

# THE ROLE OF BUDGETING IN THE MANAGEMENT PROCESS: PLANNING AND CONTROL

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## **Keywords**

*Budgeting*  
*Planning*  
*Budget controlling*  
*Flexible budgets*

## **JEL classification**

*M41, M49, M11*

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## **Abstract**

*This paper is a literature review on management accounting and it examines the necessity and the role of budgeting and budget controlling in the management process.*

*Budgets are necessary to highlight the financial implications of plans, to define the resources required to achieve these plans and to provide a means of measuring, viewing and controlling the obtained results, in comparison with the plans. Many managers, especially those familiar with accounting, criticize budgets saying that this implies additional consumption of effort and waste of time, claiming that there are too many estimates in the budget and that these estimations are unreliable, for it to be useful. And yet, any large company prepares budgets. Why? Because it forces managers to foresee, to study trends and develop necessary strategies. Also, the budget can prevent imminent issues. Budgets are excellent communication tools, pointing out the operational and financial objectives of the period. Budgets communicate to the upper and middle management which are the top-management's expectations, and also communicate the management's priorities to the lower levels. In some cases, it can give a manager the authority to dispose of certain funds, but being limited by the budget. Furthermore, the budget sets the prices for internal services and is the basis for performance evaluation. The controlling function confirms or not the compliance or noncompliance of the results with the predetermined objectives, highlighting occurred deviations and the causes that produced them. Budget controlling compares costs, revenues and actual performance with the budget so that, if necessary, it can be reviewed and corrective measures can be applied. This paper also includes a case study in a Romanian company and the collected data will be valued and interpreted in detail. Not all managers in our country understand the importance of budgeting. The aim of this study is to demonstrate the necessity of budgets in planning and controlling of a company's activity.*

## 1. INTRODUCTION

This paper is a literature review on management accounting and it examines the necessity and the role of budgeting and budget controlling in the management process.

The first part is a theoretical one and it deals with the concepts of budgeting and controlling, approaching issues such as the need for budgeting and controlling, the purpose of budgeting, the utility of budgets, types of budgets, controlling instruments, controlling principles, phases of the controlling process etc.

This paper also includes a case study in a Romanian company and the collected data will be valued and interpreted in detail. The second part includes a brief presentation of a small biscuit factory that is manufacturing two types of products and a short example regarding the creation and implementation of a flexible budget in this company. The deviations will be calculated and analyzed.

Not all managers in our country understand the importance of budgeting. The aim of this study is to demonstrate the necessity of budgets in planning and controlling of a company's activity.

## 2. THE BUDGETING PROCESS

### 2.1. THE NEED FOR BUDGETING

The budget is considered "an important management tool that is a quantitative statement of a plan of action for some specified period of time. It is used to plan for the organization's future activities and also to control current operations." (Bierman, Dyckman & Hilton, 1990)

Budgeting deals with preparing budgets, which involves quantitative establishment and in financial common terms of the planned allocation and use of the company's resources.

A budget represents "a quantitative expression of a plan of action and an aid to the coordination and implementation of this plan." (Horngren, Foster & Datar, 1994)

The budgeting process means drawing up plans in a numerical form. Budgets are descriptions in financial terms or in another form of the anticipated results. Financial

budgets are the value expressions of the company's activity.

Only when they have clear and well defined objectives and actions, managers know how much money is needed to achieve them. In essence, the budget is the instrument with which the manager underlies and implements decisions, takes responsibility for the efficient use of resources and controls the income level, expenses and profit. Budget management uses as a measure a pecuniary standard that allows an actual expression of labour, deducts costs and places expenses.

The budget's functions are:

- financial planning function;
- ensuring of financial balance function;
- controlling of financial execution

function.

The budget of a company is prepared before a reference period (usually for one year) and presents in detail the plans for sales, for anticipated costs and for all the company's modules. The budget includes anticipated financial accounts for the reference period, regarding the cost of production, income, acquisition of resources and so on, as well as planning the cash flows (cash flow budget).

### 2.2. THE PURPOSE OF BUDGETING

Budgets are necessary to highlight the financial implications of plans, to define the resources required to achieve these plans and to provide a means of measuring, viewing and controlling the obtained results, in comparison with the plans.

Budgeting is considered "a dynamic process that ties together goals, plans, decision making and employee performance evaluation." (Deakin & Maher, 1991)

The company's revenues and expenses budget is one of the basic tools with which the financial resources are dimensioned, financial stability is ensured and the results of the entire activity is summarized so that the management can guide these results to those directions that provide higher incomes.

The budget is a practical way to mobilize all financial, human and material resources, both in the organization as a whole and in different activities, products, groups of products, services or functional departments. For this purpose, the content, structure and foundation of each company's budget should

focus on revenues, expenses and obtained results in every department.

Budgets are usually made for a period of one year, but can also be for five or more years. The first quarter is broken down by months and the rest of the annual budget by quarters. Periodically the budget will be revised and at the end of the first quarter, information from the next period of time will be reconsidered and presented in more detail. Revolving budgets (rolling budgets) are used by many companies. The rolling budget is that plan in which the period that just ended is dropped and another one is added in the future.

There are two types of budgets:

- Financial budgets, which focus on the impact of cash on operations and include the capital budget, cash budget, budgeted balance sheet and budgeted statement of cash flows;

- Operating budgets, which involve all the operating activities within a company such as research and development, sales, production, marketing and distribution, and are the budgeted income statement.

Micro budgets on expenses starting from divisions, laboratories, functional departments and down to work teams make it possible to ensure highlighting of the areas and places where it is necessary to intervene through technical, economical or organizational measures, in order to achieve superior results or to adjust some dysfunctions.

Budgets for modules (areas of activity): commercial, economic, production, management; for functional services: purchasing, pricing, accounting, etc., and for manufacturing departments are prepared by the leaders of those activities, referred to as "budget responsible" for periods and time limits determined by the company's management.

The company's general budget or "the master budget summarizes the financial projections of all the organization's budgets and plans. It describes the financial plans for all value-chain functions." (Horngren et al., 1994)

The master budget is a plan for the coming year and it is also called the "static budget", the "budget plan" or the "planning budget".

