

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

SIMON KUZNETS KHARKIV NATIONAL UNIVERSITY OF ECONOMICS

**Tasks for practical lessons
and independent work
on the academic discipline
"CONTROLLING"
for full-time students
of training direction
6.030601 "Management"**

Харків. ХНЕУ ім. С. Кузнеця, 2016

Затверджено на засіданні кафедри економіки, організації та планування діяльності підприємства.

Протокол № 6 від 09.12.2015 р.

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T 38 Tasks for practical lessons and independent work on the academic discipline "Controlling" for full-time students of training direction 6.030601 "Management" / compiled by K. Iakovenko. – Kh. : S. Kuznets KhNUE, 2016. – 36 p. (English)

Situational and calculation tasks, questions for self-study and self-diagnostics for each theme of the academic discipline are presented.

Recommended for full-time students of training direction 6.030601 "Management".

Подано ситуаційні та розрахункові завдання, питання для самостійного опрацювання та самодіагностики за кожною темою навчальної дисципліни.

Рекомендовано для студентів напряму підготовки 6.030601 "Менеджмент" денної форми навчання.

Introduction

In Ukraine's current economy managers of enterprises and organizations face important problem-solving tasks: how to achieve effective results under the existing conditions and restrictions, how to control the current performance of tasks, how to timely and qualitatively react to deviations and take productive actions. A special place in the solution of these problems belongs to controlling as a system concept of enterprise management.

Implementation of controlling at Ukrainian enterprises and organizations requires preparation of highly qualified specialists in this field of knowledge. The aim of the practical tasks is to consolidate the theoretical knowledge in the field of controlling, to master the methodical principles of controlling, methods and ways of formation of a company controlling system.

Practical exercises include situational and calculation tasks that managers most frequently encounter in practice when making management decisions.

An essential element of successful learning of the academic discipline is independent work of students with national and foreign specialized literary sources. Students deepen their knowledge based on the study of publications on specific questions submitted to independent study. Questions for self-diagnostics on each theme make it possible to control students' knowledge.

As a result of studying the discipline, students must

know:

- the essence of strategic and operational controlling at an enterprise;
- the object of controlling for effective management;
- the concept of management accounting as a basis of controlling;
- the budgeting process at an enterprise to justify the ways of its future development;
- the basics of investment projects controlling;
- the analytical and information support for decision-making;
- the organizational and methodical basis of creation of a controlling system at an enterprise;

be able to:

- determine the orientation, objectives and main tasks of strategic controlling;
- determine the purpose and objectives of operative controlling;
- use the tools of strategic and operative controlling;
- determine the costs and responsibility centers according to classification groups;

set the types of costs to calculate and determine the financial results, make decisions and exercise control and regulation;
use cost accounting and cost calculation methods;
apply modern methods of accounting and calculation based on direct costs and type of activity;
choose methods and the allocation base of overhead costs;
create a system of budgets at an enterprise;
create and analyze flexible budgets;
organize the budgetary control and management in a company;
identify and use the criteria for evaluation of investment projects in controlling;
select the priority investment projects;
collect and process the initial information required for decision-making;
determine the criteria for decision-making in controlling;
make decisions based on the relevance of information;
use the cost-volume-profit analysis;
determine the conditions for implementing the system of controlling in a company;
consider the requirements for implementing the system of controlling;
create a controlling service in a company, determine its functions.

Content module 1

The role of controlling in the enterprise management system

Theme 1. The essence of controlling, its importance in enterprise management

Controlling transfers management to a new level by integrating and directing the activities of different services and departments of the enterprise to achieve operational and strategic objectives. It aims to efficiently organize and coordinate the elements of the enterprise management system.

Controlling bases on quantitative analysis and is focused on cost indicators and planning and accounting calculations. It allows constant control over the achievement of both strategic and operational objectives of the enterprise.

Task 1.1

Determine what tools are connected with strategic and operative controlling:
portfolio and investment analysis,
functional-cost analysis,
methods of costing,
dynamic methods,
budgeting,
current analysis and control of deviations,
benchmarking,
SWOT-analysis,
operation CVP-analysis,
analysis of profitability, liquidity, labor productivity.

Task 1.2

Determine what reasons led to the emergence of controlling in a company, and provide an explanation of each reason:
the need for improved management tools,
development of a market economy,
the global economic crisis,
increased competition,
globalization of the economy,
growth of expenses for production,
the need to create an additional practical basis to support the basic functions of management.

Task 1.3

A large department store sells a wide range of goods from clothing to household appliances. Department has 12 sales departments, a storeroom, an accounting department and administration. At the end of each quarter, the head of each department receives a copy of the report on income in the form presented in Table 1.

Table 1

Profit and loss report

Indicator	Amount
1. Revenue from sales (net sales)	10 700
2. Cost of sales (cost of goods sold)	4 200
3. Gross profit	6 500
4. Administrative expenses	1 900
5. Selling expenses	1 400
6. Operating income	3 200

The department store management is concerned about the profit in the third year being lower than expected, and has concluded that in some departments steps should be taken to promote sales. Accordingly, a meeting of all department heads has been scheduled to:

- identify the causes of profit deviation from the expected values;
- suggest measures to improve the internal reporting.

Explain the usefulness of the consolidated report for managers, suggest possible topics for discussion at the meeting.

Suggest measures to improve the internal reporting.

Questions for self-study

1. The structure of the controlling system, characteristics of its elements.
2. The history of controlling.
3. Interrelation of controlling with other management functions.

