

МІНІСТЕРСТВО ОСВІТИ І НАУКИ, УКРАЇНИ  
НАЦІОНАЛЬНИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ  
«Харківський політехнічний інститут»

## **МЕТОДИЧНІ ВКАЗІВКИ**

**до практичних занять з дисципліни «Контролінг» для студентів  
факультету бізнесу і фінансів напрямку підготовки 030601  
«МЕНЕДЖМЕНТ»  
денної і заочної форми навчання**

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Методичні вказівки до практичних занять з дисципліни «Контролінг» для студентів факультету бізнесу і фінансів напрямку підготовки 6.030601 «Менеджмент» денної і заочної форм навчання англійською мовою/ Уклад.: В.А. Міщенко, Р.Г. Долінська, А.Л. Парцирна. – Харків: НТУ «ХП», 2013 . – 88 с.

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## ВСТУП

Методичні вказівки призначені для студентів четвертого курсу напрямку підготовки 030601 «Менеджмент» (бакалаври), що за навчальною програмою опановують упродовж сьомого семестру на заняттях з практики загальну концепцію, базові інструменти і методи контролінгу.

Методичні вказівки складено відповідно до навчальної і робочої програми з дисципліни «Контролінг», стандартів вищої освіти в Україні. Містять по кожній темі курсу план заняття, список рекомендованої до вивчення літератури й електронних ресурсів, перелік контрольних запитань, тестів і методичних вказівок по їхній підготовці, завдання для аудиторної роботи. Завдання для аудиторної роботи студентів розподілено за темами занять за двома модулями, а саме: модуль 1 «Загальна концепція і види контролінгу», модуль 2 «Інструменти і методи забезпечення конкурентних переваг підприємства».

У методичних вказівках, як правило, пропонується виконати три завдання: 1) пояснити нові категорії (основні поняття) і відповісти на контрольні запитання за темою заняття, 2) вибрати правильну відповідь у тесті і 3) розв'язати ситуаційне завдання.

Характеристика змісту основних категорій має на меті спонукати студента до пошуку необхідної інформації, її осмислення й аналізу. Для цього наприкінці кожної теми пропонується список літератури, у якій на високому професійному рівні розкриті необхідні теми й питання. Тестові завдання дозволяють швидко визначити рівень освоєння теми без додаткового опитування кожного студента. Ситуаційні завдання активізують реальні практичні навички й дозволяють застосувати здобуті теоретичні знання у практичному контексті.

# **MODULE 1. GENERAL CONCEPT OF CONTROLLING AND ITS TYPES. OPERATIVE CONTROLLING.**

## ***Lesson 1. GENERAL CONCEPT OF CONTROLLING AND ITS EVOLUTION***

### **Learning objectives**

After completing the lesson, the student will be able to:

- Master key notions and content of the controlling concept
- Understand the connection between changes in economic conditions and management systems as well as evolution of controlling theory and practice

***Key words: CONTROLLING, PHILOSOPHY, FUNCTIONS, TASKS, TOOLS, STRATEGIC CONTROLLING, OPERATIVE CONTROLLING***

### **LESSON PLAN**

1. Answering control questions on the theme of the lesson and discussing key issues
2. Tests

### **Questions**

1. Define the term «controlling».
2. How do definitions given by different authors correlate with the history of controlling?
3. How did the world economic crisis of the beginning of the 20th century affect the controlling development?
4. Why did the situation occurred in the late 1980s allow talking about the birth of controlling as an independent concept?
5. What is the subject matter of controlling?
6. What reasons conditioned the necessity to use controlling at national enterprises?

7. Managers of some large and medium-sized companies are interested in implementing controlling. Why?
8. Which factors does the controlling organization depend on?
9. What are the main basic controlling provisions?
10. What three main functions does the controlling system perform?
11. What are controlling tasks?
12. What is the difference between controlling and management? Which notion is more extent? Which of them realizes more authorities and has more responsibilities? Why?
13. Give examples of types of activity which are effective but not efficient. Why do you think sometimes there are processes in organizations which are based on effective but inefficient types of activity?
14. Explain the difference between strategic and operative controlling.
15. What are the similarities and differences between a manager's and controller's functions?
16. What does a controller do at the organization?
17. How is controlling connected with the company information system?

### **Tasks for class discussions**

1. What is the interconnection between the history of controlling and management development?
2. The precondition of a German controlling concept was the implementation of responsibility accounting. What is the reason?
3. At what stage of development is controlling in Ukraine nowadays? What is the reason?
4. Compare the history of controlling development in Ukraine, Russia and abroad. What is the principle difference?
5. May controlling be called a management philosophy, i.e. one of the forms of views on management? Why "yes" or why "not"?

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## TESTS

### **1. *Controlling is:***

- a) A system of financial control
- b) Operative cost management
- c) Profit management and budgeting
- d) None of the definitions fully explain the subject matter of controlling

### **2. *What is the reason of controlling appearance?***

- a) Uncertainty and quick changes of business environment, internationalization and strengthening the competition
- b) Complicated company management systems
- c) Increasing the volume of information under the shortage of relevant information
- d) All of the above

### **3. *There are two models of controlling:***

- a) American and French
- b) German and French
- c) American and Western-European
- d) American and German

**4. Which model of controlling has a pragmatic approach: controlling has close connection with management and is aimed to a great extent at market demands and clients' needs?**

- a) American
- b) French
- c) German
- d) Western-European

**5. Controlling uses:**

- a) Useful for management information about past events, analysis of the current state and forecast of the future
- b) To a great extent exact information about past events which is prepared in line with the national standards and legislation
- c) Quantitative financial information about current and future state of the company

**6. Tools of strategic control are as follows:**

- a) Budgeting; current control and analysis of variances; portfolio and investment analysis
- b) Partial calculation of direct costs, operational *C-V-P* analysis, budgeting, decision-making based on contribution margin
- c) Portfolio and investment analysis, calculation of product life cycle costs, scenario analysis, algorithm of work with weak and strong signals

**7. Tools of operative control are as follows:**

- a) Budgeting; current control and analysis of variances; portfolio and investment analysis
- b) Partial calculation of direct costs, operational *C-V-P* analysis, budgeting, decision-making based on contribution margin
- c) Portfolio and investment analysis, calculation of product life cycle costs; scenario analysis, algorithm of work with weak and strong signals

**8. Which task is not assigned to operative controlling?**

- a) Budgeting

- b) Information provision
- c) Operational *C-V-P* analysis
- d) Calculation of product life cycle costs

**9. *The main purpose of operative controlling is to:***

- a) Ensure the profitability and solvency of the company
- b) Support the development of strategic potential
- c) Ensure the company's successful functioning in the future
- d) Assist in effective usage of competitive advantages and the company's

potential

**10. *What are the controller's main functions?***

a) Planning, financial accounting, control and regulating the company's activity

b) Responsibility for the concept of the company's management system, activation of the controlling system and advising the company's top managers all the levels of the management process

c) Cost accounting by elements and calculation items, identification of financial results, submitting information for decision-making

***Lesson 2.* MANAGEMENT ACCOUNTING IN THE CONTROLLING SYSTEM**

**Learning objectives**

After completing the lesson, the student will be able to:

- Give the definition of management accounting
- Explain why managers need management accounting information
- Substantiate the necessity to develop management (analytical, marginal) accounting at the company
- Name the main objects of management accounting
- Describe requirements to initial information to implement controlling functions

- Name and explain not less than seven differences between management accounting and financial accounting
- Give examples of using management accounting data in solving management tasks
- Explain the necessity of radical improvement of the existing accounting system at Ukrainian companies

***Key words:*** *MANAGEMENT ACCOUNTING, ACCOUNTING OBJECTS, ACCOUNTING TASKS, GENERAL ACCOUNTING SYSTEM, INTEGRATED ACCOUNTING SYSTEM*

### LESSON PLAN

1. Answering control questions on the theme of the lesson and discussing key issues
2. Tests

#### **Questions**

1. Characterize the content of the notion «management accounting».
2. What are the objectives of management accounting system? Show the interconnection between the objectives of management accounting and operative and strategic controlling.
3. Name not less than five objects of management accounting. Give a comparative characteristic of objects of management accounting and accounting.
4. Characterize not less than five differences between financial and management accounting.
5. What requirements should meet management accounting information in terms of controlling?
6. Why do production personnel, linear and top managers have different information needs?
7. Which top managers' solutions may require non-financial indicators?

8. What is the reason of the fact that accounting systems being used by national enterprises turned out to be unable to meet manager's needs in today's global competitive market environment?

9. What is the object of management accounting?

10. What actions should be taken to implement a management accounting system at the enterprise?

### **Tasks for class discussions**

1. In different countries management accounting is called differently. What name do you think reveals the objectives and tasks of management accounting in the best way? Why?

2. A manager of a newly founded enterprise where you are employed as a controller does not feel well when he has to deal with accounting issues. He asks you to show five-seven differences between management accounting and financial accounting. Besides, he would like to know if he will work better after implementing the management accounting system and what he needs to implement it. How would you briefly answer these questions? What work do you think this service should perform, whose orders should it follow, what is the staff and its professional background? What are your arguments to support this proposition? What objections can you expect?

3. How does the role of management accounting change as the external environment is becoming more competitive and unpredictable?

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## TESTS

### **1. *Management accounting objective is:***

- a) Providing managers with useful information for planning, control and making managerial decisions
- b) Planning, motivating, controlling and decision making
- c) Preparing information for making financial reporting documentation

### **2. *How is controlling connected with management accounting?***

- a) Management accounting is a part of controlling
- b) Controlling is a part of management accounting
- c) Controlling and management accounting do not depend on each other
- d) Controlling and management accounting have the same subject name but different names

### **3. *Management accounting and controlling are:***

- a) Desirable for every enterprise
- b) Obligatory in market economy
- c) Not obligatory for an enterprise
- d) Obligatory for a joint stock company only

### **4. *Methods of management accounting and controlling may be used by:***

- a) Industrial enterprises and building companies
- b) Any commercial organizations
- c) All organizations including state institutions
- d) State organizations only

### **5. *What are the purposes of using management accounting information?***

- a) Optimizing the usage of resources
- b) Evaluating the performance of divisions and their managers
- c) Operative planning and control
- d) All of the above

**6. *Which of the below stated provisions is not the task of management accounting?***

- a) Providing useful information to assist managers in forecasting and control of costs and results of responsibility centers and to support managerial decisions
- b) Providing useful information for making operative and strategic managerial decisions
- c) Preparing information for compiling financial and statistical reporting documentation

**7. Rules and methodology of management accounting are:**

- a) Recommended by the state
- b) Identified by authorities as recommended
- c) Established by the enterprise itself
- d) Regulated by the international standards of management accounting

**8. Medium-level managers do not often use accounting information because:**

- a) It is not sufficiently objective and reliable
- b) It is not timely and useful enough
- c) No right answer

**9. Legal base of management accounting includes:**

- a) National accounting standards
- b) International accounting standards
- c) Intra-firm legal documents approved by the company top managers
- d) No right answer

**10. Who is management accounting information aimed at?**

- a) Statistical authorities
- b) Divisional and company managers
- c) Tax administration

**11. Management accounting:**

- a) Tracks information about past events
- b) Uses analysis of the present
- c) Aims at forecasting the future
- d) All of the above

**12. Management accounting information:**

- a) Should be document-based
- b) Is shown in accounting records
- c) May be incomplete, based on approximate estimates and opinions, focused on the future and actions

**13. Management accounting information is:**

- a) Accessible for all business partners
- b) Mainly confidential
- c) Open for shareholders and potential investors
- d) Open for suppliers and creditors

**14. Periodicity of preparing documentation within management**

**accounting system:** a) annually; b) weekly; c) established according to management requirements; d) quarterly.

**15. Management accounting:**

- a) Registers information about past events
- b) Uses analysis of the present
- c) Focuses on future forecast
- d) All of the above

**16. Why do the majority of national enterprises not use the advantages of organizing management accounting?**

- a) Absence of technical facilities for registration and primary procession of information
- b) Absence of specialists to establish the management accounting system
- c) Employees' low motivation
- d) Absence of exact understanding of essence, methods and problems of management accounting
- e) Your answer: \_\_\_\_\_

**17. What steps is it necessary to undertake to develop management accounting practice?**

- a) Evaluating efficiency of using organization resources on the basis of the increase in the company value (focus on value)

- b) Enabling accounting system to timely reflect information about critical success factors
- c) Giving more detailed information about key business processes
- d) Motivating personnel to create possibilities on increasing the value
- e) All of the above

### **Lesson 3. RESPONSIBILITY CENTERS AS THE OBJECT OF MANAGEMENT ACCOUNTING**

#### **Learning objectives**

After completing the lesson, the student will be able to:

- Characterize the motives of management decentralization and disclose its relationship with the organization of responsibility centers
- Present classification of responsibility centers and give their examples
- Name main performance evaluation indicators for the centers of value, investment, profit, revenue and cost
- Analyze production situation, assess the need for compromise to overcome the mismatch of responsibility center managers' objectives
- Acquire skills of transfer pricing as a tool of ensuring economic motivation of company divisions

**Key words:** *DECENTRALIZATION, RESPONSIBILITY CENTER, PROFIT CENTER, COST CENTER, REVENUE CENTER, INVESTMENT CENTER, VALUE CENTER, TRANSFER PRICE*

#### **LESSON PLAN**

1. Answering control questions on the theme of the lesson and discussing key issues
2. Solving problems and performing a case study on responsibility accounting
3. Tests

## **Questions**

1. What is a responsibility center? Give an example of a responsibility center at the university.
2. What are peculiarities of responsibility accounting caused by interdisciplinary social and economic sciences?
3. What management objectives does responsibility accounting ensure?
4. What does the controllability principle mean?
5. What types of control are realized in responsibility accounting systems?
6. What is a cost center? Give two examples.
7. What is the responsibility of a cost center?
8. What is the responsibility of a revenue center? Give two examples of a revenue center.
9. When does the organization use profit centers?
10. What is an investment center? Give two examples of an investment center.
11. What is a value center? Give an example of a value center.
12. Explain how the choice of responsibility center affects managers' motivation.
13. What are potential dangers of responsibility accounting?
14. How do responsibility centers interact?
15. What are the four main factors affecting the choice of responsibility centers?
16. Explain the benefits of creating financial responsibility centers in the organization.

## **Tasks for class discussions**

Below you will find statements related to responsibility accounting. Comment on each of them. Say which of them are arguable or false. Give reasons for your answer.

1. Responsibility accounting is an independent system of management accounting which exists independently of planning and budgeting.

2. The budgeting system and responsibility accounting may be not connected. At the same time budgets are drawn up for the whole enterprise or by types of activity and actual performance is recorded by responsibility centers.

3. Performance reports of responsibility centers should be built under the principle of comparing actual results with the planned ones. This allows using the «management by exception» approach.

