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**L.V. Hutsalenko, O.M. Kolesnikova, I.M. Lepetan,
U.O. Marchuk, L.V. Melyankova**

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The content of the tutorial corresponds to the curriculum of the discipline “Management Accounting”. The attention is paid to the general aspects of the organizational component and methods of management accounting. A separate section is devoted to the characteristics of management accounting in enterprises of agricultural sector of economy. The study material is supplemented with figures, tables and self-test questions.

The tutorial will be useful for students, postgraduates and university teachers, as well as for accountants, auditors and entrepreneurs.

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PREFACE

The development of society on the way to sustainability sets new challenges for the business, the solution of which is possible provided the application of the effective mechanism of decision-making information support.

The needs for accounting information for production management become the information needs for managing its performance. The use of accounting and double entry has become the basis for enhanced cognitive and control functions. It has corresponded to a new level of socio-economic relations and expanded information opportunities for managing the economic activity. Meeting these needs has led to an increase in the systematic ordering of accounting data.

In the conditions of market relations, the training of bachelors in accounting and taxation is a priority direction for various branches of economy.

First of all, the theoretical definition of the content and nature of certain concepts within the relevant courses and, above all, the course “Management Accounting”, which is one of the leading disciplines in the curricula of economic specialties of higher educational institutions, is the basis for training.

During mastering of this discipline students learn to apply theoretical knowledge of accounting theory, financial accounting, accounting and reporting in taxation and reporting of enterprises in practice. They learn to use modern methods of calculation and determine the influence of costs behavior on the formation of cost of production, as well as to systematize the operational information in various forms of integrated (in-house) reporting to make operational decisions by managers at different levels, and to develop creative work and thinking skills.

The development of the tutorial is timely and relevant, since there is a need to form the level of knowledge of future professionals and the features of their adaptation to the activities of economic entities of different forms of ownership under uncertainty.

The main purpose of the tutorial is to identify the promotion of in-depth study and mastering the theoretical foundations of management accounting.

The self-control over the professional level of knowledge in the educational process in the labor market is perhaps the most important for the student who wants to be a competitive specialist in the future. In order the final control of the level of knowledge in the discipline “Management accounting” to be predictable and objective for the student, the questions for discussion and self-examination are given after each topic of the course.

The tutorial consists of a preface, educational materials necessary for the independent study of the discipline, appendices and a list of references that are recommended for the preparation of an independent work.

L. Hutsalenko (preface, theme – 1, 2, 3, 5, 7, appendices, general edition), O. Kolesnikova (theme – 4, 12, 13, 14, 15, 16, 17), I. Lepetan (theme – 4, 5, 6, 16, 17, references), U. Marchuk (theme – 2, 3, 7, appendices, references), L. Melyankova (theme – 6, 8, 9, 10, 11, references).

SECTION 1. BASIS OF MANAGEMENT ACCOUNTING

THEME 1. PLACES AND FUNCTIONS OF MANAGEMENT ACCOUNTING

1.1. Users of financial information

Effective management of a business entity depends to a large extent on an effective accounting system, that summarizes the information about its activities. The main tool of information management is a system of its accounting and financial reporting, as its effective product [94].

Accounting is the language, with the help of which financial and non-financial information is transmitted to users, who have a certain interest in the business of the enterprise: owners, shareholders, potential investors, managers, employees, creditors and government agencies.

The International Standards of Quality, Audit, Review, Other Assurance and Related Services: "Users are the persons, a person or categories of persons, for whom the practitioner draws up a assurance report. The responsible party may be one of the defined users, but not the only one" [74].

The quality of financial information is of great importance, when making decisions by the potential users, so the need for increased volume and content of quality information is increasing. Guarantees of the qualitative characteristics of financial reporting information are to a certain extent, the guarantors are independent auditors, who confirm the level of its reliability and reduce the risks of users.

The information needs of financial statement users are summarized in Table 1.1.

Different users of financial statements have different information needs, that are determined by the purpose and nature of their interests. Each user pursues his or her specific interests and already on this basis makes the appropriate conclusions and generalizations in order to make the right and effective management decisions [83].

According to current legislation, the management staff is responsible for compiling and submitting financial information to users.

In the context of the economic struggle for resources and markets, the need for complete and reliable information of the participants in the economic process is increased, in order to reduce the risks inherent in market relations and to achieve a relative level of confidence in the choice of alternative solutions [45].

The information needs of most enterprises are the same, because in some circumstances, an enterprise may provide financial assistance (the interest will be in liquidity and solvency) and in others to be a debtor or a creditor, or to be directly influenced in the structure of a multinational corporation [46].

In accordance with International Financial Reporting Standards, [73] the information is reliable, if it is characterized by completeness, neutrality, caution in the predominance of essence over form and a true reflection of the financial position and effectiveness of activity.

Table 1.1

Information needs of users of financial statements

Reporting users	Information needs
1	2
Investors and owners	Information on the purchase, sale and ownership of securities. Participation in the capital of the enterprise. Evaluation of the quality of management. Determination of the number of dividends to be distributed.
Shareholders	Data is needed to be confident in the efficiency of deposits and future results.
Management of the company	Regulates the activity of the enterprise.
Banks, suppliers and other creditors	Ensuring the obligations of the enterprise. Evaluation of the ability of an enterprise to timely fulfill its obligations to repay and repay its accounts payable.
Customers	Assessment of the enterprise's ability to meet its obligations on time.
Managers	Information that helps them to make different decisions and exercise certain types of control (eg: information on prices of sales of products; costs; demand; competitiveness and profitability of various products produced by the enterprise).
Employees of the enterprise	Information that makes it possible to predict the ability to assess their requirements for the value of their invested tangible work (wages) and forecast staff reductions.
Government Structures	Information for conducting analytical studies (eg: statistical management (various information - collected areas, gross production, cost); state financial inspections (profit for taxation, VAT...., etc.).

All these kinds of information are necessary to implement the policy of managing the economy of the country as a whole.

Information can be presented as:

$$\text{Information} = \text{Data} + \text{Value},$$

where Data are facts, that consist of numbers, letters, symbols, events, operations, etc. that have been recorded in a form, convenient for acceptance.

Information is Data, processed in such a way, that it acquires certain meaning for the person, who receives it and can use it to improve decision making.

Data is transformed into information as follows:

Input (Data) → Information Processing → Output (Information)

An information system, that measures, processes and transmits financial data is accounting.

The need for accounting information is not limited by business organizations. Accounting information about individuals is also important (eg: the loan may be extended on condition, that the information on income will be provided).

However, most users need accounting information to make decisions.

There are two categories of users of accounting information:

- 1) Internal users of the enterprise;
- 2) External users (shareholders, creditors, law-makers, etc.).

On the basis of such division, it is possible to specify the difference between two lines of accounting, which reflect internal and external users of accounting information.

Management accounting is the provision of information to individuals and the organization itself, on the basis of which are made informed decisions, that increase production efficiency, while the **financial accounting** is intended to provide information to external entities, and persons, who are not employees of a specific enterprise [25].

In order to make informed management decisions, the information, generated in the management accounting system, is required.

Management accounting information includes the following requirements:

- *timeliness* - the necessary information should prevent any management decisions;
- *differentiation* - the information, received by the manager, should be necessary and, at the same time, sufficient to allow to reduce the general information flows, and will not be confused due to the availability of unnecessary information;
- *accessibility of form and content* - the necessary information should be presented in an accessible form, that is suitable for perception by managers of different levels of competence and education, and not in the form of strictly regulated reporting forms, as is accepted in the financial accounting;
- *compactness* - reporting forms, in which management information is provided, should be simplified as much as possible, but at the same time, to allow to control not only the summary indicators but their individual components as well;
- *variability* - the information should be flexible in choosing the best course of action from several alternatives.

The effectiveness of enterprise management depends on the quality of information support for making management decisions. The management accounting system, which is a component of the accounting system of each entity, is intended to collect such information.

1.2. Differences between management and financial accounting

The difference between financial and management accounting was identified in 1972 by the National Association of Accountants of the United States (*National Association of Accountants, NAA*) when developing a program for certified management accountants (*The Certified Management Accountant*). The division of accounting into financial and management is due to the specific information needs of users of accounting information. The main purpose of *financial accounting* is to provide both internal and external users with accounting information, that characterizes the financial position and results of business activities of the organization. The main purpose of *management accounting* is to provide management personnel of the organization with the information, necessary for the

practical implementation of such management functions as: planning; control; regulation; analysis [14].

Currently, management accounting is a system of collecting, summarizing, analyzing and transmitting the information to internal users, which provides the process of making management decisions, aimed at achieving the goals of the economic entity [4].

In the table. 1.2 the main features, that characterize the financial and management accounting subsystem are presented.

Table 1.2

Comparative characteristics of financial and management accounting

A sign of comparison	Management accounting	Financial Accounting
1	2	3
Legal requirements and regulation of the accounting system	Management accounting completely depends on the desire of the management of the enterprise. Management accounting is not regulated either by state bodies or by specific standards. It is determined by the requirements of the entity and is aimed at meeting its internal needs.	Financial accounting is mandatory and regulated at the state level.
Balance sheet structure	The structure of information depends on users' requests (three types of objects: income, costs, assets).	Asset = capital + obligations.
Information users	A limited number of employees of the management staff.	A wide range of external and internal users.
The object of accounting	In management accounting, the object of accounting is more specifically: it can be a business unit, segment of activity, market, production operation, type or unit of production	In financial accounting the object is an enterprise as a whole or its product.
The purpose of accounting	Provide information to the management of the company for making current and strategic management decisions	Formation of financial statements for external users
Accounting principles	Usefulness of information for decision making, economic feasibility, efficiency	Common accounting principles
Accounting methods	Common accounting methods, specific methods.	Documentation, inventory, monetary valuation, costing, accounts, double entry, accounting balance, reporting.

Continuation of Table 1.2

1	2	3
The temporal aspect of information	Based on the evaluation of factual data, the attention is concentrated on the prediction of the consequences of future operations.	Keeping economic facts in the account after their implementation
Measuring instruments in accounting	Monetary, natural, labor, quality.	Monetary, labor, natural.
Frequency of information provision	Information is provided as needed, and when it comes to making operational decisions, it is much more often (daily, weekly, monthly) than financial.	The financial statements are regulated and prepared according to the results of the year, quarter and month.
Terms of reporting	Promptly at the end of the reporting period.	At the request of users or in the terms, established by the legislation.
The degree of responsibility for mistakes	Disciplinary	Disciplinary, administrative, criminal
Grouping of costs	By costing items, by methods of inclusion in the cost, by the degree of influence of the volume of production on the level of costs.	By cost elements
The degree of accuracy and openness of information	Management accounting can often use approximate data. This is due to the fact that management purposes require up-to-date information as well as information about future (not actual) indicators. Such information is a trade secret of the enterprise as it reflects its strategy and tactics in the specific struggle for the market.	In financial accounting, it is imperative, that the information, provided to users is accurate and open to the public.
The procedure for calculating financial results	Depending on the task, the profit or marginal income is calculated, as a result of the activity of a separate responsibility center.	The financial result of all activities of the enterprise for the reporting period is reflected at the expense of profits and losses.
The scale of accounting	Management accounting is an information base for the operational management of an enterprise, which is carried out by influencing certain elements of its activities.	Financial accounting provides the information about the enterprise as a whole.
Communication with other sciences	Closely related to microeconomics, finance, economic analysis, statistics, production and operational management	Based on their own method

Financial and management accounting are components of the accounting system of the enterprise.

Financial and management accounting are two types of accounting so they have many similarities:

- use a common (single) information system, including cost accounting data;
- financial accounting data are used to make management decisions, and management accounting data can be the starting point for financial calculations;
- both types of accounting are based on the concept of accountability of managers in order to determine the results of their activities.

At the same time, management accounting has significant differences from financial accounting [55].

1.3. Decision making process

The development of socio - economic processes due to the complication of economic, industrial, financial, political, social, environmental and technical processes influences the increase of information flows, that are necessary for processing in order to provide management personnel for decision making.

The information, obtained through the accounting and analytical system, plays a particularly important role in management decision making. Factors of business success are the ability to make decisions quickly and efficiently.

Making the right decisions is a field of management art. The ability and skill develop with the experience, acquired by a leader throughout life. The totality of knowledge and skills form the competence of any manager and, depending on the level of the latter, indicate the level of effectiveness of his work. Decision-makers are the subjects of management decision-making, and are managers of different levels (state, regional and internal organizational) and a group of employees with appropriate decision-making powers [87].

The peculiarities of managerial decision making depend on the level of uncertainty in achieving the desired results, provided by the final and intermediate purpose of the management process. The information, that will be used to make management decisions, first of all must take into account the main stages of the decision-making process and also meet certain basic requirements [122].

In management theory "a management decision is the choice of an alternative, carried out by the manager within his or her authority and competence and aimed at achieving the goals of the organization." The managerial decisions of the manager make the following requirements: purposefulness, choice of the main problem, objectivity, timeliness, competence, complexity, efficiency and specificity.

The authors distinguish different classification features of management decisions (Table 1.3).

Table 1.3

Classification of management decisions

Number	Classification feature	Types of management decisions
1	2	3
1	By the subjects of adoption	- single (accepted by one person) - collective (accepted collectively)
2	Be the peculiarity of the tasks to be solved	- programmable (includes structuring and frequency at regular intervals, adopted for typical situations); - not programmable (accepted in unstructured, uncertain situations due to lack of complete information and occur occasionally)
3	By level of acceptance	- decisions at the highest (institutional) level of management (are of a general nature, apply to the whole organization and are the competence of the head of the highest level of management); - decisions at the middle (management) level of management are made by the heads of middle level management within the powers, delegated to them); - decisions at the grassroots (technical) level of management (have a regulatory orientation and are made at the grassroots level of management)
4	By scope	- general decisions (apply to the whole organization); - partial decisions (aimed at regulating a particular process in a specific situation and referring to specific units)
5	By duration of action	- short-term (implemented throughout the year for running job of the organization); - Medium term (implemented within 1-5 years); - long-term (implemented over a long period of more than 5 years)
6	By method of justification	- intuitive (based on internal premonition); - rational (implying an objective analytical process); - analytical (involves evaluating different alternatives); - logical (based on judgments, knowledge, previous experience); - impulsive (the processes of hypothesis building substantially outweigh control); - inert (the number of tests and control functions far outweighs the number of hypotheses put forward)
7	As the degree of complexity	- complex (important for future organization and need a creative approach, solving unexpected or unforeseen problems); - medium complexity (requiring complex consideration); - simple (do not require much effort for their adoption)

Continuation of Table 1.3

1	2	3
8	At the level of centralization	- centralized (important management decisions are made in a single center, ie at the highest management level); - decentralized (provide the development of solutions agreed at all levels of management, encourage the generation of new ideas); - combined (combining elements of centralized and decentralized solutions)
9	By purposeful	- strategic (determine areas of specialization, prospects for social and economic development); - tactical (related to the specific location of forces and resources); - operative (occur in case of disruption of the production process due to unpredictable internal and external circumstances)
10	The repetition rate	- accidental (requiring a thorough analysis of a non-standard situation); - periodically repeated (containing previous manager's experience and decision-making results)
11	As the degree of novelty	- innovative (taken on problems arising for the first time after careful study of the state of affairs, experience of other organizations and real opportunities of the enterprise); - standard (accepted based on the study and comparison of existing experiences and similar situations)
12	By character	- economic (related to the economic mechanism of the functioning of the organization); - socio-psychological (related to socio-psychological aspects of the organization); - administrative (provide for a legal impact on relations between people during production, as they are governed by certain legal rules); - technological (related to technological aspects of production functioning).
13	By the consequences of influence	- negative (accompanied by typical mistakes, negative consequences); - neutral (have no management influence); - positive (provide the choice of the most effective variant of the solution from the possible).

Source: [64]

Accounting information can help managers to develop knowledge to prepare for unknown future decisions and activities. It is important, that managers require accounting information, that is easy to understand and provides the information about the results of business entity's activity. As accounting information is only one part of a broader set of the information, the managers use to do their job, it is

necessary to take into account their strengths and weaknesses, not in isolation, but with other sources of information, available to the manager. In particular, in contrast to traditional criticism of accounting, the strengths of accounting information is related to its aggregate properties and role as a common, financial language to facilitate the communication between managers. Managers interact with information and other managers using predominantly verbal forms of communication. Thus, accounting information becomes involved in management work primarily through conversations rather, than through written reports. In particular, verbal forms of communication allow the managers to adapt accounting information to specific operational issues, as well as provide a context for discussions and debates of the meanings and implications of accounting data. Accounting information may also incentives for discussion, signaling the need for further investigation of the issue. In general, incorporating the conclusions about how managers actually work is important for their use of accounting information, and, in particular, requires the reviewing of those types of accounting information, that managers find or might find useful [2].

Drury K. [24] the process of adoption, planning and management divides into the following components: *the planning process* and the *management process*.

In the planning process:

- 1) definition of goals;
- 2) search for alternative actions;
- 3) collecting data related to alternative actions;
- 4) the choice of alternative action;
- 5) implementation of the decisions made.

The management process includes:

- 6) comparison of actual and planned results;
- 7) correction of detected deviations from the plan.

1. Defining goals

Before making the right decision, the manager must determine the *purpose* and the *main direction*, that will allow him to determine the correct decision.

Economic theory assumes, that the goal of any business entity is to maximize profits. Various arguments are used to maximize profits. The reasons for choosing profit maximization as the primary goal of an entity's activity are as follows:

1. The other objective does not enable the enterprise to observe the principle of continuity of activity.
2. When selecting the principles necessary to achieve the goal, it is important to understand the possibility of receiving cash.
3. This objective should allow the enterprise to determine the possible costs for other tasks.

2. Search for alternative options for actions

In their research, individual authors, while revealing the content of a management decision, emphasize attention on "the result of the choice of the subject of management by the way of actions, aimed at solving the task in an existing or projected situation." In other words, it is a search for possible ways to achieve the

goal.

For example, search options may include:

- 1) development of *new* products for sale in already *existing* markets;
- 2) development of *new* products for sale in *new* markets;
- 3) development of *new* markets for already *existing* types of products.

The concept "decision" in modern life is very multifaceted. It is understood as a process, as an act of choice, and as a result of choice. There are a number of requirements to a management decision, in particular:

- comprehensive validity of the decision;
- timeliness;
- the necessary completeness of the content;
- powers;
- consistency with previous decisions.

