

# UTILIZATION OF VARIANCE ANALYSIS FOR MANAGERIAL DECISION IN THE FIRM

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## **Abstract**

*Calculation of products constitutes the essential instrument pricing the product and at the same time is an indispensable tool for planning of production, sales, revenues and profit. In today's conditions we often meet with the changes in the prices of production factors in the course of the planned period of production of the product concerned, which also lead to deviations in the calculations. In order to effectively manage the amount of profit from the product managers and overall contribution to the company, these changes should follow. In this paper we describe very good tool for monitoring changes in the prices of production factors in the manufacture of products may be called Variance analysis.*

## **Introduction**

The calculation of product is today very important and the calculation is necessary in term of customer requests and customer needs. By the creation of calculation is important to accept quality of product and to value price of product following the quality. Today customers influence price of product by specifications of product and producers, businessmen must to adapt price of product to customer requirements (Rajňák, 2007). This reason is stimulus to change creation of calculation and to use new modern methods of calculation for example activity based costing, target costing, kaizen costing, job costing and inventory costing and other.

Under conditions of increasing competition and continuing downward pressure on product prices is the cost management activities, which must be thoroughly overhauled and cost management becomes part of the management tools that companies use to ensure economic efficiency and cost management (Martinellini and Urošević, 2006). Costs such as basic economic category affecting the operating result is in many cases the subject of barriers to business, and may also cause out of business, leading to bankruptcy or bankruptcy and liquidation of enterprises (Skřivánek, 2005). 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 (Foltínová, 2007). Enterprises to improve business conditions require a systematic, process instruments with which they manage their cash flow, which is also reflected in cost categories.

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Utilization of these methods in companies in manufacturing company brings some specifics. These methods produce better evidence of costs and price of product but they are very difficult to introduce in praxis. Integral part of calculation creation is knowledge management. Knowledge management will be orientated to know everything about customer and needs of customers, market specifications and possibilities how to be competitive, something about competition and her strategy in area of calculation (Kádárová, Durkáčová, 2013).

**1 How to change access to creation of calculation? What is very important by the creation of calculation?**

In the first step is needed to change traditional calculation and to use new modern trends by creation of calculation. In second step we must to accept requirements of customer before production begin.

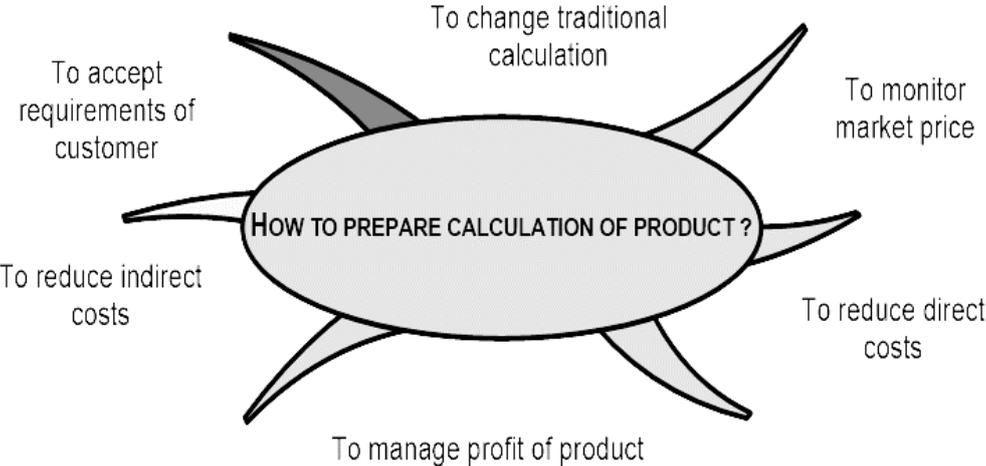


Figure 1. Mind map of calculation

The price of product consists of cost items that we must reduce. Direct and indirect costs will be reduced by using of new methods. Very important part of price is profit. We must accept profit charge by the creation of calculation.

Costs are an important indicator of the quality and efficiency of business operations processes. The role of each of the cost management plan, analyzes, manage, evaluate and direct their development in the context of continuous improvement (Kassay, 2001). In recent years, costs have begun to monitor and manage by activity respectively. Business processes, particularly in the determination of prices of the manufactured products. Traditional calculated costs it is not enough to know we determine where costs are incurred, who is responsible for the cost of why costs are incurred, such as costs incurred and what steps need to be done to the effectiveness of the various dimensions of management costs increase.

Variance analysis is a method of tracking deviation and comparisons between the standard - planned, actual - actual indicators of business - cost, profit (Gros, 2003). This analysis is commonly used in budgeting, but its application is in the calculations. Using this

analysis of variance we manage operating profit, which is based on price of the product and the sales margin (Potkány, 2011). This procedure of variance analysis for monitoring operating profit can be presented as follows (Figure 2).