Questions for self-diagnostics

1. What is the essence of controlling as a new economic trend in a company?
2. What is the role of controlling in the management system of an enterprise?
3. What are the types of controlling?
4. What are the aims and main tasks of strategic controlling?
5. What is the essence and objectives of the operational controlling?
6. What are the main indicators subject to strategic controlling?
7. What are the main indicators subject to operational controlling?
8. What are the elements of the system of controlling?

Theme 2. The objects of controlling and their classification

Costs are one of the main objects of controlling in the management process. When a manager makes a decision, he must be aware about its consequences, know what expenses and income it would entail. It is necessary to classify costs in different ways to control them. Classification of costs is a tool for solving problems of management. The main directions of the classification are connected with determination of financial results, decision-making, control and regulating for a timely response to variations in operating activities, as well as with types of economic activities, and management functions.

Classification of costs makes it possible to control the process of paying costs, it is also important how costs satisfy the needs of managers in the creation of a comprehensive information system for management. Grouping of costs in various aspects is needed to identify reserves to reduce costs.

Task 2.1

The composition of expenses of an assembly workshop includes:

- 1) wages of production workers;
- 2) direct materials;
- 3) overtime payment;
- 4) payment for electricity for technological needs;
- 5) rent of premises;
- 6) utility payments.

Classify each type of expenses into controllable and non-controllable by the head of this workshop and justify the assignment.

Task 2.2

Determine which of these costs of thermal power plant are variable, and which are fixed:

1. Fuel for technological needs.
2. Water for technological needs.
3. Basic wage of production workers.
4. Additional wages of production workers.
5. Deductions to the pension fund.
6. Amortization of the fuel warehouse building.
7. The cost of maintenance and operation of the plant equipment.
8. The costs of preparation and development of production.
9. The fee for the truck rental.
10. Expenses for the chemical cleaning of water.
11. Purchased electricity.
12. Salaries of the administrative personnel.

Task 2.3

The restaurant average expenses for food and drinks are 15 USD per visitor. Fixed costs are 1 000 USD per week.

Determine how much one portion will cost, in the case of one visitor, 10, 50, 100, 200, 400 visitors coming in a week. Present the change in the cost graphically.

Task 2.4

The annual sales volume of a company amounted to 50 000 units of products at a price of 20 USD. The annual trade expenses include:

advertising costs, 10 000 USD;

salary to employees for product sales, 80 000 USD;

business trip expenses, 50 000 USD.

Managers are considering the establishment of a new market in another region next year. They are planning to increase advertising costs by 30 % and add sales positions with a salary of 1 250 USD per month, which would deal with the sale of goods in the new market. It is also expected to increase business trip expenses by 10 % per year. The rent of trading premises in the new market is 10 000 USD. The annual target sales volume in the new market sales is 10 000 units, variable costs per unit of product are 5 USD.

Is it advisable for the company to enter the new sales market?

Task 2.5

The company previously purchased 400 USD worth of material. But it turned out that either selling or using it in the future is impossible. A buyer has ordered a product in which this material can be used, and for which he is willing to pay no more than 850 USD. Additional costs of processing the product will be 700 USD.

Is it appropriate for the company to accept the order at the price of 850 USD? Write a conclusion.

Task 2.6

A company is making a decision whether to buy a part or produce it by itself. The costs for purchasing are 42 UAH, for producing it in the company they are 67 UAH. The required number of parts is 1 600 pcs. The fixed costs of production are 21 UAH.

What is profitable: to buy or to produce the part? Write a conclusion.

Task 2.7

A consulting firm, which trains managers, is going to hold a one-day seminar. It has spent 1 500 UAH for printing 2 000 brochures and mailing them to prospective customers. It has rented a conference hall for 750 UAH per day. Food and drinks (coffee break) will cost 26 UAH per person. The penalty for refusing to rent is 20 % of the rent. The lecturer requires 900 UAH

for giving lectures at the seminar. The handout costs will make 11 UAH per person. The participants will pay 480 UAH per day. Four people have been registered a week before the seminar.

Is it necessary to cancel the seminar? With how many participants will the company cover all the expenditures?

Task 2.8

The company "Congo" wants to buy from the company "Energy" 100 pumps at a price of 900 UAH, despite the fact that their normal price is 1 150 UAH. The accountant made up a special order calculation which is shown below:

Direct materials: 50 000 UAH.

Direct labor: 18 000 UAH.

Manufacturing overhead costs (including 60 % fixed costs): 20 000 UAH.

Distribution (selling) costs (including 40 % fixed costs): 14 000 UAH.

Total costs: 102 000 UAH.

Is it appropriate for the company "Energy" to accept the order?

Questions for self-study

1. Classification of company's costs according to the types of its activities.
2. The economic nature of costs.
3. Factors which influence the choice of the type of the responsibility center.
4. Variants of organization of responsibility centers within an enterprise.

Questions for self-diagnostics

1. What are the purposes for classification of costs?
2. How are costs classified for decision-making?
3. How are costs grouped depending on the volume of production?
4. What are the groups of costs by the degree of adjustability?
5. What are the groups of costs by the types of activities of a company?
6. What are responsibility centers?
7. How are responsibility centers grouped?
8. What is a cost center?
9. What is a revenue center?
10. What is a profit center?
11. What is an investment center?
12. Give a description of the functional responsibility centers.

13. How are the responsibility centers divided by the territorial principle?
14. How are the responsibility centers divided on the basis of similarity of cost structures?
15. What are the requirements when an enterprise is divided into responsibility centers?
16. What does it mean: "different costs for different purposes"?
17. What is the difference between fixed and variable costs?
18. What is the behavior of variable and fixed costs per unit of output and the entire volume?
19. What is the difference between direct and indirect costs?