The master budget is a typically static budget because it is implemented for only one level of anticipated activity. On the other hand, the flexible budget includes budgeted

revenues, costs and profits for any level of activity. Variable costs and revenue are budgeted to change with the change of activity.

For revenues and variable expenses (in relation to the production volume) such as: raw materials, fuel, direct wages, etc. "flexible budgets" must be prepared depending on the variation of activities. The rest of the expenses conventionally considered constant can be a separate entity, in this way facilitating the daily budget controlling.

"A comparison of the master budget with the flexible budget and with actual results forms the basis for analyzing differences between plans and actual performance." (Deakin & Maher, 1991)

The financial balance is the result of a well-balanced budget, of an activity carried out in terms of efficiency and profitability. It needs to ensure synchronization between receipts and payments, and consists in equalization of existing funds and the necessary ones for the company's activities.

The accounting activity includes all the operations that aim a complete, continuous and systematic storing in monetary standard of the existence of the company's assets and liabilities and measuring the economic and financial results generated from the activity held within the company in a period of time.

Budgets transpose strategy into financial terms, which in business is the only way how, basically, the strategy can be expressed.

A company needs a budget director (budget officer) to establish the procedures for creating and implementing the budget, a budget committee which has an advisory role in the budgeting process and a budget manual to detail the procedures by which the budget is constructed. The board of directors has the authority to approve the company's budget.

### **2.3. THE UTILITY OF BUDGETS**

Budgets are considered to be "a major feature of most management control systems. When administered intelligently, budgets compel planning, provide performance criteria, and promote communication and coordination within the organization." (Horngren et al., 1994)

Many managers, especially those familiar with accounting, criticize budgets saying that this implies additional consumption of effort and waste of time, claiming that there

are too many estimates in the budget and that these estimations are unreliable, for it to be useful. And yet, any large company prepares budgets. Why?

Because it “forces” planning, ensures spare time for solving problems, materializes expectations (desires, forecasts), ensures the communication of the priorities that the management established, guarantees authority distribution (of responsibilities), sets the prices for internal services and represents the basis for performance evaluation.

In more detail, this means that it forces managers to foresee, to study trends and develop necessary strategies. Also, the budget can prevent imminent issues (for example, it is better to know in January that we will have liquidity problems in the fourth quarter than in October).

Budgets are excellent communication tools, pointing out the operational and financial objectives of the period. Budgets also communicate to the upper and middle management which are the top-management’s expectations, and communicate the management’s priorities (profit, conquering the marketplace, the company’s image, relationships between employee, etc.) to the lower levels.

In some cases, it can give a manager the authority to dispose of certain funds, but being limited by the budget.

Furthermore, the budget helps its users to know in advance what price must be paid for internal services and it can be estimated how it should be done based on how it was done in the past. Budgeting “is the most conspicuous evidence of the planning process.” (Belkaoui, 1991)

Management through budgets succeeded in providing a strong connection between profit, the production activity and managerial organization. In the market economy, the consecrated tool in obtaining the highest financial results is the budget. But, the practical effects of the budget depend upon the competence and stability of the company’s management.

The fundamental principles of the management through budgets:

- participation, understood as a means of stimulating active and constructive participation of employees in solving the company’s problems, in general, and in particular, those of planning and control;

- realism as a necessity and a means of ensuring a clear relationship between budgeted levels and more subjective reasons;

- required flexibility in the process of implementation of budget in the management system.

In order to be useful and effective, the expenses budget must be prepared and applied in a realistic, practical and achievable way, it must be active and dynamic, with frequent comparisons, usually between actual results and the budgeted ones and by a positive tracking, where correction actions are necessary, and it must be flexible in order to allow rapid adaptation to changes in the environment.

The requirements for a company’s budgetary success are:

- an assessment of the conditions and activity for the period included in the analysis;

- establishing a percentage of the general budget of the company, corresponding to the needs of each department: module, office or division;

- analysis of the causes of deviations from the budget;

- allocation of responsibilities for each department of budgeted activity;

- collecting and reporting current statistics of accomplishments compared to the budget;

- corrective actions of unfavourable conditions and maintaining or increasing the favourable ones.

### **3. BUDGET CONTROLLING**

#### **3.1. THE NEED FOR CONTROLLING**

Controlling is that aspect of management which has the task of comparing achieved performance with what was planned, and the preparation and implementation of procedures to correct the deviations. Controlling, which is inevitable at all levels of management, is a feedback process, which commonly reports any normal situation, emphasized by the control indicators. The place that controlling has in the management process is shown in Figure 1 at Appendices.

Controlling in the management process is “monitoring the implementation of the plan and taking corrective action as needed.”

(Bremser, 1990)

### **3.2. THE CONTROLLING FUNCTION**

The controlling function confirms or not the compliance or noncompliance of the results with the predetermined objectives, highlighting occurred deviations and the causes that produced them.

The controlling function is ascertaining and active, through it aiming the assurance of obtaining the prefigured results by the management's decisions, the maintaining of performing the system's activity within the pre-established parameters, the highlighting of the occurred deviations, the identification of favourable factors or embarrassing ones for the led activity.

The objective of the controlling function is continuous monitoring of the system's functioning and performance in comparison with the proposed objectives, avoiding dysfunctions.

Controlling has its specific actions:

- identifying the deviations and their causes;
- monitoring the removal of the deviations;
  - scheduled or unexpected controls;
  - technical, economical or another kind of analysis;
  - analysis of the parameters in comparison with the established standard;
  - assessments on the performed controls.

Reference elements:

1. set objectives;
2. stipulations of the plans and programs;
3. system of indicators, standards and internal rules;
4. management decisions;
5. obtained results;
6. pre-determined evaluation criteria;
7. performance standards.

The working tools in controlling are:

- plans and work programs;
- technical and operational recording, the accounting and the statistic one;
- oral and written control reports;
- the balanced scorecard;
- the control register.

The working methods and techniques used in controlling are: direct control, indirect

control, inspection. The control can have the following forms of exertion: preventive control, daily control, post-operative control.