An important element of the management decision-making process is the evaluation of actions at its various stages. At the stage of diagnosing a problem, it is an evaluation of the boundaries, scope and extent of the problem; at the stage of justification - evaluation of various options, proposed for solving the problem, at the stage of decision making - evaluation of the expected consequences of its implementation [112].

The search for alternative actions also involves the obtaining of information about the expected future changes in the environment, in which the entity exists. This is the most important and difficult step in the decision-making process. Management should consider all alternative actions, that are unfortunately limited in practice.

3. Data collection, related to alternative actions

When developing alternative management decisions, it is necessary to establish the procedure for operations related to the accumulation, movement, storage, processing, analysis of information, providing structural units and individual jobs with it, as well as to determine the actions, necessary to solve economic problems.

Since decision-making problems are often manifested in conditions of uncertainty, a number of factors, affecting each type of alternative solution, must be considered. Such factors are external conditions (for example: high inflation, reduced business activity, competitiveness, etc.).

Management decisions can have strategic goals and directed to the long-term prospect for the enterprise. Such *decisions* are called *long-term* or *strategic*, as they affect the future development of the enterprise.

Besides the strategic and long-term decisions, managers can make operational decisions and short-term decisions. This kind of decision is made by middle and lower level managers. Such decisions are determined by the quality of long-term solutions.

4. Implementation of the choice of alternative action

The purpose of management activity is to find such forms, methods and decision-making tools, that would help to achieve the optimum result in specific conditions.

In practice, decision making involves comparing alternatives and identifying the best one, which has a minimum of uncertainties and ultimately is the most profitable

of the results at the final stage.

5. Implementation of the decisions made.

Managers often use past experience and previous knowledge to develop appropriate responses, make decisions, and take actions. Much of the information, that managers collect, is not for decision-making purposes, but it is used to develop a context of knowledge and meaning for unknown possible future actions. In this process, the value of gathering information is to invest in knowledge inventory, not to contribute to a specific decision-making scenario.

Implementation of management decisions is an important element of the management process.

The implementation of the decisions involves the following operations:

- determination of calendar terms (final and intermediate) of execution of the decision;
- appointment of the responsible executor (several executors), bringing the decision to the performers;
- briefing of performers, specification of tasks and responsibilities;
- logistical support of the labor process, which ensures the quality of management decision;
- coordination of actions of performers;
- adjustment of the made decision earlier;
- motivation of performers' activity;
- accounting and control of performing.

Literary sources highlight different approaches to managerial decision making (Table 1.4).

It is advisable for management staff to choose an approach, taking into account the internal and external environment of the enterprise, its organizational structure, business activity, stability and competitiveness in the market environment, and so on[61].

Considerable management work involves responding to the unusual, special, and unplanned, where the boundaries of problems are usually undetermined.

Management decision-making requires from managers a high level of competence, time, energy, experience, responsibility, and responsibility from managers. Management decision making is an important part of management activity and determines the future life of the enterprise.

Verbal communication allows managers to adapt accounting information to specific operational issues, and provides context for discussing and discussing the meanings and consequences of accounting data. In addition, accounting information can also encourage ongoing management discussions.

Verbal message of accounting information -is not just the exchange of information but the process, by which the accounting information, related to specific problems or management issues.

Management process includes a comparison of actual and planned results and correction of detected deviations from the plan.

Comparison of actual and planned results in the vast majority occurs at the end of the production cycle, when costs of production and its compare with the

previously planned one can be determined.

Such functions are performed by the subjects of control, that is, by means of an effective control function of accounting. The managerial function of the process of control and regulation involves changing the results of activities and finding appropriate measures to achieve the goal.

Table 1.4

Basic modern approaches to management decision making

№f/o	Approaches	The essence
1	System	One of the special ways of scientific research on which the object under study is broken down into elements, that are considered in a unity, that is, as a system
2	Integrated	This is a subtraction of technical, environmental, economic, organizational, socio-psychological and other aspects of management and their interrelation
3	Functional	Enterprise management acts as a set of functions, and activity management is performed by structural elements (departments, sectors)
4	Process	It assumes that the management decision-making process should focus on the management functions, that include planning, organization, coordination, motivation and control.
5	Production	Focuses on the constant renewal of production of goods to meet the needs of a particular market with smaller, compared to the best similar object in that market, the total cost per unit of useful effect.
6	Behavioral	The main purpose of this approach is to increase the efficiency of the firm by improving the efficiency of its human resources.
7	Situational	Focuses on the fact that management decisions are made on the basis of different management methods and depending on the situation
8	Intuitive	The choice is made based on the feeling (without logical reasoning) that it is correct

In order to monitor performance indicators, the accounting department creates reports on the implementation of estimates and provides them with managers responsible for the implementation of certain decisions. These reports provide data on actual and planned results, that can be used to determine deviations. Managers pay particular attention to activities, that are subject to deviations and focus their efforts on managing these variances.

For effective control, it is necessary, that the corrective actions are carried out in such a way, that the actual results correspond to the planned level. If this situation cannot be achieved, the targets are specified. Such actions are called *adjustments*. Such actions provide *feedback*. They show that decision-making is a dynamic process, and they isolate the relationship between its various stages. Drury K. [24].

1.4. Management reporting systems

In a market economy, business entities have to function in conditions of uncertainty and risk, which determines the need for continuous improvement and requires prompt management information.

International Accounting Standards outlines the qualitative accounting information requirements, that should be reflected in an entity's reporting: relevance, reliability and comparability [72].

An integrated system for the formation of management information is the system of management reporting as a set of elements that provide information on the requests of managers at different levels.

Management reporting - is an information source for management accounting to provide an analytical evaluation of an entity's performance.

Formation of the highest quality management reporting to provide internal users with the information, necessary for weighing management decisions in the business entities' business provides management accounting. This means, that the formulation of management reporting must be clear, error-free and transparent in order to enable managers at all levels to make the right management decisions.

Management reports are intended for use in the management of financial and economic activities of economic entities, the content, frequency, timing, forms and procedure of preparation are determined independently by the enterprise [117].

The management reporting system should be oriented to the problems of management personnel and be able to systematically identify problems, deficiencies and find appropriate solutions; to provide prompt information for real management of the enterprise as a whole and its structural units; to anticipate the emergence of problematic situations and timely response to their prevention; to provide opportunities for forecasting the results of the use of comparison and modeling methods; obtaining sufficient information to support different levels of government; understandability and usability in form and content. Therefore, the format of management reporting and the number of forms that are aimed at maximizing the performance of the entity in a market environment is determined directly by the financial service of the enterprise, is confidential and inaccessible to external users.

For management reporting, the periodically of its formation and presentation to the managers of different levels of management (year, quarter, month, week, day).

In addition to financial reporting forms, budgets and performance reports are used to make planning and control decisions. Particularly important in this case are costs, incomes and financial results. Management reports should be formulated in blocks:

- 1) management reporting on the financial position, results of operations and changes in the financial position of the enterprise;
- 2) management reporting on the performance of the enterprise activity;
- 3) management reporting on budget execution of the enterprise [38].

A well-formed management reporting system will facilitate a clear and consistent reflection of the reporting indicators on the basis of which managers at all levels will make effective management decisions.

Management reporting is one of the most complex and important elements of the system of management accounting, reporting and budgeting in enterprises, as on the one hand, it allows the management of the enterprise to determine the limits of its capabilities in obtaining the necessary information from the centers of responsibility of middle and lower levels, as well as information and analytics capabilities - forecasting services, and on the other hand, receive specific information, systematized properly in a user-friendly form. In this case, the management reporting is the result of the activities of the management accounting system, budgeting reporting [116].

With the help of fig. 1.1 provide criteria for the effectiveness of management reporting as a whole and its individual forms.

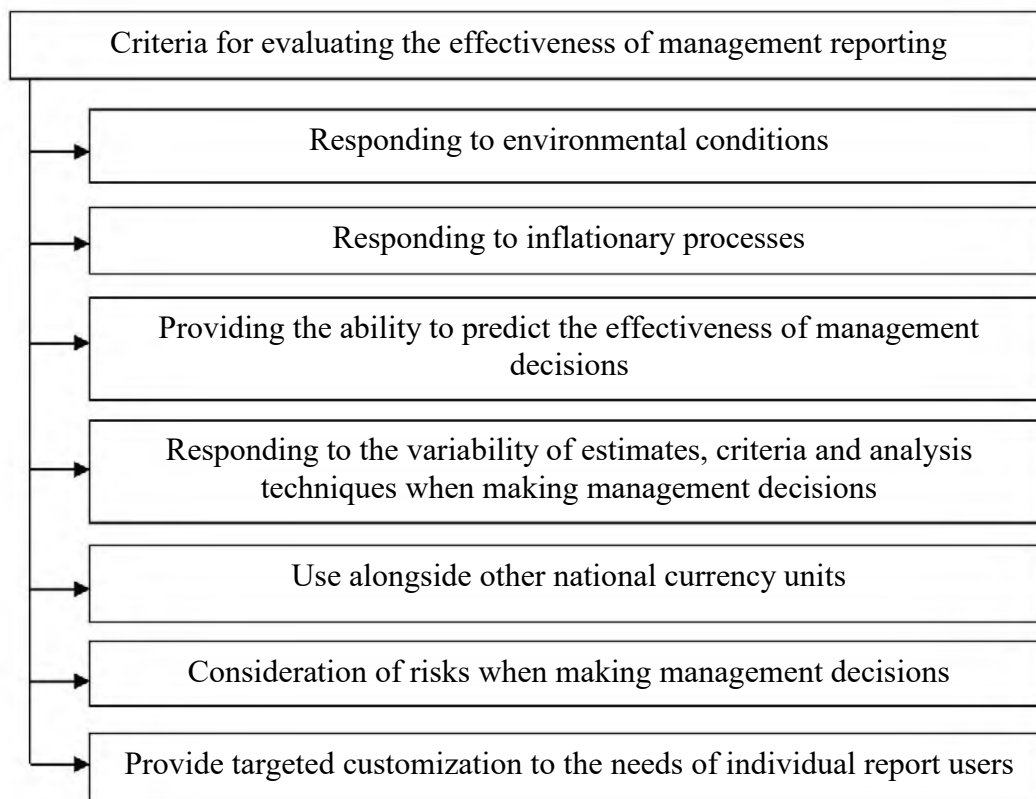


Fig. 1.1. Criteria for evaluating the effectiveness of management reporting [60]

Management reports may be formed in accordance with the characteristics, shown in Table 1.5.

Content reports play a special role in the system of governmental reporting. The following types of management reporting are distinguished:

- *analytical* -is provided to governing bodies and may include falling and rising sales, the number of non-normative work, and possible causes for increased costs;
- *thematic* -is formed on demand and contains indicators that characterize production volumes, sales volumes, volumes of supply, etc.
- *comprehensive* -is provided within a certain period of time on all departments of the enterprise, expenses and debts of the company are also included;

- *summary* - includes all the indicators, received and is delivered at any necessary time.

Table 1.5

Classification features of management reporting

№ f/o	Classification feature	Types of management reporting
1	2	3
1	By form of presentation	Tabular, graphic, text, combined
2	By type of activity	Billet reports, production reports, sales reports
3	By level of presentation	Reports for top-level managers, reports for unit managers, reports for mid-level managers, reports for managers at other levels of management
4	By appointment	Information, planned, control
5	By the amount of information	Operational reports, summary reports
6	By purpose	Forecasted, estimated
7	By frequency of publication	Annual, quarterly, monthly, daily
8	By content	Analytical reports, thematic reports, comprehensive reports, summary reports
9	By types of management decision making	For making, operational decisions, for making strategic decisions
10	By users	Internal, external

Management accounting is an internal tool for management positions, the formation of which will show all prospects for economic development of this type of activity [115].

Managers use a variety of forms of information, including management reporting, such as a marketing report on sales trends in a particular market segment, macroeconomic information, a subordinate's report on relationships with three major customers is required, an email exchange from a contact, working in a similar organization and is dealing with three customers, production information showing excessive downtime on the production line used to manufacture one of the products, and a personal notebook of a manager -information. Some possible forms of management reporting are given in the appendices.

The following principles of organization of accounting are to be observed in the formulation of management reporting: integrity, confidentiality, independence, validity and reliability, continuity, systematization and unification, identification of information, effectiveness, responsibility, complexity, interaction of structural units, economic efficiency.

The management reporting system should cover all entities of the enterprise management, as it should determine the extent of its usefulness for the decisions made; used to evaluate budget execution; determining the effectiveness of the work of individual centers of responsibility; preparing and grouping arrays of information and providing them to managers at different levels to make appropriate management decisions; to ensure communication and relationships within the business entity.

1.5. The subject, objects, methods, principles and functions of management accounting

The subject of management accounting is information support of the enterprise management.

Because most management decisions are based on income and expense comparisons, the following major *management accounting items can be distinguished*:

- costs, revenues and financial results of the enterprise, previously reflected in the financial accounting, which in management accounting are regrouped by their target purpose (by types of products, orders, economic processes, stages of production, centers of responsibility, spheres of activity, regions of sale, etc.);
- methods and techniques of accounting and costing;
- transfer pricing methods (transfer price is the internal price at which one unit of an enterprise transfers products or services to another);
- methods and techniques of forming and submitting internal reporting (content, purpose, submission deadlines);
- methods of forecasting, planning (budgeting), analysis and control of costs, income and financial results.

Management accounting method - is a set of various techniques and methods, by which the objects of management accounting in the enterprise information system are studied. The management accounting method is based on the following components:

- *general methods of object research* (observation, comparison, analysis, synthesis);

- *general methodical methods of financial accounting*. Management is closely linked to financial accounting, so it uses common accounting techniques such as documentation, inventory, valuation, calculation, accounts and double entry, balance sheet and reporting;

- *specific methodical techniques of management accounting*. Among them are the methods of grouping and regrouping production costs according to the stated purpose of the study, methods of calculation, normalization and limitation of costs, control accounts, methods of distribution, planning, forecasting, analysis and control of costs, incomes and financial results of the enterprise. Mathematical methods of research of cost and profitability of production are widely used in management accounting;

- *methods of other disciplines*, including strategic and operational planning and management, statistical methods, economics and mathematics, etc.

The purpose of management accounting is the formation of information support for effective management of the enterprise.

The main tasks of management accounting at the enterprise are:

- justification of the method of accounting and costs calculation;
- developing a system for evaluating, comparing, analyzing and controlling costs and results by areas of enterprise activity, cost centers, responsibility centers, etc.;
- ensuring quality and timely collection and submission of necessary information for reasonable decision-making;

- creation of an information base for making forecasts and plans (budgets) of the enterprise and its structural subdivisions on the basis of an assessment of alternative options for the development of production, other types of activity of the enterprise and the environment of the entrepreneurial environment [68].

Principles and functions of management accounting

In order to predict what kind of information the management needs, it is necessary to know the basic functions of management.

Management functions include: planning, control and regulation, organization and stimulation.

The management accounting system prepares the information, necessary for conducting management activities: decision making, planning, control and regulation.

In the enterprise management system, management accounting performs the following basic functions:

- *informational* – providing the managers of all levels with the information, which is necessary for strategic and ongoing planning, control and decision-making;

- *communication* - the formation of information, which is a means of internal communication between levels of management and different structural units of the same level of management;

- *control* - control and evaluation of the performance of internal units and the enterprise as a whole in order to achieve its current objectives and strategic goal of economic development;

- *forecast* - perspective and current planning and coordination of the enterprise activity, based on the analysis and evaluation of changes in the internal and external business environment.

Before considering the principles of management accounting at the enterprise, it is advisable to dwell on the characteristics of global principles of management accounting.

Global principles of management accounting

Effective management has never been as important and complex as in a hard-competitive environment. To remain competitive, the companies often act impulsively without analyzing the situation. Just for such business conditions the Global Principles of Management Accounting were created.

Management accounting is the basis for effective decision-making, as it enables to select and analyze the most relevant information to create and maintain the value [103].

Management accounting is the process of obtaining, analyzing, communicating, and using financial and non-financial information, relevant to decision making to generate and maintain the value for the organization.

Management accounting, as a profession, requires a thorough understanding of business and its operating conditions in order to understand organizational risks and opportunities. By managing and responding to risk, organizations can take the advantage of the benefits and eventually generate value for their owners.

Management accounting takes central place in the organization, located at the intersection of finance and management. Simplifying complexity and making it simple and compelling, it offers structured solutions to unstructured problems.

Given both financial and non-financial baselines, management accounting is a discipline, used to manage an organization and control and improve its effectiveness.

The purpose of the principles is to help the organizations to succeed. All the companies want to be consistently successful. Successful organizations implement an effective management accounting function, which is a combination of competent personnel, transparent principles, good performance management and reliable practices, what makes the function of management accounting effective.

Effective management accounting optimizes the decision-making process in organizations. This is because the relevant employees provide each person responsible for decision-making with relevant factual and analytical information, considering the social and environmental obligations of the organization. These are the foundations of the four Principles, which reflect the fundamental values, qualities, norms and characteristics, that constitute the management accounting, in particular:

- 1) Communication generates the information, which has an impact;
- 2) The information is current;
- 3) The impact on cost is analyzed;
- 4) Reasonable management builds trust.

All global management accounting principles are derived from the desire to make the enterprise successful [103].

These principles describe the fundamental values, qualities, norms and concepts, that must be followed by the management accounting professionals:

- *Communication generates information* that has the influence of making effective decisions about the strategy and its implementation at all levels;
- *Information is relevant* - it provides the support to organizations in planning and receiving information needed to develop a strategy and tactics for its implementation;
- *Impact on value is analyzed* - it allows to simulate scenarios showing a cause and effect relationship between the output data and the results;
- *Smart management builds trust* - allows to manage actively relationships and resources to protect the financial and non-financial assets of an organization, its reputation and value.

Principles of management accounting at the enterprise

The process of managing an enterprise's business has a complex character. Therefore, the system of gathering the information necessary for effective management decision-making is also complex and may change, depending on the change of tasks of enterprise management. At the same time, the organization of management accounting as a system of information management of the enterprise management should be grouped according to the following basic principles (table 1.6).

The organization of management accounting at the enterprise should be carried out according to a certain system.