4. The performance report of a responsibility center is focused on identifying the contribution of this responsibility center into the company's total profit as well as a specific product. In order to identify this contribution, it is necessary to have information about profit and costs which is/are directly related to a specific responsibility center.

5. In order to identify the management efficiency of a responsibility center (taking in account the behaviorism principles), it is necessary to allocate company management expenses to it. The method of allocation is determined by the company accounting policy.

6. To ensure efficient company management, as more as possible number of divisions should be assigned the status of pseudo profit centers.

7. Pseudo profit centers are a concept of Japanese company financial management. This concept has not been applied nowhere in the world.

### **Responsibility accounting case<sup>1</sup>**

The Corporation is planning to set performance evaluation indicators using the residual income model or return on assets to motivate them to raise profit and rate of return.

The managers of three responsibility centers are thinking what indicator to choose to evaluate performance: return on investment or residual income. In addition, the managers must decide how to evaluate assets: using their original cost or book value.

For the past year the following information was obtained, UAH.

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<sup>1</sup> *Note:* For analyzing and discussing the situation it is necessary to form teams according to the number of responsibility centers.

Table 1 – Responsibility center reporting data

Responsibility center in the city of:	Original cost of assets	Accumulated depreciation	Operating income
Kharkiv	800000	430000	94700
Dnipropetrovsk	760000	410000	91700
Sumy	500000	280000	61400

To calculate the residual income, the company uses a required rate of return of 10%. Thus, every responsibility center manager has four options to choose a performance evaluation indicator.

Responsibility center managers are required to choose a method of calculating the performance evaluation indicator ensuring the highest ranking for their responsibility centers. Substantiate your choice with appropriate calculations.

**Note:** Residual income is a difference between actual (budgeted) profit of a responsibility center and capital charge.

Formula to calculate the residual income (*RI*) is as follows:

$$RI = P - A \times ROA, \quad (1)$$

where *P* – profit of a responsibility center;

*A* – assets;

*ROA* – return on assets.

At the same time the period during which a positive value of residual income is ensured, is defined as the *period of competitive advantage*.

### ***Problem***

The department manufactures optical systems to produce cameras that are used in the process of intra-firm cooperation as well as sold at the external market. The department engaged in production and assembly of optical systems has the status of a pseudo profit center.

Variable standard costs to produce one system are 550 UAH and intra-firm transporting costs are 50 UAH. Average production volume is 400000 units per year, manufacturing overheads for the estimated volume of cameras are 48000000 UAH; fixed manufacturing overheads are 34000000 UAH. Production capacity of the production department is 500000 optical systems per year.

The optical systems may be sold at the external market at 1300 UAH; selling expenses for one optical system are 90 UAH.

Determine maximum and minimum levels of the transfer price for one optical system.

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## **TESTS**

### **1. What is the disadvantage of decentralization?**

- a) It allows top managers to focus their attention on strategic decisions
- b) It allows lower level managers to make operative decisions within their competency

c) It improves managers' motivation since they have the necessary control over those indicators which are used to evaluate their performance

d) It suppresses managers' initiative

**2. Responsibility centers are:**

a) All enterprise's departments

b) Departments where the manager is personally responsible for performance indicators controlled by him

c) Procurement and sales departments

d) Branches of holding companies

**3. The purpose of responsibility accounting is to:**

a) Simplify accounting and reporting documentation

b) Delimitate areas of responsibility

c) Make every department (in some cases conditionally) face the market competition

**4. Controllability principle means that:**

a) Divisional managers must be evaluated on the basis of net profit

b) Divisional managers must be responsible for decisions within their authorities taking into account the given rights

c) Divisional managers must be responsible for decisions within their authorities

**5. The following factors influence the choice of responsibility centers:**

a) Company organization structure

b) Degree of powers delegation

c) Area of activity and strategy

d) All of the above

**6. A responsibility center which manager is personally responsible for revenues, costs, profit and using profit while implementing the strategy is called:**

a) A revenue center

b) A cost center

c) A profit center

d) An investment center

**7. A department where a manager bears personal responsibility for revenues and costs of this department is called a:**

a) A revenue center

a) A cost center

b) A profit center

c) An investment center

**8. Which department may be identified as a cost center?**

a) Mechanical department

b) Division (production unit) of an industrial company

c) A subsidiary company of a transnational corporation

d) Sales department

**9. Which department may be identified as a revenue center?**

a) Mechanical department

b) Division (production unit) of an industrial company

c) A subsidiary company of a transnational corporation

d) Sales department

**10. Which department may be identified as a profit center?**

a) Mechanical department

b) Division (production unit) of an industrial company

c) A subsidiary company of a transnational corporation

d) Sales department

**11. Which department may be identified as an investment center?**

a) Mechanical department

b) Division (production unit) of an industrial company

c) A subsidiary company of a transnational corporation

d) Sales department

**12. If a department has fulfilled the planned output and has not overspent resources, its activity may be considered as:**

a) Effective and efficient

- b) Effective but inefficient
- c) Ineffective and inefficient
- d) Efficient but not ineffective

**13. If a department has over-fulfilled the planned output and at the same time has exceeded cost standards, its activity may be considered as:**

- a) Effective and efficient
- b) Effective but inefficient
- c) Ineffective and inefficient
- d) Efficient but not ineffective

**14. If a department has not fulfilled the planned output and it has not exceeded cost standards, its activity may be considered as:**

- a) Effective and efficient
- b) Effective but inefficient
- c) Ineffective but efficient
- d) Inefficient and inefficient

**14. If a department has not fulfilled the planned output and at the same time has exceeded cost standards, its activity may be considered as:**

- a) Effective and efficient
- b) Effective but inefficient
- c) Ineffective but efficient
- d) Inefficient and inefficient

**Lesson 4. VALUE-BASED MANAGEMENT AND VALUE FACTORS. KEY PERFORMANCE EVALUATION INDICATORS. PERFORMANCE MEASUREMENT SYSTEMS.**

**Learning objectives**

After completing the lesson, the student will be able to:

- Name the main indicators of the value-based management
- Characterize advantages and disadvantages of each of these indicators;

explain why the analysis of a single indicator can lead to incorrect conclusions

- Substantiate the need to expand the number of financial and non-financial indicators to manage responsibility centers
- Acquire the skills of calculating, evaluating and analyzing the economic value-added indicator

***Key words:*** *PERFORMANCE EVALUATION SYSTEM, LOGICAL AND DEDUCTIVE SYSTEMS, KEY VALUE FACTORS, PERFORMANCE MEASUREMENT, KEY PERFORMANCE INDICATORS, BALANCED SCORECARD, STRATEGY MAP*

### LESSON PLAN

1. Answering control questions on the theme of the lesson
2. Solving a task, assessing and analyzing the economic value added indicator
3. Tests

### **Questions**

1. Explain the reasons of evolution of value-based management systems.
2. What are the advantages of value-based management indicators over indicators based on profit and the Dupont model?
3. What are the main approaches to evaluate the company value? What are their advantages and possibilities to meet the needs of organization management?
4. Give a general description of the concept of economic value added. What are its strengths and weaknesses?
5. Describe how to calculate the economic value added. What steps should be done to adapt this system to the needs of Ukrainian enterprises?
6. Explain the analytical significance of the economic value added indicator and its role in management decision making.
7. Give economic description of the shareholder value added indicator and describe the method of its calculation.

8. Describe other indicators applied in evaluating company value, reveal their role in management decisions.

9. Name the main stages of the performance measurement process.

10. What are general principles of setting key performance indicators?

11. Give a general characteristic of performance measurement systems. What is their role in company management systems?

12. What are the main ideas of the balanced scorecard system?

13. What does the balance of indicators mean? What methods do ensure the balance of indicators and how reliably?

14. Name the four perspectives that are used in the balanced scorecard system.

15. What is the sequence of procedures for implementing the balanced scorecard.

### ***Exercise***

Using the data given in Table 2 calculate EVA and analyze the influence of the main factors on its changing.

Table 2 – Initial data to calculate EVA, thousand hrv.

Indicator	Budget	Actual	Variance
1	2	3	4
1. Operating profit	260000,0	240000,0	
2. Taxes, fees and payments from profit	95000,0	86000,0	
3. Interest expenses on loans	37000,0	37500,0	
4. Net operating profit after tax, NOPAT (line 1– line 2+ line 3)			
5. Equity	858000,0	847000,0	
6. Borrowed capital	588000,0	575000,0	

7. Including interest-free current liabilities	170000,0	180000,0	
8. Total assets (line 5 + line 6)			
1	2	3	4
9. Capital employed, CE (line 8 – line 7)			
10. Weight of equity, $W_e$ , (line 5/ line 9)			
11. Weight of debt, $W_d$ , (line 6– line 7)/ line 9			
12 Risk-free interest rate, $R_f$ , %	9,50	10,00	0,50
13 Risk premium, %	5,00	5,00	0,00
14. Cost of equity $R_e$	14,50	15,00	0,50
15. Annual interest rate, r	9,00	9,50	0,50
16. Corporate income tax, $T_c$	23,00	23,00	0,0
17. Cost of debt, $R_d$ ( $1-0,21^2$ ) $\times$ стр. 15			
18. Weighted average cost of capital, WACC (line 10 $\times$ line 14 + line 11 $\times$ line 17)			
19. Cost of capital employed, (line 9 $\times$ line 18)			
20. Economic value added, EVA, (line 4 – line 19)			

**Note:** Economic value added is equal to the difference between the company's yield and the cost of capital employed:

$$EVA = NOPAT - WACC \times CE, \quad (2)$$

<sup>2</sup> 0,21 – Corporate income tax in Ukraine in 2012 expressed as a decimal.

where NOPAT - net operating profit after taxes,  
WACC - weighted average cost of capital,  
CE - capital employed.

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## TESTS

**1. *How is it possible to increase return on assets?***

- a) By decreasing assets and sales volume by 1%
- b) By increasing turnover ratio and return on sales
- c) By increasing assets at the constant sales volume

**2. *Performance indicators of a company's division are as follows, \$:***

Revenue	800000
Profit	200000
Assets (investment)	2000000

***What is the division return on assets?***

- a) 8; b) 10; c) 20; d) 25.

**3. *Balanced Scorecard developers are:***

- a) D.Norton and R.Kaplan
- b) R.Lynch and R.Cross
- c) L. Meycel

**4. *The reasons of Balanced Scorecard appearing are:***

- a) Optimization of manufacturing costs
- b) Improvement of the external documentation system
- c) Overcoming orientation at current financial results
- d) Simplification of the planning process

**5. *Balanced Scorecard four perspectives are:***

- a) Finance, Customers, Internal Business Processes, Learning and Growth
- b) Finance, Customers, Processes, Production
- c) Customers, Resources, Processes, Potential

d) Finance, Customers, Resources, Potential

**6. Name one of the perspectives reflecting financial result of realizing a company's strategy:**

a) Internal Business Processes

b) Customers

c) Learning and Growth

d) Finance

**7. The main task of BSC based reporting system is:**

a) Finding and delivering at minimum costs material resources necessary for the production process

b) Ensuring company profitability and solvency

c) Providing in good time company managers with relevant, detailed information in the understandable form to make managerial decisions

d) Information support of managers to satisfy customers' needs

## **Lesson 5. CLASSIFICATION OF COSTS IN THE CONTROLLING SYSTEM**

### **Learning objectives**

After completing the lesson, the student will be able to:

– Formulate three main groups of problems which need information about costs

– Explain why operating controlling uses different groups of costs for different purposes

– Use cost grouping to make up financial reporting documentation, make decisions and control over their execution

– Acquire skills of splitting costs to variable and fixed components, creating and applying a cost function

**Key words:** *COST OBJECT, COST BEHAVIOR, COST FUNCTION, VARIABLE COSTS, FIXED COSTS, MARGINAL COSTS, AVERAGE COSTS, PERIOD COSTS,*

*PRIME COSTS, EXPIRED COSTS, UNEXPIRED COSTS, RELEVANT COSTS, IRRELEVANT COSTS, DIRECT COSTS, INDIRECT COSTS, OUTLAY COSTS, OPPORTUNITY COSTS, OVERHEAD COSTS, PRODUCT COSTS, CONTROLLABLE COSTS*

## LESSON PLAN

1. Answering control questions on the theme of the lesson
2. Cost function exercises
3. Tests

### **Questions**

1. «Costs can be classified according to different criteria depending on their nature and type of information needed by the management». Explain this statement by giving examples of costs classification by the criterion of decision-making.
2. Name not less than three main objectives of costs classification.
3. What do period and product costs include?
4. What are expired and unexpired costs? Give examples.
5. What is the cost object? What is the cost center? Give examples.
6. What are direct and indirect costs? Give examples.
7. What is the difference between direct costs and overhead costs?
8. What are relevant and irrelevant costs? Give examples.
9. What are controllable and what are uncontrollable costs? Give examples.
10. How can a manager influence regulated and discretionary costs? Give examples.
11. What are unregulated costs?
12. How can you understand cost behavior? What factors affect it? Give examples.
13. Give examples of variable costs and illustrate their behavior on the graph.
14. Give examples of fixed costs.
15. What are mixed (semi-variable) costs? Give an example.

16. What is the cost function? What is it for?

**Exercise 1**

Using the information given in Table 3 identify a cost function and calculate the estimated equipment maintenance costs for the budgeted production volume of 145000 units.

Table 3 – Initial data to create the cost function

<b>Period</b>	<b>Production volume, units</b>	<b>Equipment maintenance costs, hrv</b>
January	156000	19000
February	151000	17000
March	140000	15000
April	147000	16000

*Note:* The cost function is a relationship between costs and factors which define them. In operating controlling the most important factor (volume of business activity) is chosen and is used to build a linear cost function such as:

$$TC = VC \times q + FC, \quad (3)$$

where  $TC$  – total costs,

$VC$  – variable costs per unit,

$q$  – production volume,

$FC$  – fixed costs.

To build the cost function, you should split equipment maintenance costs to fixed and variable components. At the company being analyzed the equipment maintenance costs depend on the production volume. Hence, the production volume ( $q$ ) is a cost driver and the equipment maintenance costs ( $TC$ ) – a cost function.

The minimum was in \_\_\_\_\_ with  $TC_{min} =$  \_\_\_\_\_ hrv, maximum production volume (\_\_\_\_\_ units) was in \_\_\_\_\_ with the equipment maintenance costs  $TC_{max} =$  \_\_\_\_\_ hrv.

Variable costs per unit (VC) are identified by the formula (4):

$$v = \frac{TC_{max} - TC_{min}}{q_{max} - q_{min}} \quad (4)$$

Fixed costs are identified on the basis of formula (3)

$$FC = TC_{max} - VC \times q_{min} \quad (5)$$

In this case fixed costs are:  $FC =$  \_\_\_\_\_ hrv.

1. *When formulating the answer* plug the found coefficients of the equation (variable costs and fixed costs) in the linear equation of the cost function:

$$TC = \_ \times q + \_ \text{ hrv.}$$

2. The identified cost function allows forecasting the equipment maintenance costs in the short run. Plug the budgeted production volume (145000 units) in the cost function and calculate the equipment maintenance costs for the budgeted production volume.

