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## **BREAK-EVEN-ANALYSIS IN MILLING-BAKERY PRODUCTION**

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### **SUMMARY**

Stronger competitions on market milling-bakery production impose demand for more cost control. Significant condition for making business decision is to understand cost behavior as well as its act through different production conditions and businesses. Calculating the process it is possible to define the result that presents the best identification of decision toward businesses prosperity.

Direct cost method based on variable cost, with break-even cost analyses, gives effective databases for business decision-making. Contribution for break-even cost is a key valuation for calculating break-even point (marginal point), which divides profit field from loss field, representing equal revenue and expenses.

**Key words:** bakery production, variable cost, contribution and break-even cost

### **INTRODUCTION**

Milling-bakery production is a complex process that requires everyday decision-making necessary for business efficiency and profitability, respectively for the company considered in its entirety. In the world of modern technological-technical solutions, it is necessary to ensure optimal level of utilization of production capacity, stipulated by a wide range of factors, the most influential of which are costs and its structure.

In order to reach not only right but also timely decisions, one should have adequate knowledge and skills: in this way, information can be analyzed, so that problems may be detected and defined and possible solutions to the problem can be found. Understanding of cost functioning in various business conditions is a significant precondition for decision-making. Although traditional way of cost accounting is applied in most of the cases, it is not the only one. The purpose of this paper is to present the methods of registration and real valorization of expenditure of elements of production process, detected on the basis of authentic documentation according to their locations and subjects. Therefore, cost accounting for the output is of great importance to business policy of every company.

### **METHODOLOGY**

On the example of a profitable center's bakery production we are going to present the method of calculation based on variable costs done with point calculation and contribution of break-even cost in our paper. Although it is not prescribed by law that companies should use this calculation method, it proved to be very useful, especially

when it comes to short-term decision making.

Calculation based on variable costs and cost accounting for a certain quantity of output requires data regarding amount of costs according to the groups of utilization of product capacity dependence; in other words, it is necessary to group them according to their elements: fixed and variable. In order to divide them, the *method of reability coefficient* (variator method) was used. It is based on the known data on equity types of costs of a single level of utilization of production capacity.

The final objective of calculation is determination of break-even point as well as break-even cost rate according to the following formulas:

$$Dzp = \text{production value} - \text{variable costs}$$

$$Sdzp = Dzp / \text{production value} * 100$$

Dzp - being contribution for break-even cost, and

Sdzp - being rate of contribution.

## RESULTS AND DISCUSSION

For many foodstuffs producer's technological indicators of production are more important, concise and complete than the economic ones. In short-term and individual decision making, economic indicators are of great importance. It is significant, when it comes to changes in the volume and structure of production. A special emphasis is given to average variable costs per efficiency unit shown in calculation on the basis of variable costs. Data from these calculations may serve for computing and break-even analysis, in which costs level with income, as well as for various financial reports, required in production management and control. These calculations show financial results of production for each product separately, which provides a lot of information for monitoring and evaluating production as well as for good decision making.

By method of reability coefficient costs are separated and divided into fixed and variable, as shown in Tab. 1.

Table 1: Separation of fixed and variable costs with method of reability coefficient

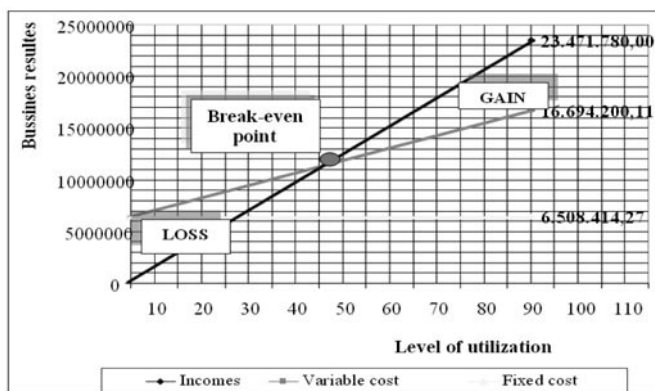
| Cost types   | Achieved<br>2004.    | Reability<br>Coefficient | Costs               |                      |
|--|----------------------|--------------------------|---------------------|----------------------|
|  |                      |                          | Fixed               | Variable             |
| Direct cost  | 6.542.722,14         | 1                        |                     | 6.542.722,14         |
| Direct gross earnings                              | 7.392.350,40         | 0,9                      | 739.235,00          | 6.653.115,4          |
| Amortization                                       | 1.532.607,66         | 0                        | 1.532.607,66        |                      |
| Electricity costs                                  | 1.005.284,88         | 0,8                      | 201.057,68          | 804.227,20           |
| Current keeping costs                              | 59.860,00            | 0,7                      | 17.958,00           | 41.902,00            |
| Spent reserved parts and deduct inventor           | 36.055,25            | 0,3                      | 25.238,68           | 10.816,57            |
| Services costs                                     | 1.400.134,59         | 0,6                      | 560.053,79          | 840.080,80           |
| General costs of efficiency                        | 2.515.386,97         | 0,5                      | 1.257.693,47        | 1.257.693,50         |
| General costs of administration and transportation | 2.718.212,49         | 0,2                      | 2.174.569,99        | 543.642,50           |
| <b>TOTAL</b>                                       | <b>23.202.614,38</b> |                          | <b>6.508.414,27</b> | <b>16.694.200,11</b> |

Source: authors

Based on the division of costs to fixed and variable, it is possible to establish, and later to analyze, the break-even point. Break-even method is one of the most simple and most used quantitative methods in income and cost leveling, and it also divides the gain zone from loss zone. The purpose of break-even-analysis is to obtain information on product quantity to be produced/sold in order to cover costs, respectively on break-even point in business operations of a farm. There are some accounting assumptions for break-even-analysis:

- accounting should provide data on fixed and variable costs directly from the account,
- selling price is known and invariable (or average) at short notice,
- variable costs are treated as proportional, and fixed as absolutely fixed.

