

Selected Learning Materials

Operational costs

AIM OF THE MODULE

- to acquire knowledge of the structure of company expenses (expenditures), costing principles, pricing, earning opportunities.
- to develop practical skills of calculating the cost of wood products, pricing and performance calculation, applying the principles and knowledge acquired while studying theory.

ASSESSMENT FORM

Students will be able

- To master the basic principles, importance and tasks of cost classification, accounting and calculation in business organisation and management.
- To master the basic principles of price calculation and profit determination, the basic principles of budget development and control, as well as be able to determine the most important costs for decision-making.
- To acquire knowledge and skills in calculating operating costs and production costs in order to effectively manage the cash flow of the company and ensure profitability in production.

TARGET GROUP

Wide range of learners of various profiles and scales of woodworking and furniture manufacturing companies, as well as different levels of responsibility and competence - from employees directly involved in production technological processes to a medium-sized woodworking plant manager.

WORK-BASED-LEARNING

The implementation of the project is based on the allocation of fields of responsibility based on the area in which their company works, or personal interest. Work based learning is following all the models from the beginning to the end of the studies.

All the topics have been chosen to be relevant to the working environment in a wood processing or furniture company, and all the discussions and case studies have been related to a real work environment, including practical, drafting, layout, planning work. This is also reflected in the Methods and ideas for learning process and Assessment of acquired learning outcomes (optimal level)).

- **Digitalisation** is emphasised in the topic: 1.2.2. "Distribution of costs by type of costs, place of cost origin, cost carriers or calculation objects".
- **Green skills** are covered in the topic: 2.1.3. "Costs of long-term investments. Fixed asset depreciation calculation methods and their impact on costs".

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READING LIST

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2017	Kalčinskis, G. Kalčinskaitė - Klimaitienė, R. Buhalterinė apskaita. “Accounting”	Vilnius: Pačiolis
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2014	Gimžauskienė, E., Jurkštienė, A., Klovienė, L., Valdymo apskaitos praktinės užduotys. “Management accounting practical exercises”	Tecnologija
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2013	Antanavičienė, J., Šimelytė, A., Verslo įmonės ekonomikos pagrindai. “Basics of business enterprise economics”	Tecnologija
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	Žiedinė ekonomika. “Circular economy”	https://am.lrv.lt/lt/veiklos-sritys-1/atliekos/ziedine-ekonomika
	Žiedinė ekonomika. 2021-2027 m. Veiksmų programos 2.6 uždavinys "Skatinti perėjimą prie žiedinės ekonomikos ir tausiai išteklius naudojančios ekonomikos" “Circular Economy - Objective 2.6 of the Programme of Action 2021-2027 "Promote the transition to a circular and resource-efficient economy"	https://am.lrv.lt/uploads/am/documents/files/2021-2027%20m_%20ES%20finansavimas%20(1)(2).pdf
	Apskaitos ir verslo valdymo programa. Demo versija Accounting and business management software. Demo version	https://www.stekas.lt/products/stekas-plius/

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6. **FINAL PROJECT TASK 2** (*Laila Kelmere*) **(OPTION 2)**

Topic:

“OPERATIONAL COSTS”

Author

Giedrė Gudeliūnienė

Module "Operational costs"

Lektorė Giedrė Gudeliūnienė

Concept of costs and expenses

Expenditure is the monetary outlays, consumption of assets and services, and debts incurred by an enterprise during an accounting period in connection with the enterprise's business activities; the amount of money spent by individuals in connection with the generation of their annual taxable income and provided for assessment in the law governing income taxation.

Costs: the valuation of the economic resources consumed in the production of goods and services. Costs may be classified in various ways, operational, selling, general and administrative, labor, etc. Costs differ from expenses in that the latter imply the disbursement of money and do not necessarily relate to the production of goods and services.

Classification of costs

Proper classification of expenditure helps to collect information on expenditure more quickly and objectively from different aspects and at different levels of management. Only a well-designed cost classification system can help managers to make the right management decisions and achieve their objectives. In each case, expenditure should be classified according to the objectives pursued. Depending on the objectives pursued by the enterprise, the situation and the operational strategy, the attributes for classifying expenditure must be selected. The possible attributes for classifying expenditure and the types of expenditure that can be distinguished on the basis of these attributes are shown in Table.

1. Table 1. Types of expenditure

Attributes of expenditure classification	Types of expenditure
1. In relation to the production process	Main and overhead
2. By offsetting against the cost of production or other costing object	Direct and indirect
3. By role in the production process	Productive and non-productive
4. In relation to production volume	Fixed and variable
5. By type of planning	Planned and unplanned
6. By calendar period	Reporting period and future periods

7. By type of expenditure	Materials (direct and indirect), labor (direct and indirect) and total economic
8. In terms of the length of time taken to achieve the objectives	Long-term and short-term
9. By cost avoidance potential	Avoidable and unavoidable
10. By cost controllability	Controlled (managed) and uncontrolled (unmanaged)
11. By place of generation	Production units and administrative and service units
12. By type of business activity	Main production, ancillary production, logistics, marketing, management, etc.
13. Other features	

New cost classification features are being sought, as at present, according to most authors, there is no good cost classification scheme.

Practical exercise.

Concept of revenue

Income is the money received by an enterprise or an individual as a reward for work, effort or as a return on investment. Income may be received in cash or in kind. Revenue is often confused with profit, but they are fundamentally different, as revenue is just the recorded income (not to be confused with cash flow), while profit is the earnings after deducting from revenue all the costs incurred. Revenue can include not only sales revenue but also other operating revenue (which is usually not included in sales revenue), income from financial activities, or earnings. When analyzing the revenue of an enterprise, it is possible to break it down not only into sales and other revenue, but also to analyze the sales revenue itself by operating segments. Such segmentation must be disclosed by companies in their financial statements. Of course, this is usually only done by large companies that sell more than one product and service.

Product and period costs

The level of period costs is independent of the volume of output. The level of product costs varies in direct proportion to the volume of output. These costs consist of three types of production costs: direct materials, direct labor and overheads.

