MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

NATIONAL TECHNICAL UNIVERSITY
«KHARKIV POLYTECHNIC INSTITUTE»

LECTURE NOTES

of the academic discipline «Enterprise Economy»
for full-time and part-time students
in the specialties 072 «Finance, banking, insurance and the stock market»
and 073 «Management»

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INTRODUCTION

"Enterprise economics" is one of the most important applied disciplines that provide economic training of specialists for various industries and spheres of activity in modern economic conditions. The special place of this discipline in the system of economic sciences is determined by the fact that, on the one hand, it is based on the study of economic theory (micro- and macroeconomics), and on the other hand, it is the basis for special disciplines (accounting, analysis of economic activity, enterprise finance, marketing, pricing, taxation, etc.).

The production of material goods and services in a market economy is carried out with the help of entrepreneurial activities at enterprises. Therefore, the object of the study "Economics of the enterprise" is the enterprise itself, where entrepreneurial activity is carried out.

Enterprise economics is an independent economic discipline, the subject of which is the activity of the enterprise, the process of developing and making business decisions, studying the economic system of the enterprise with the help of economic indicators that make it possible to assess the operating conditions of the enterprise and develop measures to improve production efficiency.

The purpose of the "Enterprise Economics" course is to provide knowledge of the main sections of applied economics, with the aim of forming students' ability to think independently, make management decisions, and perform economic calculations to analyze the effectiveness of the enterprise's economic activities. At the same time, the concept of "enterprise" is considered from an economic point of view and is used in the sense of "business entity".

The objective of the course is to study the functions and goals of an enterprise as the primary link in the national economic complex of the state, modern methods of farming and the processes of functioning of enterprises; analysis of resources and factors

of production; methods for assessing the effectiveness of their use; mastering skills for the ability to analyze the results of the enterprise.

The structure of the discipline is built on the principle of identifying relatively independent, logically interconnected sections, presenting material from a general idea of the enterprise as an element of the national economy to the study of the enterprise's resources, assessing the efficiency of their use, the formation of costs and results of the enterprise, etc.

Since the total volume of classroom lectures is 32 hours (16 classes), some topics must be partially studied independently. These " Lecture notes" on the topics of the course suggest:

1) summary of theoretical material of the course "Enterprise Economics" by topic;

2) questions for self-testing knowledge for each topic;

3) topics of abstracts for independent study;

4) list of sources of information.

Lecture topics according to the educational programs are shown in Table 1.

Table 1 – Lecture course structure

№	Subject of the lecture	Number of classroom hours
1	Topic 1. Introduction. Theories of enterprise economics and the foundations of entrepreneurship. Types of enterprises, their organizational and legal forms	2
2	Topic 2. External business environment of enterprises	1
3	Topic 3. Structure and management of an enterprise	1
4	Topic 4. Market and products	2
5	Topic 5. Planning of enterprise activities. Justification of the enterprise production program	2
6	Topic 6. Enterprise personnel, productivity, motivation and remuneration	2
7	Topic 7. Fixed capital of the enterprise	3
8	Topic 8. Working capital of the enterprise	3
9	Topic 9. Intellectual capital	1
10	Topic 10. Investment and innovation activity	3
11	Topic 11. Technical and technological base and production capacity of the enterprise	2

12	Topic 12. Organization of production and ensuring product quality	1
13	Topic 13. Costs of production and sales of products	3
14	Topic 14. Financial and economic results of the enterprise	3
15	Topic 15. Enterprise development: modern models, transformation and restructuring	2
16	Topic 16. Economic security and anti-crisis activities	1
Total		32

Topic 1. INTRODUCTION. THEORIES OF ENTERPRISE ECONOMICS AND THE FOUNDATIONS OF ENTREPRENEURSHIP. TYPES OF ENTERPRISES, THEIR ORGANIZATIONAL AND LEGAL FORMS

Enterprise economics is a field of knowledge that studies the principles and mechanisms of enterprise functioning, their management, financing and interaction with the external environment. Entrepreneurship, in turn, is the main driver of economic growth, providing innovation, job creation and the development of a market economy.

1. Theories of enterprise economics

There are several key theoretical approaches to the study of enterprise economics:

Classical theory - considers an enterprise as a mechanism that maximizes profits through the efficient use of resources.

Neoclassical theory - focuses on the balance of supply and demand, as well as on production optimization.

Institutional theory - analyzes enterprises in the context of the institutional environment, including laws, regulations and market institutions.

Behavioral theory - studies the decision-making process within an enterprise, taking into account factors of uncertainty and limited rationality.

Evolutionary theory - considers the development of enterprises as a process of natural selection of effective business models and strategies.

2. Fundamentals of entrepreneurship

Entrepreneurship is an activity related to the creation and management of a business for profit. Key aspects of entrepreneurship include:

Initiative – willingness to take risks and seek new opportunities.

Innovation – introducing new products, services or technologies.

Resources – managing capital, labor and material assets.

Risks – analyzing and managing entrepreneurial risks.

3. Types of enterprises

Enterprises can be classified according to various criteria:

By size: small, medium, large.

By type of ownership: state, private, mixed.

By scope of activity: industrial, trade, financial, agricultural, transport, etc.

By purpose of activity: commercial (profit-oriented) and non-profit (for example, charitable organizations).

4. Organizational and legal forms of enterprises

Different countries may have different forms of business organization, but in most cases the following are distinguished:

Individual entrepreneurship (IE) – a business owned by one person who is fully responsible for its activities.

A limited liability company (LLC) is an enterprise whose participants have limited liability within the limits of their contribution.

A joint-stock company (JSC) is an enterprise whose capital is divided into shares (may be public or non-public).

A production cooperative is a form of collective business where participants pool their resources and labor.

A state enterprise is a business owned by the state and managed by government agencies.

The choice of organizational and legal form depends on the goals of the business, the level of responsibility, the scale of activity and legal regulation.

Topic 2. EXTERNAL BUSINESS ENVIRONMENT OF ENTERPRISES

2.1 Business environment of enterprises

2.2 Impact of external environment on the activities of an enterprise as an open economic system

2.3 Behavior of enterprises in a market environment

2.4 Self-test questions

2.1 Basic terms

Economics is a term of Greek origin, literally means the art of housekeeping. The word «economics» comes from two Greek words, «eco» meaning home and «nomos» meaning accounts. The subject has developed from being about how to keep the family accounts into the wide-ranging subject of today.

In the classical sense, economics is the science of how society uses certain limited resources to produce and distribute useful products. Economics is a set of laws, rules and means of doing business.

But we are not just talking about the economy as a whole, but about the economy of the enterprise. *Enterprise economics* can be formulated as the science of the efficiency of the enterprise, ways and methods of achieving the best results at the lowest costs (at the enterprise). Enterprise economics is a set of economic processes that are carried out at the enterprise when using resources to meet material needs in accordance with the material capabilities of participants in economic activity.

The object of discipline research is industrial relations and economic laws and regularities that arise and operate only in individual enterprises and take into account the specifics of the production of a particular enterprise.

Now let's look at a more academic definition of what an enterprise is: enterprise is the leading link of the economy, its basis (basis of economy), because enterprises produce products and services, concentrate in their ownership most of the social capital, determine the business activity of the country's economy, provide employment, form the

country's budget. The main features that define the essence of the enterprise are the following:

1) enterprise is an independent main link in the national economy of every country;

2) enterprise is a separate specialized economic unit, the basis of which is a professionally organized labor collective (team), which, using the means of production at its disposal, produces the products necessary for the consumer, performs work, and provides services;

3) an enterprise is an independent business entity established in accordance with the current legislation for the production of products and the provision of services in order to meet public needs and make a profit;

4) an enterprise is a legal entity that meets certain criteria established by the current legislation of the country in whose territory it is registered.

Enterprises can be created both for entrepreneurship and for non-commercial economic activity. Legal support for the activities of enterprises is determined by the laws of Ukraine, resolutions of the Verkhovna Rada of Ukraine, presidential decrees, orders of relevant sectoral ministries and departments. In each country, the activities of enterprises are regulated by the relevant legislation of that country.

2.2 The role of the enterprise in the national economy of the country

The national economy of every country is an economically and organizationally unified system of interconnected industries and spheres of human activity, which are characterized by appropriate proportionality, mutually determined placement on the territory limited by state borders. In this system, the production sphere (material production) and the non-production sphere are traditionally distinguished in our country (table 1.1). It is natural that the ratio of these spheres and industries, that is, the structure of the economy.

Table 2.1 – The structure of the economy (areas of national economy)

NATIONAL ECONOMY	
Sphere of material production	Non-productive sphere (sphere of non-material production)
1. Industry	1. Housing and communal services
2. Agriculture	2. Passenger transport
3. Forestry (Forest management)	3. Health care, physical education, sports
4. Water management	4. Education
5. Transport (freight)	5. Culture and art
6. Construction	6. Science and scientific service
7. Trade and catering	7. Management of the national economy; Public organizations
8. Material and technical supply	8. Army and law enforcement agencies
9. Other activities in the field of material production	9. Other activities in the field of non-material production

Within each sphere, so-called complex branches are distinguished (industry, agriculture, etc.). In turn, complex branches are divided into branches. For example, from the complex branch "industry" the branche of mechanical engineering are distinguished. Mmechanical engineering can be divided into sub-sectors, namely energy, transport, etc. Thus, the following structural diagram of the national economy is built: national economy – spheres of the national economy – complex branches – branches – sub-sectors – enterprises – production divisions of the enterprise (workshop - teams - jobs).

2.3 Classification of enterprises

At all stages of development of a market economy, the main link of the national economy is the enterprise. It is at the enterprise that production is carried out, various types of services are provided, and a direct connection between the employee and the means of production arises. The enterprise independently carries out its activities,

disposes of its products and the profit remaining after paying taxes and other obligatory payments.

The main features that define the essence of the enterprise are the following: enterprise is an independent basic unit of the national economy; enterprise is a separate specialized economic unit, the basis of which is a professionally organized labor collective, which, with the help of the means of production at its disposal, produces the products necessary for the consumer, performs work, and provides services; enterprise is an independent business entity created in accordance with current legislation to produce products and provide services in order to meet public needs and make a profit; enterprise is a legal entity that meets certain criteria established by the current legislation of the country in which it is registered.

When carrying out any type of activity on the market, such characteristics of the enterprise as the form of ownership, legal status and chosen field of business, industry affiliation, size, as well as the purpose and nature of the activity, taking into account territorial integrity, become of great importance. The formation of the market structure of the Ukrainian economy has led to the emergence of various forms of modern enterprises operating in developed countries. The classification of enterprises according to different criteria is presented in table 1.2.

Table 2.2 – Classification of enterprises according to a number of characteristics

Characteristics	Types of enterprises
1. Purpose and nature of activity	Commercial, non-commercial
2. Form of ownership	State, private, collective, communal
3. Capital ownership	National, foreign, general (common)
4. Legal status	Sole, cooperative, rental, business partnership
5. Industry-functional type of activity	Industrial, agricultural, construction, transport, trade, etc.
6. Number of employees, gross output	Large, medium, small
7. Territorial subordination	Main, subsidiary, associated
8. Structure of production	Narrow-profile, multi-profile, combined

9. Method of creation and formation of the statutory fund	Unitary and corporate

2.4 Goals and objectives of the enterprise's production activities

In terms of market economic relations, the main figure in the enterprise is the entrepreneur. The status of an entrepreneur (businessman) is acquired through state registration of the enterprise. In this case, the subject of entrepreneurial activity can be an individual citizen or an association of citizens.

The enterprise (company) carries out its activity independently, disposes of the products, the received profit, which remained at its disposal after the payment of taxes and other obligatory payments. Its main task - to meet social needs for products (works, services) and the realization on the basis of profits of economic and social interests of the workforce and property owner.

The *goals of the enterprise* – is to determine the qualitative and quantitative characteristics of the enterprise, to achieve which it seeks.

The most important goals of the production (manufacturing) enterprise: 1) making a profit; 2) providing consumers with products in accordance with market demand; 3) job creation; 4) timely payment of wages; 5) environmental protection; 6) creation of appropriate and safe working conditions for employees; 7) creating opportunities for professional growth.

Enterprises play a crucial role in the formation of state and local budgets, as they are subjects to taxation. Therefore, the state and local authorities are interested in the efficient operation of enterprises, increasing profits, creating the necessary conditions for this through legislation.

The environment in which the enterprise operates can be divided into internal and external:

1) internal environment - fully under the control of the owner and managers, which includes all types of internal links of the enterprise and the relationships between them. *Give some examples of the internal environment of an enterprise*.

2) external environment – a set of economic subjects, social and natural conditions, national and international structures and other conditions and factors external to the enterprise.

The external environment is complex, changing, interdependent and, as a rule, uncertain. Depending on the nature of the impact, the external environment is divided into microenvironment and indirect macroenvironment.

Company's microenvironment is the factors that are closely related to the company and affect its ability to serve its target customers. The microenvironment is an environment of direct influence on the enterprise, that is, it is market participants who are in direct contact with the enterprise. The subjects of microenvironment include suppliers, intermediaries, consumers, competitors, "contact audiences", etc.

Macroenvironment is the external conditions of entrepreneurial activity that do not depend on the firm, but which must be taken into account during the development of its development strategy, business plan, etc. The macroenvironment consists of factors of indirect action, that is, they are mostly not directly related to a specific enterprise, but create a certain favorable or unfavorable environment for its economic and business activity.

2.5 Self-test questions

1. What are the goals and objectives of the discipline "Enterprise Economics"?
2. Describe the enterprise as the primary link of the national economy.
3. What legislative acts regulate the economic activity of enterprises?
4. Define the most important areas of the company's activity in modern conditions.
5. What is the external environment of the enterprise?

6. By what signs are enterprises classified?

7. What are the main functions and goals of the enterprise?

8. Name the main stages of formation and registration of the enterprise.

Topic 3. STRUCTURE AND MANAGEMENT OF AN ENTERPRISE

The *structure and management of an enterprise* determine how a business operates, organizes its resources, and makes strategic decisions. These aspects influence efficiency, communication, and overall success. Below is a breakdown of both enterprise structure and management:

1. Enterprise Structure

An enterprise's structure defines how it is organized, including roles, responsibilities, and reporting hierarchies. Common enterprise structures include:

A. Organizational Structures

1. Functional Structure – Departments are organized by function (e.g., Marketing, Finance, HR, Operations).

- Pros: Clear specialization, efficiency, and expertise development.
- Cons: Can lead to silos and slow cross-departmental communication.

2. Divisional Structure – Organization is divided into semi-autonomous divisions based on products, regions, or customers.

- Pros: Flexibility, responsiveness to specific market needs.
- Cons: Can create redundancies and inefficiencies.

3. Matrix Structure – Employees report to both functional managers and project or product managers.

- Pros: Encourages collaboration and efficient resource use.
- Cons: Can create confusion in authority and accountability.

4. Flat Structure – Fewer hierarchical levels, encouraging direct communication and decision-making.

- Pros: Fast decision-making, employee empowerment.

- Cons: Can be chaotic if not well-managed.

5. Hierarchical Structure – A traditional pyramid-shaped organization with clear levels of authority.

- Pros: Clear leadership, defined roles, stability.
- Cons: Slow decision-making, reduced flexibility.

6. Network/Virtual Structure – A decentralized structure where the enterprise outsources many functions.

- Pros: Lower costs, access to global talent.
- Cons: Less control over operations and quality.

2. Enterprise Management

Enterprise management involves planning, organizing, leading, and controlling the business to achieve strategic goals.

A. Key Management Functions

1. Planning – Setting objectives, forecasting trends, and devising strategies.
2. Organizing – Structuring resources and responsibilities for efficiency.
3. Leading – Motivating and guiding employees toward achieving business goals.
4. Controlling – Monitoring performance, making adjustments, and ensuring compliance.

B. Levels of Management

1. Top Management (Executives: CEO, CFO, COO) – Focus on strategy, vision, and decision-making.
2. Middle Management (Department Heads, Directors) – Implement strategies, oversee departments.
3. Lower Management (Supervisors, Team Leaders) – Oversee day-to-day operations and employees.

C. Management Styles

1. Autocratic – Centralized decision-making with little employee input.

2. Democratic – Employees participate in decision-making.

3. Laissez-Faire – Employees have autonomy with minimal supervision.

4. Transformational – Focuses on inspiring and motivating change.

D. Enterprise Resource Management

- Human Resource Management (HRM) – Recruiting, training, and maintaining employees.
- Financial Management – Budgeting, investing, and controlling costs.
- Operations Management – Ensuring efficient production and service delivery.
- Technology & IT Management – Implementing and maintaining enterprise technology.

Conclusion. An enterprise's structure and management determine how effectively it can operate, grow, and compete. Choosing the right structure and management approach depends on the business size, industry, goals, and market environment.

Topic 4. MARKET AND PRODUCTS

4.1 Goods and Commodity Market: Concepts and Classifications

The goods and commodity markets play a vital role in the global economy, facilitating the exchange of physical and intangible goods. These markets enable price discovery, risk management, and efficient distribution of resources. They encompass a wide range of products, from everyday consumer goods to essential raw materials used in industries.

Concepts of Goods and Commodity Markets:

1. Goods Market

The goods market refers to the economic marketplace where tangible products and services are bought and sold. This includes consumer goods (like electronics and clothing) and capital goods (like machinery and tools).

2. Commodity Market

The commodity market is a sector where raw materials or primary products are traded. These commodities are typically standardized and interchangeable, meaning that one unit of a commodity is the same as another of the same type.

3. Types of Commodities

Commodities are broadly classified into:

- Hard Commodities: Natural resources such as oil, gold, and metals.
- Soft Commodities: Agricultural products like wheat, coffee, and cotton.

4. Spot vs. Futures Market

- Spot Market: Commodities are bought and sold for immediate delivery.
- Futures Market: Contracts are made to buy or sell a commodity at a predetermined price on a future date, reducing price volatility risks.

Classifications of Goods and Commodity Markets:

1. Consumer Markets – Focused on selling goods directly to end consumers (e.g., food, clothing, electronics).
2. Industrial Markets – Where businesses buy raw materials and components for production (e.g., steel, chemicals).
3. Financial Markets – Where commodities like gold, oil, and agricultural products are traded (e.g., stock exchanges, commodity exchanges).
4. Wholesale and Retail Markets – Wholesalers buy in bulk and sell to retailers, who then sell to consumers.