The main problems to be solved are:

- ensuring the reference system's functioning at predefined parameters;
- identification and measurement of the deviations and their causes;
- identifying the measures to reduce or remove the deviations.

The vision of approaching the problems can be a direct one, dynamic or highly decentralized.

Budget controlling compares costs, revenues and actual performance with the budget so that, if necessary, it can be reviewed and corrective measures can be applied.

### **3.3. THE PRINCIPLES OF CONTROLLING AND BUDGET CONTROLLING**

The working principles of controlling are:

- analyzes the planning for what is needed to be done;
- regularly measures what has been achieved;
- compares the actual achievements with the plan;
- proposes and takes corrective measures of the deviations from the plan;
- applies feedback of the results in order to change the plan in accordance with the new requirements.

Applying these principles to the budget controlling requires the following:

A. A budget for each module, division, cost center that highlights for each cost element (to which it will be attached a cost code) budget expenses of each activity level that was introduced in the budget.

B. A comparison or recording system that allocates all costs to the ongoing cost code and to the cost center and registers the work level accomplished.

C. A comparison system that highlights actual situations towards the budget and indicates positive or negative disagreements that will occur.

This comparison system should ensure that the performance reports reach the indicated person in the shortest time possible

and are presented in such a way that the disagreements are immediately identifiable.

D. A procedure of action upon the control information received. This requires reporting to the senior management regarding what needs to be done to deal with the disagreements.

E. A procedure of feedback regarding the shifts of activity, performance levels or revision of the forecasts so that guidelines of the budget can be improved and the budgets updated.

The controlling process is schematically presented in Figure 2 at Appendices.

“Budgetary control is concerned with ensuring that actual financial results are in line with targets. An important part of this feedback process is investigating variations between actual results and budgeted results and taking appropriate corrective action.” (Collier, 2003)

The budget controlling is the only way in which the financial performance can be tracked and, therefore, improved. It will not work effectively unless:

- the budget is based on correct forecasts and assumptions;
- the budget is realistic: the tasks are not so high in order to be unachievable, nor so low in order to be insignificant;
- information and control indicators clearly specify deviations and disagreements;
- control information reach the right person who is responsible for the results and who will analyze the disagreements and take measures;
- the phases are set by the senior management in order to ensure that the disagreements are analyzed and reported, and that the occurring corrective actions are planned, implemented and have many chances of success.

In order to integrate budget controlling in the company's informational system, the controlling process must take place both on a regular basis and on continuous feedback.

A controlling process can be characterized by the phases presented in Figure 3 at Appendices.

#### **4. CASE STUDY REGARDING THE BUDGETING PROCESS AND BUDGET CONTROLLING**

The company where the study took place is SC PANCONSO SRL, a small biscuit factory in Timisoara. It has two types of products (vanilla biscuits and chocolate biscuits) and can produce 2000 kg per day. Considering that one month has about 21 working days and that the factory has a maximum of three working shifts in a day, we can calculate the monthly quantity of products depending on the number of shifts. This is illustrated in Table 1 at Appendices.

The calculation of the depreciation of the company's fixed assets can be seen in Table 2. The initial values are expressed in Euro, and for the currency conversion the exchange rate used was 4,35 RON/Euro. The life service used for calculation of the depreciation is five years, and for determining the monthly depreciation, the amount must be divided by 12.

The cost with the building's utilities can be easily estimated. The electricity depends on the number of working shifts. For one shift the cost of electricity is 2000 RON each month, for two and three shift the amount is doubled and tripled. The same calculation is applied to gas and industrial water. The amounts are presented in Table 3 at Appendices.

The cost with the external services can be seen in Table 4. The costs are expressed in Euro (according to the contracts), and the exchange rate used for conversion is 4,35. VAT is not included. The monthly external services are accounting, machinery service, IT and rent.

The number of employee depends or not on the number of working shifts, according to their categories. For example, the number of workers depends on how many shifts are used. For only one shift 12 workers are needed, for two 24 workers and for three shifts 36. The same logic is applied with the mechanic, cleaning woman and technologist. For the rest of the employees (accountant, cashier and manager) only one person is needed. The

numbers are presented in Table 5 at Appendices.

The calculation of the monthly salary costs can be seen in Table 6. The gross salary for each category of employees was multiplied with the number of employees used in a shift and the number of working shifts.

The company's monthly salary contributions can be calculated according to the Romanian law. The percentage for each contribution is multiplied with the total salary cost (gross salary) and the number of working shifts. The calculation is presented in Table 7 at Appendices.

The calculation of the company's cost with cleaning materials is illustrated in Table 8. The price per one unit is multiplied with the quantities needed for one working shift. For two and three shifts the amounts are doubled and tripled.

Unlike the cleaning materials, the maintenance materials are not calculated proportionally with the number of working shifts, because even though the machines function more hours this doesn't mean that they need maintenance more often. That is why for a number of two shifts the costs reached a growth of 50% and for three shift 100%. The amount can be seen in Table 9 at Appendices.

The recipe for 1000 kg of product is presented in Table 10. For each type of biscuits the quantity of raw materials is multiplied with their price. The exception is cocoa that is used only for chocolate biscuits. If we sum up all these amounts we can calculate the total cost of raw materials. Because of the humidity the quantity lowers with 20%, but the costs remain the same.

Furthermore, from the total quantity of biscuits some are not corresponding in terms of quality. These are transformed in biscuit crumbs, from which a part is reused in the technological process and some is sold as merchandise. For the packing materials, the quantity is multiplied with the price, the technological loss is 1% and all these costs are summed up to calculate the total cost with the packing materials. If we sum up the total cost of the raw materials and the total cost with the packing materials we can calculate the total cost with the direct materials.

Now that we know how all these cost were calculated, we can analyze the static planned budget. This budget is created by

totalizing all the costs from Table 2 to Table 10 and by adding an additional 2500 RON that represent other unplanned costs. The budget can be seen in Table 11 at Appendices.