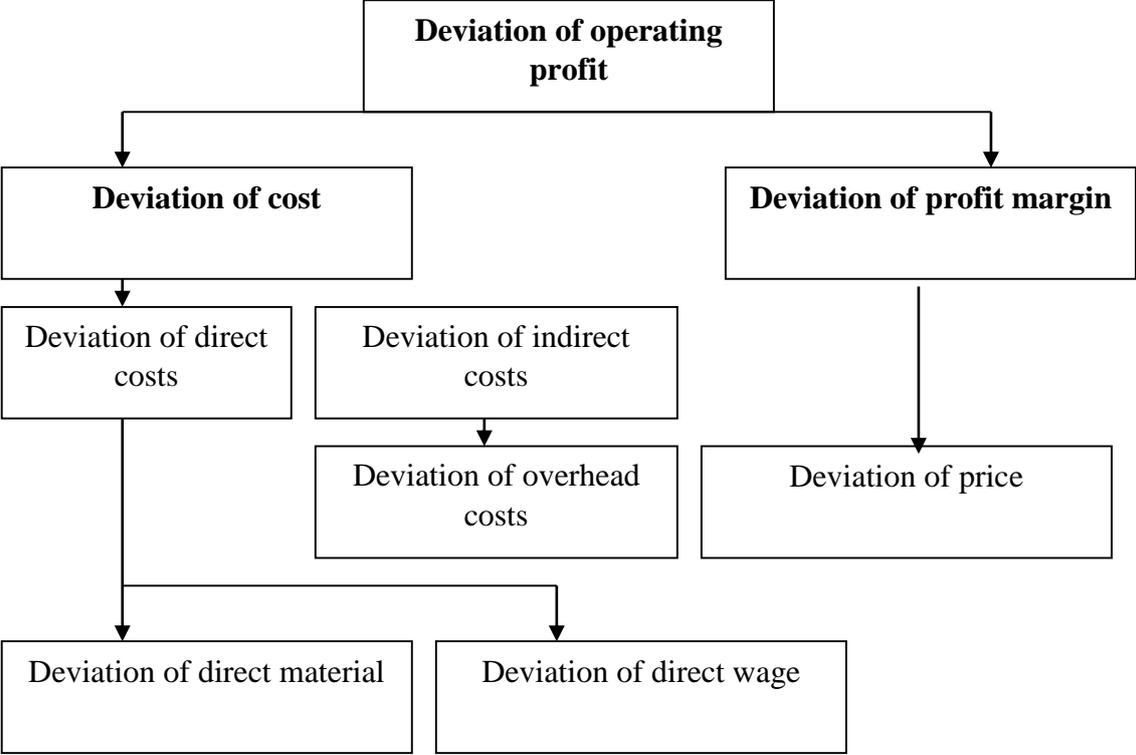


Figure 2. Deviations of variance analysis

Variations in costs are a key factor that affects the performance of the company and this analysis should lead for manager’s documentation for suggestion of measures that are increasing efficiency, profitability, business efficiency (Kostková, Lajoš, 2008). Divergences constitute a tool that controls the evolution of profits in relation to the planned prices and costs. Product Costing may be formed as standard and therefore deviations may occur in each item costs (Janok, 2002). If we looked at the production of products that create calculation and its production lasts at least a year, during production, we can capture changes in the costs and profit margins of the product, because during the year may be changes of input materials, the prices of input materials prices work but and an increase in overhead costs.

Bearing in mind the fact that the company prepares a preliminary calculation of the product before production and the calculation registers as standard, which does not reflect market changes during production, but at the end of the reporting period, so this calculation and volume of the planned profit and sales was as follows (Table 1).

Table 1. Product calculation

<b>Product calculation</b>	<b>Unit cost 1 unit of product</b>	<b>Plan of production year, 500 units</b>
Direct material 40 kg/2 €	80.00 €	
Direct wage 20 hod /3€	60.00 €	
Factor overhead	24.00 €	
Costs of production	164.00 €	
Profit margin 20 %	32.80 €	16 400.00 €
Price of product	196.80 €	98 400.00 €

Source: author

If the company during the period wants to track changes in the calculations in order to manage the cost and maintain profit levels of the product, must be dealt with analysis of variance using the method of analysis of variance. Suppose that for four months reporting period the company will analyze deviations from calculations to determine the amount of the actual cost of product development and profit at the planned selling price. From the internal bookkeeping documents can be detected effectively money spent to produce 100 units of products.

Table 2. Costs for 4 month - 100 units of products

<b>Direct material</b>	3 900 kg	9650.00 €
<b>Direct wage</b>	1500 hrs	5250.00 €
<b>Factor overhead</b>	-	2200.00 €

Source: author

Based on actual data, we can observe deviations from the standard product costing planned by the process method of variance analysis. In the first step, we observe variations in calculations of direct material product.