Table 1.6

Basic principles of management accounting

the name of the principle	content of the principle
1	2
the principle of continuity of the enterprise activity	involves the evaluation of the assets and liabilities of the company, assuming that its activity lasts more
the principle of a single monetary measure	provides measurement and compilation of business operations in a single currency in the planning and production accounting
the principle of completeness and analyticity of information	the data contained in the reports, must be complete and presented in an easy-to-analyze form and require no additional analytical processing
the principle of periodicity	reflects the production and commercial cycle of the enterprise and is important for building a management accounting system
the principle of methodological independence	Provides, that each enterprise establishes the own rules of organization and the order of management accounting
principle of orientation of accounting on achievement of strategic goals of the enterprise	means that when deciding at any level and choosing the most optimal of them, the interests of the enterprise as a whole should be prioritized
the principle of effectiveness	means that when carrying out any kind of activity it is necessary to constantly compare the costs incurred as a result of the activity with the result obtained
the principle of responsibility	Means, that the value of both costs and results is the responsibility of the specific person, who controls them
the principle of evaluation of results of activity of structural units of the enterprise	provides determination of trends and prospects of each unit in formation of profit of the enterprise at all its stages (from production to sale of production)
the principle of multivariate	Means, that when preparing the information should take into account all possible options, but choose the best one for management decision-making
The principle of acceptability and reusability	It is based on the one-time fixation of data in primary documents or production calculations and their repeated use in all types of management activities without re-fixation, registration or calculations
the principle of the budget method of managing, costs, finances, commercial activities	used in enterprises as a planning, control and regulation tool

Management accounting system is a system of collection, systematization, analysis, control and planning of management information. There are the following basic management accounting systems:

1) by types of management decisions:

- strategic management accounting;
- current management accounting;
- operational management accounting;

2) the breadth of coverage:

- systematic accounting;
- problem accounting (to solve individual problems);

3) by the level of correlation between financial and management accounting plans:

- two-cycle (autonomous) accounting system;
- integrated (monistic) accounting system;

4) on the completeness of the inclusion of costs in the cost of production:

- accounting of total costs;
- variable cost accounting;

5) by the method of cost control:

- accounting of actual costs;
- accounting for regulatory (standard) costs;

6) by objects of accounting, analysis and planning of costs:

- accounting for processes (redistribution);
- accounting for orders;
- accounting by type of activity;
- accounting by responsibility centers.

The following components of the management accounting system are distinguished:

1. Organizational and material components:

- structural unit (specialist), which performs management accounting, and logistical support of this activity

2. Intangible components:

- Management accounting options (activities, responsibility centers)
- Plan of accounts (system of indicators) of management accounting
- The composition of management reporting and its content
- Company accounting policy

3. Procedural components:

- The system of relations for collecting information for the needs of management accounting and its levels [68].

The organization of management accounting directly at the enterprise depends on the structure of the enterprise, the type and scope of business activity, technology and organization of specific production, type of products (works, services), management policy.

The managers of the enterprise independently choose the system of management accounting, determine the composition and content of internal reporting, ways of control, analysis, planning and forecasting of information, necessary for management of the enterprise.

The organization of the management accounting system at the enterprise is carried out, as a rule, in the following sequence:

- choose the system, objects and methods of management accounting;
- determine the composition of the analytical registers, the form and procedure for determining internal reporting indicators, etc.;
- allocate responsibilities for collecting and processing management information among performers (accountants).

The *main stages of the introduction of management accounting at the enterprise* are:

- valuation (diagnostics) of the factors that determine the construction of the enterprise accounting system;
- development of a model of management accounting organization;
- organizational and financial structuring of the enterprise and definition of responsibility centers;
- substantiation of the methodology of management accounting and formation of management information;
- development of a plan of accounts of management accounting;
- development of a system of management reporting.

The management structure of many foreign firms certifies that all types of accounting (financial, management) are subordinated to the chief accountant (accounting-controller). Many enterprises are characterized by centralization of financial accounting in the head office and decentralization of management accounting in order to bring it closer to cost centers and decision-making.

Primary information on costs of production, performance of works or provision of services is formed in the system of production (internal) accounting - the main information source of operational data on costs used in both management and financial accounting.

The system of production cost accounting is a collection of forms, methods and techniques of their initial display (accounting).

Establishing a system of production costs accounting for an enterprise depends on a number of factors, the most important of which are:

- *general organizational factors* - the type of business activity, branch and sub-sector of activity, the form of specialization, organizational structure of enterprise, the type of production;
- *accounting and organizational factors* - the composition of costing items, methods of valuation of objects of accounting, organization of internal economic relations, completeness of inclusion of costs, etc.;
- *technical factors* - features of production technology, interruption (continuity) of the technological cycle, the nature of the organization of jobs, features (complexity, attribution to the main or ancillary) products.

An important issue in the organization of management accounting is the choice of system (principle) of building a plan of accounting accounts. There are two main accounting systems in the world practice:

- *an autonomous (two-circle) system*, that is, the allocation of two autonomous

systems of accounts of management and financial accounts that do not correspond with each other;

- *an integrated (monistic) system*, when applying which the financial and management accounting accounts exist within a single system of accounts and correspond with each other.

Discussion and self-review questions

1. *What are the information needs of financial information users?*
2. *What are the categories of users of accounting information?*
3. *What is the difference between the concepts of "financial accounting" and "management accounting"?*
4. *What are the requirements for management accounting information?*
5. *What are the differences between financial and management accounting?*
6. *What is meant by making the right decisions?*
7. *What are the classification features of management decisions?*
8. *What are the types of management decisions by decision-makers?*
9. *What types of management decisions are specific to task-solving?*
10. *What are the types of management decisions by decision levels?*
11. *What are the types of management decisions by scope?*
12. *What are the types of management decisions by the way of justification?*
13. *What are the types of management decisions in terms of complexity?*
14. *What are the types of management decisions by level of centralization?*
15. *What are the types of management decisions by purpose?*
16. *What are the types of management decisions by frequency?*
17. *What are the types of management decisions by degree of novelty?*
18. *What are the types of management decisions by nature?*
19. *What are the types of management decisions by impact?*
20. *What are the components of the planning process?*
21. *What are the components of the management process?*
22. *What are the approaches to managerial decision-making?*
23. *What are the criteria for evaluating the effectiveness of management reporting?*
24. *What are the classification features of management reporting?*
25. *What are the types of management reporting in terms of content?*
26. *What is the subject of management accounting?*
27. *What methods are used in management accounting?*
28. *What are the main tasks of management accounting?*
29. *What are the principles and functions of management accounting?*
30. *What are the principles of management accounting?*
31. *What are the main management accounting systems?*
32. *What are the distinguished components of the management accounting system?*
33. *What are the main stages of the introduction of management accounting at the enterprise?*
34. *What are the factors of the production cost accounting system?*

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THEME 2. THE THEORY OF ACTIONS IN THE FACE OF UNCERTAINTY, ORGANIZATIONAL AND SOCIAL ASPECTS OF MANAGEMENT ACCOUNTING

2.1. An approach to uncertainty theory

The peculiarity of modern society development is complication of the course of socio-economic processes and, as a consequence, increasing of instability of the economic environment and conditions of business activity. The identified tendency determines the topicality of the study of various forms and factors of socio-economic uncertainty and to develop methods for managing the activity of economic entities in the face of growing instability.

There is an opinion, that recognition of uncertainty is an integral part of scientific knowledge and distinguishes modern science from a classical one. Agreeing with K.V. Pavlov's views, we note that adherence to the principles of both certainty and uncertainty in isolation is a one-sided perception of the outside world. Historically, at the forefront was the category of certainty, the essence of which is to reveal the various properties of certain phenomena. Instead, uncertainty always changes with certainty, which gives rise to new forms of uncertainty. However, the dialectic of the interaction of these categories is such that any uncertainty is a condition for the existence of certainty, and vice versa [85]. Thus, the universal flexibility of the bonds and relationships of objective reality is reflected in the mobility of the categories of "certainty-uncertainty", their interpenetration.

Basic classical and modern economic theories, such as the Keynesian school, monetarism, post-Keynesian, neoclassical, and neo-institutional theories considered more effective either monetary policy or fiscal one. Now modern politicians use the tools of both policies, but new crises and unpredictable situations have raised the issue of the impact of the uncertainty of the future on the economic results of today. The concept of uncertainty, either accepted (by Keynesian, post-Keynesian, and non-institutional economic theories) or not accepted (by monetarists and representatives of the neoclassical school), is now a major debate issue, in fact, the adoption of the concept of uncertainty and the irregularity of the economic system explains the need for state regulations of economic process and the importance of improving economic policy models.

The most important assumption underlying the confronting economic trends is the acceptance (or non-acceptance) of the concept of uncertain economic development. The first economist who thoroughly revealed the essence and importance of uncertainty when planning socio-economic events was J. Keynes [52]. In his view, uncertainty is "the boundary between what is known for sure and what is known likely" [52]. In his "General Theory of Employment, Percentage and Money," J. Keynes treats uncertainty as "events that do not have the scientific basis to calculate the probability of their occurrence, but require us to take some action to eliminate them" [52]. According to these ideas, the Keynesians proceed from the principle of historical time, where the past is irreversible and the future is uncertain.

That is, the Keynesian theory must be interpreted not as a static theory of "part-time equilibrium", but as a dynamic "macroeconomic theory of adaptation to the disturbance of economic equilibrium" [80].

The Keynesian concept of uncertainty of economic development is also technically called the concept of a non-ergodic stochastic system. John Keynes's world was ergodic in the sense that the past is irreversible and the future is uncertain and unknown. Thus, due to the uncertainty of the future and the variability of subjective preferences, Keynes concluded that the real rationality of expectations was impossible: expectations are subjective and investment decisions are irrational. Unlike the Keynesian's, the monetary approach assumes the ergodic character of the economic system, that is "related to the likelihood that a state may recur, especially with zero probability that a state will never happen again" [80]. That is, the view of monetarists is based on the fact that the future is recognizable by the theory of probability, and the average indicator in the future will not significantly deviate from the present. They believe that, in the face of uncertainty, money acts as a link between the present and future states of the economy.

F. Knight, like L. Mises, understood the uncertainty in the epistemological sense [76]. He believed that the world was governed by common laws, but taking into account human cognitive capabilities, the question of the truth of this statement made no practical sense. "In fact, we act on the basis of our opinions, which can be substantiated to a greater or lesser degree and of greater or lesser value; we are not completely ignorant, but we do not have complete and perfect information, possessing only partial knowledge" [76].

The very term "uncertainty" is interpreted by F. Knight as "lack of awareness and the need to act, based not on our own discretion, but on specific knowledge" [76]. He also differentiates the concept of risk and uncertainty, that is, defines risk as a condition in which it is possible to obtain a probability distribution of results in such a way as to insure them, and uncertainty as a state in which such a distribution of opportunities does not exist. Subsequently, the category of uncertainty was identified with F. Knight's definition of risk, and the latter was associated with the concept of "ambiguity."

Modern economic theory distinguishes different interpretations of uncertainty. Thus, V. Cherkasov understands this category as "constant variability of conditions, fast and flexible reorientation of production, market variability in general" [17].

G. Zellmer emphasizes that "uncertainty as an objective form of existence of the real world around us is conditioned, on the one hand, by the objective existence of probability, on the other hand, by the incompleteness of the every act of reflection of real events in human consciousness". That is, uncertainty is embodied in the variety of transformations of opportunities into reality and the existence of many states in which the object under consideration may be in the future.

Existing approaches to the nature of the uncertainty category are classified as follows.

First, uncertainty is considered as a measure of information. Let's agree that this is the most common view on understanding the specifics of this category. The sufficiency of information regarding the conditions, limitations and parameters of

socio-economic systems testifies to the certainty of a particular situation. However, it is believed that it is not possible to reach the full awareness of the subject in the management decisions regarding the object and its environment, even in ideal conditions.

Second, the uncertainty reflects the state of the system relative to the reference conditions. Yes, uncertainty is seen as a deviation between the expected state and actual economic development. Such a deviation necessitates the development of planning measures.

The third approach is that uncertainty is caused by the possibility of choosing different alternatives. Scientists emphasize that the essence of uncertainty involves the choice of an unlimited number of development options, but in the absence of well-defined criteria of optimality and efficiency.

The fourth, uncertainty determines the quality of information. It is about the evaluation of information by the reliability of information and data, its completeness and objectivity.

The fifth approach is characterized by the fact that uncertainty is a source of risk due to the inability to estimate its likelihood [58].

The Nobel Prize winner, G. Simon, in contrast to theoretical models of managerial decision-making aimed at maximizing profits, proposed the concept of limited rationality, which he described as follows: rationality is limited if there is not enough universal knowledge. Its lack is manifested primarily in the inability to know all the alternatives, the uncertainty of events, occurring in the outside world, and the inability to calculate all their consequences. There is an objective need to obtain accurate descriptions of the selection process (decision making in the context of reduced rationality). Restrictions are primarily due to the cognitive abilities of a person, in particular, his perception, attention and mental abilities. Therefore, in real-world practice, it cannot cover the entire decision-making process as a whole, and even its individual steps with the required accuracy and depth.

The functioning of the economic system as a whole is characterized by uncertain behavior of both business entities and its other elements. So not taking into account the uncertainty, it is impossible not only to describe a real business entity, its properties, behavior under certain conditions, but also to effectively manage it. Only knowledge and practical use of the laws of economic development can be a reliable basis for the effective management of business entities in a rapidly changing external environment.

Effective management can only be achieved on the basis of increasing the meaningful depth of theories, models used to analyze the situation and make decisions. In a dynamic environment, in the conditions of future uncertainty, an effective organization cannot be built on the basis of copying known decisions, procedures and rules, inherited from the glorious, but already past [36].

The functioning of any business entity at various stages and in various fields of activity is associated with uncertainty. The existence of uncertainty in the activities of economic entities is the cause of risks, without which the effective development of the enterprise is impossible.

Uncertainty of the results of the activity is a necessary reason for the occurrence

of entrepreneurial risks. It should be noted that for over a hundred years there has been a scientific debate about the relationship between the concepts of "risk" and "uncertainty". Thus, even the economists of the neoclassical school (late XIX - early XX centuries) identified the risk with uncertainty. On the contrary, non-Keynesian representatives distinguished between the risk and uncertainty categories, which are related to the condition: known or not to the decision-maker the quantitative probabilities of occurring certain events. If the risk is specific to the economic system with mass phenomena, uncertainty usually occurs in cases, when the probability of consequences has to be determined due to the lack of statistical data for previous periods.

From the standpoint of economic theory, uncertainty is the objective impossibility of acquiring absolute knowledge of the objective and subjective factors of the functioning of the system, ambiguity of its parameters. The greater uncertainty during making an economic decision, the greater the degree of risk [54].

And yet, the concept of "risk" cannot be identified with the concept of "uncertainty".

Risk is a subjective category and uncertainty is an objective category.

The risk is the possibility of the subject not reaching the goal, due to the need to make a decision under uncertainty (in a non-deterministic system).

Uncertainty cannot be interpreted as an exceptionally negative phenomenon. It is uncertainty that drives people to act irrationally, helping to overcome conservatism, dogmatism, various psychological barriers, and obtain meaningful results in a situation of inevitable choice.

Uncertainty will mean the state of ambiguity of the development of certain events in the future, the state of our ignorance and the inability to accurately predict the basic values and indicators of the development of a project.

Since uncertainty is a major component of risk, it can be a source of risk. Therefore, to reduce the risk, it is necessary to minimize uncertainty trying by timely obtaining information to reduce it to zero. That is, to translate uncertainty into complete certainty by obtaining quality, comprehensive and reliable information at the right time.

The economy of market type assumes the existence of many types of uncertainty for all business entities.

The most common is the classification of uncertainty by the degree of occurrence of an event. This classification makes it possible to distinguish between full and partial uncertainty, complete certainty.

The uncertainty of the information can be eliminated by determining the likelihood with what this information can be expected.

Depending on the means of determining the probability, there are two types of uncertainty - statistical and non-statistical. If statistical uncertainty is implied, it is sometimes said that a decision is made in a risk situation, if a non-statistical one- the decision is made in conditions of uncertainty. In its pure form, this or that kind of probability happens rarely - most often one can find a mixed kind [54].

It is necessary to differentiate and take into account several types of uncertainty, their joint influence (superposition) and their economic risk (Figure 2.1):

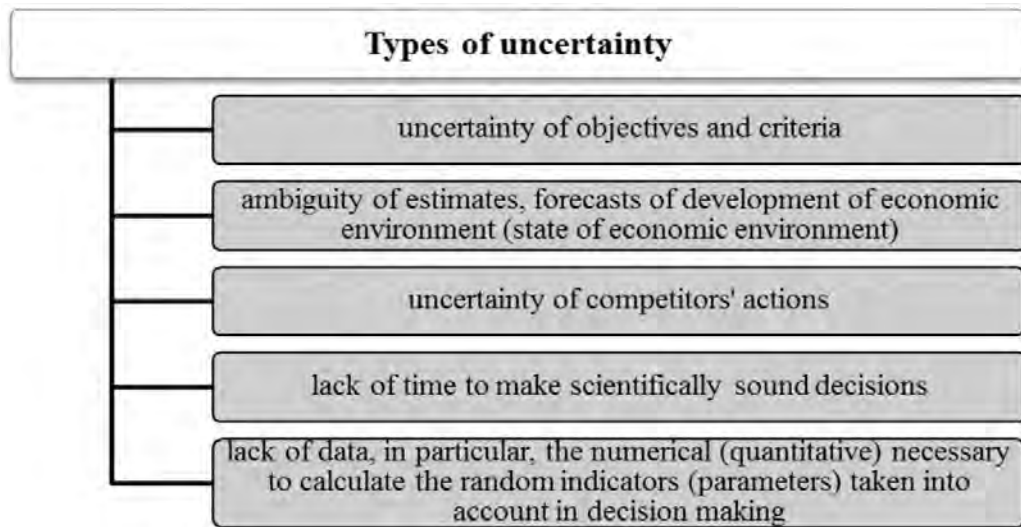


Figure 2.1. Types of uncertainty

Partial or complete uncertainty is due to the fact that, essentially, economic problems are reduced to the task of choosing from a number of alternatives. Herewith, economic entities do not have complete information on the state of the systems to develop the optimal solution and sufficient capacity to adequately account for all available data.

Uncertainty factors can be grouped into large categories (Fig.2.2).

