

## Cost Management in Mining Companies and Influence and Importance on Profit Formation

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**Abstract:** Costs constitute the basic economic indicator that affects the business activities of companies. We will search costs in mining companies in Slovakia. Cost optimization in the mining company is a key factor of business and the goal to successful growth and profit formation. The costs of the mining company are high and costs affect negatively corporate profit. The goal of this study is to find out the development costs in the mining companies in Slovakia relative to the size of the business. We will use economic cost analysis in the mining companies through a chain index. The results of this economic analysis present a decreasing development of costs in the small and medium mining companies and increasing development of costs in large mining companies.

**Key words:** Costs, profit, efficiency, trend, economic analysis, medium mining companies

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### INTRODUCTION

The main idea of the cost management in companies is to direction to evaluation and to improve of all processes. The company which wants to be successful is focused on effectivity and flexibility of own activities and processes and their optimization (Katarin, 2004). Cost management activities become part of the management tools that mining companies use to achieve economic efficiency and profit. Costs create basic economic category. Costs are instrument of barriers to business, leading to bankruptcy or liquidation of business. Financial accounting is a system for evidence all costs of business. The main body of evidence is to prepare very effective system. Man *et al.* (2011) point out that the marginal costs are very important indicator for efficiency of production. Marginal costs are intimately connected with productivity optimum which is determined by the level of activity of the company where production achievement is done at the lowest medium cost and both mathematical calculus and economic reasoning show that this optimum appears when medium cost is identical with marginal cost. It is very important mathematical formula for financial situation in companies.

**Literature review:** The new innovative method for accounting named targeting lean process improvement (Darlington *et al.*, 2016). Cost management in many companies is not systematic and that is why the question of the introduction of cost controls as a tool for effective decision making, planning and cost management is very important and necessary (Satanova and Potkany,

2004). Prosperity of the firms depends in present time mainly from the timely and proper decision of management about way for obtaining of financial, raw material, material, technical and human sources, decision about work efficiency achieving for individual working places and employees in the production, about efficiency of firm's fixed capital using, about optimal management of stocking and sales, about localization of clients and transport, about environment of the firm (Satanova *et al.*, 2015). Cost management in the mining company and their impact on profit represents a measure of financial success business (Kassay, 2001). Process approach in cost management is the key of efficiency and productivity in business today. Very important method for managerial decision is activity based costing and using of this method is possible in cost management (Florekova and Cuchranova, 2001). Legowik-Swiacik (2015) applied decision making process for chemical company with aim to present information flow in production by analysis of linear correlation and comparative analysis of cost information in production process. Kaizen cost management technique is very important instrument how to reduce and to control operational costs. Jayeola *et al.* (2012) studied relationship between Kaizen cost management technique and profitability of SMEs and the result of statistical test of hypothesis showed that there is a significant relationship between kaizen cost management and profitability.

The other new instrument for cost reduction is method Activity Based Costing (ABC) that to support the business processes and to use accounting information-costs to optimise costs in the firm

(Noerlina and Kharin, 2015). Very important instrument for cost reduction is (EMA) Environmental Managerial Accounting in the firm that cost reduction is oriented to living environment. Cost reduction can allow cost reduction of other kind of costs in the firm and it is goal of reduction (Teplicka, 2005).

## MATERIALS AND METHODS

Monitoring of the costs can be made on the basis of different approaches. For evaluation of economic and statistical indicators we can use arithmetic mean and economical chain index (Petrik, 2005). Development of costs we follow through graphical methods. Arithmetic mean indicates the average value of expenses in the period in relation to the size of the mining companies. The average value of costs is monitored in relation to the size of the business to be able to see the difference in the cost of small, medium and large mining companies. Individual chain index informs of changes in the cost of two consecutive periods. Individual index follows the development of economic indicators and suggest ways to optimize costs in the mining company. Cost optimization is important in terms of generating profits and achieving efficiency in the mining company.

**Problem statement:** We implemented statistical indicators of costs in mining companies in Slovak Republic. We classify companies-small, medium, large mining companies and cost management used in this companies because costs are very important economical index for the competitiveness of the companies. We obtained information about costs in mining companies from statistical database Slovstat and accounts register in Slovak Republic.