Theme 3. Management accounting as a basis of controlling

Cost management first of all provides cost accounting and evaluation with a view to reflecting results of the past, present and future economic activity. Information on costs is used to determine: which price of a product, work or service can be determined, which process is the most economical, which department uses productive resources more economically, which customer provides the greatest contribution to the profits of the enterprise, and so on. For this purpose, various methods of accounting and calculation of costs in relation to the specific conditions of productive activity and market requirements are used.

Task 3.1

Determine the amount of overhead costs attributable to each product if their amount is 148 000 UAH.

Table 1

Indicators	Product		
	A	B	C
The annual program of production, units	1 800	1 100	2 800
Direct materials per unit, UAH	84.5	102.3	142.8
Direct labor per unit, UAH	24.8	89.4	38.2

Choose an allocation base, substantiate and calculate the manufacturing cost of the product.

Task 3.2

A small company has two workshops: stamping and assembly. Labour hours of workers (direct labour hours) are used as a base for allocating overhead costs.

It is necessary to justify the ability to use:

- a) a unified rate of overhead allocation for the enterprise as a whole;
- b) different rates for each workshop, pre-selecting the base of distribution.

Initial data for the calculations are given in Table 2.

Table 2

Indicators	Stamping workshop	Assembly workshop	Total
Annual overhead costs, UAH	59 200	88 800	148 000
Labour-hours per year	11 100	25 900	37 000
Machine-hours per year	23 040	11 520	34 560

Explain the impact of different approaches on the accuracy of costing.

Task 3.3

A company produces five types of products. Based on the data in Table 3 you should:

1. Determine the profitability of production and profitability of each product.
2. Clarify the allocation of fixed indirect costs on the product and profitability of the product.
3. Make a decision about the production of each type of product.

Table 3

Indicators	Product					Amount, USD
	A	B	C	D	E	
Price per unit, USD	75	58	100	90	54	
Production volume, units	650	420	180	750	2000	
Variable costs per unit, USD	38	35	72	81	32	
Fixed indirect costs per unit, USD	20	20	20	20	20	

Task 3.4

An enterprise produces only one kind of product. The expected volume is 4 000 pcs. The expected overhead costs are 8 000 USD, the direct costs per unit are 10 USD. The actual overhead costs are also 8 000 USD.

Determine the overhead rate and calculate the total cost per unit if production is 2 000 pcs, 8 000 pcs.

Determine what the selling price of products should be in each case (when changing the volume).

If the product price is 12 USD, what should the volume of production be to make profit?

Task 3.5

A furniture factory produces two main products: tables and chairs. Profits and losses for the month are shown in Table 4.

Table 4

Indicators, thousand	Tables	Chairs	Total
Revenue	300	200	500
Direct expenses	150	150	300
Contribution margin (gross)	150	50	200
Fixed indirect costs	50	50	100
Profit from sales (operating profit)	100	0	100

After analyzing the accounting data, which alternative solutions can managers take:

1. Stop manufacturing chairs and manufacture tables only.
2. Increase the price of the chairs.
3. Reduce the cost of the chair production.
4. Clarify the allocation of indirect costs.

Substantiate the proposed solutions.

Task 3.6

Determine the marginal cost (variable cost) of a product, the contribution margin, the contribution margin ratio if the selling price of the product is 520 UAH. The cost of manufacturing products includes:

Direct material	144 UAH
Direct labor	128 UAH
Other direct costs	54 UAH
The cost of the motor energy	28 UAH
Transportation costs	25 UAH

Task 3.7

Variable costs per item are 5 USD. The company may sell products – 43 000 pcs at a price of 8 USD; 104 000 pcs at a price of 7 USD; 134 000 pcs at a price of 6 USD.

Determine which of the options provides the greatest contribution margin.

Task 3.8

A company produces four types of products with the following characteristics (Table 5):

Table 5

Indicators	Product			
	A	B	C	D
Price, UAH	150	200	300	400
Marginal (variable) cost, UAH	120	150	200	250

Determine the contribution margin and the contribution margin ratio for each product.

What is the right order to make the production profitable and satisfy the demand for these products?

Task 3.9

Using the ABC costing method, allocate the costs of making up an order for delivery of materials per unit of product, taking into account the following conditions:

- 1) the number of manufactured products per month: 200 pcs of "A" (bronze items); 300 pcs of "B" (steel items);
- 2) 50 orders for delivery of bronze and 30 orders for delivery of steel were made up during the month;
- 3) the total cost of making up the orders for delivery was 4 800 UAH.

Task 3.10

A company produces four types of products. The limiting factor is the fund working time of equipment which makes 3 000 machine-hours per month. Fixed costs make 10 000 USD per month.

It is necessary to maximize the profits by analyzing the demand for each product and the contribution margin per unit of the limiting factor.

The data for calculations are presented in Table 6.

Table 6

Indicators	Product				Total
	A	B	C	D	
Demand for the month, units	1 000	1 000	500	500	
Machine-hours per unit	0.5	0.75	2	5	
Contribution margin per unit, USD	3	5	10	15	

Task 3.11

A company produces products "A" and "B". The price of product "A" is 10 USD, of product "B" it is 15 USD. Variable costs per unit of product "A" are 7 USD, of product "B" they are 9 USD. The limiting factor is the fund of the working time of the equipment which is 1 000 machine-hours. 3 unit of product "A" or 1 unit of product "B" per hour can be produced.