Environment	•undefined and defined •statistical and dynamic •simple and complex •turbulent and calm
Competitive strategy and strategic mission	•low cost and differentiation •defender and pioneer •product life cycle (to build, to hold, to harvest, to refuse)
Technology	•small batches, large batches, production processes, mass production •interdependence (common, consistent, cross)
Variables at the level of unit of business, firm, industries as a whole	•the size of the firm •firm diversification (the only product, related and unrelated diversification) •the organizational structure •industrial variables
Factors related to knowledge and observation of processes	•knowledge of transformation processes •observing the result •behavioral observation (effort)

Fig. 2.2. Grouped categories of uncertainty factors

In practice, the reducing of the level of uncertainty is necessary to make economic decisions is ensured by:

- gathering of information that reduces uncertainty of expectations;
- processing of information by methods of analysis, forecasting, scenario and finding out the causes, forms and consequences of uncertainty;
- development of models, that are adequate to the situations that occur and obtaining, as a result of modeling, the values of the target values, functional dependencies of the states of the object of management and the environment [84].

Thus, the main sources of entrepreneurial risk are the external and internal uncertainties associated with the likelihood of events and phenomena that affect the activities of the firm. That is why, while making any decision, the entrepreneur should not forget about the logical connection: probability - uncertainty - risk. In other words, probability creates uncertainty that leads to risk.

2.2. The external environment. Competitive strategy and strategic mission

In a market economy, each enterprise operates in a specific competitive environment, which factors have a decisive influence on it. The analysis and especially the forecasting of the competitive environment is too laborious component of strategy development. First, the basic theoretical propositions should be understood. Among them the basic concept is competition (from Latin concurrentia - rivalry, competition). This is a key element of the market: there is no competition - there is no market economy.

To determine the strategy of enterprise behavior and its implementation, management must have a thorough understanding of both the internal environment of the enterprise, its potential and development trends, as well as the external environment, trends in its development and the place it occupied by the enterprise. Herewith, the internal environment is studied in order to uncover the strengths and weaknesses of the enterprise, and the external environment - to reveal the threats and opportunities, that the enterprise must take into account in defining its goals and in achieving them.

The environment, in which the enterprise is located and operates, is divided into the following components: internal and external environment.

Internal environment is a set of factors within an enterprise, which are the results of management decisions. **External environment** - factors beyond the enterprise.

The external environment was constantly changing and had the following features:

- a) withdrawal from the idea, that the future should be better than the past;
- b) the concept of the enterprise as an "open system" already dominates the internal orientation of the plans;
- c) planning - long-term;
- d) the basic principle of planning: to go from the future to the modern;
- e) appearance of strategic thinking: focus on reducing of threats of the

environment and using its opportunities;

g) focus - gaining competitive advantages.

The external environment is a source, that provides the enterprise with the resources necessary to maintain its internal potential at the proper level. The enterprise is in a constant state of exchange with the external environment, thus providing itself with the possibility of survival. But the resources of the environment are not limitless. There is always the possibility that an enterprise will not be able to obtain the necessary resources from the external environment because they are claimed by many other enterprises, that are in the same environment. This can weaken the potential of the enterprise and lead to many negative consequences for it. The task of strategic management is to ensure such interaction of the enterprise with the environment, which would allow to maintain its potential at the level necessary to achieve its goals, and thus would enable it to survive in the long run [19].

The confirmation of the assumption that those business units that are experiencing a greater degree of environmental uncertainty apply a more subjective approach to activity evaluation.

If the degree of environmental uncertainty increases, the need for more detailed accounting information of a wide range increases.

J. Bell proves, that "the external environment of an organization contains elements such as consumers, competitors, government agencies, suppliers, financial organizations and sources of labor resources relevant (that is, significant) in relation to the operations of the organization" [11].

The best factors of direct environmental action are the laws of Ukraine on enterprise, entrepreneurship, ownership of property, labor safety, protection of consumer rights, separation of monopoly power and prevention of low-quality competition, governmental acts and regulations, normative documents of sectoral and territorial governing bodies, focused on legal and organizational consolidation of economic relations between interstate own structures and economic entities, elaboration of standards and laws of their behavior (rules of the game) in economic space.

As the external environment is directly related to competition and competitive strategy, it should be noted that business structures, that **compete on the basis of differentiation** or explore new markets should:

- have an environment where managers are involved in decision-making;
- it is of particular importance to award managers, based on non-financial performance indicators (eg development of new types of products, market development) in addition to secondary financial indicators.

The first serious theoretical provisions on competition as a driving force for economic development started in the mid-eighteenth century by representatives of classical political economy. In particular, A. Smith investigated and later D. Ricardo built a model of perfect competition. K. Marx supplemented it from the standpoint of the law of value. Perfect competition was also explored by J. Mill, A. Cournot, E. Hawkscher, and B. Olin. J. Robinson and E. Chamberlin went further: they investigated monopolistic competition. A. Cournot theoretically substantiated the concept of oligopoly, and P. Sraffa, F. Edzhourt, A. Lerner, F. Hayek and others -

monopolies.

Competition is the coexistence and struggle of the producers and other market actors to maximize profits and other goals by meeting the diverse needs of consumers, while fully utilizing their own strengths and external capabilities, eliminating their own weaknesses and threats from the outside.

Thus, in a market economy, an enterprise is in a certain competitive environment, that's why it has to participate in competition.

The competitive environment of an enterprise are the subjects of competition (competitors) and their actions for the protection of their own interests, as a result in certain conditions of activity of the enterprise are formed.

An enterprise strategy has several levels of decomposition, each of which corresponds to a strategy of a certain rank, that is, an enterprise strategy has a hierarchical structure.

Defenders and business units, following low-cost strategies, must accept the evaluation of the results, where the focus is on reducing costs and budget execution.

The grounds for assumption in the conditions of **competitive strategy** are the following:

1. Business units, that choose a defensive strategy, pay more attention to the use of financial indicators when rewarding managers.
2. Use of non-financial indicators for sizing Executives' bonuses increase in proportion to how an organization pursues a pioneering strategy.
3. Enterprises that choose a strategy that is more based on non-financial performance indicators, actively use them to determine the size of managers' bonuses.

Mission is a business concept, that reflects the function of business, its main purpose. In contrast to the vision, the mission characterizes only the "present" of the organization: the type, scale of activity, differences from competitors, leaving out the prospects for business development.

The mission details the status of the enterprise and provides guidance for developing goals and strategies at different organizational levels. Its main components are:

- *goods or services, that is, the range of needs that are met;*
- *categories of target consumer groups;*
- *management technologies and functions (way of meeting needs);*
- *competitive advantages.*

In general, there are **three main tasks of defining the mission**:

- a clear view of the business sphere in which the organization operates;
- determining the moment, when measures to change the mission and strategic direction of the organization as a whole should be taken;
- ***a clear description of the mission that prompts action.***

1. Defining the sphere of activity of the organization is a comprehensive analysis of the following three components:

- consumer needs - what range of needs is met;
- consumer groups - whom we satisfy;
- the technologies used and the functions implemented, that is, how the needs of

consumers are met.

A comprehensive analysis of all three components is required to determine the scope of the company. Knowledge of the types of products and services provided by the company is clearly insufficient. The products and services by themselves are not so important to buyers. Their production is conditioned by the existence of specific needs, that must be met. Without specific needs, there is no business.

Consumer groups should also be considered in determining the sphere of activity, since this gives an idea of the nature of the market being served, its geographical features and types of customers. An analysis of the technologies and functions used is also needed, as it helps us to identify ways to meet consumer needs and the range of products and services, produced by the industry.

2. Changing conditions force managers to look to the future all the time to determine in time the moment of changing the course and to adjust the mission. The key point is the question: what new ways should the company move now to successfully cope with the coming changes? Changing the course of the enterprise in accordance with the barely noticeable signs of new discoveries and changes reduces the likelihood of getting into a difficult situation and losing its position in the market. The analysis of new circumstances in the chain **consumer - market - technology** eventually leads to the choice of one of the alternative directions. The strategic manager's task is to work through each of the possible areas from the beginning to the end, to evaluate the degree of risk and benefits of each, and make the appropriate decision.

3. Bringing the mission to lower-level executives and employees is no less important than developing it. A competently formulated mission drives action. The skill of describing a mission is manifested in the choice of simple, clear terminology, through which the mission is communicated in a clear and convincing manner to all interested persons at all hierarchical levels.

Approaches to mission formation. There are two approaches for understanding the mission:

- **wide;**
- **narrow.**

In a wide sense, the mission is ***the philosophy and the assignment of the firm.*** That is, the mission is defined in general terms without being firmly attached to the nomenclature of the products being manufactured, consumer groups, etc. **A broad approach** to the mission formation orientates businesses to:

- achievement of strategic advantages by creating the opportunities for production of a wide range of products (services);
- simultaneous coverage of many market segments and consumer groups;
- flexibility of maneuvering in the management of the organization.

In the narrow sense, the mission is seen as a statement, that reveals the meaning of the existence of an organization, which manifests the difference of this organization from its counterparts.

A narrowly defined mission focuses on a strategy to produce a limited product range, specific market segments, consumer groups, or strategic paths to achieve business goals.

Such approach promotes the increase of efficiency of management at the expense of strengthening of certainty and organization through the use of more focused, coordinated strategies. A properly formulated and presented mission, together with its overall content, must be something that makes it unique in its own way and that characterizes the very organization in which it was created.

Mission value. The formulation of the mission helps to accomplish such tasks.

The first, the mission forces managers to systematically engage in a comprehensive analysis of the strengths and weaknesses of the organization and its competitors, as well as opportunities and threats, which increases the validity of strategic decisions.

The second, in the case of large in size or geographically widely located companies, the mission promotes the integration of separate organizational units into one unit, staff motivation, and more effective interaction of managers and subordinates at different levels.

The third, the mission contributes to the projection of a rational and positive image of the company on business partners, shareholders, investors, on which the fate of the company depends on in different forms and degrees.

So, successful implementation of the process of development and use of the strategic mission of the enterprise on the basis of a functional approach provides a number of advantages for the enterprise in the face of frequent but difficult-to-predict changes and innovations in the market and in the minds of people.

2.3. Used technologies and interdependencies

Success in competition contributes only to those, who identify new needs, produce new products and implement new technologies. Thus, competition creates the mechanism of economic competition, forcing the entrepreneurs to analyze their economic strategy. In this regard, the use of anti-crisis management technologies of the enterprise is relevant in the current conditions.

In addition to the overall indicator of the effectiveness of a management decision organizational, economic, social, technological, psychological, legal, environmental, ethical and political effectiveness can be determined.

Speaking in this section about uncertainty, it is also worth mentioning, that among the types of uncertainty is technological one, which is caused by the general growth rate of scientific and technological progress, the conformity of technological processes of the subject with state standards, rules and regulations, etc., possible violations of the production process due to subjective -objective factors, etc.

At the micro level, as factors of uncertainty, may be the competitiveness of the subject's products, the imperfection of the production process and technology, not modern management styles, irrational use of resources, etc.

When considering uncertainty factors from a strategic management standpoint, technological uncertainty is of great importance. This is because it is impossible to set the fixed stability of technological parameters of production and research at the enterprise. Only taking into account all these factors, it is possible to choose the right

means of reduction.

At this time, there are many information technologies, that can significantly simplify the life and help to solve problems, related to decision-making processes in various subject (applied) fields.

The simplest of them is *intuitive decision-making technology*. It assumes, that the decision is determined by the experience, gained by the entity in similar situations. The main criterion in doing so is to provide the least damage to achieve a specific goal. That is, if previously similar decisions were not made - the likelihood of making a wrong decision significantly increases.

The main stages of intuitive technology are: change registration; selection of decisions that are in the memory of the entity and decision making. Its advantage lies in the speed of decision making, the disadvantage is the high probability of error.

More complicated, compared with intuitive is the *rational decision-making technology* of the actual number of stages (steps), operations and procedures of which are determined by the complexity and type of problem being solved.

The decision-making process involves the identifying of the problem, selecting options, and evaluating the effectiveness of the solution. For the proper functioning of this process, it is necessary to form an appropriate algorithm. Now there is no accepted technology for decision making.

The concept of "decision-making technology" is a set of methods and means of transformation of the initial material resources, information and other components of the "entry" of the system into the product and other components of its "exit".

The system of crisis management of the enterprise involves the use of a number of technologies, including controlling, re-engineering, financial diagnostics, financial rehabilitation, investment management, personnel management, consulting management, innovative anti-crisis management, etc.

Risk management is defined as "the process of systematic identification of critical risks, assessment of their influence, development and implementation of a comprehensive risk management solution, that integrates strategy, personnel, processes and technology" [8].

There are two management technologies, the application of which in crisis conditions should help in management of the enterprise (fig.2.3).

An example of this system's effectiveness is the Oracle Siebel CRM, which has repeatedly become one of the world's best CRM systems in various rankings. This system has a very wide functionality and a large number of ready-made solutions, time-tested and by thousands of projects, for different sectors of the economy [125].

Using CRM in crisis management helps improve the effectiveness of any organization by building and maintaining of strong relationships with customers, establishing long-term contacts with existing and potential customers. Expansion and improvement of the client base enables the expansion and profitability of the enterprise, opens new ways of obtaining investments and new business assets. With the help of budgeting technology, the expenses and cash flows in the sections, required for the real management of the enterprise, and not only accounting, thus it is possible to control the real profit and real financial condition of the enterprise.

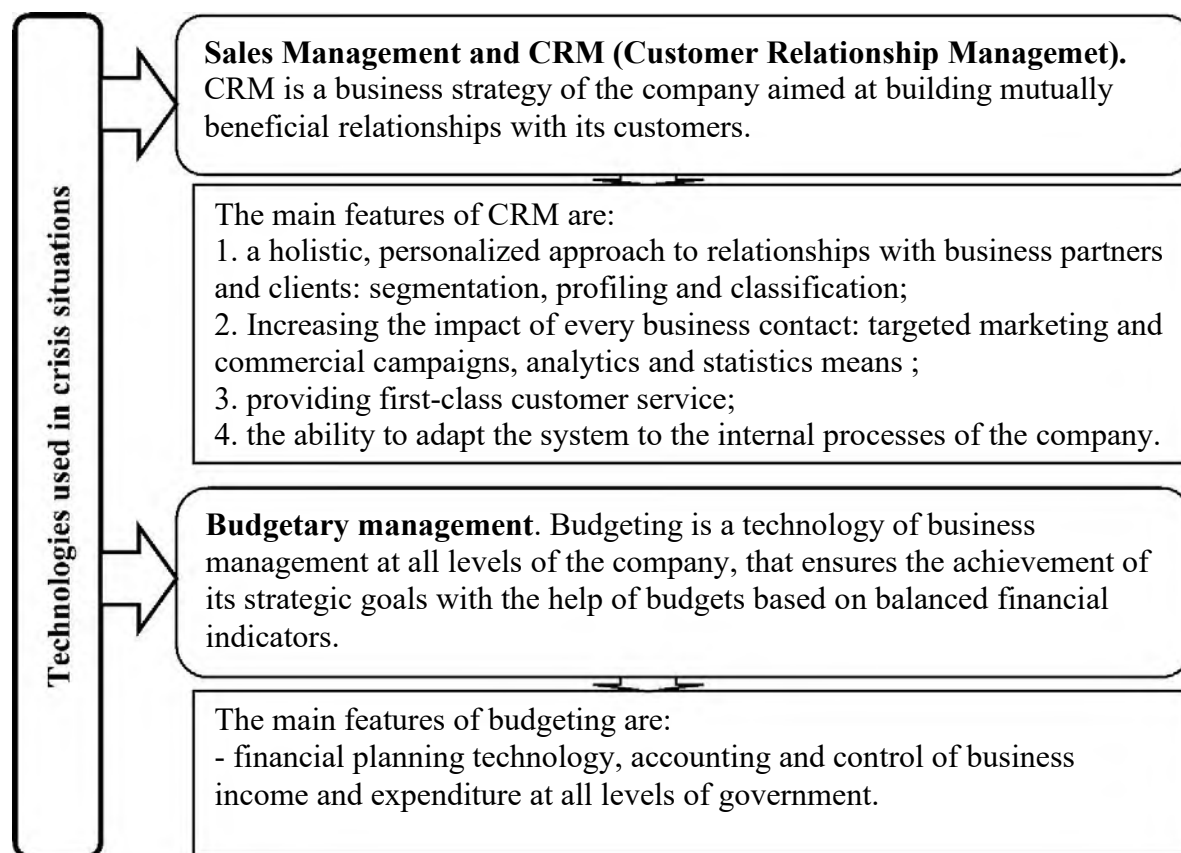


Fig.2.3. Technologies used in crisis management

Source: formed by author based on: [71]

It should be noted that economic risk is associated with losses, the likelihood of which is caused by uncertainty, as well as the benefits and gains, that can be obtained only through risk innovation activities. In times of crisis, there is a risk of bankruptcy for the state and, accordingly, a social explosion. Therefore, the risk must be weighed.

In this context, the object of public administration is the link between diversification and capital accumulation and its impact on accelerating the pace of technological innovation. On the way of reforming business and entrepreneurship, the entities of the public administration, carrying out the diversification of risks, ensure the growth of economic development.

Therefore, a successful overcoming of crises situation can only be relied only on conditions of ready developed technologies of state anti-crises management. Based on the analysis and synthesis of social processes and social systems, it is necessary to create innovative anti-crisis technologies, which confirm the expediency of their application, as well as the ability to realize the goals of public administration.

Advantages of these technologies are presented in fig. 2.4.

The expediency of using these technologies in crisis management is the benefits they provide: reducing costs, increasing sales, increasing the number of winning contracts, increasing customer satisfaction, reducing administrative costs for sales

and marketing, ensuring transparency and predictability of cash flow, increasing the control over money management, increasing efficiency and reducing the risk of using free funds, increasing control over revenue and expenditure both enterprise as a whole and the individual structural units, to optimize.