## RESULTS AND DISCUSSION

We analyzed costs according to this classification. We summarized the costs for three years and we express arithmetic mean. We solved statistical indicators of costs in mining companies. Economic analysis in mining companies points out decrease and increase of costs. We used mathematical, statistical indicator arithmetic mean for specification of cost changes in the mining companies for 3 years. Results of this economic analysis shows to decreasing of costs in small and medium mining companies but in large mining companies was recorded soft increasing of costs (Table 1). Decreasing of costs for mining companies is positive indicator for profit creation.

Continual decreasing of costs in mining companies is base in cost management. Monitoring and evaluation costs create one part of cost controlling and this part of

Table 1: Economic indicators in mining companies

| Arithmetic mean | 2012        | 2013        | 2014        |
|-----------------|-------------|-------------|-------------|
| Small mining    | 2,059,119   | 1,882,716   | 1,808,618   |
| Medium mining   | 8,620,761   | 8,534,399   | 8,010,235   |
| Large mining    | 120,164,732 | 130,505,770 | 130,554,878 |

Table 2: Economic indicators- chain index in small companies

| Company/costs(€)               | I <sub>N(13/12)</sub> | I <sub>N(14/13)</sub> |
|--------------------------------|-----------------------|-----------------------|
| Agro Matuskovo s.r.o.          | 0.91                  | 1.19                  |
| Agro Ratka s. r. o.            | 0.94                  | 0.96                  |
| Delta Stone s. r. o.           | 1.18                  | 1.06                  |
| Gazda Slovakia s. r. o.        | 1.19                  | 0.75                  |
| Chyzbet SK s. r. o.            | 0.69                  | 1.20                  |
| Ikra s. r. o.                  | 0.87                  | 0.49                  |
| Is-Lom s. r. o.                | 0.75                  | 1.32                  |
| Kabe s. r. o.                  | 0.92                  | 1.10                  |
| Kam-bet s. r. o.               | 0.91                  | 0.83                  |
| Kamenivo Slovakia a.s.         | 0.81                  | 1.70                  |
| K.L.K. s. r. o.                | 1.14                  | 0.92                  |
| Lesostav Sever s. r. o.        | 0.99                  | 0.78                  |
| Mhrc s. r. o.                  | 0.58                  | 0.89                  |
| Rekos s. r.o.                  | 0.66                  | 1.01                  |
| Sehring Bratislava s.r.o.      | 1.62                  | 1.36                  |
| Stemp-M and G s. r. o.         | 0.90                  | 0.80                  |
| Strkopiesky Batizovce s.r.o.   | 0.83                  | 0.48                  |
| Strkopiesky Hrubá Borsá s.r.o. | 0.73                  | 0.98                  |
| Vestkam s. r. o.               | 0.79                  | 1.35                  |
| Zempra s.r.o.                  | 0.72                  | 0.75                  |
| Zemplinska Plavebna            | 1.27                  | 0.70                  |

Table 3: Economic indicators-chain index in medium companies

| Company/costs (€)                 | I <sub>N(13/12)</sub> | I <sub>N(14/13)</sub> |
|-----------------------------------|-----------------------|-----------------------|
| Agrocoop Imel a.s.                | 1.02                  | 1.05                  |
| Agrorent a. s.                    | 0.97                  | 1.05                  |
| Cestne Stavby Zilina s.r.o.       | 1.08                  | 0.43                  |
| D.a.L. s.r.o.                     | 1.42                  | 1.17                  |
| Intocast Slovakia a. s.           | 0.91                  | 0.97                  |
| Mestsky Podnik Spiska Bela s.r.o. | 1.00                  | 0.58                  |
| PK Doprastav a.s.                 | 0.86                  | 0.99                  |
| Prefa-Stav s.r.o.                 | 0.92                  | 1.04                  |
| Prefa Sucany a. s.                | 1.19                  | 0.69                  |
| Vod-eko a.s.                      | 0.50                  | 1.49                  |
| Zapa Beton s.r.o.                 | 1.19                  | 0.97                  |

cost controlling affords information for managerial decision. Costs are element of all activities in company and every process in company generates costs. Bain and Company has identified several factors that differentiate successful businesses from unsuccessful businesses in cost management. One of them is the respect of external market conditions when setting cost targets (Teplicka, 2004). An international consulting firm Bain and Company based on its own survey identified four success factors that companies must comply with if they are to achieve sustainable is a necessity to take into account external market environment to define cost objectives the actions of competitors, the price elasticity of the market, technological innovation.