### **Exercise 2**

A full-cycle department produces a single product. Information about the production cost for the past 10 months is given below.

Table 4 – Initial data to create a cost function

Month	1	2	3	4	5	6	7	8	9	10
Number of units	5	7	8	6	3	2	4	6	8	7
Product cost	34	38	40	36	30	28	32	36	40	38

*Required:*

1. Identify fixed and variable costs using two methods: a) high low method and b) regression analysis method. Comment on variances in the results obtained.
2. Create a cost function and compute production costs for the budgeted production volume of 9 units.

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## **TESTS**

***1. Which of the following types of costs are used to calculate the product cost, evaluate inventory and identify financial results?***

- a) Relevant and irrelevant
- b) Controllable and uncontrollable
- c) Product costs and period costs
- d) Fixed and variable

**2. Product costs are:**

- a) Production costs
- b) Full product costs
- c) Variable costs
- d) Direct costs

**3. Period costs are:**

- a) Direct production costs
- b) Total production costs
- c) Administrative and selling expenses
- d) All of the above

**4. Expired costs are costs that:**

- a) Ensure obtaining the revenue in the future
- b) Are capitalized in assets
- c) Ensure obtaining the revenue in the reporting period

**5. Which of the following types of costs are used while preparing managerial decisions?**

- a) Relevant and irrelevant
- b) Controllable and uncontrollable
- c) Prime costs and overhead costs
- d) Expired and unexpired costs

**6. Relevant range is a range of activity within which:**

- a) Total amount of fixed costs do not change
- b) The amount of fixed costs per unit of output and total fixed costs do not change
- c) The given type of relevant costs may be used for making managerial decisions
- d) Variable costs per unit do not change

**7. Direct costs are costs that:**

- a) Are calculated on the basis of technical norms
- b) May be assigned to a calculation object in an economically reasonable way

c) Are fixed

**8. Fixed costs are costs the amount of which:**

a) Is the same for different types of products

b) Is fixed per unit of output

c) Increases with the increase in the production output and sales volume

d) Does not depend on the production output and sales volume within the relevant range

**9. Variable costs are costs the amount of which:**

a) Is the same for different types of products

b) Is fixed per unit of output

c) Increases with the increase of the production output and sales volume

d) Does not depend on the production output and sales volume within the relevant range

**10. If the production output increases:**

a) Variable costs per unit of output increase

b) Total variable costs increase

c) Total variable costs remain unchanged

**11. Fixed costs are 3000 UAH at the production volume of 1200 units.**

**What are fixed costs per unit at the production volume of 1500 units?**

a) 2,5 UAH.; b) 2,0 UAH; c) 3,0 UAH; d) No right answer.

**12. Variable costs per unit are 6 UAH at the production volume of 1000 units. What are variable costs per unit at the production volume of 1500 units?**

a) 4 UAH; b) 5 UAH; c) 6 UAH; d) No right answer.

**13. Direct material costs are:**

a) All production costs which are directly assigned to a specific cost object

b) Cost of wages and costs of their payment to workers engaged in the production process

c) Cost of raw materials and direct materials which form the basis of products, purchased semi-products, component parts, auxiliary materials, etc.

d) Material costs of serving and managing the production

**14. Indirect costs are costs that:**

- a) Depend on the production volume
- b) Depend on the sales volume
- c) Cannot be assigned to a specific cost object in an economically reasonable

way

- d) Cannot be connected with the activity of an enterprise

**15. Costs of packaging materials for packing finished goods belong to:**

- a) Direct selling expenses
- b) Expenses related to serving the selling process
- c) Expenses related to serving the activity of a sales department
- d) No right answer

**16. Are direct costs always variable?**

- a) Yes
- b) No
- c) It depends on the character of their dependence on the activity volume

**17. Marginal costs are:**

- a) Minimum total costs
- b) Ideal costs at the optimum production output level
- c) Average costs per unit
- d) Increase in total costs that arise when the quantity produced increases by one

unit

- e) Benefit forgone by refusing an alternative decision

**18. Are variable costs controllable and fixed costs uncontrollable?**

- a) Everything depends on area of a manager's responsibility
- b) Yes
- c) No

**19. Which of the following equations is the cost function?**

- a)  $TC = VC \times q$
- b)  $TC = VC \times q + FC$
- c)  $TC = VC \times q + C \times q^2$

d) No right answer

**20. Which of the following equations is the total variable costs function?**

a)  $TC = VC \times q$

b)  $TC = VC \times q + FC$

c)  $TC = VC \times q + C \times q^2$

d) No right answer

**21.** It is known that costs at the highest and lowest levels of activity are as follows:

Period	Costs, UAH	Production volume, units
<i>N</i>	500000	400000
<i>N</i> +1	300000	200000

*According to the high-low method variable costs per unit are:*

a) 1,25 UAH

b) 1 UAH

c) 2 UAH

d) 1,5 UAH

**22.** It is known that costs at the highest and lowest levels of activity are as follows:

Period	Costs, UAH	Production volume, units
<i>N</i>	500000	400000
<i>N</i> +1	300000	200000

*According to the high-low method fixed costs are:*

a) 80000 UAH

b) (100000) UAH

c) 100000 UAH

**23.** It is known that costs of the Computer Department at the highest and lowest levels of activity are as follows:

Period	Costs, UAH	Working hours
<i>N</i>	200000	30000
<i>N</i> +1	400000	80000

***According to the high-low method variable costs per unit are:***

- a) 1,75 UAH/ hour
- b) 5 UAH/hour
- c) 4 UAH/hour
- d) 8 UAH/hour

**24.** It is known that costs at the highest and lowest levels of activity are as follows:

<b>Period</b>	<b>Costs, UAH</b>	<b>Working hours</b>
<i>N</i>	200000	30000
<i>N+1</i>	400000	80000

***According to the high-low method fixed costs are:***

- a) 200000 UAH
- b) 80000 UAH
- c) 50000 UAH

## ***Lesson 6. METHODS OF FULL COSTING AND THEIR APPLICATION***<sup>3</sup>

### **Learning objectives**

After completing the lesson, the student will be able to:

- Characterize the nature of accounting and cost items in full costing
- Name the four main objectives of full costing
- Explain the reasons of differences in the values of full product costs caused by different overheads allocation methods
- Substantiate the choice of an allocation base and compute the overhead allocation rate
- Explain why it is necessary to seek managers' agreement on the methods of allocating overhead costs

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<sup>3</sup> Although the issues of cost accounting and product costing are not the core of training of Bachelor students majoring in Management, the understanding of these aspects is extremely important because cost analysis and management are in the heart of today's control and analytical systems.

## LESSON PLAN

1. Answering control questions on the theme of the lesson and discussing key issues
2. Solving problems and performing exercises
3. Tests

### **Questions**

1. Explain the classification of costs for determining the product cost. Name the main cost items of the product cost.
2. What is the subject matter of job-order costing and where is it used?
3. What is the subject matter of process costing and what is the sphere of its application?
4. Name two products where the cost object is: a) an order; b) a process.
5. Name five steps of full costing process.
6. Describe the differences among supportive operational analysis centers (service analysis centers), basic operational analysis centers and structural analysis centers.
7. Name two phases of allocating overhead costs in traditional product costing systems.
8. Why do traditional product costing systems allocate costs of service departments at first among basic operational departments and then assign them to individual orders or goods?
9. Why can traditional two-step cost allocation systems result in constant distortion of product cost?
10. Why are traditional costing methods not suitable for operative cost management objectives, situation analysis of costs for different levels of business activity and forecasting?

### ***Exercise 1***

A company's manufacturing overheads are 600000 hrv; other information by product groups is given in Table 5. The company uses a well known overhead allocation method based on a plant-wide overhead allocation rate proportionate to the number of direct labor hours. Consequently, the plant-wide overhead allocation rate is computed by dividing the total amount of overheads by the total number of direct labor hours:

$$\text{Plant-wide overhead allocation rate} = \text{Overhead costs} / \text{Allocation base}$$

Table 5 – Initial data to allocate overhead costs

<b>Indicator</b>	<b>«A»</b>	<b>«B»</b>	<b>«C»</b>
1. Number of units produced	200	300	500
2. Direct labor costs, hrv/unit	75	50	40
3. Direct machine-hours per unit	8	12	20

*Situation 1.* Identify the overhead allocation rate per one direct labor hour and allocate manufacturing overhead costs based on a plant-wide overhead allocation rate.

*Situation 2.* Identify the overhead allocation rate on the basis of machine hours and allocate manufacturing overhead costs proportionate to the number of machine hours.

Compare the results of computations and make your comment using Table 6.

Table 6 – Influence of the choice of allocation base on the amount of overhead costs per unit of output

<b>Indicator</b>	<b>«A»</b>	<b>«B»</b>	<b>«C»</b>	<b>Total</b>
1	2	3	4	5
1. Units produced	200	300	500	
2. Direct labor costs, hrv/unit	75	50	40	
3. Total direct labor costs, hrv				

4. Overhead costs = overhead allocation rate 1 × line 3				
1	2	3	4	5
5. Machine hours per unit				
6. Total machine hours				
7. Overhead costs = overhead allocation rate 2 × line 6				

*Situation 3.* Suppose manufacturing overhead costs of the Assembly Department are 350000 hrv and manufacturing overhead costs of Mechanical Department are 250000 hrv. Their sum is 600000 hrv.

You decided to allocate the manufacturing overhead costs on the basis of multiple (double) allocation bases: Mechanical Department – on the basis of machine hours, Assembly Department – on the basis of labor hours. Explain calculations and interpret the results.

Table 7 – Application of multiple (double) overhead allocation bases

<b>Indicator</b>	<b>«A»</b>	<b>«B»</b>	<b>«C»</b>	<b>Total</b>
1. Number of units produced	200	300	500	
2. Direct labor costs per unit	75	50	40	
3. Total direct labor costs				
4. Manufacturing overhead costs=overhead allocation rate 1×line 3				
5. Machine hours per unit				
6. Total machine hours				
7. Manufacturing overhead costs = overhead allocation rate 2×line 6				
8. Total applied manufacturing overhead costs				

The improvement of the costing system means making such changes that will result in better costs measuring and allocating to cost objects given differences in overheads consumption. These changes may require expanding the number of analysis centers and assigning some overheads to groups of directly included costs without using multiple overhead allocation bases and rates.

When referring to the accounting roots, the identification of a causal link between products and costs leads to activity based costing which will be studied at lesson 8.

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### **TESTS**

**1. *How is full costing called in foreign practice?***

- a) Direct costing
- b) Absorption costing
- c) Standard costing
- d) ABC - costing

**2. *Name four basic objectives of full costing.***

**3. *Full costing is not the system of:***

- a) Hybrid costing
- b) Job-order costing
- c) Costing of reverse flows

d) Process costing

**4. In job-order costing the cost object is:**

- a) A specific type of product
- b) A specific order
- c) A specific process
- d) A batch of homogeneous products

**5. In process costing the cost object is:**

- a) A specific type of product
- b) A specific order
- c) A specific process
- d) A batch of homogeneous products

**6. The advantage of semi-product costing is:**

- a) Simplicity of accounting
- b) Cheapness and operationability of obtaining the required accounting

information

c) Formation of accounting information about a semi-product cost at the end of each process

d) Possibility of separate cost accounting while producing different types of products

**7. Basic features of semi-product costing are as follows<sup>4</sup>:**

a) Identifying actual cost of finished goods without calculating semi-product cost in the absence of money accounting of semi-products movement

b) Identifying actual cost of finished goods with preliminary semi-product costing

c) Formation of accounting information about semi-product costs at the end of each process

d) Absence of money accounting of semi-product movement

**9. Branches of industry primarily using job-order costing are:**

- a) Chemical industry

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<sup>4</sup> Two correct answers

- b) Electric engineering industry
- c) Turbine construction and aviation industry

**10. Branches of industry primarily using process costing are:**

- a) Chemical industry
- b) Electric engineering industry
- c) Turbine construction and aviation industry

**11. Allocation of overheads among accounting objects includes the following basic elements:**

- a) Choosing a cost object and an allocation base
- b) Calculating an overhead allocation rate
- c) Calculating overheads to allocate to cost objects
- d) All of the above

**12. Overheads are allocated:**

- a) By periods and cost objects (products, services)
- b) By responsibility centers, between basic operational and supporting operational departments
- c) Between finished goods and work-in-process
- d) All of the above

**13. Overhead allocation rate is a:**

- a) Ratio of fixed costs to contribution margin
- b) Ratio of overheads to the total amount of the allocation base
- c) Ratio of actual costs to standard costs
- d) Ratio of revenue to variable costs

**14. What allocation base is used under labor intensive conditions?**

- a) Direct labor costs
- b) Machine-hours
- c) Direct materials
- d) Prime costs

**15. What allocation base is used under capital intensive conditions?**

- a) Direct labor costs

- b) Machine-hours
- c) Direct materials
- d) Prime costs

**16. What allocation base is used under material intensive conditions?**

- a) Number of produced products of each type
- b) Cost of direct materials which are necessary to produce each unit of product
- c) Direct costs which are necessary to produce each unit of product
- d) Number of machine-hours worked by equipment to produce each unit of

product

**17.** The company is fulfilling orders for two clients (10 units for each of them). Direct costs for order 1 are 160 UAH and for order 2 are 200 UAH. Manufacturing overheads are 72000 UAH. *Actual production cost of one unit from order 1 will be:*

- a) 20 UAH
- b) 19,20 UAH
- c) 24,5 UAH
- d) 192 UAH

**18.** During the current month the company has performed 2 orders (10 units for each of them). Total production costs are 432000 UAH, including 72000 UAH of manufacturing overheads. Direct costs for order 1 are 160000 UAH, and for order 2 are 200000 UAH. Production cost of one unit from the order 2 is:

- a) 240 UAH
- b) 24,5 UAH
- c) 43,20 UAH
- d) 19,20 UAH

**19.** A company's manufacturing overheads are 600000 UAH. Additional data by product groups follow.

Indicator	«A»	«B»	«C»	Total
Number of units produced	200	300	500	
Number of machine hours per unit	8	12	20	40
Direct labor costs, UAH	75	50	40	

***When using machine-hours as an allocation base, manufacturing overheads allocated to a unit of product B equal:***

- a) 300000 UAH
- b) 1000 UAH
- c) 600 UAH
- d) 800 UAH
- e) No correct answer

20. The company uses the direct allocation method for apportioning costs of service departments. The allocation of overheads to basic operational departments is performed in the following proportion.