In practice, many enterprises classify costs according to their behavior or dependence on the volume of activity, i.e. into variable and fixed costs.

Variable costs are costs that vary with the volume of production. For example, if a company produces furniture, each chair accumulates costs for wood, foam, tapestry and so on. These costs are the same for each chair and are called variable costs because their total sum varies with the number of units produced.

Fixed costs, which do not vary with changes in production or sales volumes. Regardless of how much or how little a firm produces, it must pay, for example, land rent, property taxes, insurance and interest on the initial capital (if borrowed). Depreciation of fixed assets is also calculated at set rates, regardless of changes in production.

Total costs are the sum of fixed and variable costs for any given level of output.

Costing systems. Costing.

There are two costing systems:

- *full cost;*
- *partial (direct cost).*

Full costing is where both variable and fixed costs are included in the cost of the product. In the case of partial costing, only direct, variable costs are included.

Two conceptual approaches to costing can be distinguished: order-based and process-based. In the costing of products using the order method, all costs are allocated to (and accumulated for) the cost of specific products (or batches, orders) on an order-by-order basis, regardless of the accounting periods involved. In the process costing approach, all costs incurred by the enterprise are allocated to all products produced during the accounting period, and the unit cost of the output is determined by dividing the total amount of costs incurred during the accounting period by the quantity of output produced during that period.

Inclusion of indirect costs in the cost of products. Once all the indirect costs of the enterprise have been allocated to the production cost centers, the final step in the costing process is to allocate them to the products, i.e. to include them in the cost of the specific products (assuming that direct production costs have already been allocated to the individual products or orders).

Pricing

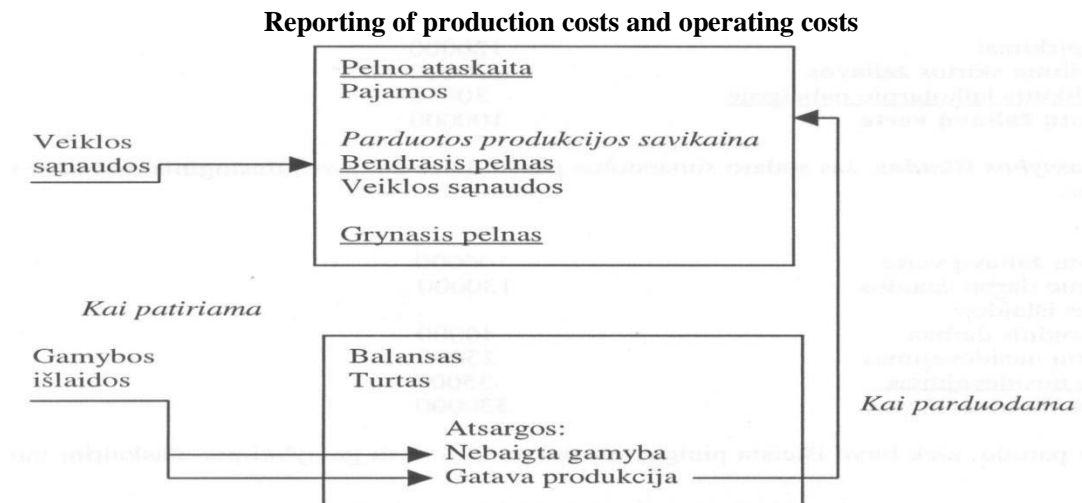
- Companies usually use the following reasoning when setting price: Price too low: no profit.

- Possible price: Cost of production.
- Prices of competitors and substitutes;
- Unique characteristics of the product;
- Price too high: Impossible to create demand
- The price to be set is the intermediate price between the price that does not generate any profit and the price when the product is no longer in demand.
- The cost of the good sets (usually) the lower limit of its price, while the consumer's perceived value of the good is the upper limit.

The firm wants to set a price that covers its costs of production, supply and sale of the good, including a premium for the firm's effort and risk, i.e. it always wants to set a price that covers its total cost of production.

Practical exercise.

Determining and analysing performance



Practical exercise.

Topic:

“CALCULATING THE COST AND PRICE OF PRODUCT”

Author

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Module “Operational Costs”

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Part 1.

- ▶ **Production resources.**
- ▶ **Concept of enterprise costs.**
- ▶ **Classification of costs (by attributes).**
- ▶ **Enterprise income.**

1. Topics analyzed

- ▶ **Concept of corporate costs.**
- ▶ **Understanding corporate costs.**
- ▶ **Classification of expenditure by time factor;**
- ▶ **Classification of expenditure according to the source of incurrence;**
- ▶ **Classification of costs according to their relationship to the cost object;**
- ▶ **Classification of expenditure according to the behavior of the cost driver.**
- ▶ **Understanding income.**
- ▶ **Sources of revenue generation.**