4.2 Types of Enterprise Products and Demand for Them

Enterprises produce different types of products based on market needs and demand patterns:

Types of Enterprise Products:

1. Consumer Goods – Directly used by consumers (e.g., food, furniture).
2. Capital Goods – Used in the production of other goods (e.g., machinery, tools).

3. Services – Intangible offerings such as consulting, education, and healthcare.

Demand for Products:

- Elastic Demand – Demand changes significantly with price fluctuations (e.g., luxury goods).
- Inelastic Demand – Demand remains stable regardless of price changes (e.g., essential goods like medicine).
- Derived Demand – Demand that depends on another product's demand (e.g., demand for car tires depends on car sales).

4.3 Marketing Activities of Enterprises in the Market

Marketing plays a critical role in helping enterprises sell their products and stay competitive.

Key Marketing Activities:

1. Market Research – Understanding consumer needs and market trends.
2. Product Development – Innovating and improving products based on demand.
3. Pricing Strategies – Setting competitive prices to maximize sales and profit.
4. Promotion and Advertising – Using media, digital marketing, and branding strategies.
5. Distribution Channels – Ensuring products reach customers efficiently (retail, online, direct sales).

Topic 5. PLANNING OF ENTERPRISE ACTIVITIES. JUSTIFICATION OF THE ENTERPRISE PRODUCTION PROGRAM

5.1 Essential Characteristics of Planning

Planning is a fundamental management function that involves setting objectives, determining resources, and establishing the means to achieve desired outcomes. It ensures the efficient utilization of resources, minimizes risks, and aligns enterprise

activities with market demands. Effective planning improves decision-making, optimizes productivity, and fosters sustainable growth.

5.2 Types and Methodological Foundations of Planning at an Enterprise

Enterprise planning can be categorized into several types:

- Long-term planning: Focuses on the enterprise's strategic vision and sustainability.
- Medium-term planning: Involves tactical initiatives to achieve strategic goals.
- Short-term planning: Deals with operational details such as daily production schedules.

Methodological foundations of planning include:

- Goal-setting methodologies: SMART (Specific, Measurable, Achievable, Relevant, Time-bound) principles.
- Forecasting techniques: Trend analysis, econometric models, and market research.
- Optimization models: Linear programming, simulation modeling, and decision analysis.

5.3 Strategic, Tactical, and Operational Planning

- Strategic Planning: A long-term approach focusing on the overall direction, market positioning, and resource allocation. It includes corporate strategy formulation, competitive analysis, and investment planning.
- Tactical Planning: Medium-term plans that translate strategy into actionable goals. It involves budgeting, workforce planning, and supply chain management.
- Operational Planning: Short-term plans that ensure day-to-day business functions align with higher-level objectives. It includes production scheduling, logistics coordination, and quality control measures.

5.4 Enterprise Production Program and Its Indicators

The enterprise production program outlines the scope and volume of products or

services to be produced within a specific period. Key indicators include:

- Production volume: Total units or quantity of goods to be manufactured.
- Product mix: Composition of different product lines and variations.
- Resource utilization: Efficiency of labor, materials, and machinery.
- Lead time and cycle time: Duration from production initiation to completion.
- Cost efficiency: Cost per unit and overall production expenses.

5.5 Justification of the Enterprise Production Program

Justifying the production program involves analyzing various internal and external factors:

- Market demand analysis: Studying customer needs, preferences, and sales forecasts.
- Competitive positioning: Assessing strengths, weaknesses, opportunities, and threats (SWOT).
- Financial viability: Evaluating cost structures, profit margins, and return on investment.
- Resource availability: Ensuring sufficient materials, labor, and technology.
- Regulatory compliance: Adhering to legal and industry standards.

5.6 The Relationship Between the Production Program and Production Capacity

Production capacity defines the maximum output an enterprise can achieve with available resources. The production program must align with capacity to avoid inefficiencies such as underutilization or overproduction. Key considerations include:

- Capacity planning: Balancing demand forecasts with operational capabilities.
- Bottleneck management: Identifying and addressing constraints in production processes.
- Scalability: Adapting production to market fluctuations and growth

opportunities.

- Technology integration: Implementing automation and innovation to enhance capacity.

Effective planning and justification of the production program ensure that enterprises remain competitive, financially stable, and responsive to market changes.

TOPIK 6. ENTERPRISE PERSONNEL, PRODUCTIVITY, MOTIVATION AND REMUNERATION

6.1 Personnel: definition and structure

The efficiency of any enterprise depends not only on compliance with the correct principles of production organization, but also on the knowledge, skills, competence of its employees, their qualifications, the ability to solve non-standard tasks, discipline, labor motivation systems, etc. *Personnel (*workforce, employees*)* – is the third necessary component of the production process, along with fixed assets and working capital. The efficiency of the personnel use greatly influences the results of the enterprise activity and its competitiveness. Workforce moves the material elements of production, creates product, value and profit. *Workforce productivity (WP)* is a generalized indicator of personnel efficiency.

Personnel of the enterprise are formed and changed under the influence of internal (nature of products, technologies and organization of production) and external factors (demographic processes, legal and moral norms of society, the nature of the labor market).

The impact of the latter is specified in such macroeconomic parameters as: the number of the active (able-bodied) population, the general educational level, the supply of labor, the level of employment, and the potential reserve of labor. In turn, these characteristics determine the quantitative and qualitative parameters of labor resources.

According to its place in manufacturing process personnel of enterprises is divided into *industrial-manufacturing personnel (IMP)* and *nonproduction personnel*.

Nonproduction personnel – employees, who work in non-productive subdivision of enterprise (housing-and-municipal services, child care centres, cultural, medical and educational institutions etc).

Industrial-manufacturing personnel (IMP – employees, who are directly or indirectly engaged in basic and auxiliary production, in service units, commissioning shops, etc. These categories represent more than 90% of the total number of employees at the enterprise (or 100% in the most cases).

Depending on the functions performed, *industrial-manufacturing* personnel (*IMP*) are divided into five categories (table 4.1).

Table 6.1 – Structure of *IMP*

№	IMP	% (as a whole by industry)	% (in power engineering)
1	Workers (main + auxiliary)	80,5	71,5
2	Engineering and technical staff (engineers, economists, accountants, sociologists, legal advisers etc), including administrative and management staff	13	22
3	Employees (clerks, secretaries, printers etc)	4,0	3,5
4	Junior service staff (couriers, cleaners) Security (guard)	1,5	1,5
5	Apprentices	1,0	1,5
	Total	100	100

1. Workers must receive secondary specialized education. Workers are divided into the main (basic) and auxiliary. Main (basic) workers - workers that directly involved in the manufacture of products (turners, drillers, seamstresses). Auxiliary workers -

workers that serve the basic production and promote its effective execution (equipment adjuster, electrician, repairman).

2. Engineering and technical staff must have higher education. Engineering and technical personnel - specialists who perform ordinary management functions, provide technical, organizational, economic management of production processes, as well as organize the activities of industrial and production personnel. This category includes engineers, economists, accountants, sociologists, legal advisers, raters, technologists and more. Administrative and management staff must have one or two higher educations (management and industry).

3. Technical executors (employees) - employees who prepare and execute documents and so on (clerks, secretaries-typists, timekeepers, draftsmen, copyists, archivists, agents, etc.). To fulfill their official duties, it is enough for them to have a secondary specialized education.

4. Junior service staff do not require special education (cleaners, loaders).

5. Apprentices at the enterprise are persons who gain practical experience in performing tasks and duties at the workplace of an enterprise, institution, organization before starting independent work under the direct supervision of an experienced specialist. An internship when applying for a job is provided for persons of certain categories. These include: civil servants; students of higher and vocational educational institutions; some other categories of persons provided for by law.

6.2 Planning the number of workers of the enterprise

The efficiency of economic activity directly depends on the determination and provision of the necessary number of personnel in specific production conditions, which will ensure the high-quality and timely performance of production tasks while observing science-based work and rest regimes. In the market conditions of business, it is extremely important to determine the optimal number of employees necessary for the implementation of the production program.

Planning the number and composition of personnel is an important task of intra-company planning, which provides for the establishment of the average composition and attendance composition of employees in all groups and categories. All planning and economic calculations for the number and composition of personnel are made on average annual indicators. As can be seen from the personnel structure at the enterprise, the largest group is workers, so we will take a closer look at planning their number at the enterprise.

The number of workers is planned using two basic methods:

1) In accordance with labour intensity (трудомісткість) of the production program (for main workers);

2) In accordance with number of work places and norms of service (for *auxiliary workers)*.

1. *The first method* is applied to define the *number* of workers engaged to normalized works. In most cases these are the *main workers*:

$$n_{m\ wi} = \frac{\sum_{i=1}^{i=m} Q_{a_i} \cdot t_i}{F_e \cdot F_f}, \qquad n_{m\ wi} = \frac{\sum_{i=1}^{i=m} T}{F_e \cdot F_f} \tag{6.1}$$

where $n_{m\ wi}$ – number of main workers of i-th category of the given profession and speciality; t_i – Labour intensity of unit of work (operation) of i-th category (h); Q_{ai} – quantity of units of products for period (units); $\sum_{i=1}^{i=m} Q_{ai} \cdot t_i$ – labour intensity of the program for the planned period in norm-hours; T – total labor intensity for period $T = Q^*t$; F_e – effective fund of the working time of one worker (working time of one worker during the planned year); m – quantity of categories on works of the given profession and speciality; F_f – factor of fulfilment of time rates.

The effective fund of the working time of one worker (F_e) is defined as:

$$F_e = F_{reg(w)} \cdot \left(1 - \frac{L_{t(w)}}{100\%}\right), \qquad (6.2)$$

where $F_{reg\ (w)}$ – regime fund of an operating time of one worker for the period, hours (for workers with normal working conditions ($F_{reg\ (w)}$ = (365 – 104 – 11) * 8 = 2000 h), $F_{reg\ (w)}$ can be taken h/year; for work with severe and harmful working conditions – 1836 h/year); $L_{t(w)}$ – percentage of planned losses of working time of workers (absences: tariff vacation etc.) (10-12 %).

2. *The second method* is usually used to estimate the number of auxiliary workers, but sometimes the main ones. The calculation is carried out in the following sequence:

1) it is necessary to find the quantity of machine tools (number of work places) calculated (Q_{mt});

b) find the quantity of machine tools actual (Q_{act});

c) find the quantity of auxiliary workers of the given profession ($n_{a\ wi}$).

Definition of quantity of *calculated* units of *machine tools* equipment (Q_{mt}):

$$Q_{mt} = \frac{\sum A_a \cdot t_i}{F_{act} \cdot F_f}, \qquad Q_{mt} = \frac{\sum T}{F_{act} \cdot F_f} \qquad (6.3)$$

where A_a – annual amount of production in units or quantity of units of work of i-th category (for period); t_i – labour intensity of unit of work (operation) of i-th category; F_f – factor of fulfilment of time rates; T – total labor intensity; F_{act} – effective fund of the working time of one units of equipment (working time of one units of equipment during the planned year).

The actual necessary quantity of units of *equipment* (Q_{act}) is calculated, considering that the actual factor (coefficient) of equipment loading (K_{el}) should not exceed the value 0,85-0,95.

$$K_{el} = \frac{Q_{mt}}{Q_{act}} \le 0,9$$

$$Q_{act} = \frac{Q_{mt}}{0,9}, \quad (6.4)$$

Quantity of auxiliary workers of the given profession:

$$n_{a\,wi} = \frac{\sum Q_{act} \cdot l}{\mathrm{Norm_s} i}, \quad (6.5)$$

where l - number of shifts per day; $Norm_s i$ – norms of service of equipment by one worker of the given profession.

6.3 Workforce productivity

How can we assess the effectiveness of the use of personnel? *Workforce productivity* is a crucial factor in improving production efficiency. The economic essence of workforce productivity is that it expresses the relation between the amount of products produced and the labor time spent on manufacturing them.

Workforce productivity is a generalized indicator of efficiency of the use of personnel (labor resources) at the enterprise, which, like all efficiency indicators, characterizes the ratio of results and costs, in this case, labor results and labor costs. Increasing workforce productivity means getting more done with the same number of team members. Workforce productivity can be measured in:

1) natural unit of measurement is based on accounting for work in natural terms (tons, meters, m3, liters) for a unit of time – month, year, shift, hour;

2) labor unit of measurement consists in the calculation of labor costs spent on a unit of production. The indicator calculated in this way is characterized by labor intensity and is the inverse of the natural indicator;

3) valuable units of measurement – the essence is that the entire volume of merchandise (gross) production of the enterprise, manufactured (sold) per unit of time is accepted for calculations. It is measured in monetary units.

Workforce productivity is one of the most important indicators of overall performance of any enterprise. It is widely applied in all countries and economy types, though calculation procedures may be different. Workforce productivity (labour efficiency) is the 1) quantity of production made in unit of time (better ti maximize) or 2) time spent to produce a unit of production (better to minimize).

There are direct and inverse methods of *WP* definition. The direct method allows defining of *production output* that is quantity of production, which is produced in a unit of time:

$$WP = CO/n_w, \tag{6.6}$$

where *CO* – volume of commodity output for the given period (in monetary or natural units of measurement); n_w – number of workers.

Production output (productivity, *WP)* – the most widespread and universal indicator of workforce productivity. Production output (productivity) is the quantity of commodity output produced per unit of work time, by unit of equipment or by one worker, per hour, shift, month, quarter, year.

The inverse method of *WP* definition allows finding amount of working time for manufacturing of a unit of production (labour intensity of production is denoted by a letter *t*). Time spent to produce a unit of production is labour intensity.

The higher *WP* is – the higher is economy of live and public work that is less time required to produce a unit of output. Growth of *WP* means production cost reduction, profit and profitability increase, growth of accrued taxes, tax proceeds, part of profit which remains at the enterprise. There are hourly, daily, monthly, quarterly and annual *WP*. This division of *WP* indicators is necessary to plan and analyze changes in

workforce productivity, depending on changes in various factors of production. Hourly WP (production output per hour) is defined as an output of one hour of worked time:

$$WPh = CO / T_p \,, \tag{6.7}$$

where CO – volume of commodity output for the given period (in monetary or natural units of measurement); T_p – quantity of hours, fulfilled during the given period.

WP is analyzed and planned at different levels of management and in all types of economy. In the developed countries *WP* is constantly traced and analyzed. At planning of *WP*, level and growth of *WP* on output and labour intensity indicators are defined. Growth of WP is in most cases defined as an increase of output:

$$\Delta WP = \frac{WP_{pl(2)} - WP_{b(1)}}{WP_b(1)} \cdot 100\% \tag{6.8}$$

where WP_{pl} – productivity in planned (next) period; WP_b – productivity in base (previous period).

Each enterprise is characterized by a certain level of workforce productivity, which can grow or decline under the influence of various factors. An increase in workforce productivity is an undoubted condition for the progress and development of production.

The growth of workforce productivity is an important indicator of the country's economic growth. Since an increase in the social product per capita means an increase in the level of consumption, and, consequently, in the standard of living, growth of workforce productivity as a main part of economic growth becomes one of the main goals of states with a market economy system.

Workforce productivity in the world. Today, the generally accepted economic indicator characterizing workforce productivity, on the basis of which international comparative analysis and assessment of trends are carried out, is the volume of GDP per hour of time worked. It is believed to be more relevant for characterizing productivity than GDP per working person. According to experts' estimates, by 2020 the leaders in this indicator among countries will be such countries as Ireland, Latvia, Poland and

Lithuania. For example, in Ireland, labor productivity should increase by 50% between 2010 and 2020, while the national average is only 9%. The reason for this increase is obvious: the development of the IT sector, thanks to which Ireland turned from the poorest country of the British Isles to one of the richest.

So it is obvious that workforce productivity is an important economic indicator that is closely related to economic growth, competitiveness and standard of living in the economy of each country.

6.4 Self-test questions

1. Composition and structure of the company's production personnel.
2. What factors determine the number of workers?
3. Workforce productivity and its components.
4. Labor intensity of products and its relationship with production volume.
5. Factors of workforce productivity growth, their classification.

WAGES, ITS ECONOMIC CONTENT, FORMS AND SYSTEMS

6.5 General concept of wages, its functions

Scottish economist A. Smith in his book "Studies on the Nature and Causes of the Wealth of Nations" (1776) noted back in the 18th century that a person should always be able to exist by his own labor, and his *wages* should at least be sufficient for his existence. It even in most cases should slightly exceed this level; otherwise it would have been impossible for him to support his family, and the race of these workers would have died out after the first generation. Therefore, a worker of the lowest grade must earn at least twice what is necessary for his personal support, so that he can raise two children.

Wage functions. Extremely important role of wages in the functioning mechanism of the market economy is determined by the fact that it must perform the following main functions: reproductive, stimulating, optimizing, regulatory, social, ect.

1. The *reproductive function* consists in providing workers and their family members with the necessary life benefits to restore labor power spent in the production process and reproduce generations.

2. The *stimulating function* of wages consists in establishing the dependence of the amount of wages on the personal contribution of the employee and the results of the activity of the entire team of the enterprise.

3. *Resource allocation function* ensures certain proportions in the growth of the wage level and labor productivity.

4. The *regulatory function* is a means of redistributing the labor force taking into account market conditions. State bodies interested in the full functioning of the labor market are more "inclined" to the regulatory function of wages.

5. The *social function* is designed to ensure equal pay for equal working conditions and eliminate any discrimination in pay.

6. The *measuring and distributive function* of wages is aimed at reflecting the measure of living labor in the distribution of consumption funds between employees and owners of the means of production.

7. In addition to the above functions that reflect the essence of wages, a number of others are considered, for example, the *function of forming the solvent demand of the population*. Solvent demand is such a situation in the market when potential consumers have the desire and ability to buy any goods.

Wages as a socio-economic category, on the one hand, are the main source of cash income for workers, so its value largely characterizes the level of well-being of all members of society. On the other hand, its proper organization will interest workers in increasing the efficiency of production, and then has a direct impact on the pace and scale of the country's socio-economic development. Wages are monetary remuneration for work in accordance with its quantity and quality, as well as the legislative and regulatory documents on remuneration and encouragement of labor.

The following organizations are engaged in compiling annual ratings of average wages and in general determining current global trends in wages: International Labor Organization (ILO); Organization for Economic Cooperation and Development (OECD); Eurostat and others.