Determine the contribution margin per unit and the contribution margin per unit of the limiting factor. Decide what product is more profitable to produce.

Task 3.12

Using the concept of the Target Costing, determine the target cost of the new appliance. Based on the market research, the predicted price is 280 USD, target sales are 1 200 units. The target profitability is 11 %.

Task 3.13

A company was informed of two branches' operation results in the previous quarter. The data for the analysis are shown in Table 7.

Table 7

Indicators	Branch A	Branch B	Total
Revenue	87 000	63 000	150 000
Variable costs	42 000	36 000	78 000
Marginal profit (contribution margin)	45 000	27 000	72 000
Fixed costs:			
Manufacturing	21 000	22 500	43 500
Administrative	5 000	4 500	9 500
Selling	11 500	6 000	17 500
Operating profit (loss)	7 500	(-6 000)	1 500

Based on the analysis of the information, the managers are considering the closure of branch B as an unprofitable (loss-making) one. Determine how it will influence the company's operation results if it reduces the fixed manufacturing costs by 8 000 USD, and the marketing costs (selling costs) – by 2 000 USD.

Task 3.14

Two firms, A and B, are selling product G. Firm A sells many products, whereas B sells only product G. The cost structure for manufacturing product G is as follows (Table 8):

Table 8

Indicators	A	B
The total absorbed costs, USD	10	8
Profit, USD	2	2
Price, USD	12	10

If price is the decisive factor, then firm B will capture the market of product G.

Firm A has decided to analyze its costs once more and discovered the following (Table 9):

Table 9

Fixed costs per unit, USD	5
Variable costs per unit, USD	5
The total cost, USD	10

What is the price of product G that firm A must establish in order to maximize its profit and outcompete firm B?

Task 3.15

A company produces four types of products (Table 10):

Table 10

Indicators	Product A	Product B	Product C	Product D
Price, USD	35	45	55	70
Variable cost, USD	22	25	35	40
Demand per month, units	2 500	230	1 000	1 100
Machine-hours per unit	1.5	1.0	3.2	7.9

The throughput of the equipment (the limiting factor) is 8 000 machine-hours per month. Fixed costs are 2 480 USD per month.

It is necessary:

- 1) to calculate the contribution margin and the contribution margin ratio;
- 2) to rank the products in accordance with profitability;
- 3) to maximize the profit from sale by analyzing the demand for each product and the contribution margin per unit of the limiting factor.

Task 3.16

Choose the price and determine the sales volume which is required to maximize the total contribution margin if (Table 11):

Table 11

Possible selling price, USD	Variable costs, USD	Sales volume, pcs
60	55	10 000
70	55	7 000
80	55	3 000

Task 3.17

A sales manager had been on 3 business-trips to sell 300 pcs of product "A" and 5 business-trips to sell 430 pcs of product "B". The total travelling allowance amounted to 880 USD that month. Determine the amount of the travelling allowance attributable to each product.

Task 3.18 (for independent work)

Calculate the contribution margin and the operating income on the basis of the data presented in Table 12.

Table 12

Indicators	Products			Total
	A	B	C	
Revenues from sales (Net sales)	375 000	270 000	60 000	
Variable costs, including				
direct materials	45 000	18 000	1 500	
direct labor	75 000	63 000	4 500	
manufacturing overhead	180 000	54 000	36 000	
Total variable costs				
Contribution margin				
Selling costs				54 000
Administrative costs				96 000
Operating income				

Task 3.19 (for independent work)

The results of enterprise's activity which produces three types of products are presented in Table 13. Analyze the profitability of products using the contribution approach and decide on the appropriateness of production.

Table 13

Indicators	Product A	Product B	Product C	Total
Sales volume, units	500	600	200	
Price, USD	2	5	10	
Direct materials, USD	400	1 500	1 000	
Direct labor, USD	200	600	600	
Overheads, USD:				
variable	100	100	200	400
fixed	200	200	300	700
Total cost, USD	900	2 400	2 100	5 400

Questions for self-study

1. Management accounting as a new approach to the cost and profit management in a company.
2. The procedure for calculating the rate of allocation of overhead costs for some cost centers.
3. Distribution of overhead costs between the manufacturing and service departments.
4. Redistribution of overhead costs of service departments to manufacturing departments.

Questions for self-diagnostics

1. What is the essence of management accounting in the controlling system?
2. What is the difference between management accounting and financial accounting?
3. What is the essence of cost accounting?
4. What are the tasks of management accounting?
5. What are the methods of cost accounting?
6. How are cost accounting and cost calculation systems used?
7. Give a description of the job order cost system.
8. Give a description of the process cost system.

9. Explain the essence of Standard Costing.
10. Explain the essence of Direct Costing.
11. What is essence of the contribution margin? How is it calculated?
12. How are overhead costs classified?
13. What are the methods of allocation of overhead costs?
14. How is the base allocation of overhead costs chosen?
15. What is the essence of Activity Based Costing (ABC)?
16. What is the essence of Target Costing?

Content module 2

Management decision making in controlling

Theme 4. Budgeting as a tool of controlling

Budgeting is considered as a basis of operational and strategic controlling, which allows managers to previously evaluate the effectiveness of management solutions, optimally allocate available production resources, choose the direction of development of the enterprise. It encourages management to plan, develop control criteria, improve coordination of the activities of the enterprise.

Budgeting allows managers to predict the sales potential of the enterprise, to control costs in accordance with the expected income, to determine the most efficient way to use resources, covering all aspects of financial and economic activity of the enterprise.