<b>Indicator</b>	<b>Maintenance Department</b>	<b>Power Department</b>
Manufacturing overheads, UAH	370400	180000
Basic Operational Department 1	40%	30%
Basic Operational Department 2	40%	60%

The amount of manufacturing overhead costs of the Power Department allocated to Basic Operational Department 2 equals:

- a) 72000 UAH
- b) 90000 UAH
- c) 108000 UAH
- d) 120000 UAH

## ***Lesson 7. METHODS OF PARTIAL COSTING AND THEIR APPLICATION***

### **Learning objectives**

After completing the lesson, the student will be able to:

- Explain the differences between full costing and partial costing systems
- Use variable costing and direct costing modified
- Characterize objectives and assumptions of the cost-volume-profit analysis

– Acquire skills of applying the cost-volume-profit analysis in decision making

## LESSON PLAN

1. Answering control questions on the theme of the lesson and discussing key issues
2. Full costing and partial costing (direct costing) exercises
3. Analysis of a situation on using a multi-step contribution margin in making decision on revision of the product mix
4. Exercises on using the cost-volume-profit analysis in managerial decision making practice
5. Tests

### **Questions**

1. What is the reason of appearing partial costing?
2. What are the four main objectives of partial costing?
3. What are the three distinctive features of the direct costing system?
4. What are direct fixed costs? Give two examples.
5. Reveal the content and peculiarities of computations in the classical direct costing system.
6. Reveal the content and peculiarities of computations in the modified direct costing system.
7. What are the main advantages and disadvantages of the partial costing method?
8. What is a cost-volume-profit analysis?
9. Give the definition of the break-even point.
10. What formulas are used to compute the break-even point?
11. Is it right to think that top managers should seek to raise the break-even point? Explain your opinion.

12. What is an operating leverage? Why can its value serve as a measure of operational risk?

13. How can one use the operating leverage to predict the change in earnings before interest and taxes knowing the expected change in sales?

**Exercise**

The company manufactures and sells sensors. At the beginning of the period there was no stock of unsold goods. Additional data regarding production and sales are given in Table 8 below.

Required:

- Prepare income statements based on full and direct costing and compare them, present the results of calculations in Tables 9 and 10.
- Use the Table 11 to explain the reasons of deviations in results obtained using the two methods.
- Set the character of relationship between profit obtained using direct costing and sales volume.

Table 8 – Production and sales of goods for the 4<sup>th</sup> quarter

<b>Indicator</b>	<b>Amount, hrv</b>
1. Number of units produced	1000
2. Sales	800
3. Price per unit	20
4. Variable costs and expenses per unit	
a) Manufacturing	9
b) Administrative and selling	3
5. Fixed manufacturing costs	4800
6. Fixed administrative and selling expenses	1500

**SOLUTION**

Table 9 – Cost of goods sold using the full costing method

<b>Indicator</b>	<b>Amount, hrv</b>
1	2
1. Sales revenue 800×20	
2. Cost of goods sold	
2.1. Variable manufacturing costs	
2.2 Fixed manufacturing costs	
1	2
3. Administrative and selling expenses	
a) Variable	
b) Fixed	
4. Full cost of goods sold (line 2 + line 3)	
5. Operating profit (line 1 – line 4)	

Table 10 –  
Income  
statement  
using the  
direct costing  
method

<b>Indicator</b>	<b>Amount, hrv</b>
1. Sales revenue 800×20	
2. Variable costs <sup>5</sup>	
3 Contribution margin, line 1– line 2	
4. Fixed costs <sup>6</sup>	
5. Operating profit (line 1 – line 4)	

Table 11 – Reconciliation schedule

1. Operating profit under full costing method	
2. Operating profit under direct costing method	
3. Variance	
4 Fixed manufacturing costs differed in inventory 0,2×4800	

*Comment on the following statement:* «The cost of a unit of product under variable costing is prepared using sales data and the cost of a unit of product under full costing is prepared using production data».

## CASE

An enterprise produces two products - T1 and T2. Additional data regarding production and sales are given in Table 12.

<sup>5</sup> Variable manufacturing costs, variable administrative and selling expenses are shown.

<sup>6</sup> Fixed manufacturing costs, fixed administrative and selling expenses are shown.

Table 12 – Computing the financial result using the traditional method

Indicator	Products		Total
	T1	T2	
Sales, units	50	100	
Selling price per unit, thousand hrv without VAT and excise duty	2000	4000	
1. Sales revenue, thousand hrv	100000	400000	<b>500000</b>
Variable costs per unit	1200	2900	
2. Total variable costs per sales, thousand hrv/month	60000	290000	<b>350000</b>
3. Specific direct fixed costs, thousand hrv	5000	10000	<b>15000</b>
4. Total fixed costs, thousand hrv	50000	35000	<b>85000</b>
5. Total costs (line 2+line 3+line 4)			
6. Operating income (line 1 –line 5)			

The company manager asked you to assess the financial results in the basic situation using full costing.

Having found out that the production of the product T1 is unprofitable, the company top managers are considering two alternative options.

1. To withdraw the product T1 from the production program remaining the production of the product T2 at the same level.

2a. To compute financial result in the basic situation using direct costing.

2b. To change the structure of goods produced using direct costing: T1 – 50 units; T2 – 150 units.

Besides the company administration asked you to solve two additional tasks:

1. To develop a personal variant of revision of the product mix.
2. To present different business situations when partial costing may be useful while analyzing business variants and decision making.

### SOLUTION

**Option 1**– Withdrawal of product T1 from the production program.

Fill in the blanks in Table 13.

Table 13 – Income statement in case of withdrawing the unprofitable product

Indicator	Product T2
Sales, units	100
Selling price per unit (thousand hrv) without VAT and excise duty	4000
1. Sales revenue, thousand hrv	400000
Variable costs per unit	2900
2. Total variable costs per sales, thousand hrv/month	290000
3. Specific direct fixed costs, thousand hrv	10000
4. Total fixed costs, thousand hrv	
5. Total costs (line 2+line 3+line 4)	
6. Operating profit (line 1 – line 5)	

**Option 2a.** Computing operating income in the basic situation using modified direct costing.

Fill in the blanks in the Table below.

Table 14 – Computing operating income in the basic situation using modified direct costing

Indicator	Products	Total

	<b>T1</b>	<b>T2</b>	
1	2	3	4
Sales, units	50	100	
1	2	3	4
Selling price per unit, thousand hrv without VAT and excise duty	2000	4000	
1. Sales revenue, thousand hrv	100000	400000	<b>500000</b>
Variable costs per unit			
2. Total variable costs per sales, thousand hrv/month			
3. Specific direct fixed costs, thousand hrv			
<b>4. Total direct costs</b>			
5. Contribution margin, thousand hrv (line 1 – line 4)			
6. Total fixed costs (by condition)			
7. Operating income (line 5 – line 6)			

**Option 2b.** Using direct costing change the structure of the product mix as follows: product T1 – 50 units; product T2 – 150 units

Fill in the blanks in the Table below.

Table 15 – Impact of changes in the sales mix on the profit

<b>Indicator</b>	<b>Products</b>		<b>Total</b>
	<b>T1</b>	<b>T2</b>	
1	2	3	4
Sales, units	50	150	
Selling price per unit, thousand hrv without VAT and excise duty	2000	4000	

1. Sales revenue, thousand hrv			
Variable costs per unit			
2. Total variable costs per sales, thousand hrv/month			
3. Specific direct fixed costs, thousand hrv			
<b>4. Total direct costs</b>			
5. Contribution margin			
6. Contribution margin ratio, % (line 5/ line 1)			
7. Total fixed costs			
8. Result (profit), line 5 – line 8			

### *Exercise*

Having analyzed financial data presented in Table 18 the company managers are considering two proposals to raise the company profit in the next year:

1. A production manager's proposal: to use cheaper materials that will allow decreasing total materials costs up to 80000 hrv. However, additional materials quality control will require increasing fixed costs by 24000 hrv.

2. A sales manager's proposal: to run an extensive advertising campaign that will allow increasing the sales by 20%. However fixed costs will increase by 45000 hrv and variable costs will be changing proportionate to the sales revenue.

Table 16 – A feasibility analysis of raising the company profit

Indicator	Situations		
	Accounting data	A	B
1	2	3	4
1. Net sales	440000		
2. Variable costs: including: materials 102000 hrv	242000		

wages 140000 hrv			
4. Contribution margin (line 1– line 2)	198000		
1	2	3	4
5. Fixed costs	90000		
6. Earning before interest and taxes (line 3– line 5)	108000		
7. Break even sales (line 5/ line 4)			
8. Safety margin (line 1– line 7)/line 1			
9. Degree of operating leverage (line 1/line 8)			

Required:

- A. Compute a break even point and safety margin for each variant.
- B. Give quantitative substantiation of selecting one of the three variants.
- C. What non-financial criteria should be considered before applying the selected variant?

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## TESTS

**1. What is partial costing called in foreign practice?**

- a) Direct costing
- b) Absorption costing
- c) Standard costing
- d) *ABC*- costing

**2. Contribution margin is:**

- a) Revenue from selling goods (services)
- b) Difference between sales revenue and variable costs
- c) Difference between sales revenue and fixed costs
- d) Difference between sales revenue and the sum of fixed and variable costs

**7.3. Contribution margin is:**

- a) Difference between sales revenue and total variable costs
- b) Sum of fixed costs and profit of the company
- c) Difference between sales revenue and product costs
- d) Two first answers are correct

**5. What is the main precondition of implementing the direct costing method?**

- a) Product costing
- b) Organizing separate accounting of fixed and variable costs
- c) Setting norms for production costs
- d) Responsibility accounting

**6. What are the main advantages of direct costing?**

- a) The highest analyticity of cost and result accounting
- b) The highest liability to norm-setting
- c) The most complete and exact costing
- d) Ensuring operative reaction to cost driving factors

**7. Choose a correct statement related to direct costing:**

- a) Under direct costing the increase in inventories result in undervaluation of inventories and overvaluation of profit

b) Under direct costing the increase in inventories result in overvaluation of inventories and undervaluation of profit

c) Direct costing is a world-wide acknowledged financial accounting method

d) Under direct costing the increase in inventories result in undervaluation of inventories and profit

**8. In CVP analysis costs should be classified as:**

a) Fixed and variable

b) Controllable and uncontrollable

c) Relevant and irrelevant

d) Well-grounded and ungrounded

**9. The company is in the break-even point when:**

a) Sales result (profit) equals the variable costs

b) Sales revenue equals total production costs and selling expenses

c) Sales revenue equals fixed costs

**10. In the break-even point the contribution margin equals:**

a) Zero

b) Variable costs

c) Fixed costs

d) Sales revenue

**11. If the product price increases with all the things being equal the break-even point:**

a) Increases

b) Remains unchanged

c) Decreases

**12. With the increase in variable costs the break-even point:**

a) Remains unchanged

b) Increases

c) Decreases

**13. Margin of safety can be identified as the difference:**

a) Between sales and break-even sales

- b) Between actual and planned sales
- c) Between sales revenue and variable costs

**14. What is the break-even point in units** if the sales price is 6 UAH, variable costs per unit are 4 UAH and total fixed costs are 100 UAH:

- a) 50 units
- b) 100 units
- c) 80 units
- d) 20 units

**15. How many produced and sold units will bring the profit of 200 UAH** if the sales price is 6 UAH, variable costs per unit are 4 UAH, total fixed costs are 100 UAH?

- a) 100 units
- b) 150 units
- c) 190 units
- d) 80 units

**16. If an organization is planning to sell 65 units at the price of 4 UAH where variable costs per unit are 4 UAH and total fixed costs are 100 UAH, the profit will be:**

- a) 50 UAH
- b) 30 UAH
- c) 90 UAH
- d) 100 UAH

## ***Lesson 8. ACTIVITY-BASED COSTING***

### **Learning objectives**

After completing the lesson, the student will be able to:

- Describe conditions under which the introduction of the activity-based costing system provides significant benefits
- Develop the activity based costing system by assigning resource costs to activities and later to such cost objects as goods, distribution channels and clients

**Key words:** ACTIVITY BASED-COSTING, COST POOL, COST DRIVER, ACTIVITY COST DRIVER RATE

### LESSON PLAN

1. Answering control questions on the theme of the lesson and discussing key issues
2. Performing a case on activity-based costing
3. Tests

### Questions

1. Why can traditional two-step overheads allocation systems distort the product cost?
2. Explain why management accountants are concerned with the method of allocating overheads to products.
3. What is a type of activity? Give an example.
4. Describe the main groups of activity types. Give examples.
5. What are the main differences between the traditional costing system and activity-based costing?
6. What do the terms «cost driver» and «overhead rates based on cost drivers» mean?
7. How are cost drivers identified in activity-based costing?
8. What steps should be taken to identify activity cost driver rates?
9. How is the cost/benefit ratio taken into account when selecting an overhead allocation method?
10. Describe the main decisions taken by a manager on the basis of information obtained while activity-based costing.
11. What are the main obstacles in implementing the activity-based costing system?

### *Exercise*

A transport company renders services of international transportation of cargo.

A financial director asked you to allocate overheads of the Marketing Department to orders A and B using activity based costing. Additional data to make computations is presented in Tables 17, 18.

Table 17 – Marketing department's costs by types of activities (operations)

<b>Indicator</b>	<b>Amount hrv</b>	<b>Customs clearance</b>	<b>Billing</b>	<b>Advertiseme nt</b>
Number of operations		235	245 000	51 000
Customs applicants' salary	80000	100%	-	-
Sales managers' salary	300000	50%	25%	25%
Economists' salary	460000	-	65%	35%
International calls	100000	-	100%	-
Computer processing of information	50000	10%	30%	60%

Table 18 – Number of Marketing Department operations by orders

<b>Order</b>	<b>Customs clearance</b>	<b>Billing</b>	<b>Advertisement</b>
A	20	100 000	2 500
B	50	20 000	4 000

***Illustrative example with solution***

Allocating costs by the types of activities include the following steps (Figure

1).