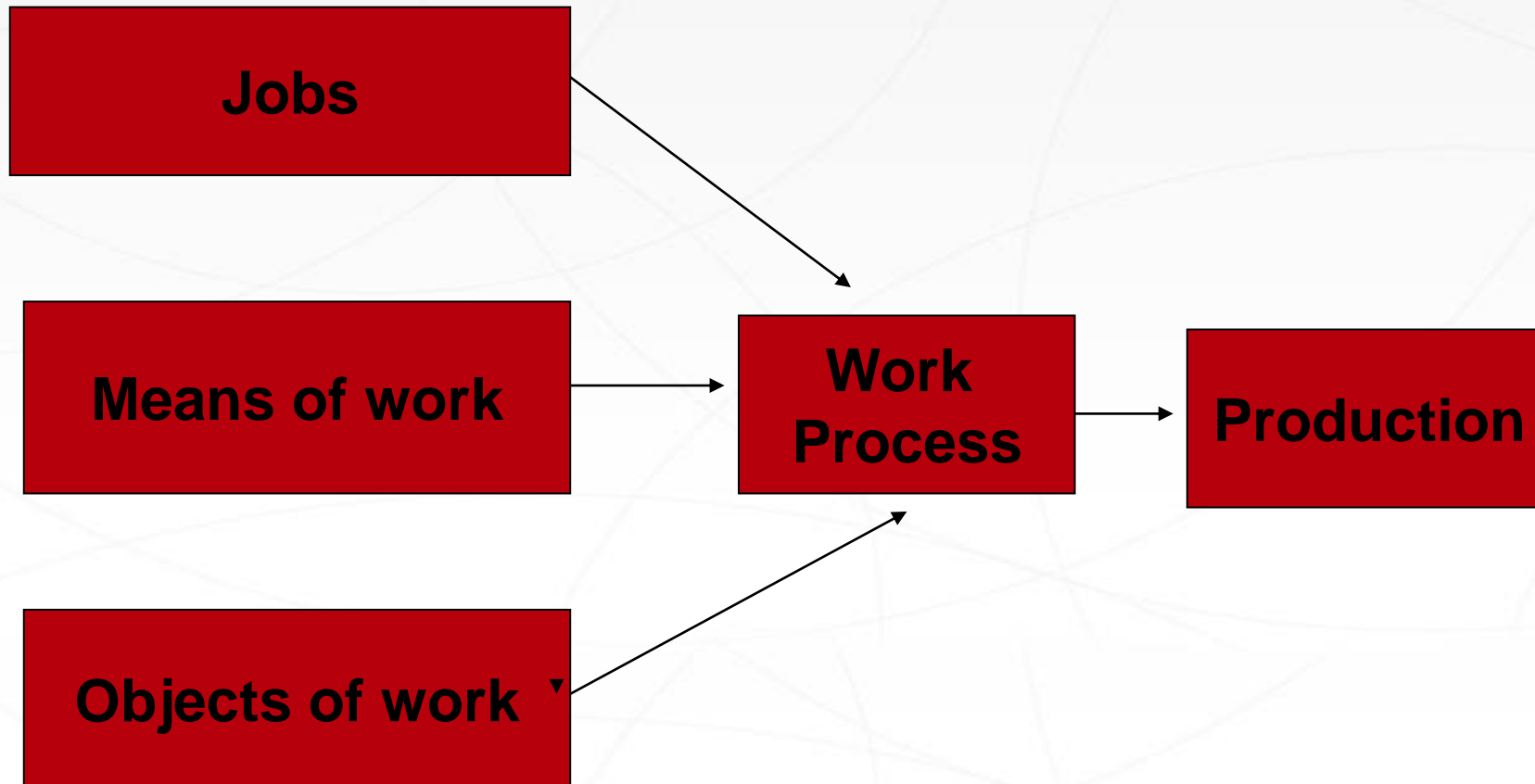
Production Theory

Production is the process by which inputs used to produce products and services are converted into finished goods.

Groups of production resources (or factors):

- lands,
- work,
- capital.

Elements of the production process



Concept of expenditure

- **Costs** are one of the most important sources of information for making management decisions.
- Costs can be described by various definitions, such as:
- It is the resources consumed or the money to be paid for goods or services; anything that reduces profit and increases loss; a loss that reduces the assets of an enterprise.
- Accounting Standard 11 'Costs' states that costs are the consumption of assets or services and the reduction in the value of assets during the reporting period.

Costs. Concept.

There are other terms related to costs - **inputs, costs**. The concept of cost is used in the context of determining financial performance. The definition of cost in the Income Tax Act is as follows: **Costs are all expenses incurred in the production of income.**

- Only that part of the costs incurred in producing the goods or services sold during the reporting period becomes an expense.
- **Costs** include both costs and inputs.

Since it is not a Lithuanian term, but a borrowing from other languages, it should not be used at all.

Object of expenditure

- *An object* of expenditure may be an activity or operation that incurs raw material, labor or other costs.
- *An object* of expenditure may be a product or service, a project or unit, or even a project. The same expenditure may be the subject of more than one object of expenditure at the same time. For example, raw material costs may be part of the cost of a product as well as the cost of a production unit.

Expenditure is usually classified for the following purposes:

1. To calculate the cost of production;
2. To make management decisions;
3. To control, regulate and forecast;
4. To analyze corporate performance.

Depending on the objectives of the enterprise and the nature of its activities, the attributes for classifying expenditure should be selected.

Expenditure is classified according to the following attributes:

- Classification of expenditure by time factor;
- Classification of expenditure according to the source of incurrence;
- Classification of costs according to their relationship to the cost object;
- Classification of expenditure according to the behavior of the cost driver.

Discussion. Practical exercises

- On the classification of costs of wood and furniture product enterprises according to the time factor, according to the source of generation, according to the relationship with the cost object, and according to behavior as the cost factor changes. Compare the different attributes of cost classification.
- Give examples of classification according to the attributes discussed.

Revenue

- Understanding income.
- Classification of income.
- Earning income.

Revenue

- *Revenue* - the funds received by an enterprise or individual as a reward for work, effort or as a return on investment. Income may be received in cash or in kind. Revenue is often confused with profit, but they are fundamentally different, as revenue is just the recorded income (not to be confused with cash flow), while profit is the earnings after deducting from revenue all the costs incurred.

Revenue

- *Revenue* may include not only sales revenue, but also revenue from other activities (which are usually not included in sales revenue), revenue from financial activities, or earnings. When analyzing a company's revenue, it can be broken down not only into sales and other revenue, but also sales revenue itself can be analyzed by operating segment. Such segmentation must be disclosed by companies in their financial statements. Of course, this is usually only done by large companies that sell more than one product and service.

Discussion

- Discuss and identify the sources of revenue generation for wood and furniture product companies.

Part 2.

- **Product cost structure.**
- **Allocation of corporate costs**

2. Topics analyzed

- Features of production costs;
- Units: production and service.
- Allocation and allocation of production costs.
- Manufacturing, non-manufacturing costs.
- Operating costs.
- Waste. Their use in the context of the circular economy.

Product and period costs

- Cost structure.
- Classification of expenditure.
- Cost centers.
- Units: production and service.

Fixed, variable and mixed costs

The classification of costs according to the impact of the volume of production (activity) on :

- fixed, variable and mixed.