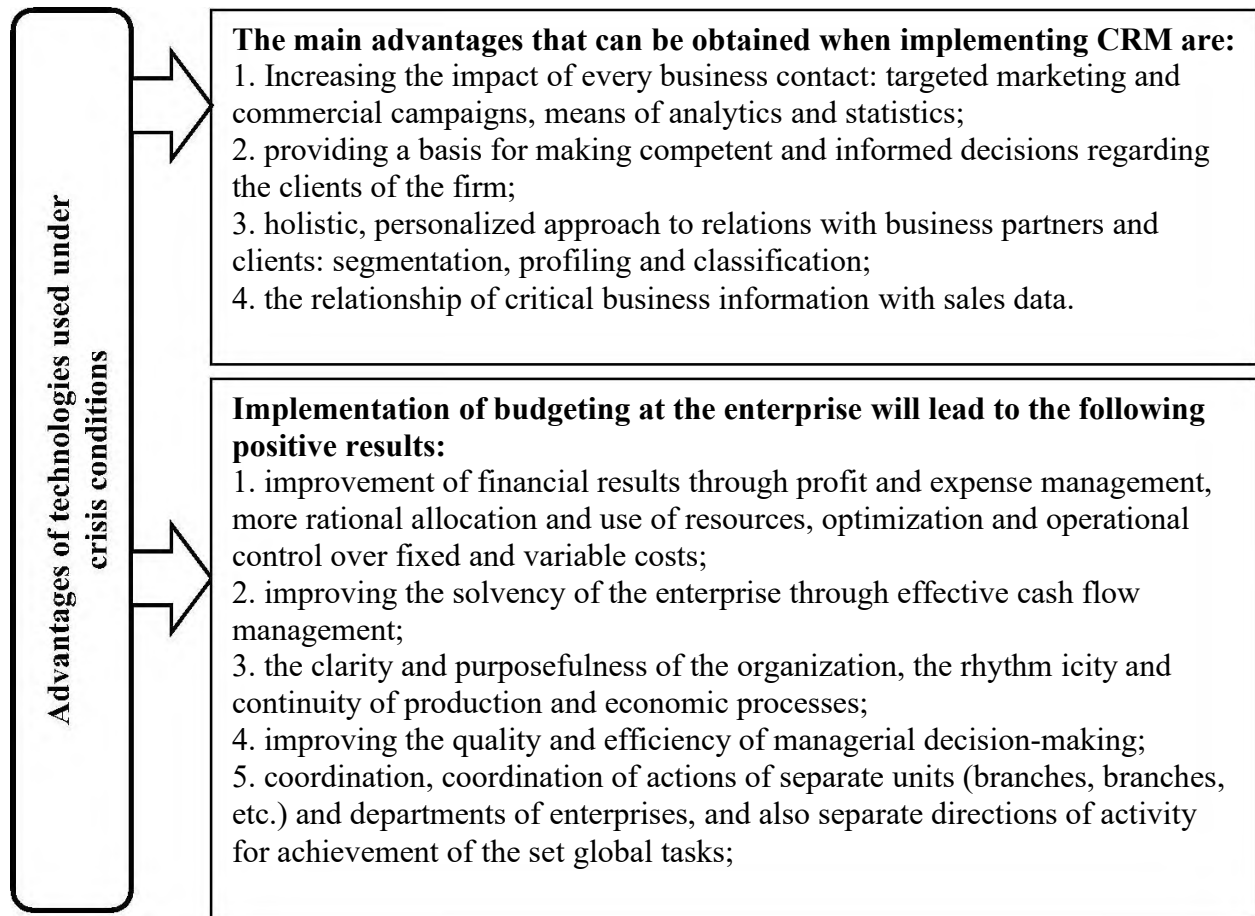


Fig. 2.4 Advantages of technologies, used in crisis management of an enterprise

2.4. Company size, diversification, structure and type of industry

One of the key factors, which affects the construction of accounting system, goal-oriented management according to the theory of circumstances, is the size of the enterprise.

UK scientists M. Abder-Kader and R. Luther conducted a survey of 113 UK food and soft drink industries in order to determine the factors, which cause the differences in management accounting, note that data of the systems, built in large enterprises, are more complex, than in small enterprises. Moreover, under the complexity of accounting systems, scientists understand its ability to provide a wide range of relevant information for planning, control, decision-making to create or increase the cost [1].

With the increase in the size of economic entities, the process of their management becomes much more complicated, while at the same time there is an

increase of responsibility of the managers of the enterprise for the results of the adopted decisions. The increasing scale of the possible negative consequences determines the need for consideration of a significant amount of information in the management process.

Z. Hoque notes, that large companies have more resources, that can be used to innovate, including innovations in accounting and control systems, which promote the effectiveness of communication flows within these companies [41]. Haldma T. and Laats K. argue that the complexity of production accounting and budgeting systems tends to increase with the size of the entity grows. The movement from primitive to more complex management accounting requires resources and specialists; only large enterprises have the opportunity to attract them [33]. In addition, small businesses do not have the sufficient resources, needed to implement a complex accounting system, such its transformation can be economically unreasonable exactly on small enterprises. That is, when compared to large enterprises, on the small ones the amount of input is much smaller, so the construction of accounting system, focused on management, is influenced by the organizational structure of the enterprise, namely the level of its decentralization. Abder-Kader M. and Luther R., as a result of their study, concluded, that enterprises that are characterized as decentralized, implement a more complex management accounting system [1]. This is primarily due to the fact, that the organizational structure of the enterprise depends largely on its size. Thus, K. Merchant notes, that large companies are more decentralized and use more sophisticated budgeting system[69]. Therefore, small businesses are characterized by a lower level of decentralization than large ones, which is primarily due to the complexity of managing by latter and the inappropriateness and economic unreasonableness of establishing an extensive management apparatus in small enterprises.

In small and medium-sized enterprises, the management accounting system is regarded as a set of formal, informative procedures, used by managers to support or change the strategic and current goals of business entities.

Various approaches are used to take businesses out of the crisis and intensify the activity of economic entities in the world economy, including the diversification of activities, that makes it possible to solve a number of problems, that businesses face.

The main prerequisites for diversification of activities at enterprises are the reduction of profits in the main production, perturbation of market needs, inactive tax system, the development of scientific and technological progress.

In the conditions of uncertain environment and fierce competition, the main indicators are not only the spending, cost and volume of products, but also market research, that results in diversification of commodity markets, products and customers' service.

It is worth noting, that the most significant investments in new technologies of the enterprise are called **diversification** - investments in the development or exit from unpromising strategic economic zones (conglomerate, concentric) markets or technologies.

Diversification is acceptable to an enterprise for the following reasons: if the business entity begins to engage the activity, that is new to already developed market,

giving it the status of technological innovator; if the new industry is attractive in terms of its high profitability; possibility of obtaining synergistic effect (synergism of sales, management, operational, investment synergism).

The diversification strategy of enterprises in the strategic management system is, of course, extremely important, and its topicality in view of the economic direction of development is only increasing. In the scientific community, there are different approaches to the definition of strategies [102].

Each product, offered by the company, has in its composition functional components, basic materials, which will further form a single whole. Most often it is in the interests of the manufacturer to buy most of the materials from outside sellers.

There are three types of diversification opportunities (Figure 2.5):

Types of diversification opportunities	
Vertical diversification	It involves both obtaining new goals and introducing new products into production. Known for the expansion and branching of components and materials. the relevant goals to be achieved by these components, parts and materials are substantially different from those of the final product. In addition, the technology for the development and production of these materials is apparently also significantly
Horizontal diversification	Introducing new products when they do not in any way match the existing product range and acquire missions, that are relevant to the know-how of the company and its experience in technology, finance and marketing.
Side diversification	It goes beyond the area in which the company produces its products. Thereby the company declares its purpose to make its own market structure even better.

Figure 2.5. Types of diversification opportunities

Source: formed by the authors on the basis of: [10]

The following methods of production diversification enable the business entity to increase its capacity, reach new market segments etc. Whether to develop existing types of production or to introduce radically new types of production it is a strategic question.

One of the prospects for the development of management accounting is its diversification of production.

Diversification of production - simultaneous development of many unrelated types of production, expansion of the range of manufactured products within one enterprise, concern, etc. Diversification is used to increase the production efficiency, the receiving of economic benefits and prevent bankruptcy.

Accounting of production activities is the central link in the management accounting system, where the information on costs is grouped by goals, functions and their behavior.

Implementation of production diversification requires the solution of important scientific problems - research and forecasting of commodity market conditions and tendencies of change of business environment, development of effective strategies of innovative development, assessment of potential (technical, resource, intellectual) diversification, establishment of risk level in the conditions of partial information certainty, developing effective diversification tools and more.

Significant place in the production accounting belongs to the rationing of costs (material, labor and overhead) and ways to reflect the actual and regulatory costs. The production accounting is organized as a single cost accounting process.

Each enterprise while carrying out the diversification of economic and financial activity, defining a strategic goal, meets on the way of its achievement the problem of formation of management accounting for obtaining information on preparation and making management decisions. Depending on the production, the level of its diversification, and also the impact of the environment, management situations require certain information, the lack of which, unlikely and untimely, increases uncertainty and risk.

At the same time, it should be considered, that management accounting is necessary to meet the requirements of managers of different levels of management in information about their costs, principles of transfer pricing, the optimal level of specialization and division of labor at the enterprise, the correctness of the choice of sizes of structural units of enterprises, the validity of the application of the principle of "cost -output - profit "in relation to production units. Here they compile and control the implementation of cost estimates, produce accounting and analytical calculations of the critical point of production volume of each enterprise, variable and fixed costs, the cost of each production, profits, etc.

The cost of services (products, works) is one of the most important financial indicators that affects, on the one hand, the size of the enterprise profit, and on the other, the indicator of the availability of assets, which, in turn, has an impact on the indicators of the financial condition of the enterprise (liquidity ratios, etc.).

The goal of diversification must be complementary to the goal of innovative development of the enterprise and must be to achieve maximum profit (net income) at limited costs for diversification of production (at an acceptable level of risk). To assess the level of diversification, it is advisable to use the Herfindahl-Hirschman index.

An example of successful diversification of production types is. The company Electron started its production of TVs. Today it is a well-known corporation of the engineering industry. This business entity covers the following areas of activity: electric transport, polymer industry, production of special vehicles, air-conditioning systems for vehicles, materials for electronics, low-power electric motors, special, home appliances, metalworking services, etc.

The main prerequisites for diversification of activities at enterprises are the reduction of profits in the main production, changing market needs, inefficient taxation system, the development of scientific and technological progress. The motives for diversifying the activity of the enterprise are grouped into five main groups: technical, technological, economic, financial, social, strategic.

Diversification is seen as a strategic orientation of the enterprise, which includes a set of measures (analytical, organizational, controlling) aimed at the formation of appropriate directions of the enterprise's activity.

2.5. Knowledge and factors that influence the observation of results

Increasing of competition has led enterprises to seek new management methods and, accordingly, new concepts of management accounting as information systems. In the conditions of uncertain environment and fierce competition, the main indicators are not only the spending, cost and volume of manufactured products, but also market research, the results of which is the diversification of commodity markets, products and customers' service. Businesses should define strategic goals as key factors for success in competition or "success potentials" for the development and implementation of an appropriate strategy, which should be addressed by the entire management accounting system.

Herbert Hawks, a former dean of Columbia College, said: "Half of the world's problems are created by people trying to make a decision before they get all the information they need." Data without analysis, understanding and communication is not knowledge, because figures usually require explanation.

Management accounting allows to turn dry figures into meaningful descriptive analysis.

In order to succeed, especially in the face of high uncertainty, organizations must develop effective management accounting in addition to the already existing financial accounting system. Financial accounting data, despite its weight, is not a sufficient information base for future decision-making because it is past-oriented. Management accounting promotes integrated thinking that allows to consider the full range of data, needed to make decisions. If the confidence in the result is low enough, not only the managers have to make the decisions.

Decision-making involves the participation of employees at all levels of the organization, each of them brings their own vision, experience and attitude to the process. Investors and other stakeholders also make decisions regarding the organization based on external reports. As the decision-making approaches and styles differ between the individuals and organizations, this decision-making document is described as a non-linear process.

It is important to note that an effective management accounting function is not one that produces good results in all areas, working in isolation from other services, but one that also provides knowledge and information sharing between different areas and cooperates with other teams.

In the course of implementing organizational changes and gathering information as part of the implementation of the tasks of management accounting, it is necessary to evaluate the effectiveness of organizational changes. Herewith, it is closely linked to the quality assessment of management technologies and the effectiveness of the management system as a whole. After all, management accounting itself and management decisions are also exposed to the external environment and organizational changes, and in their transformations must be changed accordingly.

In order to provide the most complete information for management decisions, a system of measures is being developed to control those environmental parameters, that are exposed to it, including the evaluation of efficiency. It is generally accepted that managers can evaluate only the factors, they can control.

However, when organizations ask managers whether the results are controlled or not, managers often create new methods of controlling or managing those processes, that were previously considered uncontrolled. This, on the one hand, increases the controllability of processes, on the other hand, does not always indicate the adequacy of such assessments.

Also, taking into account modern information technologies, these factors of value creation (value) of the enterprise are factors of economic life, that can be represented in a rather short period of time (day, week, month). Thus, the informational possibilities of domestic internal (management) accounting in providing management needs in the actual economic information are rather wide.

Thus, the set of management accounting tools depends on the established management goals and the tasks to be solved to generate the relevant information. Its selective value of individual components, depending on the usefulness and value of the information provided, is influenced by two groups of factors -a subject area of application and a target information need for all stakeholders, which are determined by the specific nature of the economic activity.

The skills of processing quantitative and qualitative information in management accounting are necessary to provide decision-makers with historical and current data, as well as forecast data. For example, management accounting allows to evaluate past data to calculate the level of rewards on the results of work. It allows to get current situation data in real time to monitor the implementation of strategies and plans in line with their goals.

The use of scenario planning, forecasting and other similar tools within management accounting provides the necessary understanding of the development of the situation to develop a strategy.

Except for the data of actual result, data on budgets estimates and benchmarks may be required to determine the criteria. Too often, organizations analyze data, that they are able to evaluate today or have traditionally evaluated in the past, rather than what is necessary to evaluate the implementation of future plans (which may differ from previous ones).

Obtained information on the effectiveness and efficiency of initiatives and processes, becomes the basis for decisions on the optimization of future plans. As the result, a revision of plans and even the necessity of global changes in strategy may be required.

Discussion and self-review questions

1. *What is meant by the theory of uncertainty?*
2. *How is uncertainty theory classified?*
3. *What is the difference between the terms "risk" and "uncertainty"?*
4. *Describe the types of uncertainty.*
5. *Describe the categories of uncertainty factors.*
6. *What are the differences between indoor and outdoor?*
7. *Define the competitive environment of the enterprise.*
8. *What are the main components of the mission?*
9. *Describe approaches to mission formation.*
10. *Describe the types of diversification opportunities.*
11. *Describe the technologies used in crisis management when managing an enterprise*
12. *Outline the benefits of crisis management technologies in enterprise management.*

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THEME 3. CLASSIFICATION AND BEHAVIOR OF COSTS

3.1. Basic principles of costs classification

The development of market relations and management in conditions of free competition requires management to skillfully regulate and make prompt and effective decisions regarding costs management.

In its economic essence, **costs** are a monetary expression of the amount of resources (material, labor, financial, etc.) used for a specific purpose (for the production and sale of products, works, services, other economic activities - investment or financial).

According to National Accounting Regulation (Standard) 1 “General Financial Reporting Requirements”, **costs** are a decrease in economic benefit during the reporting period in the form of disposal or use of assets or an increase in liabilities, that results in a reduction of an enterprise’s equity (excluding distribution of the capital between the participants (shareholders) or its withdrawal), provided, that these costs can be reliably estimated.

The composition of costs, related to the prime cost of manufactured products in accounting is regulated by Regulation (standard) of accounting 16 "Costs".

Due to the fact, that R(S)A 16 "Costs" is quite general and does not take into account the specifics of each industry, ministries and agencies are given the right to develop guidelines for the organization of costs accounting and prime costs products calculation in the relevant industries.

Most ministries and other central governments have developed and approved recommendations for relevant areas, including:

- Methodical recommendations on the formation of the prime cost of products (works, services), approved by the State Committee for Industrial Policy of Ukraine 02.02.01, № 47;

Methodical recommendations for planning the accounting and calculation of the prime cost of products (works, services) of agricultural enterprises, approved by the order of the Ministry of Agrarian Policy of Ukraine dated 18.05.2001. №132. Similar recommendations have been approved for cost accounting and cost calculation in housing and communal services, construction and installation works, design and survey works, communication services for transport in trade, etc.

Cost management is a necessary element of the enterprise activity of any form of ownership.

Cost management is not possible without taking into account their classification features and studying the factors, influencing their behavior. Any company, regardless of ownership, seeks to profit from its activities while minimizing costs.

The classification of costs is ensured by properly organized accounting policies and accounting processes.

The organization of cost accounting is influenced by various factors, the main of which are: activities, nature of production and products, management structure and size of the enterprise, features of technology and organization of production.

The basis for the classification of costs is provided by *the functional principle of*

management, which aims to ensure the management functions of managers at different levels. Management includes the following functions: planning; prognostication; accounting; control.

The principle of controllability plays a special role, because in its effectiveness, the responsibility center should include only those costs that can be influenced by the manager of the responsibility center.

This principle can be implemented by removing uncontrollable articles or reporting on uncontrollable and uncontrollable articles.

There are *types of factors* that cannot be controlled:

1. Economic and competitive factors (managers may respond to some of these changes, but in most cases managers are not protected from their influence);
2. State of the nature (usually managers are protected from them);
3. Interdependence, when the results of activities are influenced by other units of the enterprise (general interdependence; consistent interdependence; cross-dependence).

Production costs – are the sum of living and tangible labor costs for the production of products (services).

In each branch of the national economy there are specific features of the production process organization, and hence the composition and structure of production costs. But, despite the industry features, the means of labor, objects of labor and labor are always involved in the production process, and in some industries - natural resources (land, solar energy, etc.). The use of these elements of production determines the costs of enterprises in the course of their economic activity. These costs are carried out in the form of the cost of used items of labor (raw materials, fuel, etc.), labor costs and part of the cost of used means of labor in the amount of their depreciation. Natural factors, as a rule, do not have a monetary value, and their use does not increase the amount of production costs.

R(S)A 16 “Costs” defines, that *the elements of costs* are economically homogeneous types of costs. According to the elements, the costs are divided into: material costs, labor costs, social activities, depreciation, and other operating costs.

One costs element can be present in several costing items.

The “Material costs” element includes the cost, spent in production (except for the product of own production):

- raw materials and basic materials;
- consumer semi-finished products and components;
- fuel and energy;
- building materials;
- spare parts;
- containers and packaging materials;
- auxiliary and other materials.

The cost of returnable waste, received in the production process, is not included in the item of operating costs “Material costs”.

The “Labor costs” element includes wages and salaries, awards and incentives, financial assistance, compensation payments, payment of vacations and other unworked time, other labor costs.

The “Deductions for social activities” element includes:

- deductions for compulsory state social insurance, deductions for individual insurance of the company’s staff, deductions for other social activities.