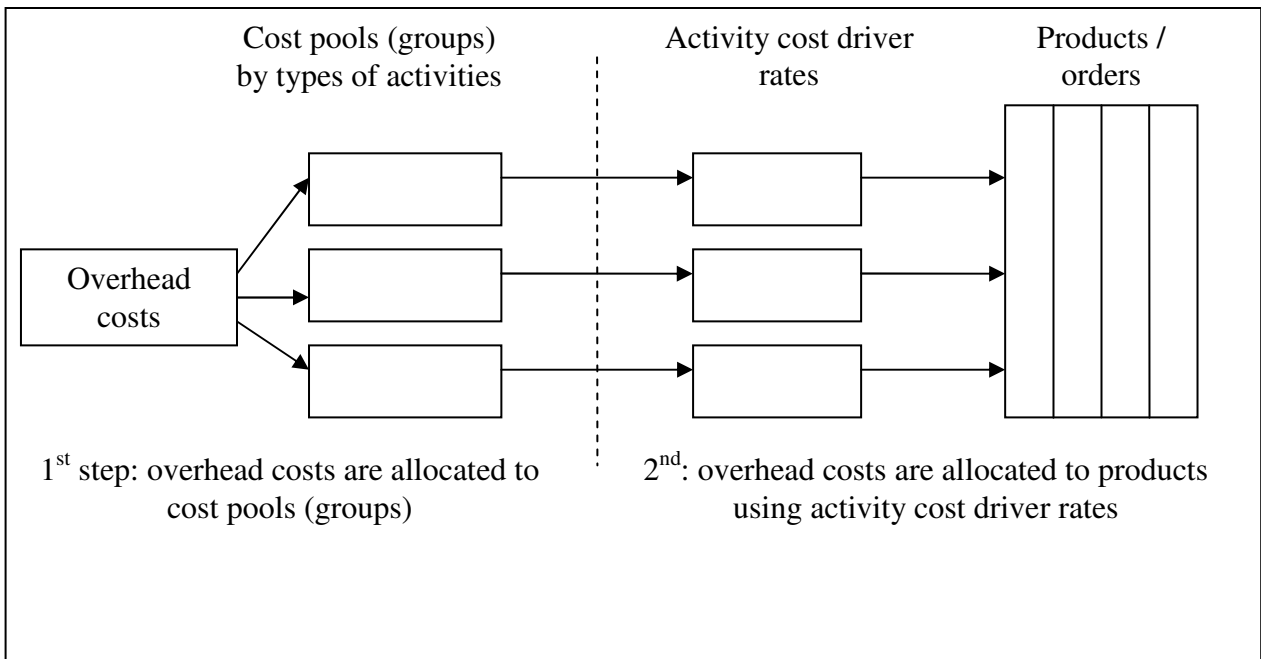


Figure 1 – Activity based costing

1. Identifying cost pools. They should be recorded separately in analytical accounting. Table 21 shows the following cost pools: a) salary costs by different groups of employees (customs applicants – 2400 hrv, sales managers – 90000 hrv, economists – 135000 hrv.); b) international call costs – 30000 hrv; c) information processing costs – 15000 hrv.

2. Analyzing the department's activity allows selecting those types of activity (operations) for which cost drivers may be found and cost pools may be formed. In this example the Marketing Department may perform the following types of activity: customs clearance; billing; advertisement.

3. Using the data of analytical accounting (managers' interviewing, motion study, etc.) to identify who and what do at the department and how much time they spend to perform the defined operations.

The outcomes of work done are shown in Table 19.

Table 19 – Allocating costs of the Marketing Department based on managers’ interviewing and motion study

Costs	Costs, hrv	Costs by types of activity, %		
		Customs clearance	Billing	Advertisements
Salary of:				
Customs applicants	2400	100%	0	0
Sales managers	90000	50%	25%	25%
Economists	135000	0	66%	34%
International call costs	30000	0	100%	0
Information processing costs	4500	10%	30%	60%
<b>Total</b>	<b>294000</b>			

Using data in Table 19 let’s identify costs by types of activity and group them into cost pools (Table 20).

Table 20– Costs and cost pools by types of activity, hrv

Cost	Costs, hrv	Costs by types of activity, hrv		
		Customs clearance	Billing	Advertisements
1	2	3	4	5
Salary of:				
Customs applicants	2400	2400	0	0
Sales managers	90000	45000	22500	22500
Economists	135000	0	89100	45900

1	2	3	4	5
International call costs	30000	0	30000	0
Information processing costs	4500	450	1350	2700
<b>Total</b>		47850	142950	71100

Now all costs of the Marketing Department are allocated by types of activity.

In order to assign these costs to specific product groups, we select a cost driver:

- Number of sets of customs documents for customs clearance
- Number of invoices submitted (and other documents) for customs clearance operations
- Number of advertisements for advertising products

On the basis of analytical accounting data we find the number of operations per each product group and total number of operations. Then we compute the activity cost driver rates (Table 21).

Table 21 – Calculation of activity cost driver rates

Indicator	Cost drivers by types of activity		
	Customs clearance	Billing	Advertisements
Number of operations:			
1. Product group A	20	100000	2500
2. Product group B	50	20000	4000
3. Total number of operations of the marketing department	235	245000	51000
4. Cost pool from the table 20, hrv	47850	142950	71100
5. Activity cost driver rates, line 3/ line 4	203,6	0,58	1,39

Now we compute the sum of overhead costs of the Marketing Department per each product group. (Table 22).

Table 22 – Marketing Department overhead costs allocated to product groups

Product groups	Customs clearance	Billing	Advertisement	Total costs
A	$203,6 \times 20 = 4072$	$0,58 \times 100000 = 58000$	$1,39 \times 2500 = 3475$	<b>65547</b>
B	$203,6 \times 50 = 10180$	$0,58 \times 20000 = 11600$	$1,39 \times 4000 = 5560$	<b>27340</b>

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## TESTS

### 1. *The necessity to implement activity-based costing is caused by:*

- a) Technology progress and high level of production automation

b) Increase in the proportion of fixed costs in production costs

c) Managers' opinion that activity-based costing is more exact in tracing the usage of resources by products, distribution channels and clients

d) All the above

**2. Indicate a cost driver for activities associated with the equipment repair:**

a) Hours and the complexity of repairs

b) The cost of repairs

c) Wages of workers of the equipment maintenance department

d) Number of breakdowns

**3. Put a tick or a cross beside each statement.**

Statement	False	True
a) Cost driver is the main reason of cost occurrence.		
b) Usage of a single plant-wide overhead allocation rate prevents from primary and secondary allocation of overhead costs in the traditional system.		
c) Cost drivers and cost pools in activity-based costing are the basis for costs allocation.		
d) Usage of cost pools and activity cost driver rates require allocating overhead costs of service departments to basic operational departments.		

## **Module 2. THE SYSTEM OF FORMING COMPETITIVE ADVANTAGES**

### **Lesson 9. BUDGETING AND THE PROCESS OF DEVELOPING A MASTER BUDGET**

#### **Learning objectives**

After completing the lesson, the student will be able to:

- Explain the subject matter, objectives and tasks of planning and budgeting
- Describe the difference between a flexible and a static budget
- Characterize budgeting stages and procedures as well as a controller's role

in this process

- Develop a preliminary budget

**Key words:** *BUDGETING, ORGANIZATION, TECHNOLOGY, BUDGET*

*RULES, PRELIMINARY BUDGETING*

#### **LESSON PLAN**

1. Answering control questions on the theme of the lesson and discussing key issues
2. Analyzing a situation
3. Tests

#### **Questions**

1. What is a budget system?
2. What is a budget, what are its objectives?
3. Do you agree with the statement: «A strategy, plans and budgets are not connected with each other»? Give your reasons.
4. What are the main types of budgets of the enterprise?
5. What are operating budgets, what are financial budgets?
6. What is the difference between operating and financial budgets?
7. What is a master budget? What elements does it include?
8. What is a static budget?

9. What is the difference between a flexible and a static budget?
10. What is a continuous budget?
11. What is zero-base budgeting and where is it applied?
12. Describe the main advantages and disadvantages of top down and bottom-up budgeting.
13. Characterize the tasks of three cycles of budgeting.
14. What does the preliminary budgeting mean?

### **Exercise**

#### *Preliminary budgeting*

Suppose you are a controller at the SV, Inc. The company produces and sells a single product defended by the patent using a single type of raw materials. The development of the budget is to start in September of the year N which is before the planned period. The medium-term plan for the year N+1 sets the task for self-financing (TSF) amounting to 1664000 hrv. Cost and price standards are still in the process of development by different departments of the company. At the moment there is only information about current costs and prices (Table 23).

Table 23 – Data to develop a preliminary budget

Selling price per unit, hrv	98
Variable costs per unit, hrv	38
Fixed costs per year, hrv	3600000
Depreciation per year, hrv	764000

Required:

1. Identify targeted sales in dollars and units under the preliminary budget.

The interconnection of preliminary, individual budgets and master budget is presented in Figure 2.

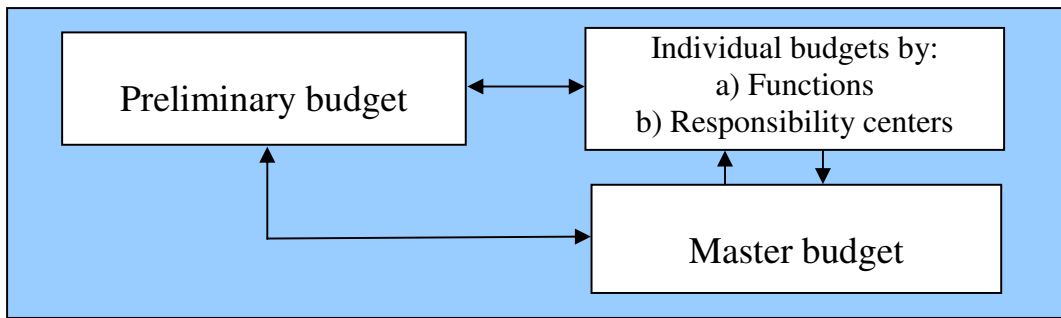


Figure 2 - Interconnection of preliminary, individual budgets and master budget

### SOLUTION

Using the task for self-financing identify:

1. The targeted net profit (NP):

$$NP = \text{TSSF} - \text{Depreciation}$$

$$NP = \underline{\hspace{10cm}}$$

2. EBIT at 25% tax rate:

$$NP = \underline{\hspace{10cm}}$$

$$\text{EBIT} = \underline{\hspace{10cm}}$$

1. Knowing the price and variable costs identify the contribution margin ratio (CMR):

$$\text{CMR} = (P - VC) / P.$$

$$\text{CMR} = \underline{\hspace{10cm}}$$

4. Using the formula  $S_{\text{target}} = (\text{FC} + \text{EBIT}) / \text{CMR}$ , identify targeted sales for achieving the TSSF.

$$S_{\text{hryvniyas}} = \underline{\hspace{10cm}}$$

5. Identify the targeted sales in units.

$$S_{\text{units}} = S_{\text{hryvniyas}} / P$$

Thus, the preliminary annual sales program is as follows:

$$S_{\text{units}} = \underline{\hspace{10cm}}$$

6. Fill in the results of calculations in Table 24 below.

Table 24 - Calculation results

<b>Indicator</b>	<b>Amount, hrv</b>
1. Sales revenue	
2. Variable costs	
3. Contribution margin	
4. Contribution margin ratio	
5. Fixed costs	
6. EBIT	

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### **TESTS**

**1. Budget may be defined as:**

- a) The amount of investment
- b) Estimate of equipment costs agreed by volumes and dates

c) The plan of a company's activity and its departments for the period of up to one year

d) Estimate of production costs

**2. What are operating budgets?**

a) Direct labor budget

b) Budgeted balance sheet, sales budget

c) Sales budget, production budget, direct labor budget

d) Budgeted income statement, cash budget, budgeted balance sheet

**3 What are financial budgets?**

a) Direct labor budget, budgeted balance sheet, sales budget

b) Production budget

c) Sales budget, production budget, direct labor budget

d) Budgeted income statement, cash budget, budgeted balance sheet

**4 The main difference between static and flexible budget is that:**

a) Flexible budget takes into account only variable costs and static budget covers all types of costs of a company

b) Static budget is prepared for the whole company and flexible budget is prepared for specific departments

c) Static budget is prepared for the planned level of activity and flexible budget is prepared for actual activity level (or for several levels of business activity)

**5. What method is not used while budgeting?**

a) Zero-base budgeting

b) Operational budgeting

c) Incremental budgeting

d) Budgeting with analysis of variants

**6. It is typical for flexible budgets to split costs into:**

a) Direct and indirect costs

b) Variable and fixed costs

c) Prime and overhead costs

d) Variable and mixed costs

**7. Incremental budgets are developed on the basis of:**

- a) Production output by departments
- b) Costs by production departments
- c) As a percentage to the achieved production and sales levels
- d) Proportionate to a product cost

**8. Indicate two adverse approaches to organizing the budgeting process which are determined by the organization culture and management style of the organization:**

- a) Participatory budgeting versus joint budgeting
- b) Top-down budgeting versus bottom-up budgeting
- c) Flexible budget versus static budget
- d) Planning versus budgetary control

**9. A type of budgeting where a responsibility center manager must annually confirm the reasonableness of each type of activity and its total costs is called:**

- a) Continuous budgeting
- b) Incremental budgeting
- c) Zero-base budgeting

**10. When does the budget play the role of a tool to motivate the company's employees?**

- a) When employees participate in the budgeting process
- b) When the remuneration system is connected with the budget execution
- c) When the budget facilitates of productive labor respect and honesty
- d) All of the above

## ***Lesson 10. FUNCTIONAL BUDGETING***

### **Learning objectives**

After completing the lesson, the student will be able to:

- Describe operating budgets and sequence of their development
- Explain the objectives of the development of financial budgets

- Describe the interconnections between financial budgets

**Key words:** SALES BUDGET PRODUCTION BUDGET, DIRECT MATERIALS BUDGET, DIRECT LABOR BUDGET, MANUFACTURING OVERHEAD BUDGET, COST OF GOODS MANUFACTURED BUDGET, COST OF GOODS SOLD BUDGET, SELLING EXPENSES BUDGET, ADMINISTRATIVE EXPENSES BUDGET, BUDGETED INCOME STATEMENT, CASH BUDGET, BUDGETED BALANCE SHEET, CAPITAL EXPENDITURES BUDGET

### LESSON PLAN

1. Answering control questions on the theme of the lesson and discussing key issues
2. Continuing to analyze the situation of Lesson 9
3. Tests

### Questions

1. What are the main questions to be answered while preparing the sales budget?
2. Why is it important to have a valid sales forecast when preparing a sales budget?
3. What tasks does the sales budget solve?
4. What is the main formula to compute the production budget taking into account sales budget and changes in finished goods inventory?
5. How is the material purchases budget prepared?
6. What fixed and variable costs are included into the manufacturing overheads budget?
7. What are peculiarities of preparing the general and administrative expenses budget?
8. What data is it necessary to have to prepare the budgeted income statement?
9. What budgets are developed while financial planning?
10. Describe the main objectives of developing the budgeted income

statement?

11. What are the main elements of the cash budget?

12. What is the most important indicator to ensure the validity of the cash budget?

13. What is the main objective of the budgeted balance sheet?

14. How can you understand the statement that short-term financial plans are developed through trial and error?

15. Choose an enterprise you know and describe, if you can, the process of planning and preparing estimates at it.

### **SITUATION**

Develop functional budgets for the SV, Inc. in the following sequence:

1) Sales budget

2) Production budget

3) Procurement budget

4) Selling expenses budget.

5) Administrative expenses budget

6) Budgeted Income Statement with the task for self-financing for the next year

Budgeting is carried out using the developed cost and price standards.

### **SALES BUDGET AND SALES PROGRAM**

Initial data for calculation:

Targeted annual sales volume – 80000 items

Selling price per unit (without VAT) – 100 hrv

According to the preliminary budget the sales program is 80000 units

The sales budget in hryvnias is calculated by multiplying the sales program by the standard price:

Sales budget = \_\_\_\_\_

### **PRODUCTION BUDGET AND PRODUCTION PROGRAM**

Initial data for calculation:

Beginning finished goods inventory — 2000 items

Ending finished goods inventory — 8000 items

Variable costs per unit – 15 hrv (1,5 kg of raw materials at 10 hrv. per kg and conversion costs amounting to 10 hrv per unit).