The flexible budget is illustrated in Table 12. This type of budget takes into consideration the production level. In this example, because the company's clients wanted more chocolate biscuits, the production manager decided to work in two shifts and to produce  $\frac{1}{4}$  vanilla biscuits and  $\frac{3}{4}$  chocolate ones. All the other costs are calculated for a production level of two working shifts.

The differences between the planned static budget and the flexible budget are called the structural deviations. These deviations are presented in Table 13 at Appendices.

The actual results can be seen in Table 14. The price of flour increased with 0, 01 RON and the production manager decided to use more cocoa in the recipe for chocolate biscuits because the company's clients wanted the biscuits darker and with a more intense chocolate flavour.

The differences between the actual results and the flexible budget are called the consumption deviations. These deviations are illustrated in Table 15 at Appendices.

Many managers in our country don't use flexible budgets. As we can see, the differences between the actual results and the flexible budgets are small, but if we were to compare the static budget with the actual results then the differences would be significant.

## 5. CONCLUSIONS

Many managers from small Romanian companies don't use budgets at all. This is because even though management accounting is mandatory in our country, the Romanian law doesn't specify the penalties involved if a company doesn't have an accounting system for internal use. Furthermore, some managers don't understand the importance of using budgets in the management process for decision-making.

Just like in the case study, using flexible budgets can help a small company's managers to minimize the deviation between what was planned and what is achieved. If the manager uses only a static budget, or if he doesn't use budgets at all, he may not be able to control the production costs. This may lead to serious

problems in the future for the company's profitability.

Budgeting and budget controlling serve two of the management's functions and that is why these activities are so important. Even in a small company, planning and control are essential in the management process for making decisions and can be vital for a company's survival in the market economy.

## 6. Acknowledgements

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## Biography

*My name is Bufan Ioana-Diana, I am 26 years old and I am a PhD. student at the West University of Timisoara, Faculty of Economics and Business Administration. Here I study accounting and my areas of interest are management accounting, cost accounting and audit.*

*Other published articles:*

*1. Evolution in Time of an Economic Entity's Performance*

*2. Assisting to the Stock Count – a Procedure of the Audit Assignment*

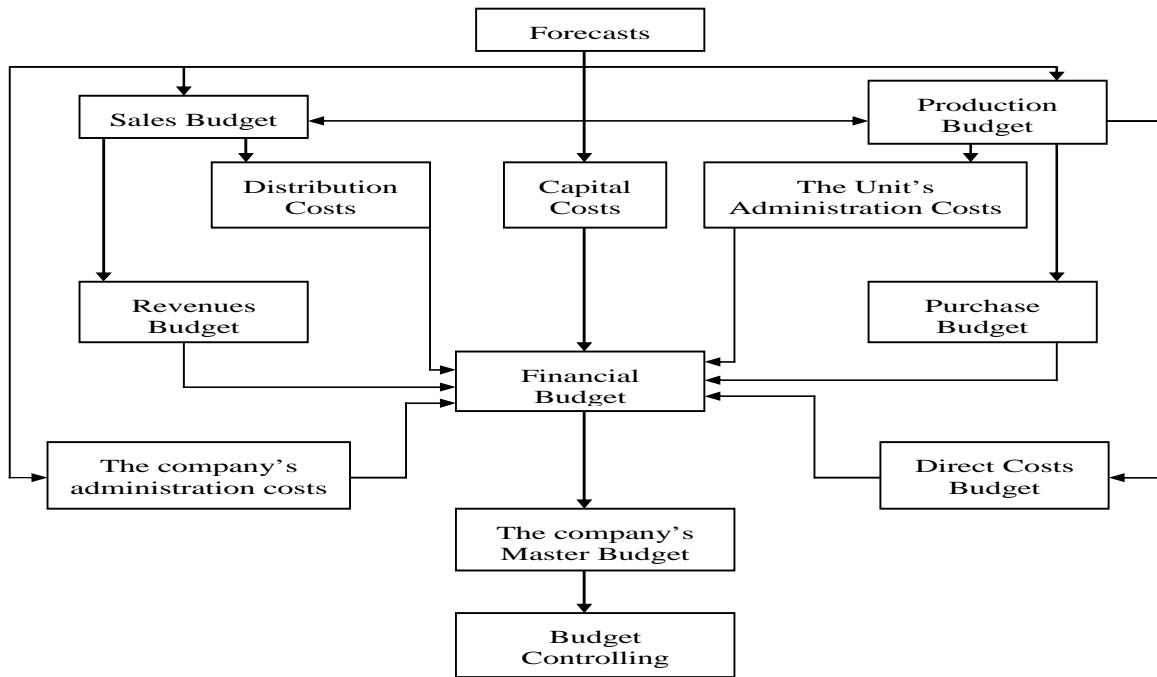
*3. The Effect of the Revaluation of Tangible Fixed Assets on the Depreciation for Tax Purposes*

*4. Case Study Regarding the Assistance of an Auditor to a Stock Count*

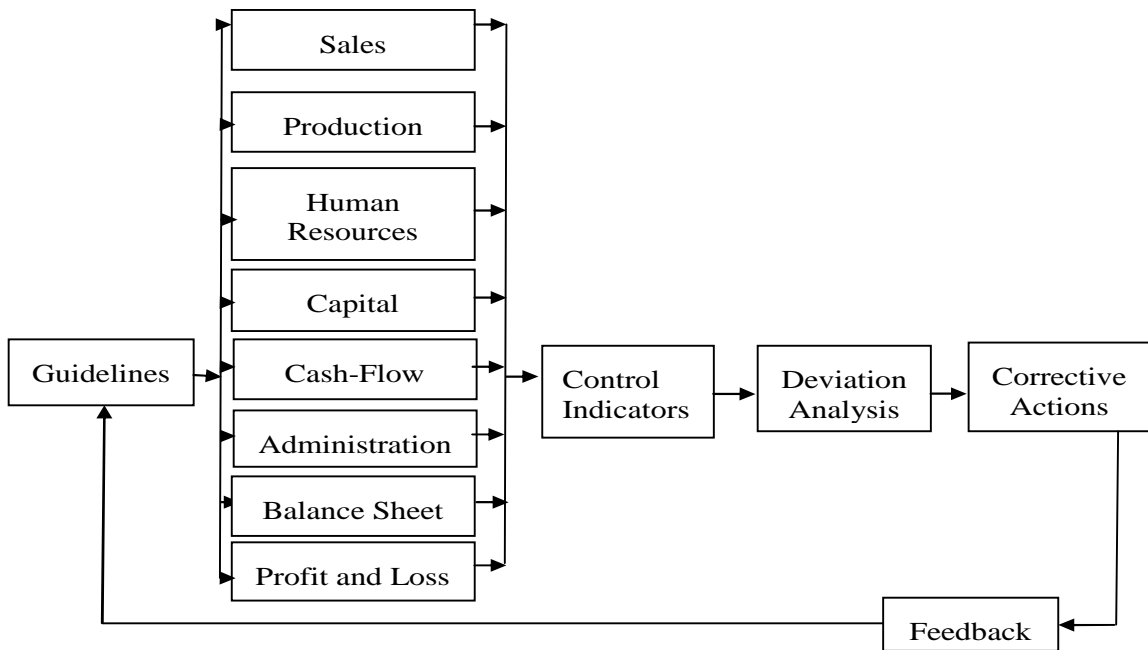
*5. The Role of Managerial Accounting in the Management Process*