Task 4.1

The company "Comfort" produces thermal mugs. The director required to prepare a flexible budget. For the planned year the flexible budget was prepared for several possible levels of activity, particularly for three sales volumes: 2 800, 3 200 and 3 600 of thermal mugs. The price of a thermal mug is 155 UAH. Variable costs per unit: manufacturing costs make 105 UAH, selling costs amount to 4 UAH. Fixed costs for the company are planned in the amount of manufacturing costs making 91 400 UAH, selling costs amounting to 48 600 UAH. The method of direct costing was used for planning.

It is necessary to prepare a flexible budget, evaluate it and choose the most effective option.

Task 4.2

In accordance with the results of calculations in the previous task, the director chose a flexible budget which corresponds to the output of 3 600 thermal mugs. But in fact, during the year, the company "Comfort" was able to make and sell only 2 800 of thermal mugs. The reported data on the implementation of the planned budget are in Table 1.

Table 1

Indicators	Fulfillment
Sales volume, unit	2 800
Revenue, UAH	434 000
Variable costs, UAH:	
manufacturing	299 160
selling	13 800
Fixed costs, UAH:	
manufacturing	92 000
selling	48 600

Compare the planned and actual budgets, assess the results of the company activity and identify the possible causes of variances.

Task 4.3 (for independent work)

A manager presented to the company's management the data on the implementation of the profit plan for July of the current year with the indication of the plan performance (underperformance) (Table 2).

Table 2

Indicators	Value, USD	Implementation, %
Actual operating profit	280	1.25
Budgeted operating profit (plan)	22 400	100
Budget variances	22 120	98.75

The deviation of 98.75 % towards the underperformance is not acceptable for the company's management and they asked the manager to make a thorough analysis. To do this, the manager compared the actual implementation with the plan (the static budget) of the main indicators (Table 3).

Table 3

Indicators	Actual		Static budget		Variances
	Value	Share, %	Value	Share, %	
Output, units	2 000		2 400		
Price, USD			70		
Sales, USD	144 000		168 000	100	
Variable costs, USD	109 320		110 400	65.7	
Contribution margin, USD	34 680		57 600	34.3	
Fixed costs, USD	34 400		35 200	20.95	
Operating profit, USD	280		22 400	13.35	

1. Determine which factors impacted on the negative deviation of the total profit, by analyzing the absolute and relative values of the indicators.

2. Calculate the flexible budget for the relevant range of 1 800, 2 000, 2 200 and 2 600 units of output on the basis of the following data (Table 4).

Table 4

Indicators	Cost per unit, USD	Options of output			
		1	2	3	4
Output, units		1 800	2 000	2 200	2 600
Sales, USD	70	126 000	140 000	154 000	182 000
Variable costs, USD:					
direct materials	20	36 000	40 000	44 000	52 000
direct labor	16	28 800	32 000	35 200	41 600
manufacturing variable	3	5 400	6 000	6 600	7 800
Total variable manufacturing costs					
Variable sales and administrative costs	7	12 600	14 000	15 400	18 200
Total variable costs					
Contribution margin, USD					
Fixed costs, USD:					
manufacturing		19 200	19 200	19 200	19 200
sales and administrative costs		16 000	16 000	16 000	16 000
Total fixed costs		35 200	35 200	35 200	35 200
Total costs, USD					
Operating profit, USD		8 000	12 800	17 600	27 200

3. Compare the actual results of the plan performance with the flexible budget and analyze the identified deviations as aggregated and detailed by the costs. The aggregate analysis can be carried out in Table 5.

Table 5

Indicators	Actual, USD	Deviation from the flexible budget		Deviation from the static budget	
		Flexible budget, USD	Deviation, USD	Static budget, USD	Deviation, USD
Output, units	2 000	2 000		2 400	
Sales, USD					
Variable costs, USD					
Contribution margin, USD					
Fixed costs, USD					
Operating profit, USD					

The cost deviation is determined by the flexible budget taking into account cost standards accepted for the calculation (Table 6).

Table 6

Indicators	Actual, USD	Flexible budget, USD	Deviation, USD
Output, units	2 000	2 000	
Variable costs, USD:			
direct materials			
direct labor			
manufacturing variable			
Total variable manufacturing costs			
Variable sales and administrative costs			
Total variable costs			
Fixed costs, USD:			
manufacturing			
sales and administrative costs			
Total fixed costs			
Total costs, USD			

Questions for self-study

1. Approaches to budgeting in different types of responsibility centers.
2. Methods of the variance analysis of actual results as compared to the planned ones.

Questions for self-diagnostics

1. What are the goals and objectives of budgeting at an enterprise?
2. What is the company budget system like?
3. What is a master budget? What does it include?
4. What are the components of the operating budget?
5. What are the components of the financial budget?
6. How are the approaches to budgeting classified?
7. What is a static budget?
8. What is a flexible budget; its features?
9. What are the advantages and disadvantages of budgeting?
10. What is the budgetary control and management by the variances (management by exception)?
11. What is the essence of the fixed budgeting approach?
12. What is the essence of the incremental budgeting approach?
13. What is the essence of the zero-based budgeting?
14. What is the essence of the kaizen budgeting approach?

Theme 5. Investment project controlling

One of the main tasks of strategic controlling at an enterprise is a cost-benefit analysis of innovation and investment. The solution to this task is primarily associated with time and the amount of costs. The duration of the expected income from investments, their volume are associated with high risk and require careful consideration and justification. Therefore, making decisions about investment assumes the choice of investment projects, which correspond to the strategic policy of the enterprise and will bring substantial benefits.