Fixed costs — 1548000 hrv (including administrative staff salary – 848000 hrv, rent - 180000 hrv and depreciation – 520000 hrv).

Production program	=	Sales program	-	Beginning finished goods inventory	+	Ending finished goods inventory
--------------------	---	---------------	---	------------------------------------	---	---------------------------------

Production program = 80000 – 2000 + 8000 = 86000 items

Table 25 - Production budget

Indicator	Price, hrv	Material consumption rate, kg	Costs per unit	Total
1	2	3	4=2*3	5=4*86000 (for variable costs only)
1. Variable costs				
1.1 Materials	10	1,5	15	
1.2 Conversion costs			10	
<b>Total variable costs</b>			<b>25</b>	
2. Fixed costs				
2.1 Administrative staff salary				
2.2 Rent				
2.3 Depreciation				
<b>Total fixed costs</b>				
<b>Total costs (line 1+ line 2)</b>				

## PROCUREMENT BUDGET AND PROCUREMENT PROGRAM

Initial data for calculation:

Budgeted fixed costs - 640000 hrv (staff costs 500000 hrv.; shop rent - 80000 hrv; depreciation - 60000 hrv)

Beginning raw materials inventory - 3 000 kg

Ending raw materials inventory - 10 000 kg

Raw materials standard price - 10 hrv per kg

Procurement program	=	Materials needed for production	-	Beginning materials inventory	+	Ending materials inventory
---------------------	---	---------------------------------	---	-------------------------------	---	----------------------------

Procurement program (cost of materials to be purchased) = \_\_\_\_\_

Table 26 - Procurement budget

Indicator	Purchases	Price per unit, hrv	Total
<i>Variable costs</i>			
Purchase	136 000kg	10	1360000
Total variable costs			
<i>Fixed costs</i>			
Staff costs			
Rent			
Depreciation			
<i>Total fixed costs</i>			
<i>Total costs</i>			

### **ADMINISTRATIVE EXPENSES BUDGET**

Initial data for calculation

Administrative expenses: budgeted fixed costs 840000 hrv (including staff costs 530000 hrv; outside services 70000 hrv; taxes 95000 hrv; interests due 15000 hrv; depreciation 130000 hrv).

Table 27 - Administrative expenses budget

<b>Indicator</b>	<b>Amount, hrv</b>
1. Staff cost	
2. Outside services	
3. Taxes	
4. Interests due on credit	
5. Depreciation	
6. Total fixed costs	

### **SELLING EXPENSES BUDGET**

Initial data for calculation:

Selling expenses: variable costs - 15 hrv per unit (including sales commission - 8 hrv; packaging and shipment – 7 hrv); total fixed costs - 702000 (staff costs - 432000, advertisement — 120000 hrv, warehouses rent – 90000 hrv, equipment depreciation - 60000).

Table 28 - Selling expenses budget

1. Variable costs	
Commission $8 \times 80000=640000$	
Package and shipment $7 \text{ hrv} \times 80000 =560000$	
Total variable costs	
2. Fixed costs	
Staff cost	
Advertisement	
Warehouse rent	
Depreciation of equipment	
Total fixed costs	
3. Total costs (line 1+line 2)	

Table 29 - Budgeted Income Statement, thousand hrv

1. Sales revenue	8000000
2. Variable costs	
Manufacturing	
Selling	
Total variable costs	
3. Contribution margin (line 1 – line 2)	
4. Fixed costs and expenses	
Manufacturing	
Procurement	
Selling	
Administrative	
Total fixed costs	
5. EBIT (line 3 – line 4)	

Profit after tax at 25% tax rate is: \_\_\_\_\_

Depreciation = 520000 + 60000 + 130000 + 60000 = 770000.

Self-financing: \_\_\_\_\_ = \_\_\_\_\_ < 1664000. It is smaller than the amount foreseen for the budget year by the medium-term plan.

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## TESTS

### **1. Sales budget is:**

- a) A plan for the sale of products in physical and monetary terms
- b) Planning (forecasting) of expected sales in physical terms
- c) Planning (forecasting) of expected sales in monetary terms
- d) Your answer

### **2. Sales budget is developed with the breakdown:**

- a) By technological routes of manufacturing products
- b) By calendar periods, market segments and regions
- c) By the types of technological equipment

### **3. Production budget:**

- a) Determines the production volume needed to achieve the sales plan and the need for inventory
- b) Determines the production volume to satisfy the needs in inventory
- c) Determines the production volume to achieve the sales plan
- d) Your answer

### **4. Which of the following budget**

***s contain initial information for planning direct materials?***

- a) Budgeted income statement
- b) Sales budget
- c) Production budget
- d) Cash budget

### **5. Direct material purchases budget is:**

- a) A budget of expected usage of materials in production plus the need to purchase the necessary direct materials
- b) A budget of expected usage of direct materials in production
- c) A budget of expected purchase of the necessary direct materials

d) Your answer

**6. Direct labor budget is:**

- a) A budget of expected direct labor costs
- b) A budget of expected labor costs of all the company employees
- c) A budget of expected labor costs
- d) Your answer

**7. Manufacturing overhead budget:**

- a) Is a plan of manufacturing costs which cannot be directly assigned to products in an economically reasonable way
- b) Shows all expected manufacturing costs with the exception of direct materials costs
- c) Shows all expected manufacturing costs with the exception of direct labor costs
- d) Your answer

**8. Cost of goods sold budget:**

- a) Reflects cost of goods manufactured to be sold in the budget period
- b) Identifies budgeted cost of goods manufactured
- c) Shows the production cost of work-in-process inventory
- d) Your answer

**9. Which of the following budgets are not used for developing the cost of goods manufactured budget?**

- a) Direct materials budget
- b) Direct labor budget
- c) Selling and administrative expenses budgets
- d) Manufacturing overhead budget

**10. Selling expenses budget usually contains information about:**

- a) Packaging costs
- b) Salaries & wages, business trip costs of selling department employees
- c) Goods in transit insurance
- d) All of the above

**11. Administrative expenses budget is:**

- a) A budget of expenses to maintain the company's administration as well as the company's general expenses
- b) A budget of planned costs on manufacturing operations
- c) A budget of planned costs on non-manufacturing and manufacturing operations
- d) Your answer

**12. What is the purpose of the budgeted income statement?**

- a) To determine the expected financial result and distribute profit
- b) To evaluate the company's financial state at the end of an accounting period
- c) To control the efficiency of using financial resources
- d) To assess if the company has enough money to finance its current operations, investment and pay off loans.

**13. Many managers consider financial budgets to be the most important budgeting result. They think so because financial budgets:**

- a) Reflect the efficiency of planned types of activity
- b) Allow revealing problems connected with the deficit of financial resources
- c) Allow evaluating future financial state of the company
- d) All of the above

**14. What is the purpose of the cash budget?**

- a) To assess if the company has enough money to finance its current operations, investment and pay off loans
- b) To identify the amount of the net profit
- c) To evaluate the state of the company's resource sources
- d) To ensure the balance between inflows and outflows of cash

**15. Which indicator ensures the interconnection between the budgeted income statement and the budgeted balance sheet?**

- a) Amount of cash balance
- b) Amount of accounts receivable
- c) Amount of retained earnings

**16. Which indicator ensures the interconnection between the budgeted balance sheet and cash budget?**

- a) Amount of accounts payable
- b) Amount of cash balance
- c) Amount of retained earnings

**Lesson 11. RECONCILIATION OF FUNCTIONAL BUDGETS WITH THE PRELIMINARY BUDGET. IMPROVEMENT OF THE PRELIMINARY BUDGET.**

### **Learning objective**

After completing the lesson, the student will be able to:

- Describe the sequence of iterations, the content of procedures related to reconciliation and consolidation of individual budgets as well as a controller's role in this process

### **LESSON PLAN**

1. Answering control questions on the theme of the lesson
2. Continuing to analyze the situation of Lessons 9 and 10

### **Questions**

1. What caused the need to adjust individual budgets with the subsequent improvement of the functional budgets?
2. What type of research foregoes the development of the updated preliminary and functional budgets?
3. Explain the role of the price forecast and improvement of material and labor cost standards in the procedures of budget development and reconciliation.

### **SITUATION**

The obtained net profit does not allow fulfilling the task for self-financing foreseen by the midterm plan due to changing production, procurement and selling

conditions. Therefore it is required revising the preliminary budget, namely to increase the sales volume in order to raise the net profit.

Table 30 - Initial data to correct the preliminary budget

Selling price per unit, hrv	100
Production and selling variable cost per unit, hrv	40
Fixed costs per year, including depreciation	3690000 770000

Required:

1. Identify break-even sales.
2. Determine minimum sales volume at the foreign market to obtain additional profit. Keep in mind that penetrating a new market will require participating in an exhibition that is expected to cost 120000 hrv.
3. Determine additional sales to 80000 units to bring the result (earnings before taxes) to the value equaling  $EBIT = TSF - \text{Depreciation adjusted}$ .
4. Identify the sensitivity of results to changes in business activity corresponding to the lowest business activity (60000 units) and the highest business activity (100000 units) given the approved product cost and price standards.

### SOLUTION

1. Identifying break-even sales for the changed conditions.

1.1. Compute a new value of the contribution margin ratio  $(P - VC)/P$ .

CMR = \_\_\_\_.

1.2 Increase the fixed costs by the cost of participation in the exhibition:

$FC = 3690 + 120 = 3810$  thousand hryvnias.

1.3.1. Break-even sales is calculated according to the formula:  $B_{\text{sales}} = FC / \text{CMR}$ .  $B_{\text{sales}} = \text{____}$  thousand hryvnias.

2. Minimum sales at the external market for the changed conditions

FC=3810 thousand hrv.

2.1 EBIT corresponding to the required value of the net profit:  $TSP - \text{Depreciation} = (1664 - \text{_____}) / 0,75 = \text{_____}$  thousand hrv.

2.2 Targeted sales =  $\text{Sales}_{\text{targeted hrv}} = (\text{FC} + \text{EBIT}_{\text{targeted}}) / \text{CMR}$

$\text{Sales}_{\text{targeted hrv}} = \text{_____}$  thousand hrv.

$\text{Sales}_{\text{targeted units}} = \text{_____}$  units

3. Additional sales at the external market are  $\Delta \text{Sales} = S_{\text{targeted}} - S_{\text{preliminary}}$

$\Delta \text{Sales} = \text{_____} = \text{_____}$  units

5. Sensitivity of results to changes in business activity.

Table 31 – Analysis of financial results at the lowest business activity of 60000 units per year

<b>Indicator</b>	<b>Amount, thousand hrv</b>
1. Sales revenue, 60000 units×100 hrv	
2. Variable costs, 60000 units ×40 hrv	
3. Contribution margin	
4. Contribution margin ratio	
5. Fixed costs	
6. EBIT	

Table 32 – Analysis of financial results at the highest business activity of 100000 units per year

<b>Indicator</b>	<b>Amount thousand hrv</b>
1	2
1. Sales revenue, 100000 units×100 hrv	
2. Variable costs, 100000 units ×40 hrv	
3. Contribution margin	
4. Contribution margin ratio	

1	2
5. Fixed costs	
6. EBIT	

After correcting preliminary budgets it is necessary to correct functional budgets for new sales volume equaling 83367 units and then to start the development of responsibility centers budgets.

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### ***Lesson 12.* RESPONSIBILITY CENTER BUDGETING**

#### **Learning objectives**

After completing the lesson, the student will be able to:

- Prepare a contribution margin income statement and explain the difference between fixed costs allocated to company departments and fixed administrative expenses
- Compute and explain the return on investment indicator
- Identify residual income as well as understand advantages and disadvantages of this method
- Explain the procedures of budget consolidation

**Key words:** *RESPONSIBILITY CENTER BUDGETING, PERFORMANCE REPORTS, CONTROLLABLE INDICATORS, TRANSFER PRICE*

## LESSON PLAN

1. Answering control questions on the theme of the lesson
2. Continuing to analyze the situation of Lessons 9 - 11
3. Cases on ROI and residual income
4. Tests

### Questions

1. What indicators and reporting forms are used to prepare profit center budgets?
2. Explain the difference between fixed costs allocated to responsibility centers and general overhead expenses. Give some examples of these types of costs.
3. How is it possible to compute the return on investment (asset) on the basis of return on sales and assets turnover?
4. What are the advantages and disadvantages of return on assets as a performance evaluation indicator of an investment center?
5. Why may ROI result in erroneous decision making? How can this problem be solved when using a residual income performance evaluation indicator?
6. What is residual income? Where is this indicator used?
7. What transfer pricing methods do you know and what are conditions of their rational application?

### SITUATION

You need to convert the functional budgets created at the lesson into responsibility center budgets given the targeted sales set at the previous lesson as well as cost and price standards being used in functional budgeting.

A company administration decided to assign the sales department the status of a profit center which buys products at the plant at transfer prices equaling the product cost.

In this case the transfer price should be computed in advance with respect to the original version of the production program (see the budget of the production function) 86000 units.

Required:

- 1) Determine the product cost at which the sales department buys products from the plant.
- 2) Evaluate the purchases budget of the sales department.
- 3) Determine revenues of the sales department.
- 4) Identify the amount of selling expenses (variable and fixed).
- 5) Compute contribution margin of the sales department.

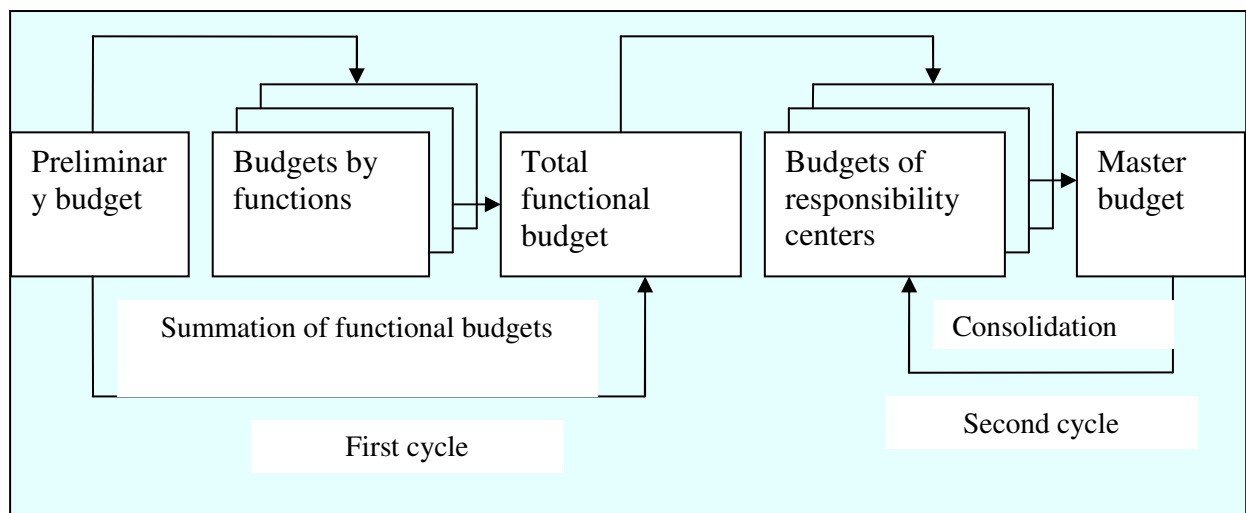


Figure 3 – Role of responsibility center budgeting in developing a master budget

### SOLUTION

A. Compute a transfer price at which the sales department buys products at the plant.

$$\text{Transfer price} = \text{Production budget} / \text{Production program} \quad (8)$$

Transfer price of purchase = 3690 thousand hrv/86000 units=43 hrv/unit.