5.1.1 Terms "salary" and "wages"

The terms "*salary*" and "*wages*" are often used interchangeably because they both describe an employee's pay. But the fact is that these two terms have certain differences and employers calculate and plan this pay in different ways. The essential difference between salary and wages is that a salaried person is paid a fixed amount per pay period and a wage earner is paid by the hour. Salary employees usually earn a specific amount over an entire year, whereas waged employees earn by the hour or piece of work. Salaries are an agreed amount per year and include holiday and sick day benefits. Wages suit employers in specific industries, often those employing staff whose schedules are more inconsistent.

Two main types of wages:

1. Time rate. A time rate means that a worker will get paid for the amount of time they work.

2. Piece rate. A piece rate is when a company pays workers for each piece of work they complete, regardless of how long it took.

Two main types of salary:

1. Base salary: A base salary, or base pay, is a salary agreed by both parties that doesn't vary over time. It has a payment frequency decided by the employer, which is usually paid monthly.

2. Variable salary: A variable salary is an annual payment that can change depending on an employee's performance that usually includes a base salary agreed between the two parties. However, there can be targets and incentives that, if met by the employee, can increase the overall pay.

6.6 The concepts of minimum wages

The concept of minimum wage exists in the legislation of many countries. *Minimum wages* have been defined as "the minimum amount of remuneration that an employer is required to pay wage earners for the work performed during a given period, which cannot be reduced by collective agreement or an individual contract". Minimum wages can be set by statute, decision of a competent authority, a wage board, a wage council, or by industrial or labour courts or tribunals. The purpose of minimum wages is to protect employees against unduly low pay. They help ensure a just and equitable share of the fruits of progress to all, and a minimum living wage to all who are.

Minimum wages across the world differ significantly. In 2019 Australia holds the world record for highest nominal minimum wage with AUS$18.93 (US$14.15), beating out Luxembourg by a cent. New Zealand's minimum wage increase to NZ$17.70 (US$12.25), effective April 1, will elevate the country to the third global rank.

Minimum wage is the lowest remuneration that employers can legally pay their employees – the price floor below which employees may not sell their labor. Most countries had introduced minimum wage legislation by the end of the 20th century. According to Wikipedia, 80% of countries in the world currently have a statutory minimum wage. Surprisingly, these are not always the poorest countries. Thus, of the 28 EU members, there is no minimum wage in six countries. These are Austria, Denmark, Italy, Cyprus, Finland and Sweden. It is also absent among European countries in Iceland, Norway and Switzerland. However, this is not the result of opposition to minimum wages, but the result of the existence of an alternative, primarily sectoral agreements between workers and managers. For example, Switzerland has collective bargaining agreements that provide minimum compensation for unskilled and skilled workers. In 2014, the country even held a referendum on establishing an hourly minimum wage, but this decision was rejected by three-quarters of those who voted.

6.7 Nominal and real wages (salary)

You may have heard statisticians or economists refer to the term "nominal wage" and wonder what it means. These words are usually followed by the concept of “real wages” – it creates additional questions that often confuse even more. How can person understand if his or her wages is “nominal” or “real” and has it increased at all?

The fact is that the economy is constantly changing: the incomes of the population can rise or fall, as well as prices by all means. In a healthy economy, price growth should not be faster than income growth. However, the opposite often happens. When nominal incomes grow more slowly than inflation, the real state of the population falls.

In order to depict this phenomenon, statisticians define two important economic indicators - nominal and real income of the population. So, wages are divided into nominal and real. *Nominal wages* are the wages received by a worker in the form of money. Therefore, *nominal wages* are also called money wages. Since a nominal wage is not adjusted for inflation, it does not accurately reflect the purchasing power of your wages. *Real wages* show the value of wages adjusted for inflation. Real wages are a guide to how living standards have changed. For example, if nominal wages increased 5%, but inflation was 5%. This would mean the purchasing power of your wages had stayed the same.

Real vs nominal explained:

– Nominal values are the current monetary values.

– Real values are adjusted for inflation and show prices/wages at constant prices.

– Real values give a better guide to what you can actually buy and the opportunity costs you face.

Example of real vs nominal:

– If you receive an 8% increase in your wages from £100 to £108, this is the nominal increase.

– However, if inflation is 2%, then the real increase in wages is (8-2%) 6%.

– The real wage is a better guide to how your living standards changes. It shows what you are actually able to buy with the extra increase in wages.

– If wages increased 8%, but inflation was also 8%, the real increase in wages would be 0% – in effect, despite the monetary increase in wages of 8%, the amount of goods and services you could buy would be the same.

Real wages can be defined as the amount of goods and services that worker purchases from his/her nominal wages. So real wages characterize the purchasing power of nominal wages under the influence of changes in consumer prices for goods and services and the level of taxes and mandatory payments. The real wage index is calculated by dividing the index of accrued nominal wages (excluding personal income tax and military service) by the consumer price index (inflation index). The inflation index, or what is also the same, the consumer price index is an indicator that characterizes changes in the general level of prices for goods and services purchased by the population.

Real wages rise if:

– nominal wages are rising, but prices are standing still;
– the nominal wage remains the same, but the price level falls;
– the growth of nominal wages faster than the rise in the price level;
– nominal wages fall more slowly than prices fall.

Real wages fall if:

– nominal wages fall and prices stay the same;
– nominal wages remain the same, but prices rise;
– the growth of nominal wages is slower than the growth of prices;
– the decline in nominal wages is faster than the fall in prices.

Nominal wages can increase indefinitely, but if their growth is not confirmed by the growth of workforce (labor productivity), then prices will simply catch up with it. It is the growth of real wages that reflects the fact that workers and enterprises become

more efficient, earn more, spend more, invest more - all this contributes to economic growth.

6.8 Wages structure

The main document in Ukraine that regulates the organization of labor remuneration at the enterprise is the Law of Ukraine "On Remuneration of Labor", according to which the basic positions of labor remuneration, the amount and features of calculating the minimum wage are determined. In addition to the state ones, there are other restrictions on wages, which are stipulated in collective agreements.

According to the Law of Ukraine "On Remuneration of Labor", wages (salary) must have the following structure:

1) basic wages (salary);
2) additional wages (salary) (afterpayments and bonuses that are regular);
3) other incentive and compensation payments (they are irregular).

Now let's look at these components in more details.

1) basic wages are reward for the work performed in accordance with the established labor standards (standards of time, output, job duties). It is established in the form of tariff rates (salaries) and piece rates for workers and official salaries for employees;

2) additional wages are reward for work beyond the established norms, for work successes and special working conditions. It includes additional payments, allowances, guarantees and compensatory payments provided for by current legislation, bonuses related to the performance of production tasks and functions of a systematic nature;

3) other incentive and compensatory payments – reward based on the results of work for the year, bonuses under special systems, compensatory payments that are not provided for by acts of current legislation or are carried out in excess of established norms.

For example, consider the salary of a university teacher and look the structure of it: 1) the monthly official salary of a teacher according to the legislation is the basic salary; 2) systematic monthly allowances, for example, for years of service (for seniority), are additional salary; 3) non-systematic bonuses, such as, for example, a bonus on the occasion of the anniversary of the department, or the anniversary of the university or on another occasion, these are other incentive and compensation payments.

6.9 Tariff system of remuneration

Commercial enterprises themselves can set the rules for calculating the wages of their employees in compliance with the current labor legislation. However, no one here will invent something new and already existing forms and systems of labor payment are reproduced. The basic system of remuneration at enterprises in Ukraine is the tariff system. Tariff system is used to differentiate the wages of personnel depending on their qualifications, responsibilities, working conditions (i.e. its harmfulness, severity, intensity, noise level, etc.), its quantity and results. With the help of the tariff system, ratios are established between low and highly paid categories of personnel.

The tariff system reflects the division of personnel according to professions, specialties and qualifications.

Profession characterizes the labor activity and employment of the employee in accordance with the training received by him, the acquired theoretical knowledge and practical skills (for example, turner, locksmith, miner).

Specialty reflects the intraprofessional division of labor. This concept is already compared with the concept of "profession" (for example, carousel turner, plumber, equipment repairman). Consequently, the specialty requires deeper knowledge and the acquisition of practical skills in a narrower range of work. Qualification – a set of production knowledge, skills, certain practical skills.

Tariff system contains the following basic elements: hour tariff rates, tariff grids; directories of tariff qualifications.

The tariff grid, as an important element of the tariff system, serves to determine the ratio in the remuneration of workers who perform work of different complexity. It contains a certain number of categories and their corresponding tariff factors (coefficients). The tariff category reflects the level of qualification of the worker, i.e. a worker with a higher qualification has a higher category of the tariff grid. Tariff factors show how many times the wage of each category of skilled workers is higher than the wage of a worker of the 1st category (table 5.1).

Table 6.1 – Tariff grid in engineering

The wage category	1	2	3	4	5	6	7	8
Tariff factor (TF)	1	1,12	1,35	1,56	1,71	2	2,2	2,4

If the average category of works is not an integer, its tariff factor is defined by the method of interpolation:

$$TF_{ij} = TF_i + j \cdot (TF_{i+1} - TF_i) \quad (6.9)$$

where j – fractional part of the wage category.

Hour tariff of the first category, Th_1, hrn/h:

$$Th_1 = \frac{W_{min} \cdot 120\,\%}{168}, \quad (6.10)$$

where W_{min} – minimum salary per month; 168 – average number of working hours per month.

Based on the tariff grid and hour tariff of the first category, the hour tariff rates of each subsequent category are calculated. Thus, it is the basis for calculating the wages of workers, a ready-made basis on which calculations should be based.

Now let's review an example of calculating the average tariff factor, using the table 5.1:

$$TF_{ij} = TF_i + j \cdot (TF_{i+1} - TF_i), \quad (6.11)$$

TF 5,2 = TF 5 + 0,2 · (TF 6 – TF 5) = 1,71 + 0,2 × (2 – 1,71) = 1,768

This will help us calculate the hourly tariff rate of category 5.2:

$Th_{5,2} = Th_1 * TF_{5.2} = 48 * 1.768$

Note that a particular worker can only have an integer wage category (3, 5, etc.), but if, for example, a team of turners from several people works, then the average for the team can be non-integer wage category!

In the framework of the tariff system of remuneration, two main forms are distinguished: time-based (hourly) and piece-rate.

Time-based form of remuneration is used in the case when the number of hours worked is used as a measure of the results of labor (for example, a turner of the 5th category worked 185 hours per month, where his wages will be equal to 185 * Th_5.

The *time-based* form has the 2 systems:

1. The *direct time-based wages* (*Wt*) is calculated by the formula

$$Wt = T_{act} \cdot T_{h1} \cdot TF_i \tag{6.12}$$

where T_{act} – time actually worked during the month (h).

2. *Time-based bonus wages (Wt-b)* is calculated:

$$Wt\text{-}bon = Wt + Bonus. \tag{6.13}$$

The employee receives a bonus if output is better than expected when comparing the time planned with the time actual.

Piece-rate form of remuneration is used when the quantity of manufactured products is used as a measure of labor results. It is also necessary to know how much a worker receives for one manufactured product. For example, a seamstress sewed 300 products in a month, and for each product she receives UAH 57/piece, then her monthly salary will be 300*57 = 17100 UAH ≈ 420 USD/h).

The *piece-rate* form has the following 3 systems:

1. *Direct piece-rate wages* (Wp) is calculated by the formula:

$$Wp = \sum Ri * N_{act\ i}\ , \qquad (6.14)$$

where R_i – rate paid per unit of production (piecework rate) (UAH/unit); $N_{act\ i}$ – number of units completed in the pay period.

Rate paid *per unit of production:*

$$R = (t_{(min)}/60) \cdot T_{h1} \cdot TF_{\ i}\ \ , \qquad (6.15)$$

where $t_{(min)}$ – labor intensity (in minutes).

2. *Piece-rate bonus wages (Wp-b)* is calculated:

$$Wp\text{-}b = Wp + Bonuses\ , \qquad (6.16)$$

When the focus is on quantity, the quality of output may suffer. Bonuses for high quality is especially useful in this case. Bonus for overfulfillment of the plan can also be paid as well as bonuses for other criteria.

3. *Piece-rate progressive wages (Wp-p)* – type of piece-rate wages, in which products manufactured within the plan are paid at the usual piecework rate, and above the plan - at higher rates. Here the rate is progressing, i.e. increasing.

Piece-rate progressive wages is calculated by the formula:

$$W_{p\text{-}p} = N_{pl} \cdot R + N_1 \cdot R_{inc1} + N_2 \cdot R_{inc2}\ , \qquad (6.17)$$

where N_{pl} – products manufactured within the plan; N_1 and N_2 – products manufactured above the plan (attention, $N_{act} = N_{pl} + N_1 + N_2$); $R_{inc1,2}$ – increased rate paid per unit of production.

6.10 Remuneration package

Remuneration refers to overall monetary and non-monetary compensation that employees or independent contractors receive for providing services to an organization

or company. The employment contract breaks it down into the base salary, bonuses, incentives, overtime payments, commissions, vacations, etc.

In respectable organizations, remuneration for work is not only a monetary reward, but there is such a concept as a remuneration package, in Ukraine it is called a social package. For example, imagine a specialist looking for a job and he or she has two options in front: Company One is offering an 80,000 (per year) salary, as well as the mandatory holiday leave, pension, statutory sick pay, and maternity/paternity benefits. Company Two is offering a 70,000 salary and the mandatory benefits. But they're also offering an attractive remuneration package that includes childcare vouchers, flexible work hours, extended annual leave, a subsidized gym membership, and more. For the majority of UK workers, Company Two wins their skills and expertise. This is especially true for Millennial workers – 40% of whom say a benefits package (AKA a remuneration package) is *more* important to them than a basic salary.

In simple terms, a remuneration package is the group of benefits that an employee receives when they work for a company. This package goes beyond your average salary and includes things like non-cash benefits and flexible work hours. Remuneration packages are typically negotiated during the hiring process. At most companies, they're also reviewed during the employee's annual evaluation or when an employee is promoted.

The remuneration package consists of financial and non-financial perks that a full-time or independent worker gets for their work. It is the precondition of employment and acts as a motivation for employees who desire fair compensation. Companies develop a remuneration policy to reward and motivate their staff to be better and more productive.

There are two types of remuneration: direct (fixed) and indirect (variable).

Direct compensation includes a variety of different types of pay: salary: fixed amount of compensation, usually paid on a monthly or biweekly basis; wages: compensation employees earn based on the number of hours that an employee works and

paid on a weekly, biweekly or monthly basis; commission: payment made based on employee performance and designed to encourage maximum performance and productivity; bonuses: payment awarded to employees in addition to their base pay and usually intended to encourage the best possible performance

Indirect compensation includes both cash and non-cash incentives, such as health and life insurance, paid time off, retirement contributions, use of a company car, equity-based programs, sick leave, profit-sharing, gym reimbursement, transit allowances, flexible working hours or the option to work from home. A strong remuneration package can make a business more attractive to skilled candidates.

6.11 Self-test questions

1. The essence of the concept of "salary" and its functions.
2. Salary structure.
3. Principles of wage organization in Ukraine.
4. What do the terms "Tariff grid", "Tariff rates" mean and what are they used for?
6. Peculiarities of calculating wages for hourly and piecework forms.
7. What is the essence of the

Topic 7. FIXED CAPITAL OF THE ENTERPRISE

7.1 Basic terms.

7.2 Classification of groups of fixed assets.

7.3 Depreciation of fixed assets.

7.4 Analysis of the efficiency of use of fixed assets.

7.5 Indicators of productivity of the fixed assets

7.6 Self-test questions

7.1 Basic terms

Enterprise economy – a set of economic processes that are carried out at the enterprise when using different types of resources. For the production process, the

enterprise needs so-called productive forces, consisting of means of production (production assets) and workforce (personnel) (table. 2.1).

Table 7.1 – Productive forces of enterprise

PRODUCTIVE FORCE	
MEANS OF PRODUCTION (PRODUCTION ASSETS): Machinery and equipment, transport, buildings, ect + cash, materials, etc	WORKFORCE (PERSONNEL): people who work for a particular enterpise or organization

Production assets are the means of production, expressed in the monetary form. Means of production – set of means of labour (cars, equipment, etc.) and subjects of labour (raw materials, basic materials, etc.). Means of labour make the material contents of the fixed production assets and subjects of labour make the material contents of working capital. Thus, production assets represent set of the fixed production assets and working production assets, to be exact – fixed assets and normalized working capital (table 2.2). Structure of production assets is different in different branches. In mechanical engineering the fixed assets make 60-65 % of production assets cost and working capital – 35-40 %.

Table 7.2 – Production assets

PRODUCTION ASSETS 100%	
FIXED ASSETS (machinery and equipment, transport, buildings, ect) 60-65%	WORKING CAPITAL (cash, stock inventory like row and basic materials, etc) 35-40%

So, one of the main goals of the enterprise is to manufacture products. To do this enterprise (company) must have the following resources:

1. Fixed assets: machinery and equipment, buildings and structures, vehicles, etc.

2. Working capital: money, raw materials, semi-finished and finished products, etc.

3. Workforce (personnel): people of different professions.

4. Intangible assets.

The topic of this lecture is fixed assets, so *fixed assets* are the part of production assets, mainly means of labour which participate in many production cycles, does not change its material form and gradually, in process of deterioration (wear and tear), transfers its cost at the cost price of manufactured production (by means of depreciation).

According to National regulation (standard) of the financial accounting 7 "Fixed assets", fixed assets are tangible (material) assets that an enterprise holds for the purpose of using them in the process of production/activity or supply of goods, provision of services, leasing to other persons or for the implementation of administrative and socio-cultural functions, the expected period of useful life of which is more than one year.

Thus, we can highlight the following *features of fixed assets*:

1) participate in many production cycles;

2) do not change their natural form during use or storage;

3) expected useful life of more than one year;

4) gradually, in process of deterioration (wear and tear), transfers their cost at the cost price of manufactured production.

5) value criterion for determining fixed assets (in Ukraine): from UAH 20,000 and above (for fixed assets put into operation since May 23, 2020), previously from UAH 6,000 and above.

7.2 Classification of groups of fixed assets

The fixed assets of the enterprise are divided into fixed production assets (function in the field of material production of the enterprise; they are divided into active and

passive parts) and fixed non-production assets (assets of the non-production sphere of the enterprise, i.e. those that do not participate directly in the production process and are intended to serve the needs of housing and communal services, healthcare, education, culture) (fig. 2.1). Fixed production assets participate in the process of making products or providing services. They include: machines, equipment, appliances, transmission devices, etc. Fixed non-manufacturing (non-production) assets are not involved in the product creation process.