We analyzed chain index in economic analysis. Chain index under value 1 means cost decreasing and chain index over value 1 means cost increasing (Table 2-4). In small mining companies is situation various. Some of mining companies minimize chain index, for example

Table 4: Economic indicators-chain index in large companies

| Company/costs (€) | $I_{(13/12)}$ | $I_{(14/13)}$ |
|-------------------|---------------|---------------|
| Holcim a. s.      | 1.43          | 1.00          |
| Lesy SR s. p.     | 1.03          | 1.01          |
| Vion a.s.         | 0.60          | 0.96          |

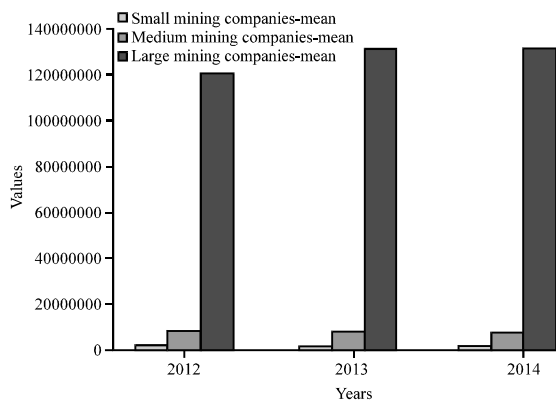


Fig. 1: Trend of costs in mining companies

IKRA s.r.o., Strkopiesky s.r.o. Batizovce. In those companies was expressive decreasing. In some companies chain index was increasing it means negative trend for costs. We have seen a reduction of difference between chain indexes in company, for example, Delta stone s.r.o., Sehrling s.r.o. Bratislava. This trend is positive for cost management (Fig. 1).

In medium mining companies is situation various. Some of mining companies expressive minimalize chain index, for example, Cestne stavby Zilina s.r.o., Prefa Sueany S.K. a.s., Mestsky podnik Spisska Bela s.r.o.

In one large mining company Holcim a.s. chain index was increasing (1,43-1,00) it means negative trend for costs but reduction of difference between chain indexes was expressive and it means positive situation of cost management in this mining company.

We obtained information that some of mining companies increased chain index very expressive in medium mining company VOD-EKO a.s. (0,5-1,49) in small mining company Chyzbet sk s.r.o., (0,69-1,20), IS LOM s.r.o. (0,75-1,32), Kamenivo slovakia a.s. (0,81-1,70), VESTKAM s.r.o. (0,79-1,35). Significant changes in costs may negatively affect for profit formation and for business activities in mining companies.

**Key results:** In conclusion we can say that the development of costs in the mining companies in relation to size of companies is positive what may appear to the profit of mining companies and preparing cost budgeting for individual costs of companies for the future strategy. Cost budget can deliver cost reduction and saving of resource. Reducing of costs is one of the main ways to get a competitive advantage in the market. About 40% of companies that are among the best in the industry, cost

Table 5: Economic indicators-profit in mining companies

| Mean of costs (€)              | 2012        | 2013        | 2014        |
|--------------------------------|-------------|-------------|-------------|
| Small                          | 2,059,119   | 1,882,716   | 1,808,618   |
| Medium                         | 8,620,761   | 8,534,399   | 8,010,235   |
| Large                          | 120,164,732 | 130,505,770 | 130,554,878 |
| <b>Mean of revenues (€)</b>    |             |             |             |
| Small                          | 3,560,780   | 3,563,450   | 3,852,230   |
| Medium                         | 9,653,785   | 9,763,652   | 9,156,456   |
| Large                          | 350,620,456 | 265,236,254 | 258,654,320 |
| <b>Formation of profit (€)</b> |             |             |             |
| Small                          | 1,501,661   | 1,680,734   | 2,043,612   |
| Medium                         | 1,033,024   | 1,229,253   | 1,146,221   |
| Large                          | 230,455,724 | 134,730,484 | 128,099,442 |