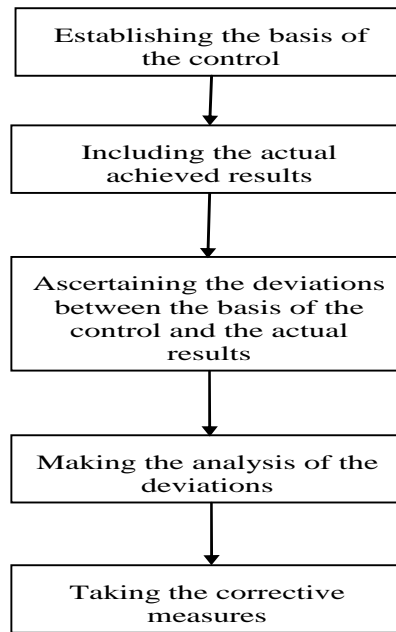
**Appendices**



**Figure 1.** The Role of the Budget Controlling in the Management Process



**Figure 2.** The Budget Controlling Process



**Figure 3.** Phases of the Controlling Process

**Table 1.** Production per month

Type of product	Quantity/1 shift	Quantity/2 shifts	Quantity /3 shifts
Vanilla biscuits	42000 kg	84000 kg	126000 kg
Chocolate biscuits	42000 kg	84000 kg	126000 kg

**Table 2.** Calculation of the monthly depreciation for the fixed assets

Fixed asset name	Q	Value euro/price	Total value euro	Value RON	Service life	Monthly depreciation
Flour mixing machine	1	15000	15000	65250	5	1087,5
Balance for flour	1	1000	1000	4350	5	72,5
Masticator	2	4000	8000	34800	5	580
Vat lifting machine	1	500	500	2175	5	36,25
Shaping machine	1	10000	10000	43500	5	725
Tunnel type furnace	1	40000	40000	174000	5	2900
Packing machine	2	10000	20000	87000	5	1450
Metal detector	1	10000	10000	43500	5	725
Robot for cream	1	500	500	2175	5	36,25
Applying-cream robot	1	3000	3000	13050	5	217,5
Plastic-packing machine	1	3000	3000	13050	5	217,5
<b>Total</b>			<b>111000</b>	<b>482850</b>		<b>8047,5</b>

**Table 3.** Calculation of the cost with the building's monthly utilities

Type of utility	Value/ 1 shift	Value/ 2 shifts	Value/ 3 shifts
Electricity	2000 RON	4000 RON	6000 RON
Gas	5000 RON	10000 RON	15000 RON
Industrial water	400 RON	800 RON	1200 RON
<b>Total</b>	<b>7400 RON</b>	<b>14800 RON</b>	<b>22200 RON</b>

**Table 4.** Calculation of monthly costs with external services

Type of service	Price/month in Euro	Price/month in RON
Accounting	300 EURO	1305 RON
Machinery service	2000 EURO	8700 RON
IT	200 EURO	870 RON
Rent	4500 EURO	19575 RON
<b>Total</b>	<b>7000 EURO</b>	<b>30450 RON</b>

**Table 5.** Number of employees

Categories of employees	No. of employees/ 1 shift	No. of employees/ 2 shifts	No. of employees/ 3 shifts
Worker	12	24	36
Accountant	1		
Cashier	1		
Technologist	1	2	3
Cleaning woman	1	2	3
Mechanic	1	2	3
Manager	1		
<b>Total</b>	<b>18</b>	<b>30</b>	<b>25</b>

**Table 6.** Calculation of monthly salary costs

Categories of employees	Gross salary/ month	Salary costs/ 1 shift	Salary costs/ 2 shifts	Salary costs/ 3 shifts
Worker	1000	12000	24000	36000
Accountant	1500	1500		
Cashier	1000	1000		
Technologist	1500	1500	3000	4500
Cleaning woman	800	800	1600	2400
Mechanic	1500	1500	3000	4500
Manager	3000	3000		
<b>Total</b>		<b>21300</b>	<b>31600</b>	<b>47400</b>

**Table 7.** Calculation of the company's monthly salary contributions

<b>Salary contributions</b>	<b>Percentage</b>	<b>Salary contributions/ 1 shift</b>	<b>Salary contributions/ 2 shifts</b>	<b>Salary contributions/ 3 shifts</b>
Contribution to the unemployment fund	0,5%	106,5	158	237
Contribution to the guaranteeing fund	0,25%	53,25	79	118,5
Contribution to the risk fund	0,242%	51,55	76,47	114,71
Contribution to the health fund	5,2%	1107,6	1643,2	2464,8
Contribution to the allowance and leave fund	0,85%	181,05	268,6	402,9
Contribution to the social security fund	20,8%	4430,4	6572,8	9859,2
<b>Total</b>		<b>5930,35</b>	<b>8798,07</b>	<b>13197,11</b>