Variable costs

To summarize, the essential characteristics of variable costs can be identified:

- 1) the overall level of costs varies with the volume of activity;
- 2) the unit cost of output remains relatively stable when output fluctuates up to a certain threshold;
- 3) costs are easily attributable to a particular division of the enterprise;
- 4) the responsibility for incurring these costs rests with the managers of the units.

Mixed expenditure

- Some costs cannot be classified as either fixed or variable. They are called mixed, as they have both fixed and variable elements.

- Since **variable costs** react to changes in output, they are defined in accounting theory as a **function of production**, while **fixed costs** reacting to time are defined as a **function of time**.
- This treatment of costs is linked to the emergence and use of the direct costing system.
- Under this system, only **variable costs** are allocated to the **cost of production**, while **fixed costs** are considered as **period costs**.

Direct and indirect costs, core and overheads

Costs are classified according to their inclusion in the cost of production as follows:

- Direct;
- Indirect.

Direct costs include:

- Direct costs of raw materials, materials, components, parts.
- Direct labor costs.
- Other direct costs.

Indirect costs are:

- The cost of auxiliary raw materials includes raw materials used in the production of a product that are related to production but are not directly incorporated into the product or, although they are part of the product, are not so significant that they can be classified as principal (IAS 9 Inventories).
- Indirect costs of raw materials, materials, components, parts.
- Indirect labor costs.
- Depreciation and operating costs of fixed assets for productive use.
- Costs of purchasing indirect services.
- Other indirect costs.

Indirect costs

There are two types of indirect costs:

1. Variable indirect costs - indirect costs that vary according to the volume of activity (indirect materials, indirect labor, electricity and other costs);
2. Fixed indirect costs: indirect costs that do not vary with the volume of activity (rent, insurance and other costs).

Classification of expenditure. Another approach.

Direct costs - Core costs

Indirect costs - Overheads

Costs are classified by production management function into:

- Production costs, which are directly determined by the production process;
- Costs of realization (costs);
- Administrative costs (costs) related to the maintenance of the company's management staff.

In summary, expenditure can be classified according to a variety of attributes, depending on the information needed by managers to make certain decisions and achieve certain objectives.

In practice, there are three methods of classifying costs:

- Direct and indirect;
- Fixed and variable;
- Product and period.

Types of expenditure

Expenditure is classified by type:

- Materials;
- Labor;
- General economic.

Types of expenditure

Selling and distribution costs. These cover two functions:

- Sales promotion;
- Delivery.

Practical tasks.

Waste. Their use in the context of the Circular Economy.

- Circular economy. <https://am.lrv.lt/lt/veiklos-sritys-1/atliekos/ziedine-ekonomika>
- Circular Economy: 2021-2027 - Action Programme for Action - Target 2.6 "Promote the transition to a circular and resource-efficient economy "[https://am.lrv.lt/uploads/am/documents/files/2021-2027%20m_%20ES%20finansavimas%20\(1\)\(2\).pdf](https://am.lrv.lt/uploads/am/documents/files/2021-2027%20m_%20ES%20finansavimas%20(1)(2).pdf)
- Discussion: Rational use of waste in wood and furniture products companies.

Part 3.

Profit-and-cost-volume analysis.

3. Topics analyzed

- Calculation of the cost price
- Pricing.
- Calculating the profit (loss) from operating result;
- Projecting the company/product's profit-cost (cost) performance.

Content of the cost price, purpose of its calculation

- Cost is the cost of producing a good or providing a service.
- Knowing the cost price makes it easier for managers to price a good or service, plan for profits and, if the selling price is below cost, to make decisions to discontinue the product.

Calculation of the cost price

- Cost is calculated separately for each type of good and service.
- When calculating cost, it is important to calculate the direct and indirect costs (expenses) of producing the product.

Calculation of the cost price

Most of the cost is made up of direct (variable) costs:

- the cost of raw materials, materials, semi-finished goods, products (for resale);
- the wages and social security costs of the workers producing the product;
- packaging costs;
- Costs of other materials used in the production process.

Calculation of the cost price

Indirect (fixed) costs can also form a significant part of the cost price:

- depreciation costs of equipment, buildings used;
- the cost of wages and social security contributions for support employees;
- costs of auxiliary materials;
- utility costs incurred during the production process;
- warehousing and storage costs.

Calculation of the cost price

Operating costs are also taken into account when calculating the cost price:

- mission expenses;
- salary costs of management staff;
- training, consultancy costs;
- representation expenses, etc.

Calculation of the cost price

For the purpose of costing, fixed and operating costs can be allocated in different ways:

- in proportion to variable costs;
- in proportion to the number of products produced;
- in proportion to the value of products sold or services rendered;
- equally for all products or services rendered;
- etc.

Types of cost price

- The cost of production, consisting of direct, indirect and operating costs, is called the full cost of production.
- The cost, which does not normally include administrative costs (management, marketing, etc.), transport costs, other selling costs, is called the manufacturing (partial) cost.

Calculation of the cost price

- The cost of sales is calculated by adding to the full cost of production the costs of selling the product (commercial services, advertising, market research, transport, other selling costs).
- Average cost - the proportion of costs per unit of product produced/sold.

Price

Price is the monetary value of a good or a productive resource.

When setting a price, companies usually use the following reasoning:

- Too low a price: it is impossible to make a profit.
- Possible price: Cost of production.
- Prices of competitors and substitutes;
- Unique characteristics of the product;
- Price too high: Impossible to create demand
- The price to be set is the intermediate price between the price that does not generate any profit and the price when the product is no longer in demand. The cost of the good sets (usually) the lower limit of its price, while the consumer's perceived value of the good is the upper limit.

The stages of price discovery:

1. Selecting pricing targets.
2. Determining demand.
3. Cost estimation.
4. Analysis of competitors' products and prices.
5. Selection of a pricing method.
6. Determination of the final price.

Practical tasks.

Accounting. Accounting and business management applications

Steps in the accounting process:

- It is the observation, measurement and recording of economic transactions. These parts of the accounting phase are reflected in the source documents.
- Systemization, technical processing and grouping of accounting information contained in the source documents.
- Preparation of reports (annual, quarterly and monthly reports).
- Accounting and reporting data are used for management purposes.