Table 3. Deviation - direct material

<b>Deviation of price</b>	<b>Deviation of quantity</b>
3900 kg x 2 € = 7800 €	40 kg x100 pcs= 4000 kg
9650 €/3900 kg= 2,474 €/kg	3900 kg x 2€ = 7800 €
3900 kg x 2,474 €= 9650 €	80 € x100 pcs= 8000 €
+1850 €	8000 €-7800 €=200 €
Adverse deviation	Favorable deviation
<b>Deviation =1850 €-200 €= 1650 €</b>	

Source: author

The total deviation for direct material adverse deviation represents the amount of € 1,650, which represents an increase of material costs to produce one product. Increase in material costs may adversely affect the development of the profit margin on unchanged sales price, which was calculated in the preliminary calculations of the product. For reference quantity decreased volume in kg, but the unit price for 1 kg of feed material increased, which negatively affected the direct material price variances.

Table 4. Deviation- direct wage

<b>Deviation of price</b>	<b>Deviation of quantity</b>
5250€/1500 hrs=3,5 €/hr	1500 hrs x3 €=4500 €
1500 hrs x3 €= 4500 €	100 pcs x60 €=6000 €
1500 hrs x3,5€=5250 €	20 hrs x100pcs =2000 hrs
5250€-4500€=750€	4500 €-6000€=-1500 €
+750 €	-1500 €
Adverse deviation	Favorable deviation
<b>Deviation =750 €-1500 €= -750 €</b>	

Source: author

The total deviation for direct labor is a favorable variation in the amount of € 750, which means a reduction in labor costs in the calculations. When analyzing price variation was observed unfavorable deviation and the deviation of quantity, decrease the number of hours to produce 100 units of products against planned estimates, representing a reduction in labor costs.

Table 5. Deviation - factor overhead

<b>Factor overhead planning</b>	24 €x100 pcs = 2400 €
<b>Factor overhead actual</b>	2200 €
<b>Deviation of factor overhead</b>	2400 €-2200 €= 200 €
<b>Deviation</b>	Cost saving - Favorable deviation

Source: author

Based on analysis of production overheads we found a decrease in the cost of an item of direction it means favorable variation for the product.

Table 6. Deviation summary for production of 100 units of product

	<b>Deviation of price</b>	<b>Deviation of quantity</b>
Direct material	+1850 €	-200 €
Direct wage	+750 €	-1500 €
Factor overhead	-200 €	
Deviation	+2400 €	-1700 €
Summary deviation	<b>+700 €</b>	

Source: author

The total deviation represents an increase in the total cost of the production of products of 700 € from the planned costs calculated costs, an increase on 1 PC product of 7 €. Due to this fact, we can conclude that the differences in the estimates of the products are necessary for manufacturing companies because of this increase in cost is reflected in the reduction of profit. If we assume that the company will not increase the selling price by itself, the result of changes in the course of the four months of production the product would mean a reduction in profit margin for the company on 1 PC product of 7 €, what would be the negative at the end of the year was also reflected in the volume of sales and profit.

Table 7. Planning and actual calculation of product after changes

Product calculation	Unit cost 1 unit of product	Actual calculation
Direct material 40 kg/2 €	80 €	96.50 €
Direct wage 20 hrs/3€	60 €	52.50 €
Factor overhead	24 €	22 €
Costs of production	164 €	171 €
Profit margin 20 %	32.80 €	25.8 (196.8-171) €
Price of product	196.80€	196.80 €

Source: author

While retaining the amount of the selling price of the product, according to the plan there would be a reduction in profit to € 25.8 in the original translation of 32.8 €. This would represent a reduction of profit products 100 pieces to about 700 €, which represents a recovery of the total variance. If we take into account the total number of planned production of 500 copies of the products, i.e. a reduction in profit would decline about € 3500 as opposed to the planned profit margin calculations. While watching the variations in costs, we found that there is an overall increase in the cost of production of the product concerned from 164 € to 170 €, which occurs at the same time to reduce the profits from that product and we can conclude that the company must manage the input factors of production for the manufacture of the product, since it may be at the end of the year find themselves in situations that the planned volume of sales and profit from the product concerned has not been fulfilled.

## Conclusion

Analysis of variations in product costing is an important tool for controlling costs and profit margin of the product (Wang, 2009). If you want the company to make a profit, which have planned in the preliminary calculations must take steps to reduce the cost of product calculated; otherwise there may be a decline in profits from the production of the product. This method of controlling product calculation is the appropriate control mechanism for managing profit and sales volume. Through the deviations we follow the evolution of the product, its price and profit margin for each product (Tumpach, 2008). This tool should be applied in companies, which would streamline the process of making calculations of the products and the process of making a profit.

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