**Table 8.** Calculation of the monthly cost with cleaning materials

<b>Type of cleaning material</b>	<b>Unit of measure</b>	<b>Price</b>	<b>Quantity/ shift</b>			<b>Value/shift</b>		
			<b>1 shift</b>	<b>2 shifts</b>	<b>3 shifts</b>	<b>1 shift</b>	<b>2 shifts</b>	<b>3 shifts</b>
Liquid soap	l	10	10	20	30	100	200	300
Toilet paper	pcs.	10	10	20	30	100	200	300
Wipes	pcs	10	10	20	30	100	200	300
Floor mop	pcs	20	10	20	30	200	400	600
Broom	pcs	60	10	20	30	600	1200	1800
Floor soap	l	10	10	20	30	100	200	300
Window cleaning solution	l	10	10	20	30	100	200	300
Dust cleaning solution	l	20	10	20	30	200	400	600
<b>Total</b>						<b>1500</b>	<b>3000</b>	<b>4500</b>

**Table 9.** Calculation of the monthly cost with maintenance materials

Type of maintenance material	UM	Price	Quantity/ shift			Value/shift		
			1 shift	2 shifts	3 shifts	1 shift	2 shifts	3 shifts
Engine oil	l	10	50	75	100	500	750	1000
Spare parts	pcs	30	10	15	20	300	450	600
Other consumables	pcs	20	10	15	20	200	300	400
<b>Total</b>						<b>1000</b>	<b>1500</b>	<b>2000</b>

**Table 10.** Recipe for 1000 kg of product

Components	UM	Price	Vanilla biscuits		Chocolate biscuits	
			Quantity	Value	Quantity	Value
<b>Raw materials</b>						
Flour	Kg	1,43	763,89	1092,36	763,89	1092,36
Fat	Kg	4,9	152,78	748,61	152,78	748,61
Sugar	Kg	3,6	76,39	275	76,39	275
Glucose	Kg	2,1	152,78	320,83	152,78	320,83
Lecithin	Kg	0,4	3,06	1,22	3,06	1,22
Salt	Kg	1	3,06	3,06	3,06	3,06
Sodium bicarbonate	Kg	2,7	9,17	24,75	9,17	24,75
Ammonium bicarbonate	Kg	3	6,11	18,33	6,11	18,33
Biscuit crumbs	Kg	4,5	76,39	343,75	76,39	343,75
Milk powder	Kg	14	15,28	213,89	15,28	213,89
Flavour	Kg	1000	0,76	763,89	0,76	763,89
Cocoa	Kg	10	0	0	22,92	229,17
Water	L	0,002	114,58	0,23	114,58	0,23
<b>Total</b>			<b>1374,24</b>	<b>3805,92</b>	<b>1397,15</b>	<b>4035,09</b>
Humidity		20%	274,85		279,43	
<b>Total from which:</b>			<b>1099,39</b>	<b>3805,92</b>	<b>1117,72</b>	<b>4035,09</b>
- Biscuits			1000		1000	
- Biscuit crumbs from which:			99,39		117,72	
• Reused		4,5	76,39	343,75	76,39	343,75
• Merchandise		4,5	23	103,5	41,33	186

<b>Packing</b>						
Carton box	Pcs	1	400	400	400	400
Plastic wrap	Pcs	0,6	400	240	400	240
Labels	Pcs	0,03	400	12	400	12
<b>Total</b>			<b>1200</b>	<b>652</b>	<b>1.200</b>	<b>652</b>
Technological losses		0,01	4	4	4	4
<b>Total</b>			<b>1204</b>	<b>656</b>	<b>1.204</b>	<b>656</b>
<b>Total costs with direct materials</b>						
				<b>4461,92</b>		<b>4691,09</b>

**Table 11.** The static planned budget

Comp.	U M	Pr.	Vanilla biscuits		Chocolate biscuits		Total biscuits	
			Q	Value	Q	Value	Q	Value
<b>Raw materials</b>			<b>21000</b>		<b>21000</b>		<b>42000</b>	
Flour	Kg	1,43	16041,67	22939,58	16041,67	22939,58	32083,33	45879,17
Fat	Kg	4,9	3208,33	15720,83	3208,33	15720,83	6416,67	31441,67
Sugar	Kg	3,6	1604,17	5775	1604,17	5775	3208,33	11550
Glucose	Kg	2,1	3208,33	6737,5	3208,33	6737,5	6416,67	13475
Lecithin	Kg	0,4	64,17	25,67	64,17	25,67	128,33	51,33
Salt	Kg	1	64,17	64,17	64,17	64,17	128,33	128,33
Sodium bicarb.	Kg	2,7	192,5	519,75	192,5	519,75	385	1039,5
Ammon. bicarb.	Kg	3	128,33	385	128,33	385	256,67	770
Biscuit crumbs	Kg	4,5	1604,17	7218,75	1604,17	7218,75	3208,33	14437,5
Milk powder	Kg	14	320,83	4491,67	320,83	4491,67	641,67	8983,33
Flavour	Kg	1000	16,04	16041,67	16,04	16041,67	32,08	32083,33
Cocoa	Kg	10	0	0	481,25	4812,5	481,25	4812,5
Water	L	0,002	2406,25	4,81	2406,25	4,81	4812,5	9,63
<b>Total</b>			<b>28858,96</b>	<b>79924,4</b>	<b>29340,21</b>	<b>84736,9</b>	<b>58199,17</b>	<b>164661,29</b>
Humidity		20%	5771,79		5868,04		11639,83	
<b>Total</b>			<b>23087,17</b>	<b>79924,4</b>	<b>23472,17</b>	<b>84736,9</b>		<b>164661,29</b>
from which:								
- Biscuits			21000		21000			42000
- Biscuit crumbs from which:			2087,17		2472,17			4559,33