Accounting principles.

The Accounting and Business Management software will:

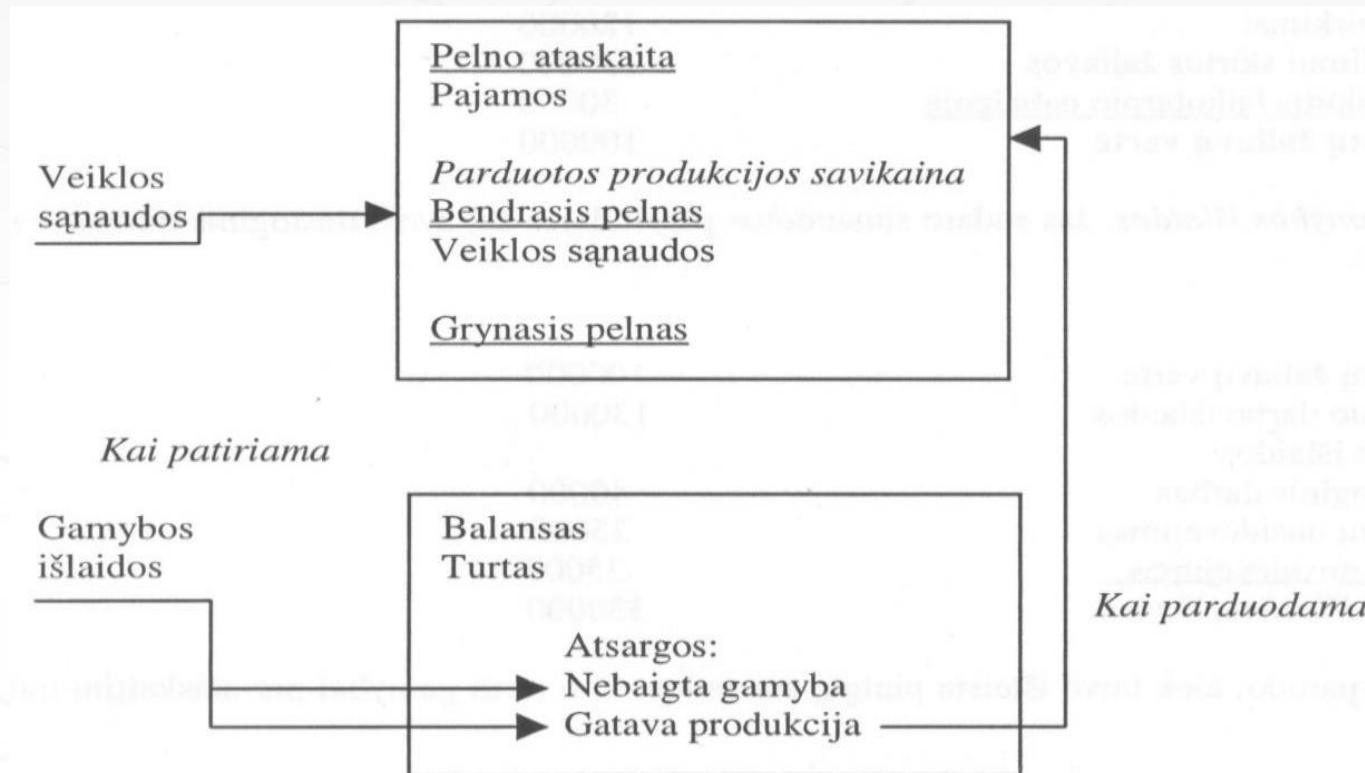
- meet customer needs faster;
- improve warehouse performance;
- facilitate and speed up the ordering of goods from suppliers;
- Increase staff productivity and visibility of staff availability;
- reduce the company's operating costs;
- Increase efficiency within the company;
- how to achieve a better result;
- increase profits;
- how to solve problems in the company.

The Accounting and Business Management software can:

- drawing up a map of material requirements per unit of output;
- calculate the consumption of materials in kind and in value terms for the output produced;
- record the production of manufactured products;
- write off materials consumed using the FIFO method;
- calculate the cost of the manufactured products.

Calculation of operating profit (loss)

Determining and analyzing performance Reporting production costs and operating costs



Practical exercise. Profit and loss account, EUR.

Articles	Amount, EUR
I. SALES AND SERVICES (sales price excluding VAT)	
II. COST OF GOODS SOLD AND WORK PERFORMED (Manufacturing cost)	
III. GROSS PROFIT (LOSS) (I-II)	
IV. OPERATING COSTS	
V. Profit (loss) from operations (profit (loss) from product (III-IV)	

Practical tasks.

Projecting the profit-cost/expense performance of a company/product.

	A	B Reduction of material consumption costs by 1%	C Effect of a 1% favorable change in all factors	D What improved the result
Purchase quantity	4 val.	4 val.		
Price per hour	25,00 €	25,00 €		
Revenue	100,00 €	100,00 €		
Jobs po 7,50 €		59,70 €		
Plus materials 7,5 € each	60,00 €			
Gross profit	40,00 €	40,30 €		
Indirect costs per day	30,00 €	30,00 €		
Net booking profit	10,00 €	10,30 €		
Change in net profit (%)	-	+3 %		

Task. Projecting the profit-cost activity volume of a company/product.

*The cost of the services provided is €7.5 per hour for wages and €7.5 per hour for consumables, totaling €15. This means that the variable cost of 4 hours is €60, and the company will make a gross profit of €40. **The total indirect costs of the company are € 6 000 per year**, divided by the working days. In this case, for 200 working days, the indirect costs are € 30 per day. Subtracting this from the gross profit, we see that a 4-hour order on that day will earn the company a net profit of €10. The services provided by the company cost €25 per hour. Today is the first order and there is work available for 4 hours. This means that the company should generate revenue of € ____.*

What would be the effect on net profit of a 1 per cent reduction in material costs? Calculate the net profit. What is the increase in net profit?

Remark. Managers can only reduce costs up to a certain limit in order to allow the company to compete in the market. Blinded by this attitude, the company's employees fail to see how effective increasing sales can be (they see lower costs as a necessity and higher sales as an aspiration at best).