Task 5.1 (for independent work)

A company is considering three investment projects of capital investments in equipment. The implementation of each of them requires investments in the amount of 63 000 UAH. Each project is designed for three years and provides the following cash flows (Table 1):

Table 1

Year	Project		
	New national equipment	Worn-out foreign equipment	New foreign equipment
1	22 500	28 500	39 000
2	27 000	28 500	27 000
3	45 000	28 500	33 000

The equipment has no liquidation value. The discount rate is 15 %.

1. Determine the payback period for each project and choose the best one.

2. Calculate the net present value of each project, and also choose the best one.

Will your choice change in the second case?

Task 5.2 (for independent work)

A company decided to acquire equipment worth 45 840 UAH. The period of its exploitation is 6 years with a zero salvage value. The expected yearly economy of money resources is shown in Table 2.

Table 2

Year	Amount, UAH
1	7 800
2	6 240
3	4 680
4	3 900
5	3 120
6	4 680

The discount rate is 11 %.

Calculate the net present value of the equipment, the payback period and the internal rate of return.

Task 5.3 (for independent work)

The company has an opportunity to invest 100 000 UAH in the project of modernization of the production area. The annual cash flows arising from its implementation are expected in the amount of 60 000 UAH within three years. Determine the net present value of the project. The minimum desired rate of profit is 12 %. Is the project effective?

Task 5.4 (for independent work)

An investor has two options to invest 800 000 UAH. The first option is to put money on a bank deposit at 70 % per annum. The second option is to put the money for three months at 60 % per annum, then withdraw the money and then again put it for three months and do the same until the end of the year.

Determine which option is more profitable to the investor.

Task 5.5 (for independent work)

An investor has 50 000 UAH and wants to get 250 000 UAH two years later. What should the minimum rate of discount be for this purpose?

Questions for self-study

1. The criteria for evaluation of investment projects, their advantages and disadvantages.
2. The approaches to the formation of an investment portfolio of an enterprise based on the controlling research.

Questions for self-diagnostics

1. What are the features of the investment project controlling?
2. What are the main objectives of investment controlling?
3. What are the stages of the process of creating a system of investments controlling?
4. What criteria are used for investment project controlling?
5. What criteria are used for investment project controlling under conditions of uncertainty?

Theme 6. Decision-making methods in controlling

One of the main functions of controlling is information support for making rational management decisions to ensure the efficient and competitive functioning of an enterprise. When making a decision a choice out of several alternatives is made based on the analysis of costs and benefits, which vary depending on the relevant decision. Relevant costs always relate to the future.

In order to know the consequences of the decisions, it is necessary to investigate the relationship of costs, volumes of activity and profit, which allows the company to find the volume of sales, which will provide reimbursement of all costs and obtain the necessary profit, to determine the impact of changes in costs, volume and sales prices on profits, the optimal structure of costs.

The break-even analysis is important in the consideration of the relationship "cost-volume-profit". It provides calculation of the breakeven point for the determination of the critical sales volume.

Task 6.1

The company's management has to make a decision whether to modernize the production line for the manufacture of products or not. It is necessary to spend 50 000 USD for the reconstruction. The sales volume is 100 000 units. The selling price is 12 USD. The costs per unit are: 8 USD for materials; 4 USD for wages before modernization and 3.8 USD after modernization; fixed costs make 2.5 USD. Is it advisable to upgrade the production line?

Task 6.2

A company is going to close its plant in the city "A", where cars are made. A regular customer wants to order one last car before the plant is closed. Can the company take the order if there are the following conditions?

It has accumulated a significant stock of materials for the production of the car frame in a warehouse, the initial cost of which was 3 000 USD. But the company can sell it for 950 USD.

There is a large stock of motor parts in the warehouse, whose initial value is 2 200 USD. They can be transported to another plant of the company, which will cost 300 USD. It is assumed that the plant will pay for them 2 000 USD.

The expected workers' wages and the variable overhead costs amount to 2 800 USD.

An engineer will need to go on a business trip for a week from the city "A" for the period of making the car. His salary is 300 USD, the travelling allowance is 400 USD.

The fixed costs are reimbursed at a rate of 2 USD per 1 USD direct costs.

The expected order price is 7 000 USD.

Task 6.3

A company has surplus production areas it may lease at a cost of 10 000 USD per year. But the sales manager is thinking of taking an order amounting to 30 000 USD.

The initial cost of material that will be used to fulfill the order was 12 000 USD. But its market value is 3 000 USD. The wages of workers who would be filling this order is 15 000 USD. The variable overhead costs are 8 000 USD.

The fixed costs are reimbursed at a rate of 1 USD of the fixed cost per 1 USD of the cost of direct labor.

Is it profitable to accept the order?

Task 6.4

A company's managers must solve the problem whether make or buy the parts. The annual demand for parts is 10 000 pcs.

The cost of manufacturing the parts:

Direct materials make 6 UAH.

Direct labor is 3 UAH.

Variable overheads are 3.5 UAH.

Fixed overheads are 5.5 UAH.

Total cost is 18 UAH.

It is supposed that these parts can be bought for 16 UAH per unit.

What decision will the company's management make:

- 1) to produce the parts at the enterprise;
- 2) to buy the parts and let the idle equipment;
- 3) to buy the parts and use the equipment for the production of other parts with a contribution margin of 19 000 UAH;
- 4) to buy the parts, and lease the equipment for 5 000 UAH.