Method of break-even-analysis is usually shown in graphs: relation between costs and income, as shown in the Fig. 1.



Source: authors

Figure 1 Break-even point

Break-even point in kunas shows which selling rate is necessary to achieve and which level of utilization of production capacity should be realized in order not to have any gains or losses. Loss is allowed to rise only to the fixed costs point. If the loss is higher than fixed costs, it is necessary to decrease capacity in order to lower total costs. If the company uses its own capacities up to break-even point, it will suffer loss, but it will be lower, if the utilization is higher. If capacity is used above the break-even point, the profit will be gained – the higher the utilization, the higher the gain (maximal profit will be gained, if the utilization of capacity is at its maximum).

It means that if a company, under given conditions and circumstances uses 45% of its capacity in a financial year, it will gain no profit. Based on break-even point shown in percentage of utilization of product capacity, one may estimate even during the financial year what the outcome will be in the end of the financial year. If a company utilizes capacities below the point in average every month, the financial year will end with loss. On the other hand, if it utilizes it above the point, its financial year will end successfully, with gain.

If fixed costs are covered from the revenue in the total amount, it is global break-even. Gradual break-even of fixed costs represents their coverage per single hierarchic level (for example, place of cost, segment, complete firm). In this way contribution for break-even of several degrees will be accounted, or gradually accounted, as well as break-even contribution rate – a percentage rate of coverage contribution (Tab. 2) in the value of sold products or per product unit according to its selling price.

Table 2: Scalar account of financial results of the firm

| Num. | Elements                     | Total                |
|------|------------------------------|----------------------|
| 1.   | Soled product value          | <b>23.471.780,00</b> |
| 2.   | Variable costs (Tv)          | <b>16.694.200,11</b> |
| 3.   | Contribution rate (Dzp) I    | <b>6.777.579,89</b>  |
| 4.   | Rate Dzp I (%)               | <b>28,88</b>         |
|      |                              |                      |
| 5.   | Fixed costs                  | <b>6.508.414,27</b>  |
| 6.   | Contribution rate (Dzp) II   | <b>269.165,62</b>    |
| 7.   | Rate Dzp II (%)              | <b>1,15</b>          |
|      |                              |                      |
| 8.   | Business efficiency          | <b>171.572,01</b>    |
| 9.   | Business efficiency rate (%) | <b>0,73</b>          |

Source: authors

Accounting of contribution rate for break-even I and II shows business efficiency of every production that enables tracking of the influence of any change or improvement of technological-organizational factors of production process. Fixed costs are unchangeable, and if parameters in the group of variable costs are changed, there will be changes in the height of break-even contribution rate. The most successful line, i.e. branch of production, has the highest break-even contribution rate.

## CONCLUSION

Recent huge changes in business operations require the application of various organizing possibilities of business activities and ideas what to do in order to improve financial results.

Since decision-making is one of the most important functions in control of the company, precise, updated and comparable data should be at disposal, because they represent the basis for decision-making.

There is a simple way, with no extra financial investment, to obtain data necessary for decision-making in milling-bakery production: calculation based on variable costs as well as calculation of break-even cost point, contribution and contribution rate.

Break-even cost point is not a permanent value. It varies by the change of selling and purchase prices, the change of relation between variable and fixed costs. It depends on everything that influences costs and income of a company.

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## TOČKA POKRIĆA TROŠKOVA MLINSKO-PEKARSKIH PROIZVODA

### SAŽETAK

Jačanje konkurencije na tržištu, nameće proizvođačima mlinsko pekarskih proizvoda potrebu sve veće kontrole troškova. Značajan preduvjet za donošenje poslovnih odluka je razumijevanje ponašanja troškova, odnosno načina njihova djelovanja pri različitim uvjetima proizvodnje i poslovanja. Računskim postupkom moguće je točno utvrditi rezultat koji predstavlja najpovoljniju odluku temeljem prepoznavanja i odabira rješenja koja vode prema željenom cilju.

Metoda kalkulacija na osnovi varijabilnih troškova, sa izračunom doprinosa za pokriće troškova, omogućuje učinkovit postupak nastajanja baze podataka za poslovno odlučivanje. Doprinos za pokriće troškova je ključna veličina za izračunavanje točke pokrića, odnosno granične točke (break point), koja dijeli zonu dobitka od zone gubitka, odnosno pri kojoj se prihodi i rashodi izjednačavaju.

**Ključne riječi:** pekarski proizvodi, varijabilni troškovi, doprinos i točka pokrića troškova