Critical profitability point analysis for sales revenue.

Practical task

Example. Imagine you run a small company that produces one type of product. Each month the company sells 2 000 products at \$60 each. The fixed costs are \$40 000 per month and the variable costs per product are \$25.

What will the companies earn:

- Operating profit?
- Relative return on sales?
- Critical profitability point in units (BeQ)?
- What will be the relative share of sales volume at the critical profitability point?

Let's say the persuasive geniuses at an advertising agency have made you an offer: for a fixed fee of \$20,000, they will organize a month-long sales promotion that will increase your sales by at least 700 units that month.

Question: is this promotion worth it?

Final project task.

Topic:

“CALCULATING THE COST AND PRICE OF PRODUCT”

Author

Guiedrė Gudeliūnienė

Calculating the cost and price of a product

Below is an example of a cost and price calculation for a product. You may choose your own form of calculation or presentation, but you must disclose the main items. If you calculate with a program, you can combine some of the lines, without separately naming the items by title (raw materials, consumables, wages, etc.), i.e. e.g. count all raw materials and put them on one line under raw materials.

Table. Determining the cost and price of a product

Nr.	Expenditure items	Total, Eur.
1	Raw materials, Ingredients	
2.	Fuel, energy, water for technological purposes	
3.	Remuneration (direct) Social security (1.77%) - only required when there is a company. It is added to the direct job.	
4.	Purchase of services (will be the case if the company purchases them)	
5.	Indirect costs	
6.	Cost of production (cost of production) (sum of lines 1 + to 5)	
7.	Operating costs	
8.	Cost (full) (line 6 + line 7)	
9.	Profit margin % of cost price	
10.	Price without VAT	

Explanations of articles

Direct costs:

- Raw materials: wood, boards, panels, paint, etc.
- Direct wages (wages of the workers who produce the product) and employer's contributions on wages (social security 1,77 %). Remark. The social security contribution of 1.77% will be calculated if the worker is an employee of the enterprise.
- Direct energy costs for the technology: e.g. electricity.

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Indirect costs can include:

- Energy for lighting, process equipment;
- Wages of auxiliary workers + 1.77% social security;
- Auxiliary materials, raw materials;
- Maintenance, operation, depreciation of production equipment.

Indirect costs can be calculated by taking 40-140% of direct wages (excluding social security) (for a company). The percentage depends on the size of the company, the nature of the production and the management. The larger the company, the higher the percentage. If the work is carried out by an individual, the indirect costs are calculated at around 30% of the direct wage.

Operating costs are costs that are not included in the cost of production.

Operating costs consist of selling (e.g. transport, wages + 1,77 % social security for sales staff, salesmen, etc.) and administrative (wages + 1,77 % social security for administration, building maintenance, travel, lighting, rent, etc.) costs.

Operating costs can also be calculated by taking 5-10% of direct wages (excluding social security).

- Direct costs + indirect costs = cost of production;
- Production cost (cost of the whole programme) + operating costs = full cost
- Full cost/quantity of products produced = full cost of 1 unit (calculated in this way if we have in-house production and a large number of the same products are produced).

Pricing.

When setting the price, a certain percentage of the desired profit (e.g. 15-30%) is added to the full cost, ***depending on demand, competition, etc.*** If the product is in high demand, a higher percentage may be added, if not in high demand, a minimum of 10-15% may be added.

Set the price according to your specific example, taking into account the market situation.

Example of price calculation

1. Full cost + 15% (1.15x...) = price
2. Cost + profit percentage = market selling price

Topic:

“PRACTICAL EXERCISES”

Author

Giedrė Gudeliūnienė

Practical exercises Part I

Production costs (costs).

Lektorė Giedrė Gudeliūnienė
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1. Production costs of a furniture manufacturing company

Quantity produced, pairs (Q)	Pasto Public costs (PC)	Changing deadweight costs (KK)	Ben higher costs (BK) (4=2+3)	Marginal costs (RK)	Vid. PK (VPK) (6=2:1)	Vid.KK (VKK) (7=3:1)	Vid.BK (VBK) (8=4:1)
1	2	3	4	5	6	7	8
0	35	0	35	-	-	-	-
1	35	24	59	59-35=24	35	24	59
2		40					
3		60					
4		85					
5		115					
6		155					
7		210					

To Do:

1. Complete the table.
2. Complete the table.
3. Plot the average fixed, variable and total cost curves.

Practical exercises Part II

Topic. Classification of expenditure

1.Information is available on the costs of a company that manufactures and retails furniture:

1. Value of lubricants used to lubricate equipment.
2. Wages and salaries of raw material warehouse workers.
3. Cost of repairs to the printing machine used in the company's accounts.
4. Wages of the workers who maintain the equipment.
5. Costs of designing and constructing samples of new products.
6. The value of the ink of the duplicating machine used by the company administrator.
7. The salaries of the staff in the company's accounting department.
8. The amount of the telephone bill of the shop floor supervisor.
9. Fees for the audit of the company's financial statements.
10. The salary of the sales manager.
11. Fees for advertising products in the press.

12. Security guard salary.
13. Value of packaging materials for products sold.
14. Depreciation of equipment.
15. Transport costs for bringing in raw materials.
16. The salary of the inspector checking product quality.
17. Interest on a bank loan.
18. Value of electricity consumed by the equipment.
19. Insurance on company buildings.
20. Trade discounts granted to customers.

2. To Do:

assign each item of expenditure to one of the listed groups of expenditure

1. basic raw materials and supplies;
2. direct costs;
3. indirect costs of production;
4. costs of disposal of production;
5. administrative costs.

Direct production materials amounted to EUR 280 000. Direct labor amounted to €375,000 and factory overheads amounted to €180,000. What were the production costs for the whole month?

- a. 555000 Eur
- b. 835000 Eur
- c. 655000 Eur
- d. Not determinable.

3. The company produces 16,000 units of products per month. Raw materials amounted to EUR 83200, factory depreciation amounted to EUR 81000, direct wages amounted to EUR 198400, the salary of the production supervisor was EUR 12200, the rent of the computer amounted to EUR 8400, the use of production maintenance supplies amounted to EUR 1600.