• Reused		4,5	1604,17	7218,75	1604,17	7218,75	3208,33	14437,5
• Merch.		4,5	483	2173,5	868	3906	1351	6079,5
<b>Packing</b>								
Carton box	Pcs	1	8400	8.400	8400	8400	16800	16800
Plastic wrap	Pcs	0,6	8400	5040	8400	5040	16800	10080
Labels	Pcs	0,03	8400	252	8400	252	16800	504
<b>Total Tech. losses</b>		0,01		<b>13692</b>		<b>13692</b>		<b>27384</b>
				136,92		136,92		273,84
<b>Total Total costs with direct materials</b>				<b>13828,92</b>		<b>13828,92</b>		<b>27657,84</b>
				<b>93753,32</b>		<b>98565,82</b>		<b>192319,13</b>
Salaries								21300
Salary contrib.								5930,35
Electric.								2000
Gas								5000
Industrial water								400
External services								30450
Cleaning materials								1000
Mainten. materials								1500
Fixed assets deprec.								8047,5
Other costs								2500
<b>Total monthly planned</b>								<b>270872,98</b>

**Table 12.** The flexible budget

Comp.	U M	Pr.	Vanilla biscuits		Chocolate biscuits		Total biscuits	
			Q	Value	Q	Value	Q	Value
<b>Raw mater.</b>			<b>21000</b>		<b>63000</b>		<b>84000</b>	
Flour	Kg	1,43	16041,67	22939,58	48125	68818,75	64166,67	91758,33
Fat	Kg	4,9	3208,33	15720,83	9625	47162,5	12833,33	62883,33
Sugar	Kg	3,6	1604,17	5775	4812,5	17325	6416,67	23100
Glucose	Kg	2,1	3208,33	6737,5	9625	20212,5	12833,33	26950
Lecithin	Kg	0,4	64,17	25,67	192,5	77	256,67	102,67
Salt	Kg	1	64,17	64,17	192,5	192,5	256,67	256,67
Sodium bicarb.	Kg	2,7	192,5	519,75	577,5	1559,25	770	2079
Ammon. bicarb.	Kg	3	128,33	385	385	1155	513,33	1540
Biscuit crumbs	Kg	4,5	1604,17	7218,75	4812,5	21656,25	6416,67	28875
Milk powder	Kg	14	320,83	4491,67	962,5	13475	1283,33	17966,67
Flavour	Kg	1000	16,04	16041,67	48,13	48125	64,17	64166,67
Cocoa	Kg	10	0	0	1443,75	14437,5	1443,75	14437,5
Water	L	0,002	2406,25	4,81	7218,75	14,44	9625	19,25
<b>Total Humid.</b>		20%	<b>28858,96</b>	<b>79924,4</b>	<b>88020,63</b>	<b>254210,69</b>	<b>116879,58</b>	<b>334135,08</b>
<b>Total from which:</b>								
-Biscuits			21000		63000			84000
-Biscuit crumbs from which:			2087,17		7416,5			9503,67
Reused Merch.		4,5	1604,17	7218,75	4812,5	21656,25	6416,67	28875
<b>Packing</b>		4,5	483	2173,5	2604	11718	3087	13891,5
Carton box	Pcs	1	8400	8400	25200	25200	33600	33600
Plastic wrap	Pcs	0,6	8400	5040	25200	15120	33600	20160
Labels	Pcs	0,03	8400	252	25200	756	33600	1008
<b>Total Tech. losses</b>		0,01		<b>13692</b>		<b>41076</b>		<b>54768</b>
<b>Total</b>				<b>13828,92</b>		<b>41486,76</b>		<b>55315,68</b>



<b>Total costs with direct mater.</b>	<b>93753,32</b>	<b>295697,45</b>	<b>389450,76</b>
Salaries			31600
Salary contrib.			8798,07
Electric.			4000,00
Gas			10000,00
Industr. water			800,00
External services			30450
Cleaning materials			1500
Mainten. materials			3000
Fixed assets deprec.			8047,5
Other costs			2500
<b>Total monthly flexible</b>			<b>490146,34</b>

**Table 13.** The structural deviations

Comp.	U M	Pr.	Vanilla biscuits		Chocolate biscuits		Total biscuits	
			Q	Value	Q	Value	Q	Value
<b>Raw mater.</b>			<b>0</b>		<b>42000</b>		<b>42000</b>	
Flour	Kg	1,43	0	0	32083,33	45879,17	32083,33	45879,17
Fat	Kg	4,9	0	0	6416,67	31441,67	6416,67	31441,67
Sugar	Kg	3,6	0	0	3208,33	11550	3208,33	11550
Glucose	Kg	2,1	0	0	6416,67	13475	6416,67	13475
Lecithin	Kg	0,4	0	0	128,33	51,33	128,33	51,33
Salt	Kg	1	0	0	128,33	128,33	128,33	128,33
Sodium bicarb.	Kg	2,7	0	0	385	1039,5	385	1039,5
Ammon. bicarb.	Kg	3	0	0	256,67	770	256,67	770

Biscuit crumbs	Kg	4,5	0	0	3208,33	14437,5	3208,33	14437,5
Milk powder	Kg	14	0	0	641,67	8983,33	641,67	8.983,33
Flavour	Kg	1.000	0	0	32,08	32083,33	32,08	32.083,33
Cocoa	Kg	10	0	0	962,5	9625	962,5	9625
Water	L	0,002	0	0	4812,5	9,63	4812,5	9,63
<b>Total</b>			<b>0</b>	<b>0</b>	<b>58680,42</b>	<b>169473,79</b>	<b>58680,42</b>	<b>169473,79</b>
Humid.		20%	0		11736,08			11736,08
<b>Total</b>			<b>0</b>	<b>0</b>	<b>46944,33</b>	<b>169473,79</b>		<b>169473,79</b>
from which:								
-Biscuits			0		42000			42000
-Biscuit crumbs			0		4944,33			4944,33
from which:								
Reused Merch.		4,5	0	0	3208,33	14437,5	3208,33	14437,5
<b>Packing</b>		4,5	0	0	1736	7812	1736	7812
Carton box	Pcs	1	0	0	16800	16800	16800	16800
Plastic wrap	Pcs	0,6	0	0	16800	10080	16800	10080
Labels	Pcs	0,03	0	0	16800	504	16800	504
<b>Total</b>				<b>0</b>		<b>27384</b>		<b>27384</b>
Tech. losses		0,01		0		273,84		273,84
<b>Total</b>				<b>0</b>		<b>27657,84</b>		<b>27657,84</b>
<b>Total costs with direct mater.</b>				<b>0</b>		<b>197131,63</b>		<b>197131,63</b>
Salaries								10300
Salary contrib.								2867,73
Electric.								2000
Gas								5000
Industr. water								400
External services								0
Cleaning materials								500
Mainten. materials								1500
Fixed assets deprec.								0