### SALES BUDGET OF THE SALES DEPARTMENT

B. Sales department revenue: \_\_\_\_\_ units×100 hrv/unit = \_\_\_\_\_ thousand hrv.

C. Budget of intra-plant purchases of the sales department. From the previous lesson it is known that targeted sales are \_\_\_\_\_ units and transfer price is \_\_\_\_\_ hrv per unit.

The budget of intra-plant purchases = \_\_\_\_\_ × 43 = \_\_\_\_\_ thousand hrv.

#### D. SELLING EXPENSES BUDGET<sup>7</sup>

1. Variable expenses (commission plus packaging expenses and others) = \_\_\_\_\_ × (10 + 15) = \_\_\_\_\_ thousand hrv.

2. Fixed selling expenses = 702 thousand hrv (see selling expenses budget).

#### E. CONTRIBUTION MARGIN OF THE SALES DEPARTMENT

Contribution margin of the sales department: Revenues – Selling expenses budget.

Table 33 – Budget of contribution margin, thousand hrv

Indicator	Total, thousand hrv
1 Total revenues	
2 Variable expenses	
3 Contribution margin (line 1 – line 2)	
4 Fixed expenses	
5 Contribution margin (line 3 – line 4)	

**Note:** In the process of responsibility centers budgeting it may happen that business activity program does not meet production constraints. That is why responsibility centers budgeting goes in line with the development of measures to eliminate weaknesses in production and distribution of products.

#### ***Exercise***

Fill in the blanks in the Table below.

<sup>77</sup> See budgeting of the selling function of the previous lesson

Table 34 –Investment center budgets

Indicator	Investment center		
	A	B	C
1. Sales without VAT, million hrv	228000		
2. Operating income, million hrv		120000	78750
3. Assets, million hrv			125000
4. Return on sales, %			21
5. Asset turnover	2,4	3,0	
6. Return on investment, ROI, %	42	30	
7. Cost of capital, %	16		
8. Residual income, million hrv		64000	61250

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### TESTS

**1. A controllability principle means that:**

- a) Managers are responsible for those decisions which are within their authorities
- b) Managers are evaluated on after-tax profit

c) Managers must be able to cut costs connected with uncertain events

**2. *Responsibility center budgeting implies that:***

a) A responsibility center manager is personally responsible for the indicators controlled by the center

b) A responsibility center manager personally takes part in identifying indicators used to evaluate his activity

c) A responsibility center manager submit performance reports on a regular basis

d) All of the above

**3. *For evaluating the performance of a responsibility center companies use a segmented statement of:***

a) Revenue

b) Income (profit)

c) Costs

d) Investment

**4. *What responsibility center's manager is responsible for the return on invested capital?***

a) Engineering cost center

b) Revenue center

c) Profit center

d) Investment center

**5. *Residual income as a performance evaluation indicator of the investment center is:***

a) A share of earned profit being at the disposal of the responsibility center

b) Difference between the actual profit and charge for the capital

c) Contribution margin of the responsibility center

**6. *By its essence the EVA indicator corresponds to:***

a) Increase in residual income of the investment center

b) Increase in the business value

c) Rate of return on the invested capital required by the headquarters

**7. What measures contribute to the EVA growth?**

- a) Growth of the net operating profit
- b) Reduction in the use of fixed assets and working capital
- c) Decrease in weighted average cost of capital
- d) All of the above

**9. Transfer prices are:**

- a) A means of economic motivation and goal congruence of company divisions
- b) Minimize total company taxes
- c) Allow finding non-manufacturing expenditures and losses of specific divisions

**10. What of the given below may be used as a basis to calculate transfer prices:**

- a) Market prices and standard costs
- b) Actual full and variable costs
- c) All of the above

**Lesson 13. BUDGETARY CONTROL AND VARIANCE ANALYSIS**

**Learning objectives**

After completing the lesson, the student will be able to:

- Substantiate the necessity of the budgetary control
- Explain why cost and price standards, benchmarks and other control norms are used in variance analysis
- Explain the objective of management by exception
- Compute static budget variances
- Compute flexible budget variances

**Key words:** CONTROL PROCESS, BUDGETARY CONTROL, MANAGEMENT STYLE, VARIANCE, VARIANCE ANALYSIS

## LESSON PLAN

1. Answering control questions on the theme of the lesson
2. Variance analysis exercises
3. Tests

### Questions

1. Describe the objectives of the control system?
2. What are the three main stages of the control process?
3. What are control standards? How are they set?
4. What are basic principles of correct identification of variances?
5. What is a range of acceptable variances? Give examples.
6. What are the objectives of variance analysis?
7. What is the difference between static and flexible budgets?
8. What are the three types of static budget variances?
9. What are the ways to identify sales volume variances?
10. Explain possible reasons of favorable sales volume variances.
11. Formulate two reasons why the actual costs of materials may differ from the flexible budget values.
12. How is direct materials variance identified? What are the reasons of variance? Give examples.

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### ***Exercise 1***

The following information about goods produced is available in Table 39.

Table 35 – Initial data to compute flexible budget variance

1. Budgeted number of goods produced	10000
2. Actual number of goods produced	9000
3. Materials cost standard, hrv/unit	40
4. Actual usage of materials, hrv	342000
5. Flexible budget material costs, line 2×line 3	

Required:

Fill in the blank in the Table 39 and compute a flexible budget variance.

Determine if the variance is favorable or unfavorable.

### ***Exercise 2***

The estimated sales volume is 5000 thousand units and actual sales volume is 8000 thousand units. The estimated selling price is 15 hrv per unit and actual selling price is 18 hrv per unit. Identify sales price and sales volume variances. Determine if the variance is favorable or unfavorable. Present the results of calculations.

**Note:** The scheme of variance analysis is given below at Figure 1.



1. Standard usage of materials, hrv per unit	40
2. Standard materials price hrv per kg	5,0
3. Actual materials price, hrv per kg	6,0
4. Actual number of units produced	11000
5. Actual materials usage, kg	60000
6. Actual materials cost, hrv (3)×(4)	
7. Standard usage of materials for the actual activity level, (1)×(5), kg	
8. Flexible budget materials cost, hrv, (2)×(7)	
9. Materials cost variance, (6)–(8)	

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## TESTS

**1. Budgetary control tasks are:**

- a) Specifying and correcting budgets
- b) Comparing actual results with control standards
- c) Taking measures to eliminate unfavorable variances
- d) All of the above

**2. Appearing from time to time insignificant variances are normal phenomena and may arise even when there is a hard cost control:**

- a) Yes
- b) No

**3. Reaction to variances exceeding a predetermined limit is the best way to regulate variances:**

- a) Yes
- b) No

**4. Static budget is applied to:**

- a) Analyze revenue variances
- b) Control costs
- c) Analyze contribution margin variances

**5. Difference between actual budget values and flexible budget values characterizes:**

- a) Cost variances
- b) Revenue variances
- c) Contribution margin variances

**6. Unplanned material losses cause favorable profit variance:**

- a) Yes
- b) No

**7. Which of the following statements is correct?**

- a) Flexible budget help the enterprise to control sales volume
- b) Flexible budget is prepared for a planned activity level
- c) Flexible budget is similar to the static budget

d) Flexible budget creates a useful base for comparing actual and budget costs

**8. Why are technical cost standards and planned prices necessary?**

a) They are the means of measuring the efficiency of using resources

b) They act as a tool to control responsibility

c) They allow taking corrective measures after the analysis and interpretation of variances

d) All of the above

**9. Which of the following departments are responsible for substantiating planned sales prices?**

a) Technological and planning departments

b) Procurement and planning departments

c) Planning and sales departments

d) Your answer

**10. Which of the following departments are responsible for labor intensity standards?**

a) Technological and planning departments

b) Planning and accounting departments

c) HR management and accounting departments

d) Your answer

**11. Labor efficiency variance equals the difference between actual and standard labor rates multiplied by the standard labor efficiency:**

a) Yes

b) No

**12. Labor rate variance equals the difference between actual and standard labor efficiency multiplied by the standard labor rate:**

a) Yes

b) No

**13. Identify revenue variance using the following data:**

Revenue, UAH		Quantity sold, units		Price UAH/unit	
Actual	Budget	Actual $q_e$	Budget $q_s$	Actual $p_e$	Budget $p_s$

212500	212800	1120	1250	170	190
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a) 1900;      b) (-300) F;      c) (-300) U.

**14. Identify sales price variance using the following data:**

Revenue, UAH		Quantity sold, units		Price UAH/unit	
Actual	Budget	Actual $q_e$	Budget $q_s$	Actual $p_e$	Budget $p_s$
212500	212800	1120	1250	190	170

a) 22400 F;      b) (-22400) U;      c) 10900 F.

**15. Identify flexible budget variance using the following data:**

Revenue, UAH		Quantity sold, units		Price UAH/unit	
Actual	Budget	Actual $q_e$	Budget $q_s$	Actual $p_e$	Budget $p_s$
212500	212800	1120	1250	190	170

a) (-10900 U);      b) 22100 F;      c) (-22100) U.

**16. Identify flexible budget variance using the following data:**

Budgeted production volume, units	10000
Actual production volume, units	9000
Budgeted material costs, UAH/unit	40
Actual material costs, UAH	342000

a) 18000 U;      b) 18000 F;      c) 58000 U;      d) 58000 F.

**17. Identify material price variance using the following data:**

Material costs, UAH		Material usage, kg		Price UAH/kg	
Actual, $3_e$	Budget, $3_s$	Actual $q_e$	Budget $q_s$	Actual $p_e$	Budget $p_s$
1353750	1368000	6412	6840	211,13	200

a) 87400 U;      b) (-7400) F;      c) 71350 U;      d) (-13680) F.

**18. Identify labor efficiency variance using the following data:**

Wages		Labor intensity, hrs		Price per hour	
Actual, $3_e$	Budget, $3_s$	Actual $q_e$	Budget $q_s$	Actual $p_e$	Budget $p_s$
37800	39976	5000	4997	7,56	8,00

a) (-176) F;      b) 24 U;      c) 2176 U;      d) (-24) F.

**19. Identify labor efficiency variance using the following data:**

Wages		Labor intensity, hrs		Price per hour	
Actual, $z_e$	Budget, $z_s$	Actual $q_e$	Budget $q_s$	Actual $p_e$	Budget $p_s$
37800	39976	5000	4997	7,56	8,00

a) (-2176) F; b) 2200 U; c) 2176 U; d) (-2200) F.

**20. Identify material usage variance using the following data:**

Material costs, UAH		Material usage, kg		Price UAH/kg	
Actual, $z_e$	Budget, $z_s$	Actual $q_e$	Budget $q_s$	Actual $p_e$	Budget $p_s$
1354320	1280600	6840	6403	198	200

a) 87400 U b) 73720 F c) (-73720) U d) (-87400) F

**21. Identify material price variance using the following data:**

Material costs, UAH		Material usage, kg		Price UAH/kg	
Actual, $z_e$	Budget, $z_s$	Actual $q_e$	Budget $q_s$	Actual $p_e$	Budget $p_s$
1354320	1280600	6840	6403	198	200

a) (-13680) F b) 1380 U c) 8700 U d) (-8700) F

**22. Identify labor efficiency variance using the following data:**

Wages		Labor intensity, hrs		Price per hour	
Actual, $z_e$	Budget, $z_s$	Actual $q_e$	Budget $q_s$	Actual $p_e$	Budget $p_s$
37800	38000	5000	4750	7,56	8,00

a) (-2200 UAH) F b) 200 UAH U c) 2000 UAH U d) 2200 UAH F

**23. Identify labor rate variance using the following data:**

Wages		Labor intensity, hrs		Price per hour	
Actual, $z_e$	Budget, $z_s$	Actual $q_e$	Actual, $z_e$	Budget, $z_s$	Actual $q_e$
37800	38000	5000	4750	7,56	8,00

a) (-2200 UAH) F b) 200 UAH U c) 2 000 UAH U d) (-200 UAH) U

**24. Identify material usage variance using the following data:**

Material costs, UAH		Material usage, kg		Price UAH/kg	
Actual, $z_e$	Budget, $z_s$	Actual $q_e$	Actual, $z_e$	Budget, $z_s$	Actual $q_e$
1353750	1368000	6412	6840	211,13	200

a) 87400 UAH b) (-5600 UAH) F c) (-4250 UAH) U d) (-4250 UAH) F

**25. Identify material price variance using the following data:**

Material costs, UAH		Material usage, kg		Price UAH/kg	
Actual, $3_e$	Budget, $3_s$	Actual $q_e$	Budget $q_s$	Actual $p_e$	Budget $p_s$
1353750	1368000	6412	6840	211,13	200

a) 8400 U

b) (-87400) F

c) 71350 U

d) (-13680) F

**Lesson 14. RELEVANT COSTS FOR DECISION MAKING**

**Learning objectives**

After completing the lesson, the student will be able to:

- Understand such terms as relevant costs, sunk costs, opportunity costs and marginal costs
- Name three basic features of relevant costs
- Use these notions in simple decision-making scenarios

**Key words:** *RELEVANT COSTS, SUNK COSTS, SPECIAL ORDER DECISION, OUTSOURCING*

**LESSON PLAN**

1. Answering control questions on the theme of the lesson
2. Analyzing a situation
3. Tests

**Questions**

1. What is relevant information?
2. What are relevant information criteria?
3. What are relevant costs? Why are past costs irrelevant?
4. All future costs are relevant. Do you agree with this statement?
5. Why should decision-makers focus their attention on relevant costs only?
6. Are sunk costs of the past relevant?

7. Are direct materials and labor costs always relevant? Give examples explaining your answer.

8. Variable costs are always relevant and fixed costs are always irrelevant. Do you agree with this statement? Why?

9. What are opportunity costs?

10. On what principles is based the analysis of information for making decisions on special order?

11. Why are administrative and selling expenses irrelevant in make or buy decisions? Give examples when similar expenses are relevant.