Do the math:

- What are the variable costs per unit of output;
- What are the fixed costs;
- What are the total costs if production is 19200 units per month?

4. “Medis” Ltd. produces X wood products. The company's costs:

- The wages of the workers producing the products are €11,5/hour (it takes 3 hours to produce one X product);
- Raw materials - 28 €/piece;
- Variable indirect costs - 1 €/piece;

- monthly rent of the production hall - € 5 000;
- administrative salary costs for the year - € 45 000.

The annual cost of Medis Ltd. should be determined if it produces 20 000 units of X products per year and if it increases the quantity of X products by 40 000 units of products. Evaluate what causes the change in the amount of expenditure.

Practical exercise Part III.

Topic. Calculation of cost price. Price determination. Performance.

1. Group the expenditure items in the table and enter them in Table 1.
Calculate the product:
 - selling (manufacturing) cost;
 - full cost;
 - market selling price.

Table 1. Pricing

Expenditure items	Amount , EUR	Amount , EUR after change in expenditure
1. Raw materials		
2. Excipients (direct)		
3. Fuel, energy, water (for technology)		
4. Remuneration (direct) and social security		
5. Indirect costs in production		
6. Production costs (cost of production) (sum of Art.1+to 5)		
7. Operating costs		
8. Savings (full-time) (6+7 pp.)		
9. Unit full cost (Art.8/Number of units)		
10. Profit premium... %		
11. Product profit		
12. Price		
13. Market selling price incl. VAT(21 %)		

Table 2. Expenditure items

Order No.	Expenditure article	Amount, EUR
1.	Raw materials (wood, panels, etc.)	800
2.	Adhesives and other auxiliary materials	550
3.	Electricity (for technology)	770
4.	Worker's salary DU+soc.dr.	1500
5.	Worker's salary DU+Soc.dr.	1800
6.	Maintenance and operation costs of the equipment	1000
7.	Director's remuneration + Associate Director's	2000
8.	remuneration	1000
9.	Administrator's salary DU+soc.dr.	5000
10.	Advertising and exhibition expenses	1200
11.	Mission expenses	260
	Energy for space heating and lighting	
Total:		17836

The following month, the cost of glue and auxiliary materials increased to €680, but the cost of advertising and exhibitions was reduced to €2,700.

- Calculate how gross profit and operating profit changed.
- Calculate the price and the change in price for a production of 1200 units.
- Please show the calculations in Table 1.

Calculation of operating profit (loss)

Case I		Case II	
Articles	Amount, EUR	Articles	Amount, EUR
1. Sales revenue (quantity*prices excluding VAT)		1. Sales revenue (quantity*prices excluding VAT)	
2. Cost of sales (Manufacturing cost)		2. Cost of sales (Manufacturing cost)	
3. Gross profit (loss) (1-2)		3. Gross profit (loss) (1-2)	
4. Operating costs		4. Operating costs	
5. Operating profit (loss) (3-4)		5. Operating profit (loss) (3-4)	

Topic:

“FINAL PROJECT TASK 1”

Author

Giedrė Gudeliūnienė

Final project task. Module "Enterprise costs".

Calculating the cost of a product. Pricing and performance

Objective. To know how to classify costs, to be able to calculate cost and to determine price. Know how to calculate the operating result.

Task. Choose a specific product.

1. Classify and calculate the costs of the product for costing purposes.
2. Calculate the cost of the product.
3. Determine the cost of the product.
4. Calculate the profit for the product.

Calculations needed to complete the task

1.1 Calculating the cost price.

- Start the calculation part by introducing the product under analysis.
- Present the data in tables. These may be in free form.

Costs must be calculated as follows:

Direct costs:

- Raw materials: wood, boards, panels, paints, etc.
- Direct wages (wages of the workers who produce the product) and employer contributions on wages (social security 1.77%). Remark. The social security contribution of 1.77% will be calculated if the worker is an employee of the enterprise.
- Direct energy costs for the technology: e.g. electricity.

Direct costs

Please provide the direct costs in tables in free form according to your projected data. Here are some possible examples of tables.

Remark. Before and after each table, please provide a description - explanation.

Introductory sentences

Table 1. Materials and raw materials

Name	Quantity	Price per unit	Amount, EUR
Total			

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Table comment - description.

Introductory sentences

Table 2. Direct wages (workers)

Name e.g.	Hours worked or other period	Rate, EUR / hour Can be monthly or other form	Social security 1.77 %*	Amount, EUR
Job responsibilities				
Total				

*Soc. insurance at 1.77% will be charged if you are an employee of the company.

Table comment - description.

Introductory sentences

Table 3. Direct energy consumption of the technology

(to be calculated in a form that suits you)

Energy type e.g.	Device	Costs	Hours worked	Amount, EUR
Electricity	E.g. machine tools			
Total				

Table comment - description.

Once all direct costs have been added up, they need to be combined in a single table.

Introductory sentences

Example Table 4. Example of direct costs

Order No.	Costs	Working hours.	Total amount, EUR
1.	Raw materials and supplies		
2.	Wages (social security 1.77%*,)		
..	Electricity consumption		
...		
Total			

*Soc. insurance at 1.77% will be charged if you are an employee of the company.

Table comment - description.

If more detailed calculations are needed, please provide them under the relevant table.

Indirect costs:

Indirect costs can include:

- Energy for lighting, process equipment;
- Wages of auxiliary workers + 1.77% social security;

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- Auxiliary materials, raw materials;
- Maintenance, operation, depreciation of production equipment.

You can summaries the calculations in the tables below. You can redo the tables according to your own calculations.

Examples of tables.

Introductory sentences

Before calculating depreciation, please provide the technical equipment used.

Table 5. Hardware used during the work

Name	Quantity	Price, Eur	Amount, EUR

Table comment - description.

Comment. Each table must be preceded and followed by a description and comments.

Introductory sentences

Table 6. Indirect costs (calculation of equipment and other fixed assets used, auxiliary materials, wages and social security of auxiliary workers, energy consumption, etc.)