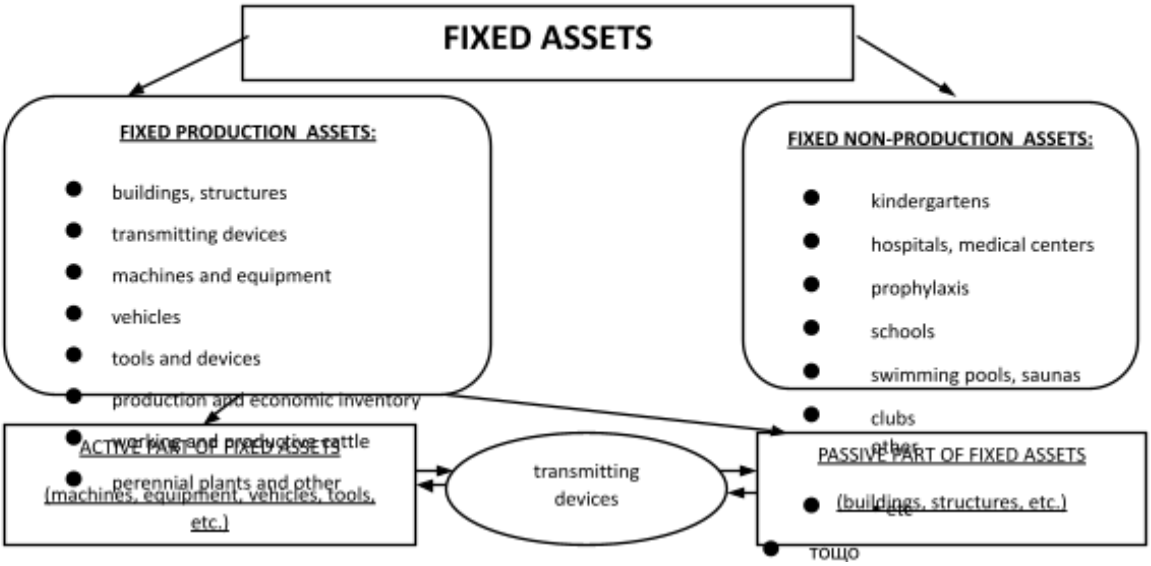


Figure 7.3 – Fixed assets

There are different classifications of fixed assets – for accounting purposes fixed assets are divided into 9 groups, there are also classifications of fixed assets in industry and in tax accounting. In the table 2.3 presents the classification of fixed assets proposed in the Tax Code of Ukraine.

Table 7.3 - Classification of groups of fixed assets

Group	Contents	Minimum service life, years
Group 1	Land plots	-
Group 2	Capital expenses for land improvement that are not related to construction	15

Group 3	- building - structures - transmission devices (assets created to perform special functions for the transmission of energy, substance, signal, information, etc. of any origin and type over a distance: power lines, pipelines, water pipes, heat and gas networks, communication lines, etc.)	20 15 10
Group 4	Machinery and equipment including: computers and other machines for automatic processing of information, connected with them, means or reading and printing of information, related computer software (other than software acquisition costs are recognized as royalty and / or programs that are recognized as intangible assets), and other information systems, switches, routers, modules, modems, uninterruptible power supplies and means for connection to telecommunication networks, telephones (including cellular), microphones and radios, which value is higher than 2500 hrn.	5 2
Group 5	Transport means	5
Group 6	Instruments, equipment, inventory (furniture)	4
Group 7	Animals	6
Group 8	Perennial plants	10
Group 9	Other fixed assets	12
Group 10	Library funds	-
Group 11	Non-current tangible assets of low cost	-
Group 12	Temporary (denotified) facilities	5
Group 13	Natural Resources	-
Group 14	Returnable packaging (reusable containers)	6
Group 15	Items of renting (rent objects)	5
Group 16	Long-term biological assets	7

The structure of fixed assets is defined as the ratio of different groups of fixed assets in their total amount. It reflects the technical armament of the enterprise and the efficiency of capital investments. The structure of the main means of production of various industries and enterprises depends on certain factors: the type of production, the technological features of the manufactured products, the technical level of machines and equipment, etc.

The production structure of fixed assets is one of the most important indicators of the technical level of the enterprise (industry, national economy in general), which has a decisive influence on the efficiency of production. The higher the share of machines,

equipment, devices, i.e. the active part of the fixed assets of production, the higher the return on capital, i.e. the more products are produced for each unit of the value of the main means of production.

Along with the basic assets, concept of "intangible assets" is considered. Intangible assets include so-called imperceptible assets, which can produce profit during several years (patents, licences, complete sets of design and technological documentation, technological secrets (know how), trade marks, software, the lease rights, "goodwill" (reflection of accompanying advantages of assets – a convenient location, qualified personnel, wide experience of work, traditions, etc.).

7.3 Depreciation of fixed assets

An important quality of fixed assets is depreciation, the economic meaning of which is the gradual transfer of the value of fixed assets to the cost prise of manufactured products. This is done through constant depreciation deductions. Depreciation deductions are a part of the value of fixed assets in monetary terms, which is included in the cost prise of production. By the way, intangible assets are also subject to depreciation! Depreciation is subject to those fixed assets that undergo to wear and tear, i.e. lose their value over time, for them the minimum terms of useful operation established. Land plots are not subject to depreciation, because they do not wear out, so they do not have a fixed useful life.

It is necessary to mention the term wear and tear of fixed assets (not to be confused with depreciation!) While in service and storage, funds wear out and lose their value. The economic essence of wear and tear consists in decreasing of funds value. There are two types: 1) physical wear and tear and 2) obsolescence of funds (moral wear and tear).

1. Physical wear and tear of fixed assets – this is the gradual loss by means of labor of their original technical and operational qualities as a result of their use in production (the first form), as well as in a state of inactivity – under the influence of the

forces of nature (metal corrosion, weathering) (the second form). The level of physical wear and tear of fixed assets depends on the primary quality of fixed assets; degree of their exploitation; level of aggressiveness of the environment; level of qualification of service personnel; timeliness of planned and preventive repairs (PPR), etc.

2. Moral wear and tear (obsolescence) of fixed assets. The essence of moral wear and tear is the depreciation of the means of labor, the loss of value before their physical wear and tear, before the end of their useful life.

Essentially, depreciation is needed so that we can calculate when the cost of our fixed assets will be recouped by the products produced with the help of these fixed assets. For example, we purchased a sewing machine (this is the fixed assets) and spent $1,000 on the purchase, installation and adjustment of this machine. How can we get these funds back? We have to sew clothes on this machine, and we add a small fraction of the cost of this sewing machine to the full cost price (and then to the price) of each finished product.

In Ukraine the depreciation policy in accounting is stated in the standard 7 of accounting "Fixed assets". According to it in accounting 5 methods of depreciation are provided:

1. Straight-line method.

2. Method of reduction of residual value.

3. Method of the accelerated reduction of residual value.

4. Accumulated (cumulative) (method of sum of serial numbers of years).

5. Unit of production method.

The following three methods of depreciation are most often used in Ukraine and in the world – straight-line, accumulated (cumulative) and unit of production method.

Next, we will consider the peculiarities of calculating when using these methods:

1. With the straight-line depreciation method, the value of an asset is reduced uniformly over each period until it reaches its liquidation (salvage) value (liquidation value is the value of fixed assets at the time of decommissioning.). Straight line

depreciation is the most commonly used and straightforward depreciation method for allocating the cost of a capital asset. It is calculated by simply dividing the cost of an asset, less its liquidation value, by the useful life of the asset. So:

$$A_i = \frac{FA_{in} - FA_l}{T}, \tag{7.1}$$

where FA_l - liquidation value of fixed assets, UAH; T – the normative lifetime of fixed assets, periods (for example years); FA_{in} – the initial (balance, book) value of fixed assets, UAH. An initial value of the fixed asset is the amount of funds spent on its acquisition or creation. Besides that, the initial value of an asset comprises costs for its transportation and installation ($Costs_{t\text{-}i}$), insurance and taxes ($Costs_{other}$). So:

$$FA_{in} = Purchase\ price + Costs_{t\text{-}i} + Costs_{other}, \tag{7.2}$$

2. Accumulated (cumulative) method (method of sum of serial numbers of years). Its essence lies in the fact that most of the write-off of the value of fixed assets occurs in the first years of its operation.

$$A_i = (FA_{in} - FA_l) \cdot Cc_i, \tag{7.3}$$

Where Cc_i – is the cumulative coefficient. It shows how much of the value of the fixed asset is depreciated in this period:

$$Cc_i = \left(\frac{T - Ti}{T_{sum}} \right) \tag{7.4}$$

$$A_i = (FA_{in} - FAl) * \left(\frac{T - Ti}{T_{sum}} \right), \tag{7.5}$$

where T – is a number of years of regulatory operation (normative lifetime of fixed assets); T_i – the number of current years of service; T_{sum} – is the sum of serial numbers of years of lifetime of fixed assets.

The cumulative coefficient can be calculated according to the following scheme:

$$C_{ci} = \frac{\text{number of remaining years of useful life}}{\text{sum of serial numbers of years of useful life}}.$$

Example: T = 3y; FA_{in} = 10000 UAH

Cc_{1y} = 3/ (1+2+3) = 1/2 → A1 = 10000/2 = 5000 UAH;

Cc_{2y} = 2/(1+2+3) = 1/3 → A 2 = 10000/3 =3333 UAH;

Cc_{3y} = 1/6 → A3 = 10000/6 = 1667 UAH.

3. Unit of production method calculates depreciation charge on the basis of actual usage of asset. The expected total output, usually express in units produced or hours worked, is estimated at the time of acquisition and based on the activity in the period proportionate depreciation is calculated.

$$A_i = Q_i \cdot Da, \tag{7.7}$$

where Q_i - the volume of products of i-th period; Da - depreciation rate. Here the depreciation rate is calculated by dividing the depreciated cost by the total amount of production that the company expects to produce using the fixed asset:

$$Da = (FA_{in} - FA_l) / \sum Q, \tag{7.8}$$

where $\sum Q$ - the total volume of products that the company expects to produce using the asset.

Depreciation costs per item are calculated**:**

$$A_{item} = A_i / N_i, \tag{7.9}$$

where N_i – the number of products of i-th period

The method of depreciation of fixed assets is chosen by the enterprise independently, considering the expected method of obtaining economic benefits from its use and is revised in case of a change in the expected method of obtaining economic benefits from its use.

7.4 Analysis of the efficiency of use of fixed assets

The activity of the enterprise is inextricably (inseparable) linked with the availability and use of fixed assets, which must be characterized by the appropriate composition and structure for the implementation of the production process. To ensure the competitiveness of the enterprise and obtain the required amount of profit, it is necessary to carry out a constant analysis of the efficiency of the use of fixed assets and to study the factors that affect this change. The task of analyzing the condition and efficiency of the use of the fixed assets can be defined as follows:

a) identification of the provision of the enterprise and its structural subdivisions with fixed assets, i.e. establishing compliance of the size, composition and technical level of the assets with the enterprise's production program;

b) determination of the level of use of fixed assets and factors affecting it;

c) establishing the appropriate completeness of the available equipment park;

d) finding out the efficiency of equipment use in time and by productivity (power);

e) calculation of the impact of the use of fixed assets on the volume of production;

f) identification of reserves for improving the efficiency of the use of fixed assets.

7.5 Indicators of productivity of the fixed assets (use indicators)

Productivity of fixed assets largely determines the efficiency of the entire enterprise. Indicators of productivity of fixed assets are divided into two groups: *general and partial (private).*

1. *General indicators* serve to generalize the effectiveness of the use of all fixed assets. So, the following general indicators of productivity of the fixed assets use should be calculated: *capital productivity, capital intensity* and *fixed capital per worker*.

1) The most important and applied indicator is *capital productivity* (*fund return*) *(CP*). It shows how many products (in value terms) are produced by 1 unit value

of the fixed production funds. However, it is necessary to keep in mind, that this indicator characterises the productivity of only one part of resources – the fixed assets:

$$CP = \frac{CO}{C_{aa}}, \tag{7.10}$$

where CO – volume of commodity output, it can be equal to the revenue; C_{aa} – average annual value of the all fixed production assets. C_{aa} may be defined as:

$$C_{aa} = C_b + \frac{\sum C_n \cdot T_1}{12} - \frac{\sum C_r \cdot T_2}{12}, \tag{7.11}$$

where C_b – the value of the fixed assets at the beginning of the year (01.01); $\sum C_n$ – total value of new funds. The sign Σ means, that the funds can be added or removed in several stages; T_1 – operating time of new fixed assets during the year (months); C_r – the value of removed fixed assets; T_2 - time of inactivity of removed funds during the year (months).

2) *The capital intensity (*CI) is an indicator, inverse to the capital productivity:

$$CI = \frac{C_{aa}}{CO} = 1/\text{CP}, \tag{7.12}$$

It shows the value of fixed assets for one hryvna of output.

3) *Capital endowment (fixed capital per worker) (*FC_w) shows the value of fixed assets, which falls on 1 employee. It is calculated as:

$$FC_w = \frac{C_{aa}}{N}, \tag{7.13}$$

where *Caa* - average annual value of the fixed production assets; N - the number of manufacturing workers or all industrial-manufacturing staff.

4) Factor of updating of fixed assets (F_a):

$$F_a = \frac{C_n}{C_{aa}}, \tag{7.14}$$

In the developed countries, especially in the high technology branches, where modern technologies are applied, this value makes up to 30%.

2. *Partial indicators* are used to characterize the use of certain types of machines, equipment, production area, for example, the average production output in natural terms per unit of equipment per shift, production output per 1m2 of production area, etc. *Partial* indicators of efficiency of the fixed assets are divided into *indicators of extensive* and *intensive use* of the fixed assets. Indicators of extensive use an estimation of the fixed assets use in time and indicators of intensive use – the productivity per unit of time.

1) *Indicator of extensive use* of the fixed assets F_e:

$$F_e = \frac{T_a}{T_p}, \quad = F_{act}/Freg \tag{7.15}$$

where T_a, T_p – accordingly, actual and planned funds of operating time of the fixed assets (the same meaning F_{act} and F_{reg} – accordingly, actual and planned funds of operating time of the basic assets (see table 2.2 below)).

This value should tend to 1. The higher T_a is, the longer is the operating time of the equipment and more production is manufactured by the enterprise.

2) *Indicator of intensive use* of equipment is the factor of intensity of use (F_i):

$$F_i = \frac{P_a}{P_m}, \tag{7.16}$$

where: P_a and P_m – actual and maximum (passport - specified in the regulatory documentation) productivity of the equipment.

3) The *integrated factor* is defined as a product of factors of extensive and intensive use of the fixed assets:

$$F_{\int} = F_e \cdot F_i, \tag{7.17}$$

4) A *factor of shift-working arrangement* of the equipment is frequently applied as the indicator of extensive use. The simplest methods of its calculation is the following:

$$F_{swa} = \frac{n_1 + n_2 + n_3}{n_0}, \tag{7.18}$$

where, n_1, n_2, n_3 is a quantity of units of equipment which work during the first, second and third shift; n_0 – the overall number of the units of equipment, installed in the considered subdivision.

One of the main factors that significantly affects the efficiency of the use of fixed assets is the working time fund. There are three main types of this fund (table 2.2).

Table 7.2 – Calculation of equipment operating time funds

Funds of operating time of equipment	Non-working hour
Calendar fund of time, F_{cal}, hours $F_{cal} = 365 \cdot 24 = 8760$ hours	–
Nominal (planned, regime) fund of equipment operating time, $F_{reg\,(nom)}$, hours. (It depends on the operating mode of a particular enterprise). $F_{reg} = d_{wa} \cdot l \cdot t_{shift.} = (365 – (104 + 10)) \cdot l \cdot t_{shift}$ $d_{wa} = 365 – 104 - 10 = 251$ *days* d_{wa} – working days during the year l - number of shifts per day; t_{shift} - duration of one shift in hours (8, 6 hours).	$F_{reg} = (104 + 10) \cdot 8 \cdot n_{зм}$; 104 – weekends during the year 52 weeks per year so: $52 \cdot 2 = 104$; $(52 \cdot 2 = 104)$; 10 – public holidays throughout the year;

3. Actual annual fund of operating time, F_{act}, hours. $F_{act} = F_{reg} \cdot \left(1 - \frac{L_t}{100}\right)$ Lt – losses of time	L_t - percent of losses of time for maintenance service and repairs (3-6 %).

An important factor of competitive advantages is the management of the efficiency of the use of the company's fixed assets, i.e. the ability of the company to quickly reorganize the managerial influence, to make and implement decisions that are adaptive to the formed economic circumstances regarding the management of the evaluation process of the company's fixed assets. This is necessary to support the innovative activity of the enterprise

7.6 Self-test questions:

1. Productive forces and production assets - features of the concepts.
2. Definition and composition of fixed assets of the enterprise.
3. The structure of the company's fixed assets and factors influencing it.
4. By what features are the fixed assets of the enterprise classified?
5. The essence of the concept of depreciation of fixed assets, methods of calculating depreciation.
6. What are the types of depreciation of fixed assets?
7. What are intangible assets of the enterprise?

Topic 8. WORKING CAPITAL OF THE ENTERPRISE

8.1 Structure of working capital

8.2 The turnover of the company's working capital

8.3 Indicators of productivity of working capital

8.4 Working capital rationing

3.5 Self-test questions

8.1 Structure of working capital

Except the fixed assets, every enterprise need working capital for production manufacturing. The structure of working capital is presented in Figure 3.1 and described in more detail below.

Table 8.1 – Structure of working capital

WORKING CAPITAL	
Material part: 1) funds embodied in stocks (manufacturing stocks); 2) work-in-progress; 3) finished product.	Intangible part: 1) deffered cost; 2) cash; 3) receivable debt (receivables)

So, from a financial point of view, working capital can be attributed to:

1) Material part:

– funds embodied in stocks (manufacturing stocks) – raw and basic materials, purchased accessories and half-finished products, auxiliary materials, fuel, invaluable and high-wear tools and inventory, tare and tare materials, spare parts for repairs;

– work-in-progress – work pieces, machine parts, assembly units, the items which have not been finished in production, that is not tested and not packed. I.e. work-in-progress is products of all levels of readiness except finished products;

– finished product – packed, tested and ready for sale.