The “Depreciation” element includes the amount of accrued depreciation of fixed assets, intangible assets and other non-current tangible assets.

The item “Other operating costs” includes operating costs that are not included in the items, in the above items, including travel expenses, communication services, payment for settlement and cash services, etc.

Production costs form:

- *production prime cost of products;*
- *prime cost of sale;*
- *total prime cost of sales.*

According to R(S)A16 the production costs of products (works, services) includes:

- direct material costs;
- direct labor costs;
- other direct costs;
- distributed general production costs (Fig. 3.1).

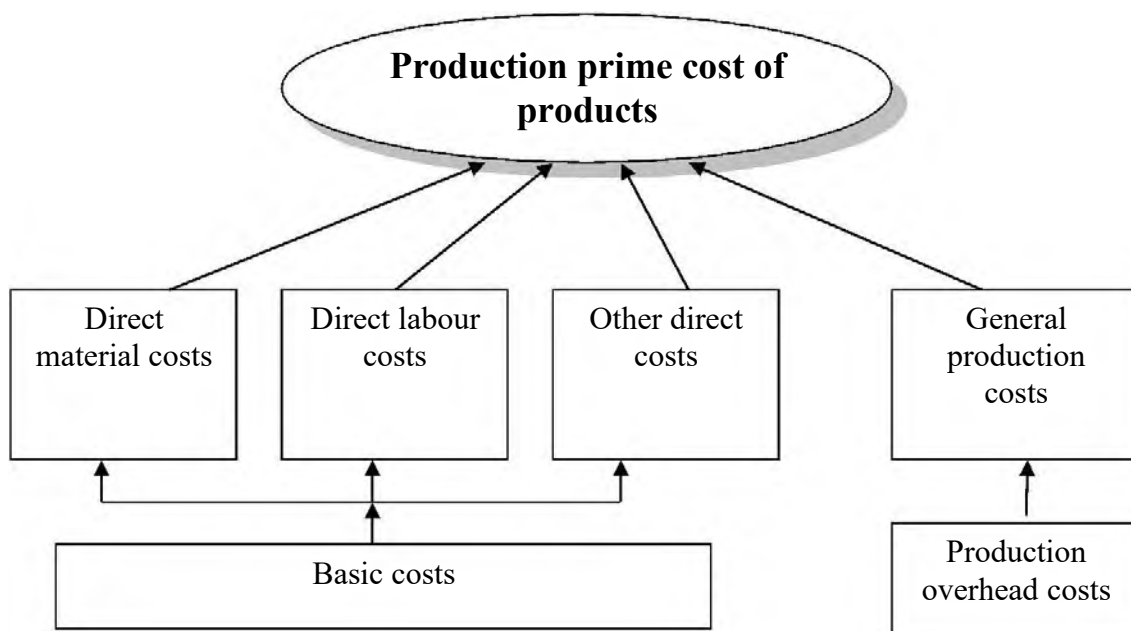


Fig. 3.1. Formation of production prime cost of products

Direct material costs include the cost of raw materials and basic materials, that form the basis of products, purchased semi-finished and component products, auxiliary and other materials, which can be directly attributed to a particular object of accounting.

Direct labor costs include wages and other payments to workers, engaged in the manufacture of products, performance of works or provision of services, which can be directly attributed to a specific object of accounting.

Other direct costs include:

- a) payments for property insurance of the enterprise;

- b) rent for fixed assets, that can be attributed to a specific object;
- c) costs for maintenance, operation and repair of non-current assets, used in a particular production process, including their depreciation, costs for lighting, heating, water supply, electricity, etc.;
- d) taxes and fees (mandatory payments), which according to the law are attributed to production costs;
- e) other costs that can be directly attributed to a specific cost object.

The general production costs include:

- a) costs of production management (wages, social activities and health insurance and the cost of business trips of the administration and specialists of industries (shops), stations, departments, etc.);
- b) depreciation of non-current assets of general production (shop, district, brigade) purpose;
- c) costs of maintenance, operation and repair, insurance, operating lease of fixed assets, other non-current assets of general production purpose;
- d) the cost of improving technology and organization of production (wages, including contributions to social activities, employees engaged in improving technology and organization of production, improving product quality, improving its reliability, durability, other performance characteristics in the production process, payment for services of third party organizations, etc.);
- e) costs for heating, lighting, water supply, drainage and other maintenance of common premises for industrial purposes;
- f) costs of maintenance of the production process (wages and other costs of technological control over production processes and quality of products, works, services, etc.);
- g) other costs (losses from defect, payment for downtime, etc.);
- g) rent for land and property for industrial purposes;
- h) the amount of accrued (paid) fixed agricultural tax. At the end of the reporting period (year), this amount is distributed among the objects of accounting for the costs of crop production in proportion to the area of land occupied by the respective crops.

The prime cost of sales, which were sold during the reporting period in accordance with R(S)A 16 “Costs” consists of the production prime cost of products, unallocated fixed general production costs and excess production costs, as shown in Fig. 3.2.

Excessive production costs are considered to be the consumption (use) of resources for production in excess of norms, standards, prices, etc., approved by the authorized body. Excess costs are included in the cost, if such costs are not associated with shortages, damage, non-technological use and violation of storage rules, at the discretion of the authorized person (manager) of the enterprise. According to this Law, the basis for reflecting in the facts of business transactions (expenditure of resources) are the primary documents, which must contain, in particular, information on the content, normalized and excessive (with an explanation of circumstances) expenditure (use) of resources.

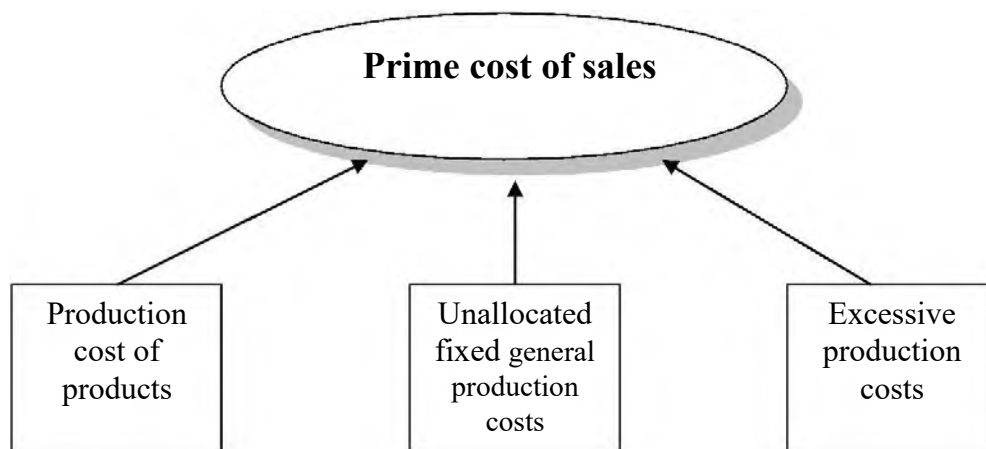


Fig. 3.2. Formation of prime cost of sales

R (S) A 16 "Costs" provides for the *general principles* of grouping the costs of the enterprise by *costing items and costs elements* with a division into production costs of ordinary (provided by the rules and technology of production) and excessive production costs.

Are not included in the prime cost of manufactured and sold products and are covered by other sources:

- a) administrative costs;
- b) marketing costs;
- c) other operating costs;
- d) financial costs;
- e) costs of participation in capital;
- f) other costs covered by the profit;
- g) costs incurred through targeted funding.

The total prime cost of sales is formed from the prime cost of sales, administrative costs and marketing costs (Fig. 3.3).

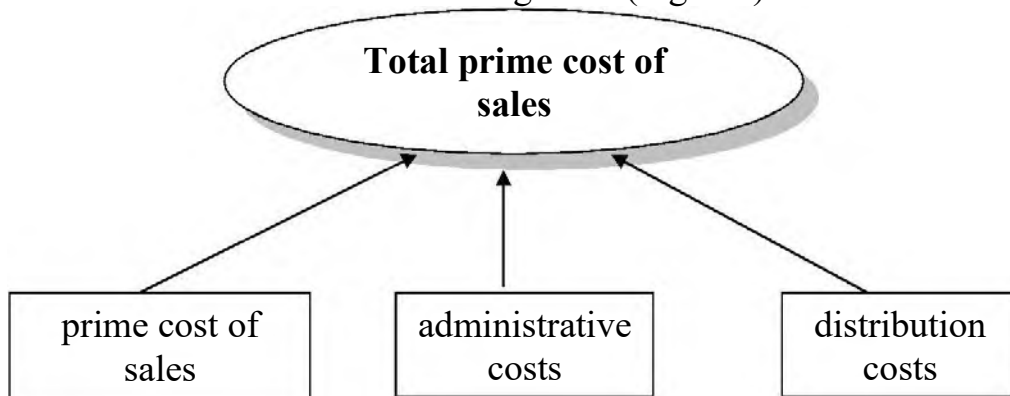


Fig. 3.3. Formation of total cost of sales

R(S)A 16 "Costs" defines the items of costing – as groups of costs, allocated to their intended purpose.

3.2. Classification of costs by accounting areas

The goal of every business is to make a profit. At the same time, each company tries to reduce costs, but keep the proper quality of goods or services to remain competitive in the market.

For the correct organization of cost accounting in accordance with their features, composition and value in the production process, as well as for control, analysis, costing and cost management, they are divided into groups (classified) on the basis of those characteristics, that are determined by the classification.

The most cost-effective approach for building a cost accounting system is to select typical groups of solutions and select the appropriate cost accounting objects (e.g. product or unit).

According to the importance of management accounting, we can distinguish three areas of costs classification, which are based on the principles: *different costs for different purposes*.

By areas of accounting costs are classified:

- Depending on the of inventory valuation and the determination of financial results
- Depending on the decision making
- Depending on the control of execution of decisions (Fig. 3.4).

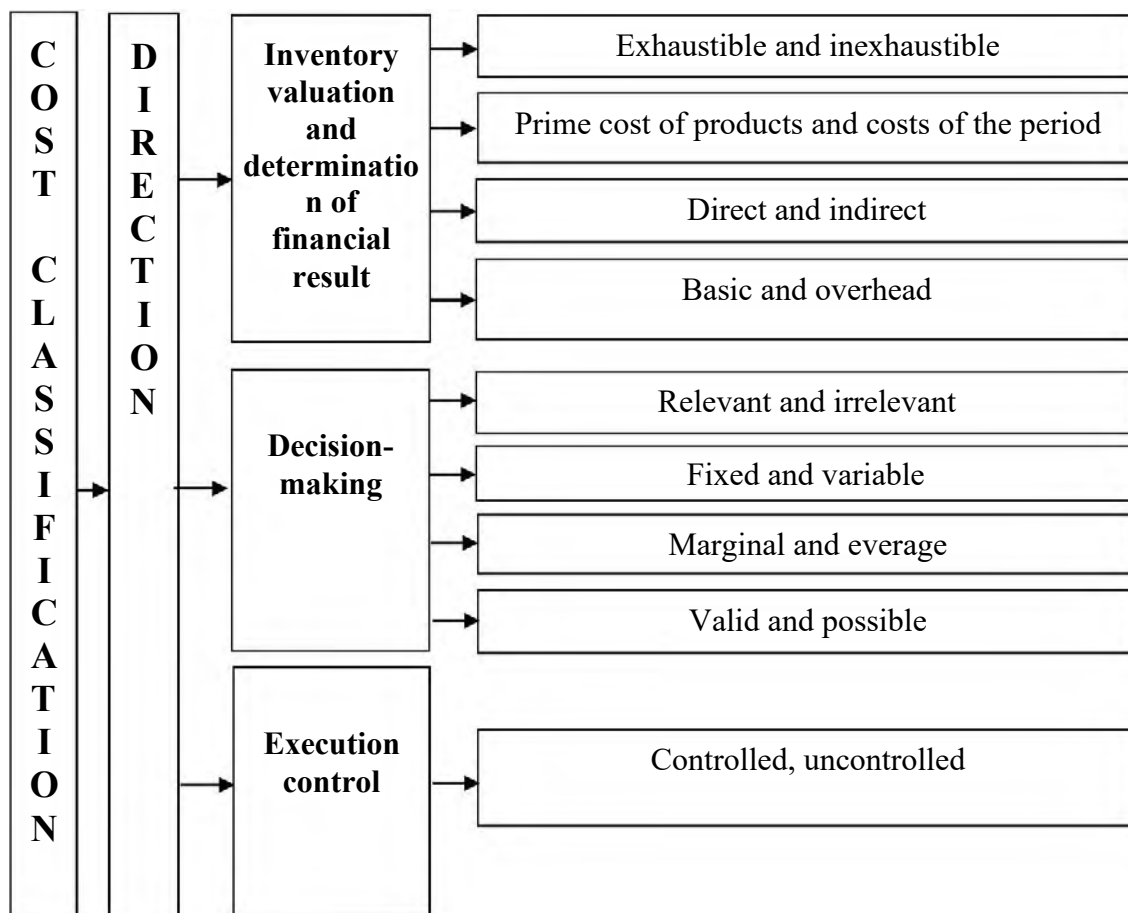


Fig. 3.4. Classification of costs by accounting areas

I. Depending on inventory valuation and determination of financial results, costs are divided into: exhaustible and inexhaustible, product costs and period costs, direct and indirect costs, basic and overhead costs

- Exhaustible costs are an increase in liabilities or a decrease in assets in the course of current activities to generate income for the reporting period.

- Inexhaustible costs are increase in liabilities or a decrease in assets in the course of current activities to generate income or other benefits in future periods.

- Product costs are costs, directly related to the production of goods or the purchase of goods for sale.

- Period costs are costs, that are not included in the cost of production and inventories and are treated as costs of the period, in which they were committed.

- Direct costs are costs, that can be attributed directly to a particular cost object in an economically possible way (direct materials, direct wages, other direct costs).

- Indirect costs are costs, that cannot be attributed directly to a particular cost object in an economically possible way (salaries of general plant and management staff).

- Basic costs - is a set of direct costs of production.

Production costs - is the sum of living and tangible labor costs for the production of products (services).

Each branch of the national economy has specific features of the organization of the production process, and hence the composition and structure of production costs. But, despite the sectoral peculiarities, the means of labor, objects of labor and labor are always involved in the production process, and in some industries – natural resources (land, solar energy, etc.). The use of these elements of production determines the costs of enterprises in the process of their economic activity. These costs are incurred in the form of the cost of used items of labor (raw materials, fuel, etc.), labor costs and part of the cost of used means of labor in the amount of their depreciation. Natural factors, as a rule, do not have a monetary value, and their use does not increase the amount of production costs.

- *overhead costs* are costs, that are formed under the influence of certain working conditions for the organization, management and maintenance of production.

II. According to the method of decision-making costs are divided into: relevant and irrelevant, constant and variable costs, marginal and average costs, valid and possible.

Relevant costs are costs, that may change as a result of a decision.

Irrelevant costs are costs, that do not depend on the decision.

For example: An agricultural enterprise needs to decide, whether to apply mineral fertilizers to the soil on its own or with the involvement of a third-party organization. The total amount of such costs depends on the decision of the head (on their own – fuel accounting, depreciation of equipment, wages, etc.; with the involvement of a third-party organization – the cost of services provided). To make a decision, it is necessary to make calculations and determine, which decision will be profitable, and what costs will remain regardless of its adoption.

Fixed costs – costs, the absolute value of which with increasing (decreasing) output does not change significantly. Such costs include costs, associated with the

maintenance and management of production activities of shops, as well as the cost of meeting the economic needs of production.

Variable costs include costs, the value of which increases with increasing output, and decreases with its decreasing.

These costs *remain constant per unit of output* (table 3.1).

Table 3.1

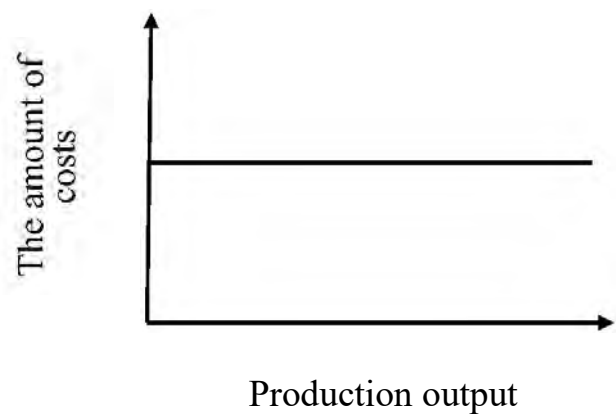
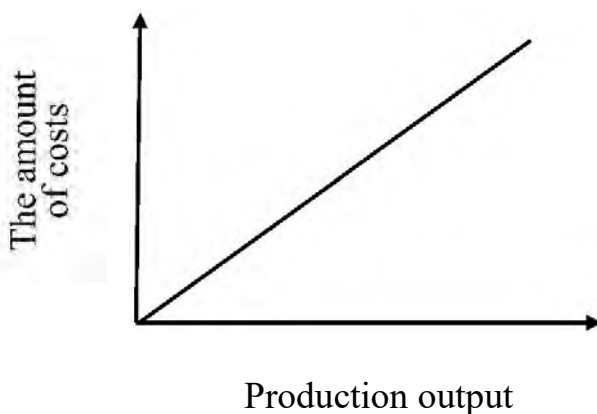
Impact of variable costs		
Product activity (production output, units)	Variable costs per 1 unit. UAH	Total amount of variable costs, UAH.
1	100	100
10	100	1000
20	100	2000
30	100	3000

We present this information graphically.