Other costs	0
<b>Total monthly flexible</b>	<b>219699,36</b>

**Table 14.** The actual results

Comp.	U M	Pr.	Vanilla biscuits		Chocolate biscuits		Total biscuits	
			Q	Value	Q	Value	Q	Value
<b>Raw mater.</b>			<b>21000</b>		<b>63000</b>		<b>84000</b>	
Flour	Kg	1,44	16041,67	23100	48125	69300	64166,67	92400
Fat	Kg	4,9	3208,33	15720,83	9625	47162,5	12833,33	62883,33
Sugar	Kg	3,6	1604,17	5775	4812,5	17325	6416,67	23100
Glucose	Kg	2,1	3208,33	6737,5	9625	20212,5	12833,33	26950
Lecithin	Kg	0,4	64,17	25,67	192,5	77	256,67	102,67
Salt	Kg	1	64,17	64,17	192,5	192,5	256,67	256,67
Sodium bicarb.	Kg	2,7	192,5	519,75	577,5	1559,25	770	2079
Ammon. bicarb.	Kg	3	128,33	385	385	1155	513,33	1540
Biscuit crumbs	Kg	4,5	1604,17	7218,75	4812,5	21656,25	6416,67	28875
Milk powder	Kg	14	320,83	4491,67	962,5	13475	1283,33	17966,67
Flavour	Kg	1000	16,04	16041,67	48,13	48125	64,17	64166,67
Cocoa	Kg	10	0	0	1458,19	14581,88	1458,19	14581,88
Water	L	0,002	2406,25	4,81	7218,75	14,44	9625	19,25
<b>Total</b>			<b>28858,96</b>	<b>80084,81</b>	<b>88035,06</b>	<b>254836,31</b>	<b>116894,02</b>	<b>334921,13</b>
Humid.		20%	5771,79		17607,01			23378,8
<b>Total from which:</b>			<b>23087,17</b>	<b>80084,81</b>	<b>70428,05</b>	<b>254836,31</b>		<b>334921,13</b>
-Biscuits			21000		63000			84000
-Biscuit crumbs			2087,17		7428,05			9515,22
from which:								
Reused Merch.		4,5	1604,17	7218,75	4812,5	21656,25	6416,67	28875
<b>Packing</b>		4,5	483	2173,5	2615,55	11769,98	3098,55	<b>13943,48</b>
Carton box	Pcs	1	8400	8400	25200	25200	33600	33600

Plastic wrap	Pcs	0,6	8400	5040	25200	15120	33600	20160
Labels	Pcs	0,03	8400	252	25200	756	33600	1008
<b>Total Tech. losses</b>		0,01		<b>13692</b>		<b>41076</b>		<b>54768</b>
				136,92		410,76		547,68
<b>Total Total costs with direct mater.</b>				<b>13828,92</b>		<b>41486,76</b>		<b>55315,68</b>
				<b>93913,73</b>		<b>296323,07</b>		<b>390236,81</b>
Salaries								31600
Salary contrib.								8798,07
Electric.								4000
Gas								10000
Industr. water								800
External services								30450
Cleaning materials								1500
Mainten. materials								3000
Fixed assets deprec.								8047,5
Other costs								2500
<b>Total monthly flexible</b>								<b>490932,38</b>

**Table 15.** The consumption deviations

Comp.	U M	Pr.	Vanilla biscuits		Chocolate biscuits		Total biscuits	
			Q	Value	Q	Value	Q	Value
<b>Raw mater.</b>			0		0		0	
Flour	Kg	0,01	0	160,42	0	481,25	0	641,67
Fat	Kg	0	0	0	0	0	0	0
Sugar	Kg	0	0	0	0	0	0	0
Glucose	Kg	0	0	0	0	0	0	0
Lecithin	Kg	0	0	0	0	0	0	0

Salt	Kg	0	0	0	0	0	0	0
Sodium bicarb.	Kg	0	0	0	0	0	0	0
Ammon. bicarb.	Kg	0	0	0	0	0	0	0
Biscuit crumbs	Kg	0	0	0	0	0	0	0
Milk powder	Kg	0	0	0	0	0	0	0
Flavour	Kg	0	0	0	0	0	0	0
Cocoa	Kg	0	0	0	14,44	144,38	14,44	144,38
Water	L	0	0	0	0	0	0	0
<b>Total</b>			<b>0</b>	<b>160,42</b>	<b>14,44</b>	<b>625,63</b>	<b>14,44</b>	<b>786,04</b>
Humid.		0	0	0	2,89	0	0	2,89
<b>Total</b>			<b>0</b>	<b>160,42</b>	<b>11,55</b>	<b>625,63</b>		<b>786,04</b>
from which:								
-Biscuits			0		0			0
-Biscuit crumbs			0		11,55			11,55
from which:								
Reused		0	0	0	0	0	0	0
Merch.		0	0	0	11,55	51,98	11,55	51,98
<b>Packing</b>								
Carton box	Pcs	0	0	0	0	0	0	0
Plastic wrap	Pcs	0	0	0	0	0	0	0
Labels	Pcs	0	0	0	0	0	0	0
<b>Total</b>				<b>0</b>		<b>0</b>		<b>0</b>
Tech. losses		0		0		0		0
<b>Total</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>
<b>Total costs with direct mater.</b>				<b>160,42</b>		<b>625,63</b>		<b>786,04</b>
Salaries								0
Salary contrib.								0
Electric.								0
Gas								0
Industr. water								0
External services								0
Cleaning materials								0

Mainten. materials	0
Fixed assets deprec.	0
Other costs	0
Total monthly flexible	<b>786,04</b>

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