2) Intangible part:

– deffered cost – a part of costs for development and implementation of new items, expenses on rationalisation and invention, work in progress of subsidiary productions, etc.;

– cash;

– receivable debt (receivables) – debts owed to a company by its customers for goods or services that have been delivered or used but not yet paid for.

Structure of working capital is the specific weight of their separate components. It is different for different branches of the national economy.

8.2 The turnover of the company's working capital

Working capital – part of the production assets of the enterprise, which is completely consumed in each technological cycle of manufacturing products and fully transfers its value to the cost price of these products. Working capital invested in the production of products is consumed in full and is reproduced immediately after the end of the production cycle due to the sale of manufactured products. That is, we invested money in materials → produced product → sold product → returned funds invested in materials → again invested in materials → produced the product again → and so on in a circle.

Figure 3.1 depict phenomenon which has a name *turnover* of working capital.

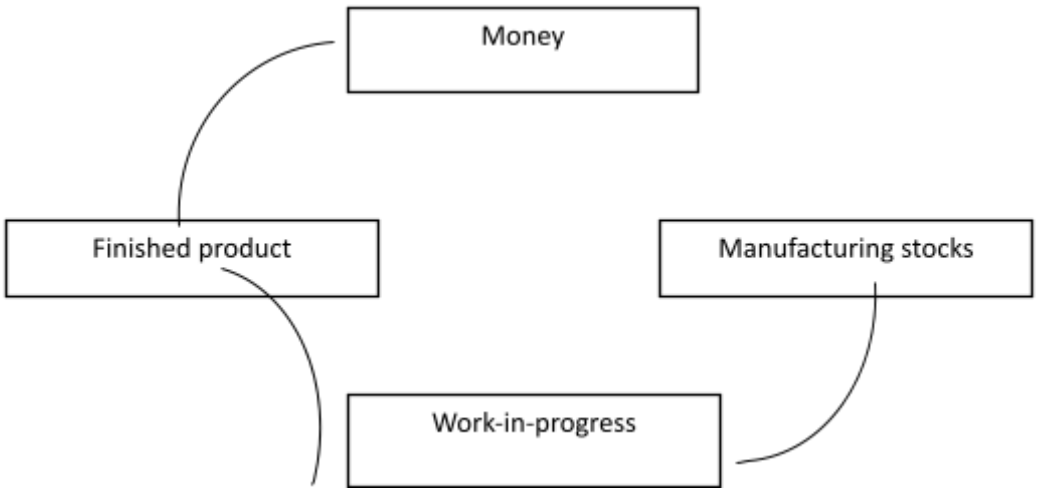


Figure 8.1 – Turnover of working capital

These assets are not accidentally called working or circulating – they are really always in motion. We can say that working capital (assets) work efficiently only when they move, that is, products are manufactured, sold, new materials are purchased and products are manufactured and then sold again.

The main point – working capital of the enterprise always moves. During the analysis, three stages of movement are allocated. At the first stage, monetary resources, cash (M) transform into stocks of commodities and materials (S_m). At the second stage commodities and materials go to production process and turn into the work in progress (W_p), and then into finished products (P^1). At the third stage, finished products P^1 go into the sphere of circulation and are sold for the amount of money M^1. This process can be represented as:

$$M - S_m - ...W_p - ...P^1 - M^1,$$

As a rule, $M^1 > M$. The difference between M^1 and M is a profit.

8.3 Indicators of productivity of working capital (turnover indicators)

The main issue of managing the company's working capital, as in the case of fixed assets, is increasing the efficiency of their use, that is, obtaining the maximum result with minimal investments in working capital. Effective use of working capital is their functioning, during which a stable state of financial resources is ensured and the highest performance results are achieved at the lowest costs of the enterprise.

Turnover is an important indicator of the efficiency of the use of working capital. For a better understanding of the meaning of the concept, let's understand what the turnover of working capital is. The turnover of working capital is the process of converting cash into physical form (raw materials and materials), passing them through the production sphere and further converting them into cash after the sale of products.

Let's consider the main indicators that will allow us to evaluate the efficiency of the use of working capital of the enterprise:

1. *Inventory turnover factor* (*factor of turnover of working* capital*)* - shows the number of turnovers that are carried out by working capital over a certain period of time (year, six months, quarter, month):

$$F_{IT} = \frac{TR}{CC_a}, \quad (8.1)$$

where TR – total revenue for the period; CC_a – the average value of working (circulating) capital for the period, hrn. *CCa* is calculated by the formula of the average chronological value.

$$CCa = \sum CCi / 12 \ (4, 2), \quad (8.2)$$

2. *Duration of one turn-over (duration of one turn of the circulating capital)*:

$$D_t = \frac{T}{F_{it}}, \quad (8.3)$$

where T – duration of the planned period in days. If T is a fiscal year, then it is = 360 days, and if financial quarter, T = 90 days, month = 30 days. This indicator is applied for the analysis of working (circulating) capital efficiency. Its value should be as low as possible. Circulation acceleration even for one day releases significant amount of money.

3. *Loading factor of working assets* (*working capital utilization ratio*) - determines the amount of working capital per unit of product sold (amount of *working* capital in hryvnas, which is used to create one hryvna of production manufactured):

$$F_L = \frac{CC_a}{TR} = \frac{1}{F_{iT}}, \quad (8.4)$$

The *amount of working capital released* as a result of accelerating the turnover of working capital can be calculated by the formula:

$$\Delta CC_a = \frac{TR_2}{360\,(90, 30)} \cdot (D_{t1} - D_{t2}), \quad (8.5)$$

4. The efficiency of working capital can also be estimated by the *material utilization rate Ru*:

$$Ru = Wnet/CR, \tag{8.6}$$

where W_{net} – finished product weight (net weight); CR – material consumption rate.

8.4 Working capital rationing

Rationing is determining the need for working capital. Working capital are divided into *rationed* and *unrationed*. Let's go back to table 3.1 and find answers there about the elements of working capital that should be rationed. All three groups of material part and the first group of intangible part are rationed.

In order to determine the company's need for working capital, working capital is being rationed. The rationing of working capital refers to the process of determining the economical need of the enterprise for working capital, ensuring a normal production process. It is easiest to understand the essence of this concept using the example of raw materials. Your company manufactures products – how much raw material and material do you need for the smooth operation of your company? So that, on the one hand, you don't reload and increase the storage space, and on the other hand, it doesn't happen that you suddenly run out of materials, and as a result, your equipment will be idle? For example, you have a bakery and you bake bread. Rationing of working capital should help you correctly calculate how much flour, yeast, sugar, salt, eggs, etc. should be in your warehouse for normal, uninterrupted work.

But remember, not only raw materials but also other elements of working capital are rationed. The total standard (stockpile) of the company's working capital is calculated only in monetary terms and is determined by summing up the working capital standards for individual elements

$$W_{total} = W_{ms} + W_{wip} + W_{fp} + W_{d}, \tag{8.7}$$

where W_{ms} – manufacturing stocks standard (stocks of raw materials), UAH; W_{wip} – standard (norm) of work-in-progress, UAH; W_{fp} – the standard of stock of finished products in the company's warehouses, UAH; W_d – the standard of deffered cost (spending of future periods), UAH.

The norm of working capital characterises minimum stocks of commodities and materials and is calculated, as a rule, in days of stock. Standard is the concept similar to the norm.

1. Standard (need) for manufacturing stocks (stocks of raw materials) can be found as follows:

$$W_{ms} = \frac{C_{mr}}{T} \cdot N_{total}, \tag{8.8}$$

Where: C_{mr} – consumed all material resources per period; T – duration of the planned period in days; N_{total} – norm of stock in days (it determines for how many days the company should be provided with working capital for this type of production stock).

$$N_{total} = N_c + N_{tr} + N_i + N_{tech}, \tag{8.9}$$

where N_c – the current stock rate, days (it is the main type of stock, therefore the working capital rate in the current stock is the main determining value of the entire stock standard in days. *The size of the current stock is affected by the interval of supplies of materials* (supply cycle), as well as the volume of their consumption in production); N_{tr} – transport stock (it may be equal to the duration of transportation); N_i – the insurance stock, days (it is provided to prevent the consequences of supply failures. The rate of insurance stock is can be set within 30-50% of the current reserve rate); N_{tech} - the norm of preparatory (technological) stock, days (preparatory (technological) stock is created in cases where materials coming to the enterprise require additional preliminary processing (drying, sorting, cutting, trim, etc.).

It should be noted that this $\frac{C_{mr}}{T}$ is the average daily need for material $C_{mr\,daily}$ so:

$$W_{ms} = C_{mr\,dayly} \cdot N_{total}\,, \tag{8.10}$$

2. Standard (norm, need) of work-in-progress*:*

$$W_{wip} = \frac{C_{mf}}{T} \cdot t_m \cdot F_a\,, \tag{8.11}$$

where C_{mf} – manufacturing cost price of output; T – duration of the planned period (so C_{mf}/T – average daily costs for output (by total production cost of finished goods); t_m – duration of the production manufacturing cycle; F_a – product readiness factor (expenses growth factor) – it shows the average level of product readiness at the enterprise).

8.5 Self-test questions:

1. Definition and composition of current assets of the enterprise.
2. Sources of formation of working capital of the enterprise.
3. Circulation of working capital.
4. The essence of rationing of working capital. Concepts of norm and norm.
5. Indicators of the efficiency of the use of current assets, their economic meaning and relationship.
6. What are the directions for increasing the efficiency of the use of working capital?
7. Remuneration package.

Topic 9. INTELLECTUAL CAPITAL

9.1 Concept of Intellectual Property (IP)

Intellectual Property (IP) refers to creations of the mind—such as inventions, artistic works, designs, symbols, names, and images used in commerce—that are protected by law. IP grants the creator exclusive rights over the use of their creations. This protection encourages innovation and allows creators to benefit financially from their work.

Types of IP include:

- Patents: Protection for new inventions.
- Trademarks: Protection for brands, logos, and names.
- Copyrights: Protection for original literary and artistic works.
- Trade secrets: Protection for confidential business information.

9.2 Legal Protection of Means of Individualization

This refers to the legal protections that help distinguish a company's goods or services from others in the market. These protections are designed to avoid confusion or misrepresentation.

Key elements include:

- Trademarks: To protect logos, product names, and slogans.
- Trade names: To protect the name under which a business operates.
- Domain names: Online addresses tied to a specific business or brand.

These legal protections are crucial in preventing infringement and ensuring that a company can maintain its unique identity in the marketplace.

9.3 Intangible Assets

Intangible assets are non-physical assets that can be of significant value to a company. These may include things like brand reputation, intellectual property, proprietary technology, and goodwill. Unlike tangible assets (e.g., buildings or

machinery), intangible assets do not have a physical form but can contribute substantially to a company's value and performance.

Examples of intangible assets include:

- Patents
- Trademarks
- Copyrights
- Business goodwill
- Software or databases

Intangible assets nclude so-called imperceptible assets, which can produce profit during several years (patents, licenses, complete sets of design and technological documentation, technological secrets (know how), trademarks, software, the lease rights, “goodwill” (reflection of accompanying advantages of assets – a convenient location, qualified personnel, wide experience of work, traditions, etc.).

So, the objects of intangible assets include the manufacturing and intellectual property, and also other rights, recognized as objects of the property right (patents, licenses, complete sets of the design and technological documentation, new technologies, "know-how", trademarks, rights of lease, etc.). In practice their value is defined by direct accounting. According to the Tax Code of Ukraine, there are 6 groups of intangible assets subject to depreciation (table 4.4).

Table 9.1 – Classification of groups of intangible assets

Groups	Term of right to use
Group 1 — the right to use natural resources (subsoil license, the right to use other natural resources, geological and other environmental information)	Subject to title document
Group 2 — the right to use property (the right to use land plot except for the right to permanent use of land plot under the legislation, the right to use building, the right to rent facilities etc.)	Subject to title document

Group 3 — the rights for trade names (the rights to trademarks (marks for goods and services), commercial (business) names etc.) except for those the expenses for acquisition of which are recognized as royalty	Subject to title document
Group 4 — the rights for industrial property items (the right to inventions, useful models, industrial patterns, plant varieties, animal breeds, semiconductor topography rights, trade secrets, including know-how, protection against unfair competition) except for those the expenses for acquisition of which are recognized as royalty	Subject to title document but at least 5 years
Group 5 — copyright and allied rights (right to literary works, pieces of art, musical pieces, computer programs, software for electronic computing devices, database compilations, phonograms, videograms, broadcasting programs etc.) except for those the expenses for acquisition of which are recognised as royalty	Subject to title document but at least 2 years
Group 6 — other intangible assets (the right to carry out activity, use of economic and other benefits etc.)	Subject to title document

9.4 Valuation of Intangible Assets

Valuing intangible assets can be complex because they don't have a physical presence and are often hard to quantify. However, there are several methods commonly used to assess their value.

Common methods of valuation include:

1. Cost-based Approach: This method determines the value of the intangible asset based on the costs incurred to develop or acquire it.

2. Market-based Approach: The value is derived by comparing similar intangible assets that have been bought or sold in the market.

3. Income-based Approach: This method values an intangible asset based on the income it is expected to generate in the future, often using discounted cash flow (DCF) analysis.

Valuation is essential for various purposes, such as mergers and acquisitions, tax reporting, and financial statements.

TOPIC 10. INVESTMENT AND INNOVATION ACTIVITY

10.1. Concepts and types of investments

10.2. Sources of investment financing

10.3 Self-test questions

10.1 Concepts and types of investments

In the broadest sense, investment is a way of placing capital, which should ensure the preservation or growth of the amount of capital.

In accordance with the Law of Ukraine "On Investment Activities", investments are all types of property and intellectual values that are invested in objects of business and other types of activity, as a result of which a profit (income) is created or a social effect is achieved." According to this law, the property and intellectual values invested in entrepreneurial activity include: cash, targeted bank deposits, units, shares and other securities; movable and immovable property (houses, buildings, equipment and other material assets); property rights arising from copyright, experience and other intellectual values; a set of technical, technological, commercial and other knowledge, formalized in the form of technical documentation, skills and production experience, necessary for the organization of one or another type of production, but not patented ("know-how"); rights to use land, water, resources, houses, structures, equipment, as well as other property rights; other values.

Investments in objects of entrepreneurial activity are made in various forms, they can be classified according to certain characteristics. Investments are classified according to the following characteristics: by investment objects; according to method of participation in investment process; depending on form of ownership of investors; by time.

1. According to investment objects, investments are divided into financial and real (capital). Financial investment is the investment of funds in various financial instruments: purchase of securities, shares, bonds, parts and shares in the statutory fund of other enterprises, investment of money in deposit accounts in banks for interest. Real (capital) investments are investments in tangible and intangible assets of the enterprise. They are divided into gross and pure. Gross investment is the total amount of investment in both simple and advanced reproduction of tangible and intangible assets of the enterprise. Pure investment is an investment in advanced reproduction only. It is calculated as the difference between gross investments and the size of depreciation deductions for tangible and intangible assets of the enterprise.

2. According to the method of participation in the investment process, direct and indirect investments are distinguished. Direct investments are characterized by the direct participation of the investor in the selection of investment objects and the investment of funds. They are carried out, as a rule, in the form of a loan without investment intermediaries for the purpose of acquiring a controlling stake in the enterprise. Indirect investments are investments made by financial intermediaries (investment funds or investment companies).

3. Depending on the form of ownership, state, private, and foreign investors are distinguished.

4. According to the sign of time, short-term and long-term investments are distinguished. Short-term investments are investments for a period of up to one year. Long-term investments are investments, respectively, for a period of more than a year.

Depending on the directions of use, the following structures of investments at the enterprise are distinguished: reproductive, industry and technological.

10.2 Sources of investment financing

The required amount of capital investment depends on the economic situation on the market and in the enterprise. At the same time, three options for the development of events at the enterprise are possible: simple, extended and narrowed reproduction.

In the case of simple reproduction at the enterprise, the reproduction of fixed assets must be carried out at the expense of depreciation deductions. Therefore, the volume of capital investments for the year in value terms will be equal to the amount accrued for the same period of depreciation. With extended reproduction, the amount of additional investments is added to the volume of capital investments that ensure simple reproduction of fixed assets – directed to the expansion of fixed assets. In the case of narrowed reproduction at the enterprise, it is necessary to consider options for restructuring the technical and technological base of production. Therefore, the amount of capital investment will depend on the investment option selected according to certain criteria.

The studies of many scientists have established a direct relationship between the country's GDP growth rate and capital investment. At the same time, world experience shows that for stable economic growth, gross capital investment should be at the level of 20-25% of GDP. The same indicators can be used at the micro level, that is, at the level of a specific enterprise. At the same time, it should be remembered that net investments should be at least 65% of gross investments. The main sources of capital investment financing at the enterprise are: own funds; loan funds; means involved; budget allocations.

The basis for assessing the effectiveness of investment projects is the definition and correlation of costs and results from their implementation.

The economic efficiency of real (capital) investments is determined using indicators of general (absolute) economic efficiency and comparative (relative) economic effect.

Indicators of general economic efficiency include the efficiency ratio (Ke) and the payback period of capital investments.

10.3 Self-test questions

1. What are investments?

2. Features of investment classification

3. What sources of investment financing do you know?

4. What is simple and advanced asset reproduction?

5. Name the indicators of investment performance evaluation.

10.4 General characteristics of innovative processes

The entire set of processes (phenomena) occurring at enterprises of various branches of the national economy can be conditionally divided into two groups: 1) traditional; 2) innovative. Traditional processes (phenomena) characterize the normal functioning of the national economy, its branches and enterprises, and innovative ones - the development of the latter at a qualitatively new level.

During a long period, when the economy functioned and developed mainly due to extensive factors (the use of an ever-increasing volume of public resources - personnel, production assets), traditional evolutionary processes dominated production. Since extensive factors have practically exhausted themselves or become economically unprofitable, the development and intensification of modern production should be based mainly on new solutions in the fields of technology, engineering, organizational forms and management methods. Development, adoption and implementation of such decisions constitute the content of innovative processes.

In a general sense, innovative processes that take place in any complex production and economic system are a set of progressive, qualitatively new changes that continuously occur in time and space. The result of innovative processes are novelties, and their introduction into economic practice is recognized as an innovation.