Task 6.5

A company is considering the option of replacing a machine tool. The volume of production and revenue do not change making 100 000 USD per year. The following information is available for making a decision:

as to the old machine tool:

the initial cost of the machine tool is 120 000 USD;

the residual value is 40 000 USD (depreciation is 80 000 USD);

the liquidation value is 40 000 USD;

the residual lifetime is 4 years with a zero liquidation value;

the variable costs per year are 80 000 USD;

as to the new machine tool:

the price is 60 000 USD;

the lifetime is 4 years with a zero residual value;

the variable costs per year are 56 000 USD.

Is it advisable to replace the machine tool?

Task 6.6

A company sold 1 088 units of product at a price of 90 UAH. Variable costs per unit are 50 UAH, fixed costs of the company are 22 520 UAH, the income tax rate is 18 %.

Determine the number of sales items if it is necessary to obtain the net profit amounting to 23 940 UAH.

Task 6.7

The results of operating activities of the company that produces cameras, is represented in Table 1.

Table 1

Indicators		Report		Plan	
		Expenses	Income	Expenses	Income
1.	Revenue		120 000		
2.	Direct materials	40 000			
3.	Direct labor	24 000			
4.	Overheads	36 000			
	including variables	6 000			
	fixed	30 000			

1. It is planned to reduce the selling price by 10 %, which should increase sales by 50 %.

2. The price of the materials that make up half the cost of all the necessary materials will increase by 10 %.

3. The hourly wage rate will increase by 5 %.

4. 20 000 USD of the total overhead costs are unchanging fixed costs, and 10 000 USD are regulated costs, and the manager is going to make some arrangements to save 2 000 USD.

5. 6 000 USD of the overhead variable costs vary with output.

1. Determine the planned operating profit for the year under planning.

2. Calculate the breakeven point and the margin of safety percentage for both years.

3. What problems should draw the attention of the manager before the beginning of the year under planning?

Task 6.8

The managers commissioned the economist to study the economic condition of the enterprise according to the following conditions:

product price is 10 USD;

variable costs per unit are 5 USD;

total fixed costs are 15 000 USD.

Determine:

1. The break-even point in units and dollars.
2. The possible sales volume to get 6 000 USD profit after taxes (net profit). The income tax rate is 18 %.
3. The possible sales volume if the profit is 10 % from the received sales volume.

Task 6.9

Determine the possible profit for the year under planning. During the year, the production volume amounted to 10 000 units, the sales price was 60 UAH, the variable costs per unit were 40 UAH, the total fixed costs made 40 000 UAH.

The production volume is expected to grow by 5 % and the unit (per unit) costs are to reduce by 4 % in the planned year. The fixed costs will decrease by 5 000 UAH.

1. Determine the operating profit in the year under planning.
2. How will the profit change if the basic variable costs rise by 8 %, and the price decreases by 4 %.

Task 6.10

The director of a company has decided to increase the workers' wages in the next year by 20 %. He asked the economist to justify the plan for the next year. The reported data for the previous year are as follows:

the annual output of products is 10 000 units;

the price per unit is 40 UAH;

costs per unit:

direct materials are 15 UAH;

direct labor is 6 UAH;

overhead variable costs are 3 UAH;

annual fixed costs are 45 000 UAH.

Determine:

1. How much should the selling price be increased to cover the wage increase by 20 % and keep the level of the contribution margin at 40 %.

2. How many products must be sold to get the same operating profit as in the reporting year, while maintaining the price of 40 UAH and increasing the wages by 20 %.

Task 6.11

A company comprises three branches – A, B and C. Over the past month the revenue of the company was 520 000 USD, the variable costs made 390 000 USD, the fixed costs amounted to 180 000 USD. The report of the branches' activities per month is shown in Table 2.

Table 2

Indicators	Revenue, USD	Variable costs, USD
Branch A	180 000	80 000
Branch B	200 000	140 000
Branch C	140 000	170 000
Company	520 000	390 000

1. Calculate the contribution margin ratio and the breakeven point for the company and draw the profit-volume graph.

2. Calculate the contribution margin ratio for each branch.

3. What actions can the management of the company take based on the data?

Task 6.12

A company expects to make 5 000 USD in profit. Variable costs per unit are 25 USD, the sale price is 45 USD, the company fixed costs are 10 000 USD.

1. What should the sales volume be to get the target profit?

2. Will the sales volume change, if the fixed costs increase by 10 %?

Task 6.13

The company produces 44 % of product "A", 18 % of product "B" and 38 % of product "C". The contribution margin per unit of product "A" is 28 UAH, for product "B" it is 14 UAH, for product "C" it makes 38 UAH. The fixed costs of the company are 27 000 UAH.

Determine the breakeven point for each product.

Task 6.14

Determine the break-even point for each type of product based on the data presented in Table 3.

Table 3

Product	Output, units	Unit contribution margin, USD
A	1 500	12
B	8 200	10
C	3 700	8

The fixed costs for the company amount to 36 000 USD.

Task 6.15

A company produces one type of product. The output is 18 000 units. The product price is 15 USD. Variable costs per unit are 11 USD. The fixed costs of the company are 97 000 USD. Determine the margin of safety percentage.

Task 6.16

Determine the additional sales volume, if it is necessary to obtain 88 000 UAH of net profit (after-tax profit). The income tax rate is 18 %. The product price is 48 UAH. Variable costs per unit are 32 UAH.

Task 6.17

The enterprise activity is characterized by the following data:
revenue per year is 50 000 USD.

costs: variable costs are 35 000 USD, fixed costs are 15 000 USD.

Determine what revenue must be received at the breakeven point if the fixed costs increase by 6 000 USD.