Name e.g.	Duration of work (in units of measure, can be hours)	Calculation	Amount, EUR	
Depreciation of machine tools				
..				
..				
Total				

Note: Table 6 can be reworked according to your calculations. Alternatively, you can present your calculations in separate tables, in the same way as you did for direct costs.

The purchase of services can be included as an indirect cost if the amount is independent of the output of the product. It may also be included as a direct cost by means of a table with calculations if the amount depends on the production volume.

Table comment - description.

Below is an example of a possible depreciation calculation.

Depreciation (amortisation) of equipment is calculated as follows:

1. Annual depreciation amount (N_m):

N_m = the initial value of the equipment multiplied by the annual rate of depreciation deductions N_a .

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N_a depends on the type of equipment, for computer equipment N_a 30-33% for technological equipment (machine tools, machinery) N_a is 8-15%.

2. *Annual N_m divided by the annual working time pool F_d (the number of working hours per year) and multiplied by the number of hours your equipment will work.*

Example:

The purchase price of the computer is €1,200., $N_a = 30\%$.

1. Annual depreciation amount:

$N_m = 1200 \times 30 / 100 = 360$ (Eur).

2. Annual working time fund:

$F_d = 21$ (number of working days per month) $\times 8$ (number of hours in a working day) $\times 12$ (number of months in a year) = 2016 hrs.

You will work on your project on a computer for 180 hours.

$N_i = 360 : 2016 \times 180 = 32$ (Eur).

Or take the specific working hours calculated in 2020 for a 5-day week in 2018.

Another way to calculate indirect costs.

If indirect costs are difficult to calculate, you can calculate them as follows.

Indirect costs can be calculated by taking 40-140% of direct wages (excluding social security) (for a company). The percentage depends on the size of the company, the nature of the production and the management. The larger the company, the higher the percentage. If the work is carried out by an individual, the indirect costs are calculated at around 30% of the direct wage.

Operating costs are costs that are not included in the cost of production.

Operating costs are made up of selling (e.g. transport, wages + 1,77 % social security for sales staff, salesmen, etc.) and administrative (wages + 1,77 % social security for administration, building maintenance, travel, lighting, rent, etc.) costs.

Operating costs can also be calculated by taking 5-10% of direct wages (excluding social security).

- **Direct costs + indirect costs = production cost;**
- **Production cost (cost of the whole programme) + operating costs = full cost**
- **Full cost/quantity of products produced = full cost of 1 unit** (calculated in this way if we have in-house production with large quantities of the same products).

1.2 Pricing.

When setting the price, a percentage of the desired profit (15-30%) is added to the full cost, depending on demand. If the product is in high demand, a higher percentage may be added, if not in high demand, a minimum of around 10-15%.

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Set the price according to your specific example, taking into account the market situation.

Example

1. Full cost + 15% (1.15x...) = price
2. Cost + profit percentage = market selling price

Remark. Please indicate the method of pricing, justification for the profit premium.
Transfer all the data calculated above into Table 8.

Table 7. Product pricing

Nr.	Expenditure items	Amount, EUR
1.	Raw material	
2.	Ingredients (direct)	
3.	Fuel, energy, water (direct)	
4.	Remuneration (direct)	
	Social security (1.77%) - only required if you have a company. It is added to the direct job.	
5.	Indirect costs	
6.	Cost of production (cost of production) (sum of Articles 1+ to 5)	
7.	Operating costs	
8.	Savikaina (full-time) (6+7)	
9.	Profit margin % of cost price	
10.	Price without VAT	
11.	Market selling price (plus VAT at 21%)	

Table comment - description. It should summarise the pricing, whether or not VAT applies, etc.

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1.3. Calculation of the performance result.

Profit and loss account, EUR	
Articles	Amount, EUR
I. SALES AND SERVICES (sales price excluding VAT)	
II. COST OF GOODS SOLD AND WORK PERFORMED (Manufacturing cost)	
III. GROSS PROFIT (LOSS) (I-II)	
IV. OPERATING COSTS	
V. Profit (loss) from operations (profit (loss) from product (III-IV))	

Note: The costing and pricing can be presented in another format that suits you. It is important to identify the cost items and classify production costs. If you are not able to present the items in monetary terms, then list the exact cost items and interpret the results as far as you can.

The work must have a cover.

Assignment by the lecturer G. Gudeliūnienė

Send your work to the following email address giedre.gudeliuniene@go.kauko.lt until 23-12-2020

Topic:

"FINAL PROJECT TASK 2"

Author
Laila Kelmere

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FINAL PROJECT TASK 2 (Laila Kelmere)

You will need to determine and allocate costs, make calculations and present the results to an audience. The presentation must explain and show with figures the result obtained.

1. If possible, use a product or service provided by your company as an example (several products or services are allowed) and do the following:
 - 1.1. Break down the costs by type (materials, consumables, personnel costs, etc.) and by product or service produced. Who performs this task in your company and how?
 - 1.2 Which costs are fixed and which are variable? What purpose would the following cost breakdown serve for you?
 - 1.3 Calculate the unit cost of your chosen product or service. Explain how you arrived at your result and which costs did you include and why? Who in the company calculates the cost price of the good or product? Would you like to do this job and what would be the benefits?
2. How will you develop the selling price of the product: will you use the more common "cost + profit plus rate" approach or some other approach? What price will you offer for your chosen product or service and why?
3. Calculate the break-even point within one year, i.e. how much would have to be produced and sold of the product in question for the company's revenue to equal its costs. Evaluate the result. What would you recommend to be changed in order for the company to make a profit (the desired profit) on the product or service and is this possible with the product or service or maybe a side service needs to be developed, e.g. a service?
4. Prepare a budget (profit or loss) plan for one period (preferably one year), showing projected revenues, costs and calculating the projected operating result (profit). You can prepare a budget plan for a specific product or service for which you have previously calculated the cost price, or for an individual business unit or the company as a whole.
- 5 Prepare an appropriate cash flow, in which you plan all cash receipts and cash payments for the period as a whole and in detail for each month.