Innovative processes are initiated by certain branches of science, and are completed in the field of production, contributing to progressive changes in the latter. The primary impulses for introduction of innovations at enterprises are not only social needs and the results of scientific research, but also the use of foreign progressive experience in the field of technology and production organization, modern forms of management.

10.5 Scientific and technical progress, its general and priority directions

Potential opportunities for development and production efficiency are determined primarily by scientific and technical progress, its pace and socio-economic results. The more purposefully and effectively the latest achievements of science and technology, which are the primary sources of the development of productive forces, are used, the more successfully the priority (relative to production) social tasks of society's life activities are solved. Scientific and technical progress in the literal sense means a continuous interdependent process of development of science and technology; in a broader substantive sense, it is a constant process of creating new and improving applied technologies, means of production and final products using the achievements of science.

Scientific and technical progress can also be interpreted as the process of accumulation and practical implementation of new scientific and technical knowledge, a complete cyclical system "science - technology - production", covering several stages: 1) fundamental theoretical research; 2) applied research works; 3) research and development; 4) development of technical innovations; 5) increasing the production of new equipment to the required volume, its application (operation) within a certain time; 6) techno-economic, ecological and social obsolescence of products, their permanent replacement with new, more efficient models. Scientific and technical progress is characterized by evolutionary (associated with the accumulation of quantitative changes) and revolutionary (due to jump-like qualitative changes) forms of improvement of technological methods and means of production, final products.

10.6 Self-test questions

1. What is an innovation? What is the classification of innovations?
2. Name the priority areas of scientific and technological progress.
3. What is a scientific and technological revolution?

10.7 Types and content of the concept of "economic efficiency"

Increasing production efficiency is the most important complex problem facing every enterprise, firm, and organization. In a significant number of cases, this is a problem of a strategic nature, which is not solved immediately, but over a long period of time, involving more or less resources, and is solved in stages. As a rule, solving such problems has serious positive (and not only!) consequences of various kinds. This includes, of course, economic, as well as social, environmental, organizational and other results. *Social efficiency* is mainly the number of newly created jobs, the emergence of additional opportunities for the population, an increase in their solvency, an increase in trade turnover and, in general, an increase in living standards and economic efficiency. *Environmental efficiency* is a reduction in anthropogenic load on the environment, the appearance of clean water bodies, soil, air, i.e. everything that significantly affects the duration and quality of life of the population, and therefore improves living standards.

In any case, solving such problems involves the use of more or less significant funds over long periods. Therefore, the question of *economic efficiency* of investment always arises. For an operating enterprise, in terms of its innovative activities, the issues of increasing production efficiency are also relevant and are resolved by attracting investments during the planning period.

Efficiency is a complex, multifaceted (has many sides) concept that characterizes the expediency, economic and commercial success of the project under consideration. Since there are many situations where it is necessary to determine the efficiency of different projects, the indicators of economic efficiency in different cases will also be different. In general, *economic efficiency of production* refers to a level of maximum capacity in which all resources are being fully utilized to generate the most cost-efficient product possible. At maximum production efficiency, an entity cannot produce any additional units without drastically altering its production process.

Every enterprise has at least 3 comprehensive goals:

1. *Production goal* – produce products of the required assortment, quantity and quality, which is able to satisfy a certain need and, therefore, have a sale.

2. *Commercial goal* – obtain the maximum profit.

3. *Social goals* – workplaces with decent conditions, wages and social services.

All these goals are closely interrelated. In fact, success in business is possible only by combining efforts to achieve all these goals. However, the leading link of this chain, at least in the conditions of Ukraine, currently for a number of reasons is innovative activity in the production sphere. Only through the modernization of equipment, technologies and manufactured products can you achieve results in all these areas. Therefore, the main attention in this case will be paid to the assessment of economic efficiency.

When assessing economic efficiency at an industrial enterprise, the following situations can be distinguished: assessment of the efficiency of an operating enterprise; assessing the feasibility of investing in an innovation project; assessment of the effectiveness of alternative technical and technological projects and solutions.

There are situations when it is difficult to assess the economic feasibility of a project by direct calculation of economic efficiency in monetary terms. In such cases, you can limit yourself to the calculation and analysis of cost indicators and non-economic performance parameters, such as aesthetics, safety, etc. An example of this type of project could be projects for lighting and advertising installations on various office and public buildings, etc.

10.8 System of indicators for assessing economic efficiency of production

In market conditions, the assessment of the economic efficiency of production is of great importance for solving at least two of the most important problems facing the managers of any enterprise – problems of tactics and strategy of enterprise development.

First, the owners and management of the enterprise must clearly know what position the enterprise occupies on the market, its strengths and weaknesses, in order to

correctly determine the tactics of behavior in time and the development strategy in the future. Secondly, this information is no less important for use by various financial organizations and investors when considering the company's applications for the provision of loan or equity capital for the implementation of various innovative projects.

Economic efficiency of production is a multifaceted concept that can be evaluated by a system of indicators, each of which determines one or another aspect of production. In particular, in relation to an industrial enterprise, we can talk about the evaluation of the efficiency of the use of various production resources with the help of specific indicators that we have already studied. This includes indicators of efficiency of use: fixed assets, equipment, etc.; raw materials, materials and semi-finished products and working capital in general; personnel; financial resources of production. With this approach, the problem arises of reducing the considered indicators to generalizing one, so you can use one of the scoring methods or other mathematical methods for obtaining integral estimates.

In practice, from the whole variety of indicators, the main ones are selected, which are the criteria that allow one to draw a conclusion about the efficiency of production. Currently, in accordance with current accounting standards, all these indicators are divided into four families of financial ratios, namely: liquidity indicators; leverage indicators (solvency); profitability indicators; indicators of efficiency of asset use.

10.9 Calculations of the efficiency of investing in innovative projects

To maintain an enterprise in a competitive state, it is necessary to constantly update the enterprise’s machine equipment, its technical components, improve technology, master the production of new or modernized products, develop new markets, etc.

In other words, to ensure the competitiveness of an enterprise, it is necessary to constantly pursue a modernization or innovation policy, which requires certain monetary costs, time for the development and implementation of these innovations, labor resources, etc. The most common case is the calculation of the economic efficiency of

an innovative project, which requires significant one-time investments (investments or capital investments), and as a result, various technical, organizational or business innovations can be obtained, the implementation of which leads to the appearance of an economic effect.

According to modern ideas, calculations of the economic efficiency of such projects are carried out based on the following considerations:

– in the presence of several sources of investment, it is necessary to determine the price of capital;

– calculations are carried out for the calculation period, during which the operation of the project and the receipt of profit are expected;

– all cost parameters of the project (investment and operational costs) must be discounted at the discount rate taking into account the risks at the time of the project effectiveness assessment;

The main efficiency criteria are the amount of net cash flow, the internal rate of return (*IRR*) and payback period (*PP*).

Concept of cash flow, its types and calculation

The basis for calculating economic efficiency is the concept of cash flow (*CF*), which is generally defined as the difference in receipts and deductions as a result of the company's activities over a certain period of time or as general changes in cash balances in the company's accounts for the same period .

When applied to investment analysis (specifically, to calculating the effectiveness of innovative projects), cash flow is defined as the sum of net profit and so-called implicit (not visible) income, which are depreciation charges.

$$CF = Profit_{net} + Depreciation, \quad (10.5)$$

where $Profit_{net}$ – net profit; *Depreciation* – depreciation charges.

All costs associated with the development and implementation of the project are discounted at the time of calculation, the beginning of the process or the end of the

investment. *Discounting* is the process of bringing the value of money received or spent in the past or future to the present moment (usually to the time of calculation). Discounting considers the decline in the value of money in the future due to natural, normal inflation and the risks associated with any investment and expenditure of funds. Money tends to lose value. Due to inflation, 1000 hryvnias now is not equal to 1000 hryvnias in the future. This must be considered in the framework of investments.

Discounting is carried out at a discount rate equal to the discount rate of capital at the time of calculation, considering risks determined either by insurance risk or by the current situation in the economy. Discounting refers to a technique used to determine the present value (*PV*) of a future payment or a sequence of cash flows that will be received in the future. It is an important technique in the valuation process and price estimation.

The time value of money is one of its underlying fundamentals, and it is relevant in analyzing the present value of future cash flows. Hence it is the main variable utilized to price a stream of future cash flows. Businesses use discounting techniques like Net Present Value and Internal Rate of Return to estimate the profitability of potential investments.

Discounting is the process of converting value received in a future period of time into an equivalent value received immediately. For example, a dollar received 50 years from now may be worth less than a dollar received today (perhaps 80 cents)—and it is discounting that measures this relative value. Discounting is carried out at a discount rate, which is equal to the discount rate of capital at the time of calculation, considering risks determined either by insurance risk or by the current situation in the economy.

The Discount Factor is calculated using the compound interest formula, namely:

$$Discount\ Factor = 1 / (1 + Discount\ rate)^t , \qquad (10.6)$$

where discount rate (r) equal to either the price of capital or the interest on capital considering risks; this value is determined for each specific period of time; t – number of the year of profit so, $Discount\ Factor = 1 / (1 + r)^t$.

Determining the discount rate is an important task in the implementation and justification of investment projects, as well as in the assessment of the value of intellectual property objects. From an economic point of view, the discount rate is the rate of return on invested capital that an investor usually receives from investments of a similar content and level of risk. To assess the commercial efficiency of the project as a whole, foreign experts in financial management recommend applying the commercial rate of discount, set at the level of the cost of capital.

Since in most cases it is necessary to attract capital not from one source, but from several (equity capital and loan capital), the cost of capital is usually formed under the influence of the need to ensure some average level of profitability. Therefore, the weighted average cost of capital WACC (Weighted Average Cost of Capital) can be defined as the level of profitability that an investment project should bring so that it is possible to ensure that all categories of investors receive income similar to what they could receive from alternative investments with the same risk level.

The discount factor is most often used to determine the present value (*PV*) of a series of future cash flows. The present value of a cash flow – i.e. the value of a future cash flow discounted back to the present date – is calculated by multiplying the cash flow for each projected year by the discount factor, which is driven by the *discount rate* and the matching time period.

Generally speaking, there are two methods to calculate the discount factor, but in either case, the discount factor is a function of the following two variables.

1. Discount Rate → The discount rate can be thought of as representing the percentage of return that you could have received by investing that dollar, if you had received it today.

2. Time Period → The time period refers to the future date on which the cash flow is expected to be received.

The reason you would prefer to have $1 today than $1 three years from now is that if you received the $1 three years from now, you would have missed out on a full three

years when you could have invested that $1 and ended up with more than $1 by the end of that time. If the funds spent in previous years are brought to the present moment, then the amount of invested funds (investments) is divided by the discount factor, and the discounted funds will be greater than their value at the time of calculation.

If future funds (income) are discounted to the present moment, then they are multiplied by the discount factor, i.e. the amounts given will be less than the original cost due to inflation and risks, and the calculation formula will be:

$$PV = CF \times Discount\ Factor \Rightarrow PV = CF \times 1 / (1 + r)^t$$
$$\Rightarrow PV = CF / (1 + r)^t , \quad (10.7)$$

So, to arrive at the present value using the first approach, the discount factor must be multiplied by the cash flow to compute the present value (*PV*).

Efficiency calculations are made considering the project implementation period, i.e. calculation period equal to the expected duration of the project. Typically, the calculation period is taken to be 4–5 years for Ukraine, since the economic situation is unstable and the likelihood of plans for a longer period is not high enough. In addition, in market conditions, the market situation changes quickly and planning for a longer period has a low degree of reliability. This, however, does not apply to large energy companies, etc. projects whose implementation period is 10 years or more.

10.10 Criteria for economic efficiency of innovative projects

In real practice, for business projects, the following performance criteria are most often used: Net Present Value (NPV); Internal Rate of Return (IRR); Profitability Index (PI); Payback Period (PP).

For analytical purposes, it can also be used other indicators, including various profitability indicators. As the main, mandatory criterion for the effectiveness of projects, the indicator of net present value or net cash flow (NPV) is used, which is the discounted cumulative cash flow for the entire reporting period under consideration. Net present value is used to determine whether or not an investment, project, or business will

be profitable down the line. The NPV of an investment is the sum of all future cash flows over the investment's lifetime, discounted to the present value.

To calculate net present value, you need to determine the cash flows for each period of the investment or project, discount them to present value, and subtract the initial investment from the sum of the project's discounted cash flows.

$$NPV = \sum PV - Initial\ Investment. \quad (10.8)$$

The NPV indicator is an absolute indicator* with all the inherent shortcomings of such indicators. (Absolute indicators are always expressed in natural, cost or other units of measurement. Natural units of measurement such as tons, kilograms, square, cubic and simple meters, miles, kilometers, gallons, liters, pieces, etc. are used).

In the practice of investment analysis, many relative indicators* are used that have different values. (Relative indicators are quantities that express quantitative relationships between economic phenomena, which are obtained by dividing two quantities. They can be measured as a percentage or in the form of a coefficient).

The most commonly used indicators include the fo IRR, PI, PP, MC (Minimum Cost, essentially coinciding with the concept of consumption price).

The consumption price reflects the full costs of the consumer for the purchase and operation of the product during its service life. Total costs consist of one-time and current costs. One-time costs include the costs: for the purchase of the product (purchase price);

transportation; tax fees; assembly and adjustment. Current costs include the costs of: for post-warranty repair; fuel and energy; components and materials consumed during the operation of the product. For some goods (vehicles, refrigerators, etc.), current costs exceed one-time costs. It is because of the subsequent lower current costs that the buyer often chooses a more expensive product (with a higher purchase price).

The Internal Rate of Return (*IRR*) is the discount rate that makes the net present value (*NPV*) of a project zero. In other words, it is the expected compound annual rate of return that will be earned on a project or investment.

The Profitability Index (*PI*) is calculated as the ratio between the present value of future expected cash flows and the initial amount invested in the project. A higher *PI* means that a project will be considered more attractive.

Payback Period measures the amount of time required to recoup the cost of an initial investment via the discounted cash flows generated by the investment.

$$PP = Initial\ Investment/PV_{aa}, \quad (10.9)$$

where PV_{aa} – average annual positive discounted cash flow generated by an investment project.

$$PV_{aa} = (PV_1 + ... PV_t)/t, \quad (10.10)$$

where PV_1, PV_t – present value by years, t – years of project implementation.

Assume that $500,000 was invested in the project, and cash flows are generated across periods as indicated in the table 10.1 below.

Table 10.1 – Example

Period, years	Investments in the project	Discounted cash flow for the project (PV)	Cumulative discounted cash flow (∑PV)
0 (2022)	500 000		
1 (2023)		80 000	80 000
2 (2024)		120 000	200 000
3		145 000	345 000
4		160 000	505,000
5		170 000	675,000

Therefore, the payback period of the project will be 4 years, because the cumulative discounted cash flow exceeding the initial investment amount of $500,000 will be reached by the end of the 4th year and will be $505,000.

Self-test questions

1. What does the company's financial condition depend on?
2. What is the liquidity of the enterprise?
3. Define the solvency of the enterprise
4. What is the economic effect and economic efficiency of the enterprise?
5. Name the performance indicators of the enterprise.

Topic 11. TECHNICAL AND TECHNOLOGICAL BASE AND PRODUCTION CAPACITY OF THE ENTERPRISE

These sections outline the key aspects of a company's technical and technological base, organizational structure for technical development, and production capacity. Here's a detailed breakdown of each section:

11.1 Characteristics of the Technical and Technological Base of Production

This section focuses on the physical and technical infrastructure of the enterprise. It includes:

- Machines and Equipment: Description of the machines, devices, tools, and technology used in the production process. It outlines their condition, age, productivity, and technological advancement.
- Production Processes: Overview of the methods and techniques applied in production, such as automation, use of robotics, computer-controlled machinery, or innovative technologies.
- Facility Layout: The organization and design of the physical space used for production, including the flow of materials, tools, and products.
- Technology Integration: How the latest technologies (e.g., Industry 4.0, IoT, AI) are integrated into the production system to optimize efficiency and product quality.

11.2 Organizational and Economic Management of the Technical Development of the Enterprise

This section describes how the enterprise manages and fosters technological advancements and innovations:

- Management Structure: The organization of departments or teams responsible for research, development, and integration of new technologies.
- R&D Investment: The strategies for investing in research and development to drive innovation, such as collaboration with universities, partnerships with tech companies, or in-house R&D teams.
- Budgeting and Resource Allocation: How financial and human resources are allocated to technical development projects and upgrades to machinery or systems.
- Innovation Strategy: The approach the enterprise takes to stay competitive through technological advancements, including future plans for tech upgrades, product innovations, or entering new markets.

11.3 Formation and Use of the Production Capacity of the Enterprise

This section discusses the operational aspects of the enterprise's ability to produce goods and services at scale:

- Production Capacity: The maximum output the enterprise can produce under normal working conditions. It includes the number of units produced per time period, the number of shifts, and worker capacity.
- Utilization Rate: How effectively the production capacity is being used, including factors that may impact utilization, such as downtime, maintenance, and inefficiencies.
- Flexibility and Scalability: The ability of the production system to adapt to changes in demand or changes in product types, and whether the enterprise can scale up or down its operations easily.
- Maintenance and Upgrades: The systems in place for maintaining and upgrading production equipment and machinery to ensure continuous and efficient production.
- Optimization of Resources: How the enterprise ensures the efficient use of raw materials, labor, and energy to maximize output and reduce waste.

These sections provide a comprehensive view of the enterprise's technical foundation and its capacity to innovate and maintain production efficiency, ultimately ensuring its long-term competitiveness.

Topic 12. ORGANIZATION OF PRODUCTION AND ENSURING PRODUCT QUALITY

12.1 The Essence, Structure, and Principles of Organizing Operational Activities

- Essence: Organizing operational activities involves managing and optimizing the processes that transform raw materials into finished products. It includes aligning resources, processes, and workflows to achieve production goals efficiently.
- Structure: The structure often consists of production lines, departments, workgroups, and key management functions. Each component is designed to focus on specific tasks within the overall production cycle.
- Principles: Some key principles include:
  - Efficiency: Maximizing output while minimizing waste.
  - Flexibility: Adapting quickly to changes in demand or resources.
  - Cost-effectiveness: Reducing production costs without sacrificing quality.
  - Sustainability: Incorporating eco-friendly practices into production processes.