12. What qualitative indicators should be taken into account while analyzing make or buy decisions?

13. Give examples of opportunity costs which will be relevant in make or buy decisions.

14. What production constraints should be taken into account when planning the production output in the short run?

### **Tasks for class discussion**

(a) A company is planning to replace professional legal consultants hired from outside the company by its own newly trained staff. At present the staff members work at the company's secretariat and after taking on new responsibilities will not get a pay raise. They will be assigned to continue their previous duties. At the moment the annual amount of salary paid to these staff members is \$100000.

Is the amount of \$100000 relevant in making the decision about replacing the professional consultants?

(b) An enterprise is considering the improvement of its computer system. The modernization will result in the growth of a service contract payment from \$30000 to \$40000.

Is the service payment a relevant cost for making the modernization decision?

(c) To make a special order, an enterprise needs 100 kg of material X; 200 kg of material X (at the price of \$10 per kg) are already in stock. Before getting this

special order the enterprise was going to get rid of it as unnecessary, since this material is considered to be obsolete. What is the relevant cost of the material X in making a decision about accepting or rejecting the special order?

***Situation***

A manufacturing company is allocating its manufacturing overhead costs using an overhead allocation rate of 200% of direct labor costs. The given overhead allocation rate is computed using the data in Table 42.

Table 36 – Initial data to analyze the situation

<b>Indicator</b>	<b>Amount, \$</b>
Variable manufacturing overhead costs	64000
Fixed manufacturing overhead costs	96000
<b>Total manufacturing overhead costs</b>	
Direct labor costs	80000

Use the data above to solve the following two problems.

***Problem 1***

The product selling price is \$22 per unit. The company obtained a proposal from a foreign company to produce 2000 units at the price of \$16 per unit. The company has all resources to produce additional number of products.

Is it worthwhile to accept a special order, if the company's fixed costs remain unchanged? Give reasons to your answer. To do this it is necessary to:

a) Evaluate relevant costs/benefits connected with the company's administration decision to accept a special order.

b) Compute net (differential) costs/benefits in case of accepting a special order and on this basis make recommendations to the company's administration.

c) Name and briefly explain three qualitative factors which should be taken into account by the company's administration before making the final decision.

Table 37 – Relevant costs analysis

Indicator	Amount, \$ per unit	
	Total	Relevant
Raw materials	8	
Direct labor costs	4	
Manufacturing overhead costs including	8	
Variable overhead costs		
Fixed overhead costs		
Total	20	

***Recommendations to solving the problem***

Special order decisions involve determining whether a special order from a customer should be accepted. This type of decision is usually a one-time order that will not impact a company’s regular sales. Before considered a special order, the company must have idle capacity, i.e., it should have the ability to complete the special order without expanding its operations. As a rule all variable costs are relevant and fixed manufacturing costs, selling and administrative expenses are irrelevant. In case of accepting a one-time order additional profit/loss is identified as a difference between the order price and relevant costs.

**Note:** When starting to analyze the problem you should use the data of Table 42 to compute the percentage of variable overhead costs in total overhead costs. Then you should split manufacturing overhead costs to variable and fixed (Table 43) and compute the amount of relevant costs per unit and per batch of goods.

***Problem 2***

Information related to producing a spare part of a product is given in Table 43. The spare part may be purchased at the outside at \$20. Make a decision if it worthwhile to continue the production of a spare part or it is better to buy it at the outside provided that the fixed costs remain the same.

**Note:** A criterion for make or buy decisions is the difference between relevant costs of different possible options.

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## **TESTS**

**1. *Widget, Inc. wants to replace the old equipment. What is relevant while making this decision?***

- a) Accumulated depreciation on the old equipment
- b) Accumulated depreciation on the old equipment and the price of buying new equipment
- c) The price of buying new equipment and possible selling price of old equipment

**2. 130 million UAH were assigned and spent to build a new production department. Now it is clear that it is necessary invest additional 120 million UAH to launch it. Net present value of the investment project is 230 million UAH. *Is it worth continuing the construction of the plant?***

- a) Yes
- b) No

**3. *Special order decision is:***

a) One-time order for selling products at the price lower than the ordinary selling price or the price less than the product cost

b) One-time selling products without concluding a preliminary contract

c) Decision on purchasing materials for producing exclusive products

**4. Do you agree with the statement that a one-time special order will never be accepted at the price lower than the product cost?**

a) Yes

b) No

**5. Which non-financial indicators should be taken into account when making the final decision on a special order?**

a) Possibility to ensure product quality

b) Pricing policy

c) Necessity to change the production technology

d) All of the above

**6. Total costs for making a product are \$5, 30% of which are fixed. Relevant costs for make or buy decision analysis are:**

a) 5,0; b) 1,5; c) 3,5; d) 7,0.

**7. The selling price per unit is \$75. Gadget, Ltd accepts a special order to produce 1,500 units of products at \$50 per unit. Manufacturing costs are \$50, 80% of which are variable. In case of idle capacities additional profit equals:**

a) 9 000; b) 7 500; c) 37 500 loss; d) 7 500 loss.

**8. Which costs do not change if the activity of one of the manufacturing departments is temporarily terminated?**

a) Direct labor costs

b) Direct materials costs

c) Direct overhead costs

d) Administration and selling fixed expenses allocated to this department

**9. A computer shop can sell an old computer for \$600, the initial price of which is \$900. To be sold the computer must be modified that will require the shop engineer's additional 20 working hours that are free from other assignments. The**

engineers' labor rate is 10 dollars per hour. *What is the net relevant revenue related to the decision on selling the computer?*

- a) Net relevant loss is \$500
- b) Net relevant loss is \$300
- c) Net relevant revenue is \$400
- d) Net relevant revenue is \$600

**10.** A manufacturing enterprise without reserve capacities can accept a special order only by refusing current works amounting to 10000 UAH. The price of the special order is 15000 UAH. Direct labor costs in both variants are similar and make up 7 000 UAH. *What are opportunity costs in case of accepting the special order?*

- a) 3000; b) 15000; c) 8000; d) 10000.

**11.** *When starting the revision of the product mix first of all it is worth increasing the production of products:*

- a) Having maximum profit per unit
- b) Having maximum return on sales
- c) Having maximum contribution margin ratio

**13.** *When making a decision on the optimum production program under conditions of constraints the basic relevant indicator will be:*

- a) Contribution margin per unit
- b) Differential costs<sup>8</sup>
- c) Opportunity costs
- d) Contribution margin per unit of the limiting factor

## ***Lesson 15. STRATEGIC COST MANAGEMENT TOOLS***

### **Learning objectives**

After completing the lesson, the student will be able to:

- Explain the necessity of strategic cost management within the life cycle
- Reveal the main stages of the product value chain analysis for buyers
- Show advantages and disadvantages of target costing

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<sup>8</sup> Difference between costs of two alternative decisions.

– Use contemporary cost management methods in the process of continuous improvement

– Characterize four groups of costs in the quality assurance program

– Use financial and non-financial indicators in the process of improving the quality

**Key words:** STRATEGIC COST MANAGEMENT, STRATEGIC POSITIONING, VALUE CHAIN ANALYSIS, COST FACTORS ANALYSIS, TARGET COSTING, KAISEN COSTING, TOTAL QUALITY MANAGEMENT

### LESSON PLAN

1. Answering control questions on the theme of the lesson and discussing key issues

2. Performing exercises

3. Tests

### Questions

1. How do you understand the role of strategic cost management within the life cycle? How does it differ from the conventional cost accounting system?

2. What is a competitive advantage?

3. Name the three variants of strategic positioning of the company.

4. Describe the five main stages of building and using a value chain.

5. Give examples of structural and operating (functional) cost factors.

6. What is target costing?

7. What are the two parameters needed to calculate the target cost?

8. At what stage of full product life cycle is target costing usually applied?

9. Explain the difference between target costing and conventional methods of technological innovation management.

10. What are peculiarities of product costing in the system of continuous improvement (kaizen costing)?

11. What does the term «cost of nonconformance» mean?

12. Name the four categories of costs related to ensuring quality conformance.

13. How does the quality conformance differ from the quality of the construction itself? Explain using an example.

14. Give three examples for each of these categories:

- a) Prevention costs.
- b) Quality assessment costs.
- c) Internal nonconformance costs.
- d) External nonconformance costs.

15. What is the difference between the external and internal nonconformance?

16. Do you agree with the statement that «companies' managers should focus their attention on financial indicators of quality, since they directly affect the profit»? Give reasons for your answer.

17. Give two examples of non-financial indicators affecting the level of a customer's satisfaction.

### **Tasks for class discussion**

1. The system of total quality management should be set up simultaneously with the management accounting system which would allow tracking the ratio of quality costs to benefits obtained as a result of reducing defects at all key control points. It may happen that costs related to implementing the total quality management system and its maintaining will exceed benefits from its using.

2. Kaisen costing system is an intermediate point between the responsibility accounting system and operation accounting in terms of detailing. As you know, all these systems are aimed at implementing a local control and improvements in the production process.

3. The implementation of kaisen costing may be a good experiment for the company starting to think about local improvements. It does not require lots of implementation costs and special programs and the company's administration can easily include workers in kaisen-groups in the most reasonable way.

4. Organizations striving to cut quickly the most part of production costs should not implement target costing since it is a long-term process with high degree

of uncertainty. It is worthwhile to implement kaizen costing because this method contributes to reducing the greater part of costs. Kaizen costing and target costing systems cannot be called complementary, they are interchangeable.

### ***Exercise***

According to marketing research findings a company decided to develop a new device. The expected selling price per unit is 200 USD. And targeted sales volume is 10 thousand units per year. The targeted return on sales is 20% ( $ROS = P \times 100\% / \text{Sales}$ ). Compute a target cost of one device.

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## **TESTS**

***1. Which of the following are included as components of the value chain?***

- a) Research and development and design
- b) Supplier and production related activities
- c) Marketing and distribution activities

d) All of the above

**2. Which of the following components of the value chain is designed to provide information to potential customers and make products and services accessible to customers?**

- a) Research and development and design
- b) Supplier and production related activities
- c) Marketing and distribution activities
- d) Customer service

**3. Which of the following components of the value chain deals with resources consumed by supporting the product or service after it is sold to customers?**

- a) Research and development and design
- b) Supplier and production related activities
- c) Marketing and distribution activities
- d) Customer service

**4. Next Generation Information Systems, Inc. pays salaries to a number of computer scientists to design and develop computer operating systems. Into which component of the value chain would this cost be classified?**

- a) Research and development and design
- b) Suppliers and production
- c) Distribution and marketing
- d) Customer service

**5. Superior Products, Inc. is interested in producing and selling a deluxe electric razor. Market research indicates that customers would be willing to pay \$80 for such a razor and that 40,000 units could be sold each year at this price. The current cost to produce the razor is estimated to be \$68.**

**a) If Superior Products requires a 20% return on sales to undertake production, what is the target cost for the new razor?**

- a) \$16
- b) \$54,4

c) \$64

d) \$68

b) Superior has learned that a competitor plans to introduce a similar razor at a price of \$75. *If Superior requires a 20% return on sales, what is the target cost for the new razor?*

a) \$60

b) \$64

c) \$68

d) \$15

**6. Structural factors specifying costs include:**

a) Achieving a critical investment amount; technology at each stage of the value chain, degree of vertical integration; availability of experience, width, complication and complexity of product (service) mix.

b) Total quality management, degree of vertical integration; availability of experience, achievement of a critical investment amount, usage of relations with suppliers and customers.

c) Degree of employees' participation in continuous perfection of production processes, rational usage of production capacities, total quality management, efficiency of a plant layout, product configuration, usage of relations with suppliers and customers.

**7. Functional factors specifying costs include:**

a) Achieving a critical investment amount; technology at each stage of the value chain, degree of vertical integration; availability of experience, width, complication and complexity of product (service) mix.

b) Total quality management, degree of vertical integration; availability of experience, achievement of a critical investment amount, usage of relations with suppliers and customers.

c) Degree of employees' participation in continuous perfection of production processes, rational usage of production capacities, total quality management,

efficiency of a plant layout, product configuration, usage of relations with suppliers and customers.

**8. *Difference between target costing and kaizen costing is that:***

- a) Target costing is implemented at the production stage
- b) Target costing aims to optimize technical realization of product design by criteria of cost-effective product supply to the market
- c) There is no difference

**9. *Formula to calculate price using target costing is as follows:***

- a)  $\text{Price} = \text{Cost} + \text{Profit}$
- b)  $\text{Price} - \text{Profit} = \text{Cost}$
- c)  $\text{Price} - \text{Cost} = \text{Profit}$
- d) No right answer

**10. *The process of reducing costs in the system of continuous improvement is called:***

- a) Costing without continuous improvement
- b) Strategic costing
- c) Target costing based on large innovation
- d) Market costing
- e) Kaizen costing or making improvements in the production process in small incremental portions

**11. *At what stage of the life cycle can be applied kaizen costing?***

- a) At the designing stage
- b) At the research and development stage
- c) At the production stage
- d) At the stage of after-sale service and utilization

**12. *A distinctive feature of kaizen costing is:***

- a) Analyzing variants of constructive implementation of product functions
- b) Aiming the target cost at the required cost level in the process of development

c) Involving employees in ensuring the reduction of production costs according to the given level

**13. Which of the following costs belong to the group of prevention costs?**

a) Market research; certification of suppliers' certification, introduction of ISO 9000

b) Cost of returning the defective products, reworking of redeemable defective products, underproduction costs

c) Checkup of measurement devices, technical quality control

**14. Which of the given below costs belong to internal failure costs?**

a) Value analysis

b) Warrantly repair expenses

c) Redeemable defective product costs

d) Current product quality control

**15. If the forecasted selling price is 100 UAH, sales rate of return is 25%, target cost is:**

a) 125 UAH; b) 80 UAH; c) 75 UAH

**16. Visual presentation of causal relationships among the elements of strategy is:**

a) Strategic balances method

b) Strategic map of the company development стратегическая карта развития предприятия;

c) Portfolio analysis

d) Balanced scorecard system

**17. Strategic management accounting:**

a) Is obtaining and analyzing information about a business and its competitors to use while developing and implementing a business strategy in particularly information about relative levels and tendencies of real costs and prices, sales volumes, market share, cash flows and a share of total company resources belonging this business

b) A system of collection, reflection and aggregation of information about activity of organization divisions (segments)

c) A variant of accounting including fixation of primary data at the moment of their appearance, registration of the obtained information and its usage

d) A system of using economic information about costs and results of activity to manage the enterprise

**18. *Establishment of the controlling system at the organization depends on:***

a) Factors of external and internal environment

b) Combination of elements of budgeting and accounting policy

c) All answers are true

**19. *Controlling service should be established at all enterprises without exception:***

a) Yes b) No c) Everything depends on the situation

**20. *The reasons of failure to establish a controlling system at the organization may be:***

a) Undermaintenance of analytical accounting

b) Absence of a detailed plan to organize a controlling system

c) Insufficient personnel motivation

d) All of the above

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