BEHAVIOR OF VARIABLE COSTS

On the total production costs

Per unit



Fixed costs change inversely in proportional to the change in activity per unit of output. (table 3.2)

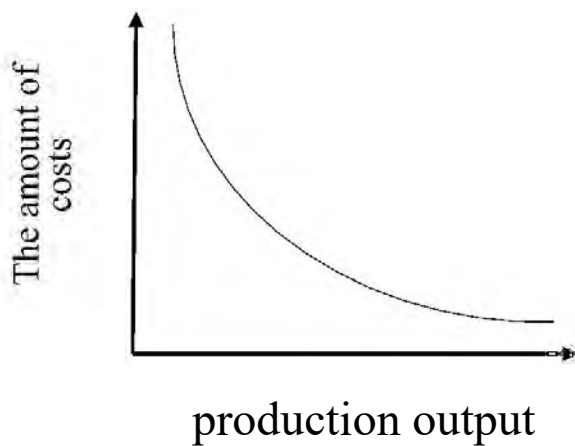
Table 3.2

Impact of fixed costs		
Product activity (production output, units)	Fixed costs per 1 unit. UAH	Total amount of fixed costs, UAH.
1	1500	1500
5	300	1500
10	150	1500
20	75	1500

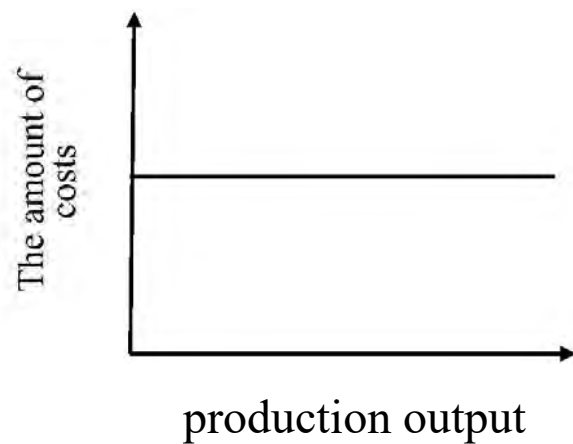
We present this information graphically.

FIXED COSTS BEHAVIOR

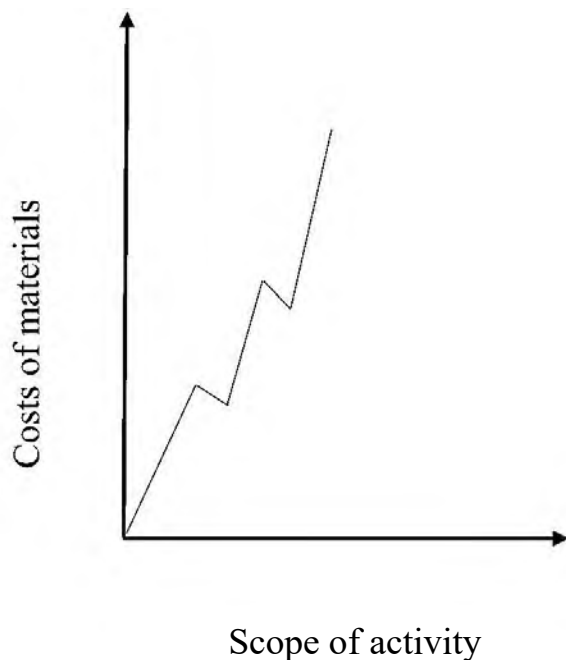
Per unit of output



For the total amount

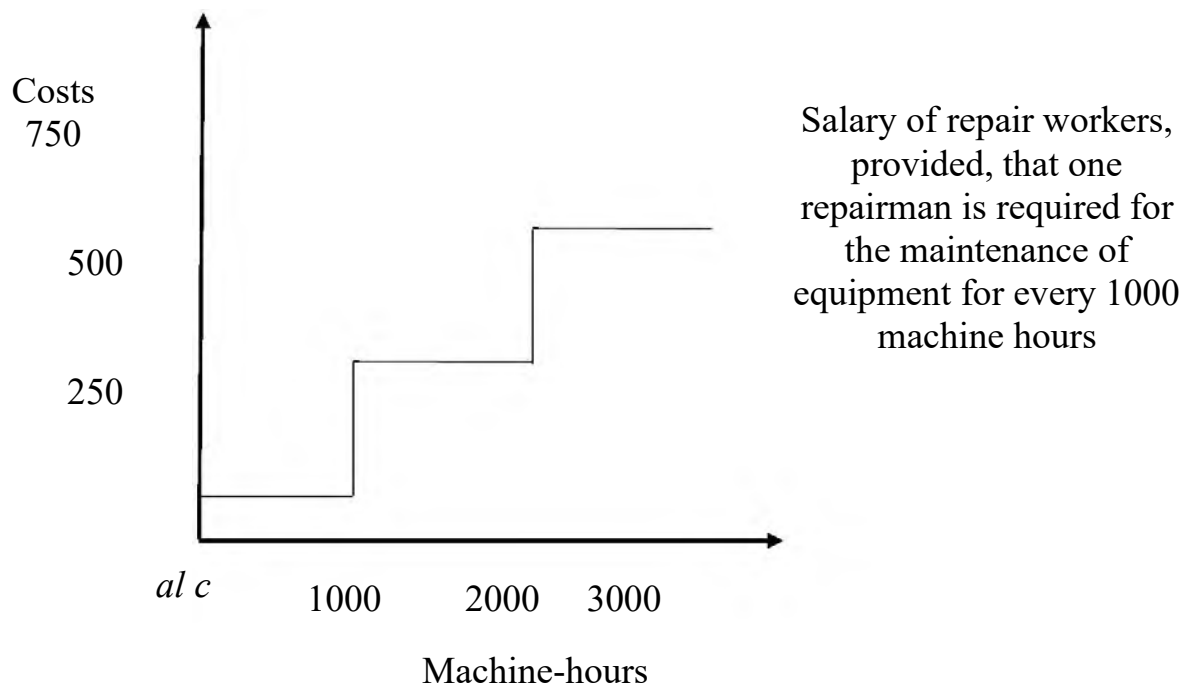


Semi-variable costs are costs, that change, but not directly proportional to the change in the scope of activity (or other factor) (For example, the costs of purchasing materials subject to a discount in the case of purchasing a large batch). Graphically, they will be depicted as follows:



The costs of purchasing materials subject to a discount in the case of the purchase of a large batch

Semi-fixed costs - costs that change step by step when changing the scope of activity.



Average costs - is the arithmetic mean unit cost of production, calculated by the ratio of total costs to the number of units of manufactured products.

Valid costs are costs, that require payment of money or spending of other assets.

Alternative (possible) costs – is a profit, that is lost, when choosing one course of action requires abandoning an alternative solution.

III. In order to monitor the costs execution, they are divided into:

1. - *controlled costs* - are costs, that the manager can directly control or have a significant impact on them;

- *uncontrolled costs* are costs, that the manager cannot directly control or significantly influence. For example, the revaluation of fixed assets will affect the amount of accrued depreciation, which does not depend on the decision of the head.

3.3. Behavior of costs, depending on their classification

In the practice of management there are problematic situations, in which managers have to make decisions.

Decision-making is a purposeful choice of several alternative management decisions, that ensures the achievement of the chosen goal or the solution of an existing problem.

Most management decisions should be based on the definition and analysis of the behavior of costs and income, associated with the implementation of these decisions.

Objective analysis and evaluation of the behavior of various cost elements allows managers to make decisions on the regulation of production, which usually comes down to choosing from several alternatives the one, that is optimal in this situation.

Costs behavior is the nature of the cost response to changes in the enterprise. Events and operations of economic activity, that affect costs, are called costs factors.

With the growth of production, the total costs of the enterprise in absolute terms increase due to the growth of their variable part. The reduction of costs in this case is observed only per unit of the final result of activity, in proportion to the growth of production. The increase in the prime cost of products and costs in general can occur both faster and slower of the growth rates of production [99].

An example of costs factors is given in table 3.3.

Table 3.3

Examples of costs factors for different business functions

Business function	Costs factors
1	2
Research and development	Number of projects Technical complexity of projects
Design of products, services and processes	Number of products The number of components of the product
Production	Production volume Number of equipment reconfigurations Basic salary
Marketing	Number of advertisements Number of sellers Receipts
Delivery	Number of customers Weight of cargo Transportation distance
Customer service	Number of orders Service time
Management	Number of orders Number of staff

In relation to the change in the costs factor, they are divided into:

- variable – costs, that change in proportion to the change in the cost factor (production volume, number of employees, size of stocks, duration of the production process, etc.);

- fixed – costs, that when the cost factor changes, they are unchanged during the relevant period;

- semi-variable (conditionally variable) - costs that change, but not directly proportional to the change in the cost factor;

- semi- fixed (conditionally constant) - costs that change step by step when the cost factor changes [84].

There are the following models of cost behavior:

1) Behavior of variable costs. In the case of change in production, the total amount of variable costs changes in proportion to the change in volume.

2) Behavior of fixed costs. Per unit of production, in the case of increasing production volumes, fixed costs are reduced. Based on the total number of products, fixed costs remain unchanged.

3) Behavior of general (mixed) costs.

Variable costs behavior.

The dependence of variable costs on individual factors is expressed by:

- graphically;

- the equation of the line:

$$y = bx, \quad (3.1)$$

where y is the total amount of variable costs;

x– volume of activity (number of units of manufactured products);

b– unit costs.

Depending on the percentage of the ratio of changes in costs and changes in production, variable costs are divided into:

- *proportional* - costs change at the same rate as the volume of activity;

- *progressive* - these are those, whose growth rate exceeds the growth rate of production;

- *degressive* - variable costs, the growth rate of which lags behind the growth rate of production.

Ratio of costs response (R_{cr}) - characterizes the ratio of growth rates of costs and growth rates of business activity of the enterprise.

$$R_{cr} = \frac{\% \text{ change in costs}}{\% \text{ change in the volume of activity}}$$

Depending on the cost ratio factor to the changes in production, they are divided into:

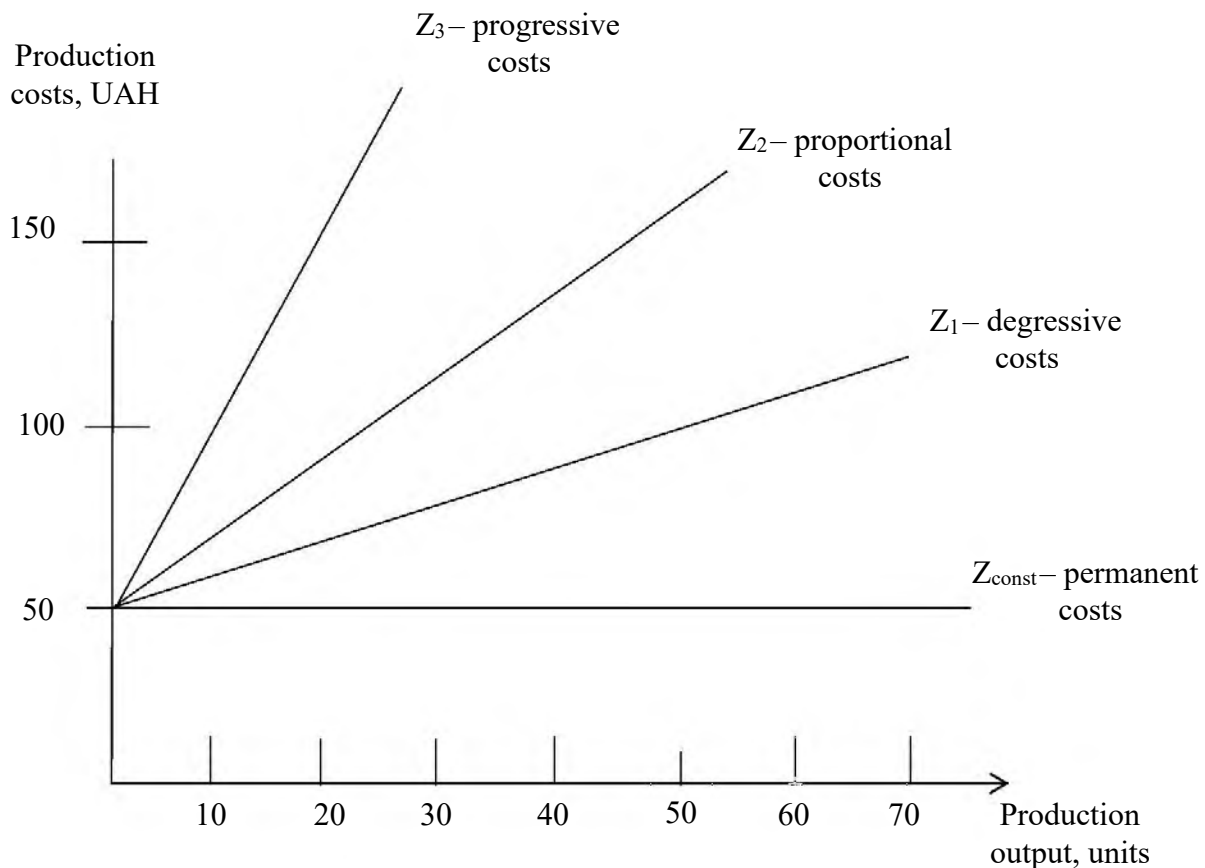
$R_{cr} = 0$ - fixed costs;

$0 < R_{cr} < 1$ - degressive costs

$R_{cr} = 1$ - proportional costs

$R_{cr} > 1$ - progressive costs

Graphically, these costs will look like (Fig. 3.5)



The relationship between output and production costs

Here is an example of determining the behavior of variable costs.

Condition:

*The costs of raw materials for the production of a unit of products is 50 UAH.,
The number of planned products - I quarter. 200 units; II quarter - 250 units III
quarter - 400 units*

The dependence of variable costs on individual factors is shown in table 3.4.

Table 3.4

Dependence of variable costs on individual factors

Production output, units (x)	Variable costs per unit products, UAH / unit, (b)	The total amount of variable costs for production, UAH (y)
1	2	3
1	50	$1 \cdot 50 = 50$
200	50	$200 \cdot 50 = 10\,000$
250	50	$250 \cdot 50 = 12\,500$
400	50	$400 \cdot 50 = 20\,000$

Behavior of variable costs: With increasing the volume of production costs increase in direct proportion to such an increase.

Semi-variable costs - costs that change with the change in the volume of activity, but not in direct proportion, that is, there is a nonlinear dependence.

Fixed cost behavior.

Fixed costs do not change automatically, when production changes, but they may change for other reasons, e.g., due to appropriate management decisions. The enterprise management can influence cost behavior through decisions about such factors as production and services, capacity, technology, and financial policy.

Total fixed costs remain unchanged until the total output, regardless of the number of such products.

For such costs, the costs response factor is zero (the numerator of the formula is zero) (**CRF= 0**).

Fixed costs per unit of output change inversely proportional to the changes in output, that is, have a degressive nature.

Conditionally fixed costs are constant over a certain range of activities, but with its significant change, they can increase or decrease by a fixed amount.

Here is an example of determining the behavior of fixed costs.

Condition:

Fixed costs (equipment rental) for the production of a product unit are 1250 UAH, the number of planned products - I quarter. 200 units; II quarter - 250 units III quarter - 400 units

The dependence of fixed costs on individual factors is shown in table 3.5.

Table 3.5

Dependence of fixed costs on individual factors

Production output, units (x)	Fixed costs per unit products, UAH / unit, (b)	The total amount of fixed costs for production, UAH (a)
1	$1250/1 = 1250$	1250
200	$1250/200 = 6,25$	1250
250	$1250/250 = 5$	1250
400	$1250/400 = 3,16$	1250

The graphic image will look like:

Fixed costs per unit products.

Behavior of fixed costs: With the increasing of production, costs decrease inversely proportional to changes in the production volume.

Fixed costs do not change automatically, when production changes, but they may change for other reasons, e.g.: due to appropriate management decisions.

Enterprise management can influence the costs behavior through decisions concerning such factors as production and services, capacity, technology, and financial policy.

Fixed costs are divided into two groups: mandatory and discretionary.

Mandatory costs are the costs, that determine the capacity of the enterprise (depreciation, rent, salaries of service personnel, etc.). The amount of these costs depends on the amount of power projected. But if the capacity is already determined, the amount of mandatory costs does not change. Mandatory costs have a tendency to remain unchanged in terms of changes in activity within short periods (quarter, year). However, over long periods, as of several years, significant changes in demand can lead to mandatory costs.

Discretionary costs are costs, that are determined by the management of the enterprise and are not directly related to changes in current activities.

Such costs include: research and development costs; advertising; staff training, etc. A characteristic feature of discretionary costs is that at a critical moment their value can be reduced without changing the volume of activity.

Semi-fixed costs – costs, that change step by step with changes in production

The behavior of total costs shows the relationship between costs and their factors and allows to predict future relevant costs.

The relevant range is the range of activities, within which the relationship between the value of costs and their factor is preserved.

The total costs in general can be represented by the formula:

$$y = a + bx, \quad (3.2)$$

where y is the total amount of costs;

a– the amount of fixed costs;

x– volume of activity (number of units of manufactured products);

b– unit costs.

Here is an example of determining the behavior of total costs.

Condition:

The cost of raw materials for the production of a product unit is 50 UAH, fixed costs (equipment rental) for the production of a product unit are 1250 UAH, the number of planned products - I quarter. 200 units; II quarter - 250 units III quarter - 400 units

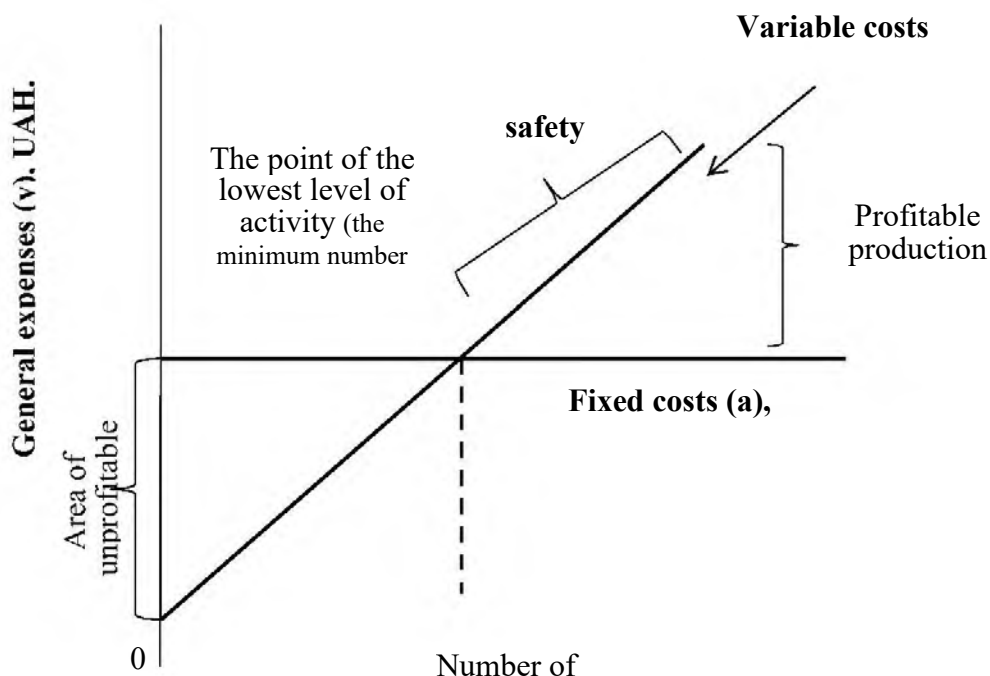
The dependence of total costs on individual factors is shown in table 3.6.