12.2 Types and Methods of Organizing Production

- Types of Production:
  - Mass Production: High volume, standardized products (e.g., car manufacturing).
  - Batch Production: Production in batches or sets (e.g., food production).
  - Job Production: Customized products made one at a time (e.g., luxury furniture).
  - Continuous Production: 24/7 production (e.g., oil refining).

- Methods of Organizing Production:

  - Process Layout: Grouping similar machines or workstations together based on the process they perform.
  - Product Layout: Arranging workstations based on the sequence of operations needed to make a specific product.
  - Cellular Manufacturing: Organizing workstations into cells that perform a series of operations for a family of products.
  - Just-In-Time (JIT): Minimizing inventory and producing only what is needed, when needed.

12.3 Quality and Competitiveness of Products

- Quality: Quality refers to the ability of a product to meet the expectations of customers and comply with standards. This is achieved through rigorous control processes and continuous improvement techniques like Total Quality Management (TQM) or Six Sigma.
- Competitiveness: Product competitiveness depends on factors like:
  - Quality: Products that are reliable, durable, and meet customer needs.
  - Price: Competitive pricing strategies.
  - Innovation: Offering unique features or improved versions of products.
  - Brand Value: The reputation of the company can significantly impact product competitiveness.

12.4 Standardization and Certification of Products

- Standardization: This refers to creating uniformity in production processes to ensure consistency, quality, and compatibility. Standards can be set for materials, processes, or final products.
- Certification: Products often undergo certification by recognized bodies (e.g., ISO 9001 for quality management) to assure customers that the product meets defined standards and regulations. Certification increases trust and can expand market reach.

12.5 Managing the Competitiveness of the Enterprise

- Innovation: Continuous product and process innovation are crucial to maintaining competitiveness.
- Market Research: Understanding consumer needs, trends, and competitor strategies helps inform production and business strategies.
- Cost Management: Efficient cost control allows the enterprise to offer competitive pricing without compromising quality.
- Strategic Planning: Setting long-term objectives, evaluating market opportunities, and adjusting strategies to maintain a competitive edge.

Each of these elements works together to enhance the overall operational efficiency and product quality, ensuring a competitive position in the market.

Topic 13. COSTS OF PRODUCTION AND SALES OF PRODUCTS

13.1 Concept and classification of costs

13.2 Cost price of the enterprise's products

13.3 Classification of costs according to their dynamics (by response to the changes in production volumes)

13.4 Break-Even Analysis

13.5 Self-test questions

13.1 Concept and classification of costs

Any enterprise, starting a production process or deciding on its expansion, must be sure of its profitability. Comparison of costs and results of activity allows to assess the efficiency of the enterprise. Without such a comparison, irreparable errors arise when choosing the economic policy of the enterprise, making important management decisions, choosing the types of business activity, determining the optimal volumes and structure of output (works, services), as well as prices for products (works, services).

The main financial result of the enterprise is profit, which is the basis and source of funds for its further development. Profit can be increased by increasing production

volumes or prices for products (work, service) produced. However, this is not always possible and advisable. Therefore, in the system of enterprise development in the conditions of significant economic restrictions, the increase in financial results is directly related to the decrease in costs.

Costs are the amount of consumed production factors (material, financial, labor resources) necessary for the enterprise to carry out economic activities aimed at obtaining profit and maximizing the well-being of the owners in monetary terms.

Enterprise *costs* are expressed in monetary terms volume of all consumed production factors: material, energy and labor resources for the production and sale of one or another type of product (works, services) or any other type of operational activity of the enterprise.

All costs of the enterprise can be broadly divided into two blocks: 1) current expenses, which are associated with the solution of such tasks as the purchase of materials (including raw materials), maintenance of material and technical base, etc; 2) long-term – associated with solving the strategic tasks of the enterprise, such as construction, etc.

Enterprise costs can be classified according to different criteria. Cost classification is necessary to determine the cost of products and, accordingly, pricing; to determine the cost of production, that is, local costs. Of great importance is the classification of costs in their management and, above all, for the calculation of the cost of production for various management needs. Successful cost management, their analysis and accounting completely depend on the classification of costs. The basis of the classification of costs is the principle – different costs for different purposes – the classification of costs is very diverse and takes place in different sections, according to different sources and objects, depending on the needs of the enterprise or other needs.

13.2 Cost price of the enterprise's products

Enterprise's costs are included into the *cost* price of production. *Cost price* as an economic category is the sum of all costs for the production and sale of products, expressed in monetary terms.

To control the use of material, labour and other resources, costs must be grouped according to certain characteristics. In economic terms, costs are grouped:

– by economic elements;

– by costing items.

1. The *economic element of costs* – a set of economically homogeneous costs. The normative document that provides for the grouping of expenses by economic elements is the Regulation (Standard) of accounting 16 "Expenses". All costs that make up the cost price are grouped in connection with their economic content. Accounting Regulation (Standard) 16 provides for the classification (grouping) of expenses according to the following economic elements: 1) material costs; 2) costs for wages; 3) deductions on social needs (Single social contribution); 4) depreciation; 5) other operational costs.

2. The essence of the classification of costs *by costing items* is that the costs are grouped according to the principle of commonality of their production purpose, on the basis of a close degree of connection with the manufacturing process. According to this classification, the place of occurrence of costs is important.

Calculating the *full cost price* of products (works, services) is a set of techniques and methods that ensure the calculation in monetary terms of the full cost price of a unit of individual types of products (works, services) produced by the enterprise in terms of cost items. On the basis of costing, the cost price of production is determined, which, in turn, can be different: planned cost price; normative cost price – the one that ideally should be at the enterprise, if all standards were met; actual (reported) cost price.

Full cost price is a monetary expression of all costs of the enterprise for production and sales of products, as well as administrative costs. When calculating the

cost by costing items, usually all calculations are tabulated. Below is an example of such calculation in the table 6.1.

According to acting standard documents the *full cost price* of an item (C_f) includes:

$$C_f = C_{mf} + C_{adm} + C_s, \tag{13.1}$$

where C_{mf} – manufacturing cost price (costs for production), hrn.; C_{adm} – administrative expenses, hrn.; C_s – sales costs, hrn.

In turn the *manufacturing cost price* is defined as:

$$C_{mf} = C_m + C_{om} + C_{pa} + C_{fe} + W_b + W_a + SSC_n + C_{mo} + C_w + WL + C_o, \tag{13.2}$$

where C_m – material costs; C_{om} – semi-finished products of own manufacturing; C_{pa} – expenses for purchased components and semi-finished products; C_{fe} – expenses for fuel and energy; W_b – the basic wages; W_a – the additional wages; *SSC* – single social contribution; C_{mo} – costs for equipment maintenance and operation; C_w – whole-manufacturing expenses; *WL* – losses from wastes; C_o – other expenses.

It means: $C_f = Cm + Com + Cpa + Cfe + Wb + Wa + SSCn + Cmo + Cw + WL + Co + C_{adm} + C_s$.

The *full cost price* is the sum of expenses for manufacturing and sales of a unit of production of the given type.

When calculating costs at enterprises, as a rule, the following calculations are made:

1. *Costs of basic materials* (C_m) and *semi-finished products* of own manufacturing (C_{om}) are defined under the formulas:

$$C_m = K_T \cdot \sum_{i=1}^{i=m} N_{ai} \cdot P_i - RW, \tag{13.3}$$

$$C_{om} = \sum_{i=1}^{i=m} N_{ahi} \cdot C_{npi}, \quad (13.4)$$

where K_m – factor considering transport and loading-unloading costs for materials ($К_т$=1,01-1,1); N_{ai} – norm of application of a material (material consumption rate) of i-th kind per unit of production (in the accepted units of measure); P_i – the price of unit of i-th kind of a material, hrn.; *RW* – cost of a returnable wastes, hrn.; m – quantity of kinds of the basic materials; N_{phi} – norm of application of semi-finished products of own manufacturing of i-th kind per unit of production; C_{npi} – the manufacturing cost price of a unit of i-th kind of semi-finished products of own manufacturing, hrn.; *m* – quantity of kinds of semi-finished products of own manufacturing.

2. *Costs of purchased components* and *semi-finished products (C_{pa})*. Calculations of these expenses is executed under the formula:

$$C_{pa} = \hat{E}_T \cdot \sum_{j=1}^{j=n} P_{n.j} \cdot N_{n.j}, \quad (13.5)$$

where K_T – the factor considering transport costs for purchased components ($К_т$ = 1,05-1,1); P_{nj} – unit price of *j*-th kind of the the purchased components, hrn.; N_{nj} – quantity of the purchased components of *j*-th kind for unit of production; *n* – quantity of kinds of purchased components for unit of production

3. The costing item "*Fuel and energy* for technological purposes" includes costs for all types of fuel and energy (both received from third-party enterprises and organizations and produced by the enterprise itself), which are directly used in the production process, for example, fuel for heating, electricity for lighting, fuel for cars, etc.

4. *Costs for basic wages (Wb).* The basic wages are defined as:

$$W_b = W_d + A, \quad (13.6)$$

where W_d – direct wages of basic industrial workers, hrn.; A – afterpayments to direct wages, hrn.

The *direct wages* for one product is calculated by the formula:

$$W_d = \sum_{i=1}^{i=m} Th_1 * TF_I * t_i \quad , \tag{13.7}$$

where Th_1 – hour tariff of the first category (the base of calculation is the minimum wage in the billing period); TF_I – tariff factor of average category of i-th kind of works; t_i – labor intensity of i-th kind of works for a unit of production; m – number of kinds of works.

5. *Additional wages (W_a)*. The additional wages of manufacturing workers are taken proportionally to the sum of the basic wages.

6. *Single social contribution (SSC)*. The single social contribution is a consolidated insurance contribution in Ukraine, which is collected in the system of compulsory state insurance on a mandatory basis and on a regular basis. The *single social contribution* is paid by employers, private entrepreneurs, and self-employed citizens. The single social contribution rate is established at 22%. However, the maximum taxable amount of the single social contribution shall not exceed 15 minimal wages.

The sum of these costs forms the manufacturing cost, and by adding sales and administrative costs, we get the full cost price.

7. *Costs for equipment maintenance and operation* may include costs for:

– functional supervision and maintenance of technical equipment,

– restoration and repair of structural elements, road surface, painting of technical equipment,

– emergency actions, such as fixing any components that have loosened by adjusting the wrong position.

8. *Whole-manufacturing expenses* may include expenses for the organization

of production and management of shops, divisions, branches, teams and other divisions of the main and auxiliary production.

9. *Losses from wastes*.

10. *Other expenses* may include all other production costs that were not included in the previous cost items.

11. *Administrative expenses* include expenses for managing the enterprise: general corporate expenses (organizational expenses, expenses for conducting annual meetings, representative expenses, etc.); expenses for business trips and maintenance of the enterprise's management apparatus and other administrative personnel; expenses for maintenance of fixed assets and non-current assets of administrative purpose (operating lease, property insurance, depreciation, repair, heating, lighting, water supply, drainage, security, etc.); fees for professional services (legal, auditing, property valuation, etc.); communication costs (postal, telegraphic, telephone, telex, fax, etc.); expenses for the resolution of legal disputes; taxes, fees and other mandatory payments provided by law (except for taxes, fees and mandatory payments that are included in the production cost of products, works, services); fees for settlement and cash service and other bank services; other costs of administrative purpose.

12. *Sales costs* include costs related to the sale of products (goods, works, services): costs of packaging materials for canning finished products in warehouses; costs for the repair of containers for product storage; wages and commissions to sellers, sales agents and employees of sales units; expenses for advertising and market research (marketing); costs for pre-sale preparation of goods; travel expenses of employees engaged in sales; costs of maintaining non-current assets related to the sale of products, goods, works, services (operating lease, insurance, depreciation, repair, heating, lighting, security); costs for transportation, transshipment and insurance of finished products (goods), transport forwarding and other services; costs for warranty repair and warranty service; other expenses related to the sale of products, goods, works, services.

Further, the enterprise calculates the *full cost price*, *profit* and *wholesale price*.

The *wholesale price* is the sum of a given product's cost price plus the manufacturer's profit margin. When calculating the cost of costing items, all calculations are tabulated. Below is an example in the table 6.1.

Next, *VAT* (more information below) and the *enterprise's selling price* are calculated. Value-added tax in Ukraine and in the world. The value-added tax (VAT) in Ukraine rate is 20%. For pharmaceutical products, the VAT rate is 7%.

Table 13.1 – Calculations of the full cost price and price of the item by costing items

Costing items	Amount of expenses, hrn/unit
1. Basic materials, C_m	
2. Half-finished products of own manufacturing, C_{om}	
3. Fuel and energy, C_{fe}	
4. Basic wages, W_b	
5. Additional wages, W_a	
6. Single social contribution (22% W_b), *SSC*	
7. Costs for equipment maintenance and operation, C_{mo}	
8. Whole-manufacturing expenses, C_w	
9. Losses from wastes (% ∑1+…..+8) (from the amount of previous expenses)	
10. Other expenses (% ∑1+…..+9), (from the amount of previous expenses)	
11. Administrative expenses (% C_{mf}), C_{adm}	
12. Sales costs (% C_{mf}), C_s	
Full cost price (C_f)	
Profit $_{\text{of manufacturer}}$, P_{rof}	
Wholesale price, P_w	
Value-added tax, *VAT*	
Transfer price of the enterprise, P_t	

It should be noted that 0% VAT rate is applied to export of goods in the customs regime from the territory of Ukraine. The taxpayer is obliged to register as a VAT payer if the aggregate value of supplied goods or services exceeds UAH 1 million for the last 12 months.

13.3 Classification of costs according to their dynamics (by response to the changes in production volumes)

To justify the company's commercial strategy, it is important to classify costs according to the degree of their dependence on production volumes into fixed and variable costs. Fixed and variable costs are the difference in the classification of an enterprise's costs as static or fluctuating when there is a change in activity and sales volume.

1. Fixed costs (*FC*) – costs, the volume of which at the moment does not directly depend on the size and structure of production. Examples are fees for premises, costs for building maintenance, costs for training and retraining of personnel, deductions to the repair fund, depreciation of fixed assets. Such costs may increase over time, but they remain constant over a period of time (for example, rent for a year). The term "fixed" indicates, that costs do not change automatically with changes in production. Fixed costs can change for another reason, for example, as a result of any management decision.

2. Variable costs (*VC*) – costs, the total volume of which at the moment of time is directly dependent on the volume of production and sales of the company's products. Variable costs are, for example, costs for the purchase of raw materials, wages, energy, fuel for production purposes, costs for containers, packaging for products, etc.

Thus, the sum of fixed and variable costs forms total costs (*TC*).

$$TC = FC + VC. \quad (13.8)$$

Total cost is the sum of expenses a company needs to manufacture a specific level of output. It’s a total of fixed and variable costs, calculating which helps product managers evaluate their overall profit margin.

We talked about the dynamics of the behavior of fixed and variable costs on the volume of output over a period of time. But what about the variable and fixed component in the full cost price of a unit of output? Will it change depending on the change in the volume of output?

13.4 Break-Even Analysis

Break-even analysis entails calculating and verifying a margin of safety for an enterprise based on the revenues collected and associated costs. In other words, the analysis shows how many sales it takes to recoup the cost of doing business.

Break-even analysis in economics, business, and cost accounting refers to the point at which total costs and total revenue are equal. So break-even analysis is a financial calculation used to determine a company's break-even point.

$$BEP = FC / (P_w - VC^{unit}), \quad (13.9)$$

where FC – total Fixed Costs are costs that do not change with varying output; P_w – wholesales price per unit; VC^{unit} – Variable Cost per unit is the variable cost incurred to create a unit.

The main conclusions regarding the break-even analysis are presented below.

1. Break-even analysis shows how many units of a product must be sold to cover the fixed and variable costs of production.
2. The break-even point is considered a measure of safety margin.
3. Break-even analysis is widely used, from trading stocks and options to corporate budgeting for various projects.

The break-even graph is built on the volume of production (not per unit!), because it will allow us to estimate at what volume of output we will break even - that is, cover all our costs (all fixed costs and variables for this amount of production, which is equal to the *BEP*). To construct a break-even graph, we must calculate:

1) Variable costs per unit:

$$VC^{unit} = C_m + C_{om} + C_{pa} + W_b + W_a + SSC_n + 0,7*C_{mo} + 0,2*C_s . \quad (13.10)$$

2) Variable costs per volume of output: $VC = VC^{unit} * A$;

3) Fixed costs of output: $FC = TC - VC$;

3) Total cost of output: $TC = C_f * A$ or TC = FC + VC

4) Revenue from the sale of the volume of output (total revenue): $TR = Pw * A$.

Key Takeaways:

1. Break-even analysis reveals when your investment is returned dollar for dollar, no more and no less, so that you have neither gained nor lost money on the venture.

2. Break-even analysis is a financial calculation used to determine a company's break-even point (BEP). In general, lower fixed costs lead to a lower break-even point.

3. Business will want to use a break-even analysis anytime it considers adding costs – remember that a break-even analysis does not consider market demand.

4. There are two basic ways to lower your break-even point: lower costs and raise prices.

Thus, it can be concluded that the calculation of the break-even level plays a significant role in making management decisions at the enterprise. It is the analysis of the break-even level (drawing a graph and finding the break-even point) that enables company managers to analyze the necessary volumes of production to achieve the required level of profit and profitability.

13.5 Self-test questions

1. Classification of production costs.
2. The concept and meaning of costs and cost price.
3. Grouping costs by economic elements.
4. The essence of the calculations of full cost price by costing items.
5. Types of cost.
6. What is the meaning of dividing costs into fixed and variable?
7. The essence of break-even analysis.

PRICES AND PRICING OF ENTERPRISE PRODUCTS

13.6 Economic content and functions of prices

Pricing is the process of setting prices for goods and services, the process of developing, adopting and practical implementation of pricing decisions. There are two fundamentally different approaches to pricing – cost and market. The cost approach to pricing is based on the company's actual costs for the production and sale of goods. In general, the price is calculated according to the formula:

$$P = Cf + Profit_{norm}, \tag{13.11}$$

where $Profit_{norm}$ is the normative profit.

The advantage of the cost principle is its simplicity and logic. The manufacturer is obliged to return the money spent, which is what this approach ensures. However, this approach ignores market conditions and problems of marketing products. The use of the market principle involves setting a price at the so-called equilibrium level, the value of which is determined by the supply-demand relationship and depends on various market, often unregulated factors. Under these conditions, it is important to ensure a balance between the market price and the price of a specific manufacturer.