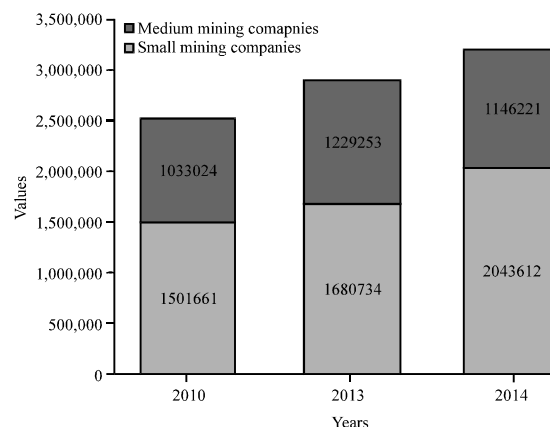


Fig. 2: Trend of profit in small, medium mining companies

leadership is considered a pillar of its competitive strategy. Bain and Company research shows that companies that have set measurable goals based on performance indicators achieved good results in cost reduction. Condition of performance indicators was to respect the competitive situation (Table 5).

**Influence on profit formation:** The results of this economic analysis present a decreasing development of costs in the small and medium mining companies and increasing development of costs in large mining companies. We obtain influence of cost optimization to profit formation.

Profit in small mining companies is increasing because costs in mining companies in period 2012-2014 are decreasing and it is positive progress (Fig. 1). Profit in medium mining companies is increasing and in year 2014 is soft decreasing but results of economic situation is positive because mining companies to achieve profit. This influence to profit creates decreasing of revenues but costs are decreasing.

Profit in large companies is decreasing (Fig. 3). This influence to profit creates decreasing of revenues and increasing of costs. This financial situation is not acceptable for large mining companies. This situation decreases competitiveness.

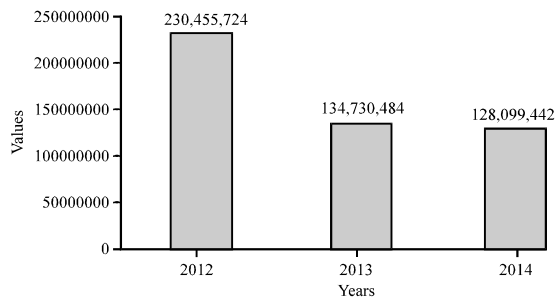


Fig. 3: Trend of profit in large mining companies

### CONCLUSION

Continual improvement is one part of management. Improvement of business processes create base for costs decreasing. Awkward set up processes of more expensive products and lower corporate profits (Wagner, 2009). The current goal of mining companies is cost reduction. Traditional methods for costs reducing such as saving material, energy, the reduction of the workforce, inventory is limited. It needs to look for a new methods and tools for reducing costs. One such method is to optimize the costs of the processes (Kassay, 2001).

Processes and activities that show significant inefficiencies must be optimized. Economical-mathematical model create base for cost optimization. The highest costs are incurred in production processes. These processes are priority in optimization and optimization solutions to deliver profitable growth. In mining companies are very important to use new methods of process optimization. Process optimization is connected with cost reduction in mining companies. Cost controlling is a tool for the effective management of costs in mining companies. An important part of the data basis. Information on the costs needs to be linked with information from the financial accounting (Potkany, 2015). Through controlling can successfully manage critical business processes and enable the enterprise as a whole to build a concept of permanent continuous improvement in the direction of reducing costs. Reduce costs in the future has to bring enterprise positive to eliminate the risk and prioritize economic effect. A very important change in cost is the cost of innovation. Enterprises to innovate are reserved approach because innovations are very demanding on resources. Mistakes are part of upgraded and it is very important to reduce and eliminate errors which reduces the cost. Open innovation represent expense management a new approach for mining companies.

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