Task 6.18 (for independent work)

An entrepreneur rented a shop. The initial payment was 5 000 USD. In addition, the annual rent will be 5 000 USD. If the lease is cancelled, the initial fee of 5 000 USD will be lost. The entrepreneur plans to use the shop for selling clothes and getting the following results:

the volume of sales with VAT of 120 000 USD;

variable costs of 50 000 USD;

the salary of managers of 12 000 USD;

the fee for heating and lighting amounting to 10 000 USD;
the insurance fee of 1 000 USD;
the auditing costs making 2 000 USD.

But the entrepreneur has not yet decided whether to implement his plans or not, because he can sublease the building for a monthly fee of 550 USD.

What decision should the entrepreneur take?

Task 6.19 (for independent work)

The chairman of a JSC, which produces spare parts for pumps, has promised to increase the workers' wages by 10 % in the next year. Other changes in costs are anticipated. It is necessary to justify the production plan for the next year. The report for the previous year is as follows:

the annual output of products was 5 000 units;
the price per unit was 80 UAH;
direct materials per unit were 30 UAH;
direct labor per unit was 12 UAH;
overhead variable costs per unit were 6 UAH;
annual fixed costs were 51 000 UAH.

With the help of the break-even analysis, determine:

1. What should the new selling price of spare parts be?
2. How many parts are to be sold to make a profit in the amount of 150 000 UAH?

Questions for self-study

1. Classification of management decisions, the main methods of making them.
2. The basic decision making paradigms.

Questions for self-diagnostics

1. What is the essence of a management decision?
2. How are management decisions classified?
3. What are the stages of the management decision process?
4. What is the role of controlling in the managerial decision making?
5. How are the approaches to decision-making in controlling classified?
6. What are the requirements to the management decision-making criteria in controlling?
7. What is the essence of the cost-volume-profit analysis (CVP)?
8. Explain the analytical model of the CVP.
9. What are the types of graphical models of the CVP?

10. What does the breakeven analysis includes?
11. How is the breakeven point for multiple products determined?
12. What are the assumptions underlying the CVP analysis?
13. How does the cost structure affect the change in the operating profit?
14. Identify the ways to reduce fixed costs at an enterprise.
15. How does the choice of the method of pricing affect gaining a maximum profit?
16. What are the benefits of the marginal pricing approach?
17. Which pricing method is most often used in practice and why?

Theme 7. Organizational and methodical basis of the creation of a controlling system at an enterprise

Effective implementation of all tasks of controlling requires attention to the organization of controlling activity at an enterprise. This implies establishing a controlling service at the enterprise – a special structural unit which will help optimize the flow of information moving between the divisions and from subordinates to managers.

The controlling service which is built at an enterprise is a part of the financial and economic services of a company, along with other departments, such as accounting, finance, planning and economic departments.

Since one of the main objects of controlling is costs then it is important for the analysis and management of costs and profits to provide a possibility for controlling service to receive relevant information on time and in full for further development of recommendations for managers' decision-making. Managers should take into account certain requirements when create a controlling service in a company.

Task 7.1

You have got the speciality "manager", you are going to work in a company which is engaged in manufacturing household electrical appliances. Having studied the activity of the company, you have offered to implement the controlling system and create a controlling department in the company.

1. What arguments in favour of this proposition will you offer?
2. What will the controlling department do?
3. Can there be any objections to this proposal, and what are they, if any?
4. You have proposed to introduce a system of accounting and calculation by the method of direct costing instead of the existing one of accounting and calculation of the full cost (absorption costing) in the company. How will you argue this proposal?

5. Why, in your opinion, must the head of the controlling service be paid more than the head of the financial department?

6. You propose to analyze the variances that arise in the production process of the company, and implement management by exception. Give arguments in favour of your proposal.

7. Can the cost-volume-profit analysis be used in the company to get a certain amount of profit?

Questions for self-study

1. The features of introduction of the controlling system at an enterprise.
2. Information flows in the controlling system.
3. Factors contributing to and hindering the introduction of controlling.
4. The duties of specialists of the controlling service.

Questions for self-diagnostics

1. What is the structure and composition of controlling services in a company?

2. What are the main requirements for creating a controlling service in a company?

3. What place should the controlling service occupy in the organizational structure of a company?

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EDUCATIONAL EDITION

**Tasks for practical lessons
and independent work
on the academic discipline
"CONTROLLING"
for full-time students of training direction
6.030601 "Management"**

Compiled by K. **Iakovenko**

Editorial director *O. Iastremska*

Editor *Z. Zobova*

Proof-reader *Z. Zobova*

НАВЧАЛЬНЕ ВИДАННЯ

**Завдання для практичних занять
та самостійної роботи
з навчальної дисципліни
"КОНТРОЛІНГ"
для студентів напряму підготовки
6.030601 "Менеджмент"
денної форми навчання**

Укладач **Яковенко Катерина Віталіївна**

Відповідальний за випуск *Ястремська О. М.*

Редактор *Зобова З. В.*

Коректор *Зобова З. В.*

План 2016 р. Поз. № 65.

Підп. до друку 22.06.2016 р. Формат 60 x 90 1/16. Папір офсетний. Друк цифровий.
Ум. друк. арк. 2,25. Обл.-вид. арк. 2,81. Тираж 40 пр. Зам. № 94.

Видавець і виготівник – ХНЕУ ім. С. Кузнеця, 61166, м. Харків, просп. Науки, 9-А
Свідоцтво про внесення суб'єкта видавничої справи до Державного реєстру
ДК № 4853 від 20.02.2015 р.