In a market economy, it is difficult to overestimate the role of such an economic category as *price*. Price is the basis of commodity-money relations; most economic relationships in society are formed through it. Price is the norm for the exchange of goods for money, but at the same time it reflects the consumer properties (utility, usefulness) of the goods, the purchasing power of the monetary unit, the degree of rarity of the goods, the strength of competition in the market, the influence of the state on the market and the behavior of economic entities on it, etc.

Prices reflecting socially necessary costs for the production and sale of products are consistent with the requirements of the law of value (law of value is a law stipulating that the production and exchange of goods should be carried out on the basis of their value, that is, as an exchange of equivalents). They allow the comparison of costs and production results, provide an equivalent exchange of products, allow the use of cost characteristics to establish the correct economic proportions, etc.

Price – is the monetary value of a product, an important economic category that influences both the development of a country's economy as a whole and the economy of each individual enterprise. Price is the monetary expression of the value of a product, the amount of money that is paid (received) for a unit of a product or service.

The prices used in the market economy perform *several basic functions*: 1) *accounting and measuring, 2) distributive,* 3) *stimulating, 4) regulating*.

Types of prices. Retail price

At its most basic, a price is the amount of money that a buyer gives to a seller in exchange for a good or a service. When someone hands over $2.00 and receives a pound of tomatoes, the price is straightforward observation: $2.00 a pound. When an actual, observable transaction takes place, the price is sometimes called the *traded price or the spot price*. But there are many other types of price.

All prices operating in Ukraine can be classified according to various features (there are more than 10 classification features and several types of prices for each).

Although there is no single classification, the following types of prices are traditionally distinguished:

– wholesale prices;
– purchase prices for agricultural producers;
– estimate prices in construction;
– retail prices in trade;
– transport tariffs;
– tariffs for services.

The first and most important feature of price classification is the dependence on the stage of the commodity circulation at which they are formed. Usually, mass merchandise goes through three stages of merchandise circulation:

– manufacturing enterprise;
– an enterprise engaged in wholesale trade;
– an enterprise engaged in retail trade – sells goods to consumers.

Three types of prices correspond to these stages of merchandise circulation:

– wholesale price of the manufacturer (sale price);

– wholesale price of industry;

– retail price.

Retail price – the price of a product sold for personal consumption in small quantities; the price of goods in retail. The retail price is the price that a customer will pay when purchasing a product at a retail store. This is the final price that customers pay for products they purchase. *Retail prices* are the prices on which trading organizations sell production to the population. In the diagram presented in fig. 7.1 you can see all the stages of formation of retail price and calculate it.

<table>
<tr><td>Full cost price, $\mathbf{C_f}$</td><td>Profit of manufacturer, Prof</td><td rowspan="2">Excise duty (for excisable goods), ED</td><td rowspan="3">Value-added tax, VAT (20%)</td><td rowspan="4">Margin of wholesale intermediaries, $\mathbf{M_{wi}}$</td><td rowspan="5">Trade margin, $\mathbf{M_r}$</td></tr>
<tr><td colspan="2">Wholesale price of manufacturer, $\mathbf{P_{w\,(m)}}$</td></tr>
<tr><td colspan="3">Selling price of the enterprise without VAT, $\mathbf{P_{s\ without\ VAT}}$</td></tr>
<tr><td colspan="4">Selling price of the enterprise with VAT (purchase price of the wholesale intermediary), $\mathbf{P_{s\ with\ VAT}}$</td></tr>
<tr><td colspan="5">Sale price of wholesale intermediary (purchase price of trading enterprise), $\mathbf{P_{w\,(i)}}$</td></tr>
<tr><td colspan="5">Retail price, $\mathbf{P_r}$</td></tr>
</table>

Figure 13.1 – Stages of formation of retail price

Many tasks are solved with the help of prices. The price acts as a carrier of information and occupies a special place in the national economy management system, being an important tool for analysis, forecasting and planning of all economic indicators in monetary terms.

Price functions reflect socially necessary labor costs for the production and sale of various types of goods (works and services), their consumer properties, and at the same time regulate the demand and supply of goods and services.

So, prices perform the following main functions:

– accounting and measuring department;
– regulatory (balancing supply and demand);
– distributive (redistributive);
– contributes to the rational placement of production;
– stimulating;
– social.

Self-test questions

1. The essence of the concept of "price".
2. Basic pricing methods
3. Types of prices.
4. Pricing algorithm.
5. Retail price structure.
6. Price functions.

Topic 14. FINANCIAL AND ECONOMIC RESULTS OF THE ENTERPRISE

14.1 Economic essence of the enterprise's revenue and income
14.2 Profit and profitability, its types
14.3 Self-test questions

14.1 Economic essence of the enterprise's revenue and income

In Ukraine, according to accounting, *revenue* is interpreted as earnings from the sale of goods, works or services without deducting the discounts provided, the return of previously sold goods and indirect taxes and fees (value added tax, excise duty, etc.). In general revenue – earnings from the sale of products, the provision of services and the performance of works, excluding value added tax and excise duties.

Sometimes *income* can be equal to revenue, but in general Income is a broader concept than revenue, which summarizes all cash receipts of a business. Thus, in addition to revenue, it may include additional receipts (надходження) such as:

- lease payments from counterparties;
- interest on bank deposits;
- proceeds from the sale of equipment and inventory;
- received dividends;
- income from financial investments, etc.

Obtaining income indicates that the company's products have found their customers, they meet the requirements and market demand in terms of price and quality. This creates the basis for self-financing of the enterprise, provided that the amount of income is sufficient to cover the enterprise's costs of production and sale of products, fulfillment of obligations and generation of net profit.

It is necessary to distinguish between the concepts of gross and net income. Gross income is the total amount of income received by the enterprise from all types of activities for a certain period of time. Net income is the difference between income from the sale of products and mandatory payments included in the price of products.

14.2 Profit and profitability, its types

The company's profitability is one of the most important indicators that reflect its financial condition. The main result of the enterprise's activity is determined using a number of indicators, which are divided into *absolute* and *relative*. The absolute ones include the company's profit, which is sometimes mistakenly equated with the concept of "income", and the relative ones – the company's profitability.

Profit and profitability are two terms that are often used interchangeably, however, they are not the same. The clarification of both terms is different and those who are able to interpret them correctly can expect to witness the financial success of a company.

To determine whether a company is financially sound or not, business owners and investors need to keep a track of the company’s profit from its profitability.

To keep the business afloat, you need to always ensure a smooth working capital and cut business costs and expenses as much as possible.

The profit of an enterprise in the general sense is part of the value of the surplus product and is an integral part of the income of the enterprise. *In market conditions, profit is the main indicator of the enterprise.* In general, profit is the difference between the wholesale prices and the full cost price of the product. Profit per 1 product ($Profit_1$) is defined as the wholesale price (Pw) minus the full cost price (Cf):

$$Profit_1 = Pw - Cf_1, \tag{14.1}$$

$$Profit_{gross} = Revenue - Cf = Pw*N - Cf_1*N, \tag{14.2}$$

$$Profit_{net} = Profit_{gross} - Tax\ on\ profit\ (18\%), \tag{14.3}$$

Profitability is an integral indicator that reflects the efficiency of the enterprise, which is aimed at obtaining profit in the short term and which indicates the quality of management decisions related to the financial, operational and investment activities of the enterprise. In such a definition, it is emphasized in which cases profitability is really a criterion of the economic efficiency of the enterprise, and it is also considered that different indicators of profitability can testify to the effectiveness of different areas of management's work.

Currently, complex crisis processes are observed in the economy. In such conditions, it is extremely important to look for available reserves to increase profitability, which would allow business entities to conduct uninterrupted activities, to carry out simple and extended reproduction. The high cost of borrowed funds, the rapid depreciation of the value of the national currency, the small domestic market - all these factors contribute to increasing the relevance of the study of the aspects of managing the profitability of the enterprise in order to ensure its effective operation.

The general level of profitability of the enterprise, which reflects the overall efficiency of the enterprise, is calculated according to the formula

$$Profitability = (Profit/Cf) * 100\% . \quad (14.4)$$

The company is profitable if the amount of proceeds is sufficient not only to pay production costs, but also to generate profit. Thus, profitability characterizes the efficiency of the enterprise's work, gives an idea of the enterprise's ability to increase its capital. Depending on the purpose of analyzing the company's activity, the following types of profitability are distinguished.

14.3 Self-test questions

1. Interpretation of the essence of the concept of income and revenue.
2. Sources of enterprise income formation.
3. Name the factors affecting the formation of profit at the enterprise.
4. What are the main ways to increase the company's profit?
5. What is the economic meaning of the concept of profitability?

TOPIC 15. ENTERPRISE DEVELOPMENT: MODERN MODELS, TRANSFORMATION AND RESTRUCTURING

15.1 Essence, factors and types of enterprise restructuring
15.2 Concept and essence of rehabilitation of the enterprise
15.3 Bankruptcy and liquidation of the enterprise
15.4 Self-test questions

15.1 Essence, factors and types of enterprise restructuring

Termination of the activity of a business entity is carried out by means of its reorganization (merger, merger, division, transformation) or liquidation – by the decision of the owner (owners) or bodies authorized by him, by the decision of other persons – the founders of the business entity or their legal successors, and in cases, provided for by this Code, by a court decision. Restructuring means the implementation of

organizational, economic, legal and technical measures aimed at changing the structure of the enterprise, its management, forms of ownership, increasing competitiveness and work efficiency.

In a broad sense, restructuring involves the complexity of changes and is at the same time a tool of enterprise management. The need for restructuring can be dictated by both external and internal factors. External factors of enterprise restructuring can be: scientific and technical progress; state policy; changes in the situation on markets. Internal factors can be: need to adapt to new economic conditions; decrease in the competitiveness of the enterprise and products; high level of costs; unsatisfactory level of management. Thus, the restructuring of the enterprise solves two tasks: ensure the normal functioning and restore the solvency and competitiveness on the market.

15.2 Concept and essence of rehabilitation of the enterprise

In accordance with the Law of Ukraine "On restoring the debtor's solvency or declaring him bankrupt", the following court procedures apply to the debtor: disposal of the debtor's property; the settlement agreement; sanitation; liquidation.

Sanation (from Latin Sanatio – treatment, rehabilitation) is a system of measures carried out during the bankruptcy proceedings of an enterprise, aimed at improving the financial and economic situation of the debtor, as well as satisfying the demands of creditors in full or in part.

At the same time as issuing a decision on rehabilitation, the arbitration court appoints a rehabilitation manager by its decision, and the rehabilitation is carried out without the participation of the debtor's administration. Within three months from the date of issuing the decision on the rehabilitation of the debtor, the rehabilitation manager is obliged to submit the debtor's rehabilitation plan to the creditors' committee for approval.

The reorganization plan must contain measures to restore the debtor's solvency, the conditions for investors' participation, the term and sequence of debt payments, and

the terms of the investor's liability for non-fulfillment of the obligations accepted in accordance with the reorganization plan.

15.3 Bankruptcy and liquidation of the enterprise

The concept of bankruptcy is inherent in modern market relations. It characterizes the inability of the enterprise (organization) to satisfy the demands of creditors regarding the payment of goods, works, and services, as well as to ensure mandatory payments to the budget and extrabudgetary funds. The Law of Ukraine "On Bankruptcy" defines bankruptcy as the inability of a legal entity of a business entity to meet its creditors' demands and fulfill its obligations to the budget due to a lack of liquid assets.

Under normal business conditions, shareholders and creditors expect a reward, the level of which depends on the degree of profitability of the firm. One of the first signs of a move toward bankruptcy is a decline in the company's profitability below the cost of its capital. Interest on the loan and dividends paid by the firm cease to correspond to modern market conditions of business, and investing in such a firm becomes unprofitable. Creditors (bond holders and others) receive certain amounts determined by credit agreements, but the relative profitability of their investments in this company decreases, and due to the decline in the value of equity capital, the price of shares also falls, the risk of non-return of funds increases, the firm has difficulties with in cash, especially if creditors do not extend credit agreements for the next period and the firm will be forced to pay not only interest, but also the principal amount. A liquidity crisis may arise and the firm will enter a state of "technical insolvency". This phenomenon can already be considered as bankruptcy. The reasons for the bankruptcy of enterprises (organizations) can be very diverse. Generally speaking, they can be divided into two groups: 1) externat; 2) internal.

External factors can be international and national. International factors are formed under the influence of the dynamics of general economic indicators of the development of leading countries, the state of the world financial system, the stability of international trade, customs policy, the movement of international capital, etc.

It is the unjustified economic policy of the government, uncontrolled inflationary processes, a total economic crisis, political instability of society, and the decline of business activity in the economy that have the greatest impact on the results of enterprises, primarily due to the imperfection of the legislative framework.

Bankruptcy can occur at each of the stages of the life cycle of a firm's competitive advantage. Researchers name the following main factors contributing to the bankruptcy of the firm.

15.4 Self-test questions

1. Name the possible reasons for the termination of the enterprise.
2. Name the factors and types of restructuring.
3. What is rehabilitation of the enterprise?
4. What are the measures to restore the company's solvency?
5. Name the reasons for the bankruptcy of the enterprise.
6. Who liquidates the enterprise?
7. Sequence and order of satisfaction of creditors' demands.
8. What documents regulate the bankruptcy process?

Topic 16. ECONOMIC SECURITY AND ANTI-CRISIS ACTIVITIES

16.1 Economic Security of the Enterprise: Essence and Prerequisites for Formation

Economic security refers to the protection of an enterprise's ability to operate effectively and achieve its strategic goals while mitigating risks that could threaten its stability. The essence of economic security lies in ensuring that the company has a sustainable financial and operational foundation. Key components often include:

- Financial stability
- Risk management
- Effective governance and compliance
- Competitive positioning

Prerequisites for forming economic security in an enterprise include:

- A robust internal control system
- Clear strategic planning
- Adequate financial reserves
- Risk identification and management strategies
- A responsive corporate culture

16.2 Bankruptcy of the Enterprise as an Economic Phenomenon

Bankruptcy refers to the legal status of an entity that is unable to meet its financial obligations or pay off debts. It is an economic phenomenon that often results from:

- Persistent financial losses
- Inadequate management practices
- External market factors (e.g., economic downturns, changes in regulations)

Bankruptcy can take various forms (liquidation, reorganization), and its occurrence reflects both internal and external issues within the enterprise.

16.3 Organization and Consequences of the Liquidation of Bankrupt Enterprises

Liquidation is the formal process through which a bankrupt enterprise's assets are sold, and the proceeds are used to pay creditors. This can be either voluntary (initiated by the company itself) or involuntary (when forced by creditors). Key aspects include:

- Appointment of a liquidator or bankruptcy trustee
- Assessment of the company's assets and liabilities
- Settlement with creditors (priority of claims)
- Distribution of remaining assets to shareholders (if applicable)

Consequences of liquidation may include:

- Termination of business operations
- Loss of jobs for employees
- Devaluation of the company's brand or market presence
- Legal and financial implications for stakeholders

Understanding these topics is crucial for managers, investors, and other

stakeholders involved in corporate decision-making or risk management.

ESSAY TOPICS FOR INDEPENDENT STUDY

1. Optimization of the sectoral structure of Ukraine's economy.
2. Peculiarities of defining the mission and main areas of activity of enterprises of various forms of ownership and branches of the economy.
3. Peculiarities of creation and functioning of joint ventures in international business. Development problems of such enterprises are possible.
4. Foreign experience of centralized enterprise management.
5. Peculiarities of the formation of the personnel structure of enterprises of various economic sectors, sizes and forms of ownership.
6. Assessment of business qualities of leaders and managers of enterprises.
7. Practical significance of fixed and current assets for conducting economic activity.
8. Directions of intensification of reproduction and ways of better use of the company's fixed assets.
9. Legal protection and efficiency of use of intangible resources of the enterprise.
10. Patenting and licensing of business activities and company resources.
11. Modern resource conservation policy and effectiveness of its implementation in Ukraine.
12. Basic approaches to the economic substantiation of investment projects of enterprises.
13. Impact of innovative processes on production. The main trends of organizational progress.
14. Trends in the formation of national scientific and technical potential.
15. The essence, stages and logic of developing a business plan of an enterprise.

16. Development of the system of strategic planning and business planning of enterprises.

17. Reserves for increasing labor productivity and ways of using them at the enterprise.

18. World experience of using labor motivation models at enterprises.

19. Formation of remuneration policy at enterprises of various forms of ownership.

20. Graphical and analytical methods of determining the critical production volume of enterprises.

21. Possible ways of improving the pricing of enterprise products.

22. Directions of using profit at the enterprise.

23. Dynamics of the level of profitability of enterprises of various sectors of the economy.

24. Dynamics and ways of increasing profitability at enterprises of various branches of the economy.

25. Economic security in the system of enterprise activity.

26. Areas of investment in the enterprise.

27. Innovative enterprises of Ukraine

28. The current state of efficiency of enterprises in Ukraine.

29. Reasons for enterprise restructuring.

30. Analysis of the bankruptcy process of enterprises in Ukraine.

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CONTENT

№	Subject of the lecture	Number of classroom hours

	Introduction	3
1	Topic 1. Introduction. Theories of enterprise economics and the foundations of entrepreneurship. Types of enterprises, their organizational and legal forms	5
2	Topic 2. External business environment of enterprises	7
3	Topic 3. Structure and management of an enterprise	13
4	Topic 4. Market and products	15
5	Topic 5. Planning of enterprise activities. Justification of the enterprise production program	17
6	Topic 6. Enterprise personnel, productivity, motivation and remuneration	20
7	Topic 7. Fixed capital of the enterprise	39
8	Topic 8. Working capital of the enterprise	52
9	Topic 9. Intellectual capital	59
10	Topic 10. Investment and innovation activity	62
11	Topic 11. Technical and technological base and production capacity of the enterprise	76
12	Topic 12. Organization of production and ensuring product quality	78
13	Topic 13. Costs of production and sales of products	80
14	Topic 14. Financial and economic results of the enterprise	92
15	Topic 15. Enterprise development: modern models, transformation and restructuring	96
16	Topic 16. Economic security and anti-crisis activities	99
Essay topics for independent study		101
List of information sources		102

Навчальне видання

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текст лекцій для студентів спеціальностей

072 — «Фінанси, банківська справа, страхування та фондовий ринок»

та 073 — «Менеджмент»

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ГАВРИСЬ Микола Олександрович
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