Table 3.6

Dependence of total costs on individual factors

Production output, units (x)	Variable costs per unit, UAH (b)	The total amount of variable costs for production, UAH	The total amount of fixed costs for production, UAH (a)	Total amount of costs, UAH (y)
1	2	3	4	5
1	50	50	1250	1300
200	50	10 000	1250	11250
250	50	12 500	1250	13750
400	50	20 000	1250	21250

Graphical method for determining the behavior of total costs



The behavior of total costs shows the dependence of the amount of costs on the volume of production

3.4. Methods for determining the cost function

Studying the cost behavior allows to estimate costs and to build their function.

Costs estimation is the calculation of the sum of costs at different values of the costs factor.

The level of costs, as a rule, depends on a significant number of factors, but to build a function of costs one or two of the most important from their totality are chosen.

The cost function is a mathematical description of the relationship between costs and their factors.

The costs function can be described as follows:

$$Y = a + bx, \quad (3.3)$$

where: Y - total costs;

a - total fixed costs;

b - variable costs per unit of activity;

x - the value of the costs factor

In practice, costs have several costs factors, but for the construction of costs functions, mostly, one or two of the most influential factors are chosen. The costs function facilitates the prediction of costs, i.e. their forecasting.

Costs forecasting is the forecasting of future costs for different levels of activity. The costs function can be described as follows:

$$Y = a + bx, \quad (3.4)$$

where: Y - total costs;
a - total fixed costs;
b - variable costs per unit factor;
x - the value of the cost factor.

Example:

Fixed costs = 4000 UAH. Variable costs for 1 factor = 38.50 UAH. The company plans to increase production to 500 finished products.

$$Y = 4000 + 38.50x$$

$$Y = 4000 + 38.50 * 500 = 23250 \text{ UAH}$$

The following basic methods are used to determine the costs function:

- method of technological (engineering) analysis;
- analysis of accounts;
- method of higher-lower point;
- method of visual devices (graphic);
- least squares method;
- regression analysis;
- simplified statistical analysis.

All these methods, except for the method of technological analysis, are based on the use of past statistics that accumulate in the accounting registers. The method of technological analysis allows you to estimate future costs in the absence of statistics, focused on future operations and does not require the study of past events. From a methodological point of view, it is the most accurate.

All these methods are used, however, the least time-consuming are economic-statistical and graphical methods.

Method of technological (engineering) analysis – a systematic analysis of the functions of activities to determine the technological relationship between resource costs and results of activity. It requires a detailed study of all operations, resource needs and assessing the adequacy of their use. It is characterized by their complexity and significant time consuming.

The advantages of this method are that it focuses on future operations, rather than on the study of past activities.

The disadvantages include the fact that it requires significant time and money.

This is a kind of functional-costs analysis of activities.

Method of analysis of accounting data - involves the distribution of costs into variables and constants for the relevant factor on the basis of accounting data.

The method of account analysis is widely used in practice. But it should be considered, that it is largely based on the experience and institutions of the manager and analysis of past events. Therefore, its disadvantage is a certain subjectivity and

the possibility of significant differences between past and future conditions. To some extent, these defects can be avoided through a series of observations and through the use of mathematical methods.

The higher-lower point method (mini-max method) involves the constructing of a costs function, based on the assumption, that variable costs are the difference between total costs at the highest and lowest levels of activity. Since, according to this method, the costs function is actually based on two points (at the highest and lowest level of activity), there is a risk, that in the intermediate cases there will be no close relationship with the higher and lower points, and the costs function will not reflect the real relationship between costs and their factor.

Example:

Table 3.7

Determination of the costs function by the method of higher-lower point

Result of Observations	costs factor, machine-hours	Equipment maintenance costs, UAH.
The highest value of the costs factor	144	21840
The lowest value of cost factor	69	10650
	75	11190

Variable costs per 1 machine- hour are:

$11190: 75 = \text{UAH } 149.2.$

Fixed costs are equal to:

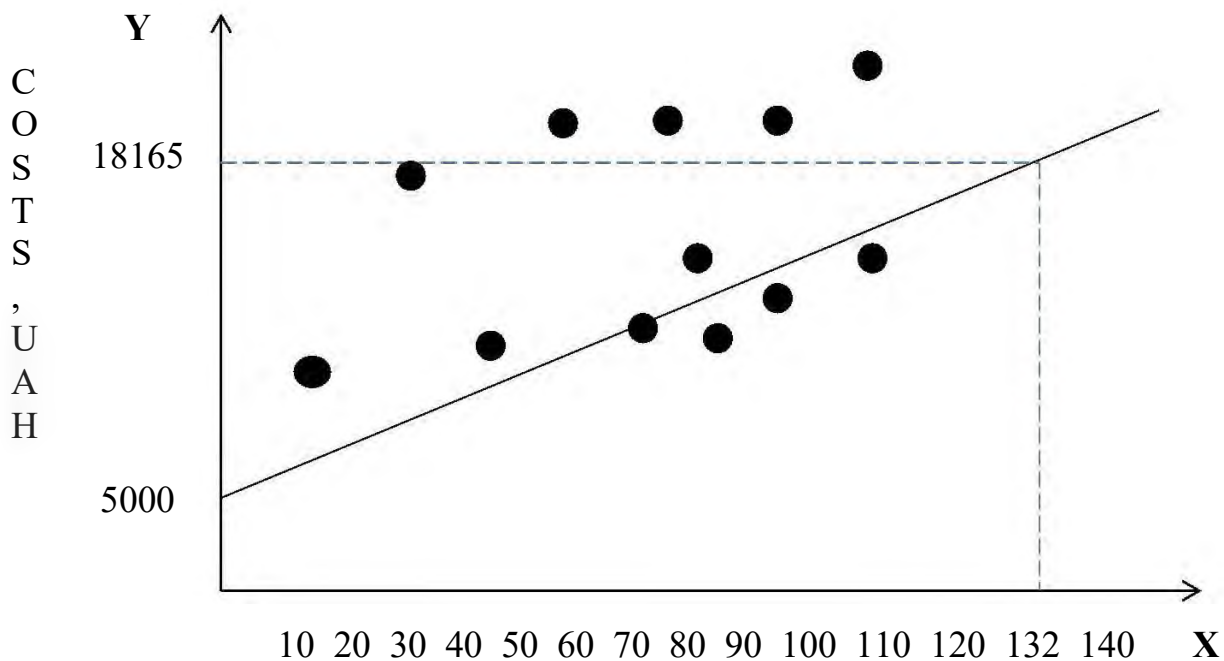
$21840 - (144 * 149,2) = 21840 - 21485 = 355 \text{ hryvnias.}$

The costs function in this case is as follows:

$Y = 355 + 149,2X$

The method of visual devices (correlation) – a graphical approach to determining the costs function, in which the analyst visually draws a straight line, taking into account all costs points. The method of visual devices avoids the disadvantages of the method of higher-lower point, but does not avoid subjectivity, as the results of calculations significantly depend on the qualifications of the analyst.

From the given schedule it is visible, that fixed costs make 5000 UAH. To calculate variable costs, we use data on the volume of activity of 1132 machine hours. At this point, the total costs is 18,165 UAH. Thus, the variable costs are equal to $18165 - 5000 = 13165 \text{ UAH.}$



The least squares method - allows to determine most accurately the composition and value of fixed and variable costs. Costs indices are calculated, that the square of the distance from all points, that give the costs values to the theoretical regression line, is minimal.

To determine the costs function by the least squares method, it is necessary to solve a system of equations:

$$y = na + bx; \quad (3.5)$$

$$xy = ax + bx^2, \quad (3.6)$$

where x is the independent variable (level of observed activity);

y - dependent variable (total or mixed costs);

a - total fixed costs;

b - rate of variable costs per unit of activity;

n - the number of observations.

To calculate the cost equation is quite simple, using the analysis-regression function of the spreadsheet EXCEL.

The calculation of the values of x^2 and $x \cdot y$ are given in table 3.8.

Table 3.8

Calculation of x^2 and $x \cdot y$ values

Month	Production output, (x)	General costs, (y)	x^2	$x \cdot y$
1	2	3	4	5
January	502,5	987,4	252506,3	496168,5
February	415,9	918,8	172972,8	382128,9
March	556,6	1259,4	309803,6	700982,0
April	557,3	1047,2	310583,3	583604,6
May	558,0	1051,4	311364,0	586681,2
June	558,3	979,7	311698,9	546966,5
July	457,3	769,6	209123,3	351938,1
August	509,5	1076,2	259590,3	548323,9
September	609,3	1180,3	371246,5	719156,8
October	702,6	1233,3	493646,8	866516,6
November	717,0	1260,8	514089,0	903993,6
December	704,4	1294,0	496179,4	911493,6
Total:	6848,7	13058,1	4012804,0	7597954,3

Substituting the results of the calculations given in the table in the system of equations, we obtain:

$$13058,1 = 12a + 6848,7b$$

$$7597954,3 = 6848,7a + 4012804,0 \cdot b$$

To solve the system of equations for b , multiply the first equation by 6848.7: 12. We have:

$$7452319,142 = 6848,5735 \cdot a + 3908579,915.$$

Let's calculate the last equation:

$$145381,1429 = 104094,9678 \cdot b.$$

$$\text{So } b = 1,3966$$

Substitute the value of b in the equation and solve it for a :

$$13057,8769 = 12 \cdot a + 6848,5735 \cdot 1,13966;$$

$$a = 291,085$$

After replacing the coefficients a and b in the regression equation with their values, the regression equation for monthly costs has the following form:

$$y = 291,085 + 1,13966x.$$

The costs line for annual production will look like:

$$y = 3493,0203 + 1,3966x.$$

Regression analysis involves the construction of a correlation-regression model that reflects the dependence of a variable on one independent variable or their combination.

Regression analysis should be implemented in the following sequence:

- statistical support of the analysis;
- establishing a causal relationship between the studied statistical indicators (costs and costs factors);
- substantiation of the regression model (selection of the most significant features and establishment of the type and form of the communication function);
- determination of communication parameters (checking the reliability of simulation results);
- selection of the regression equation that best describes the relationship between the features
- finding confidence intervals for the coefficients of the regression equation;
- forecasting costs values and their analysis;
- model check [59].

Simplified statistical analysis is a method of determining the costs function, which involves the division of indicators into two groups, based on the growth of the value of X, and the calculation of fixed costs, based on average values of costs (X) and production (Y).

According to this method, the costs function has the form:

$$y = a + b x \quad (3.7)$$

For analysis, use the data in columns 2 and 3 of the previous table and make the following table.

The amount of fixed costs (a) is determined by the formula:

$$a = (Y_o X_1 - Y_1 X_o) : (X_1 - X_o), \quad (3.8)$$

where Y_o and Y_1 are average costs

X_o and X_1 are the average values of activities

	Group I		Group II	
	Production output, tons (X_o)	Total costs, thousand UAH (Y_o)	Production output, tons (X_1)	Total costs, thousand UAH (Y_1)
	415,9	918,8	558,0	1051,4
	457,3	769,6	558,3	979,7
	502,5	987,4	609,3	1180,3
	509,5	1076,2	702,6	1233,3
	556,6	1259,4	717,0	1260,8
	557,3	1047,2	704,4	1294,0
Total	2999,1	6058,6	3849,6	6999,5
Average value	499,85	1009,7666	641,6	1166,5833

Substituting in the above formula the calculated average values of X and Y, we obtain:

$$a = (1009.7666 \cdot 641.6 - 1166.5833 \cdot 499.85) : (641.6 - 499.85) = 456.7872.$$

Knowing the value of fixed costs, we can calculate the variable costs per unit (b) by the formula:

$$b = (1009.7666 - 456.7872) : 499.85 = 1.1063$$

Therefore, the costs function for this example, determined by simplified statistical analysis, is as follows:

$$y = 456.7872 + 1.1063 \cdot x.$$

The function of the costs of annual production will look like:

$$y = 456,7872 \cdot 12 + 1,1063 \cdot x = 5481,4464 + 1,1063 \cdot x$$

To make management decisions, one should choose the most relevant costs function. To choose the right costs functions, it is advisable to apply the following criteria:

- economic plausibility;
- good adaptability;
- significance of independent variables.

When making management decisions, it is necessary to take into account the *uncertainty factor*, that affects the behavior of costs and revenues.

Uncertainty is the lack of sufficient information. Uncertainty causes risk.

Risk in management accounting is the probability of deviation of the actual values of indicators from the expected ones. Uncertainty is associated with the occurrence of random events.

The probability of occurrence of random events is the ratio of the number of favorable cases to the number of all cases. In the presence of uncertainty, the expected values are calculated. The expected value is calculated by multiplying the value of a certain indicator by the probability of occurrence of this value.

After calculating the expected values, a decision tree is built – a diagram, that shows several possible courses of action, as well as the expected results of these actions.

Discussion and self-review questions

1. *What is the economic essence of costs?*
2. *What principle provides the basis for costs classification?*
3. *What is the role of controllability in costs classification?*
4. *What types of factors cannot be controlled?*
5. *What is the costs classification by element?*

6. *What costs form the prime cost of production?*
7. *What costs form the cost of sales?*
8. *What costs form the total cost of sales?*
9. *What costs are included in general production costs?*
10. *What are the excess production costs?*
11. *How are costs classified by the areas of accounting?*
12. *How are costs divided depending on stocks valuation and determination of financial results?*
13. *How are costs divided according to the method of decision-making?*
14. *What is the behavior of variable costs?*
15. *What is the behavior of fixed costs?*
16. *How are costs divided in order to monitor execution?*
17. *What do costs factors mean?*
18. *How are costs divided according to the factor change ratio?*
19. *What are the models of costs behaviors?*
20. *What methods are you used to define the costs function?*
21. *Describe the technological (engineering) analysis method.*
22. *Describe the account analysis method.*
23. *Describe the higher-lower point method.*
24. *Describe the visual devices method.*
25. *Describe the least squares method.*
26. *Give a regression analysis characteristic.*
27. *Give a characteristic of simplified statistical analysis.*
28. *Why is it necessary to take into account the uncertainty factor when making management decisions?*
29. *Define the risk in management accounting.*
30. *Give a characteristic of occurrence of random events probability.*

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THEME 4. METHODS OF COST ACCOUNTING AND PRIME COST PRODUCTS CALCULATION

4.1. Prime Cost and Calculation: Economic Content and Classification

In accounting, prime cost is a valuation of the resources used to achieve certain goals. The enterprise must independently determine the list of costs that include the cost of products (works, services) as an element of accounting policy, based on the economic nature of the costs incurred and the general principles of accounting and requirements for the organization of its management.

According to T.P. Karpova, “prime cost (cost) is the value of resources used for specific purposes in monetary terms” [51]. According to L.V. Napadovska, all costs of production and sales of products are reflected in the products’ prime cost [77]. V.V. Sopko states that all the different substances and natural forces used in the production process to produce a new product of labor form the notion of cost, and prime cost is the monetary expression of costs for the production of a particular product [109]. However, K.M. Radchenko believes that the prime cost should be understood as the sum of all the obvious costs for simple reproduction and obtaining entrepreneurial income [95]. As you can see, the above-mentioned definitions of the prime cost are reduced to its interpretation as a monetary expression of the costs of the enterprise for the production and sale of products. However, there is difference between production costs. So, prime cost is expressed only in monetary form, and the production costs can be both monetary and natural. Moreover, the prime cost includes some of the costs that are part of the added product. Many researchers interpret the prime cost by defining the cost concept. The products’ prime cost is considered only as part of the cost, which does not include the costs realized in the value of the additional product [67]. Economic literature in English doesn’t pay particular attention to polysemic term cost. Moreover, American accounting literature doesn’t use the term price cost. In particular, R. Anthony and J. Rees identify the concepts of cost and prime cost, defining them as the monetary value of resources used for specific purposes. The authors emphasize the decisive importance of the purpose of resources using by the enterprise in the concept of cost and prime cost [5].

Prime cost as an economic indicator is used for:

- assessing the level of business management of the enterprise and its structural units;
- control over the inputs efficiency;
- determination of the economic efficiency of investment and innovation activities, implementation of measures to ensure a more efficient management process;
- development and pricing of products (works, goods and services);
- determination of economic expediency and profitability of carrying out business activity on different objects of management.

Thus, considering prime cost, you should take into account the subordination of specific goals, i.e. determining the costs associated with the production, pricing,

forecasting and determining the end result, etc.

Various types are used for planning, prime cost accounting and analysis of its level.

In accounting the structure and composition of costs is governed by National accounting standard 16 Costs. It should be noted that National accounting standard 16 Costs defined their two types:

- 1) costs of goods sold (works, services);
- 2) manufacturing products' prime costs (works, services).

Costs of goods sold (works, services) includes manufacturing products' prime costs (works, services), which was realized during the reporting period, retained fixed production costs and excess production costs.

The manufacturing products' prime costs (works, services) consist of:

- direct material costs;
- direct labor costs;
- other direct costs;
- variable production and unretained fixed production costs.

M.I. Skrypnyk proposes to classify the prime cost by the following features:

- exhaustiveness of costs (full, production, technological);
- for planning, accounting and analysis needs (individual, sectoral, corporate);
- depending on the time and purpose of the calculation (planned, actual, provisional (expected), regulatory);
- depending on the time of calculation (annual, quarterly, monthly) [104].

It is impractical to divide the prime cost into annual, quarterly and monthly rates because of the seasonal nature of agricultural production and its long duration. So, the prime cost of agricultural products is determined at the end of the production process. I.M. Boichyk distinguishes some other types of prime cost. According to the author, we should distinguish planned, actual, regulatory and estimated prime cost by the time of costs formation. The author distinguishes such types of cost as technological, workshop, production and complete depending on the sequence of costs formation and place of origin. The scientist speaks on individual, average and sectoral prime cost depending on the purpose of the research [12].

Professor F.F. Butynets considers such a classification of prime cost [15]:

- technological one includes direct costs in the workplace, area; it characterizes the level of costs for the implementation of individual technological operations, the manufacture of individual parts, units, etc.;
- production one is the technological prime cost increased by the amount of costs associated with the management of production units that manufacture products.
- marginal (limited) one is the production prime cost that characterizes the level of direct variable costs per unit of output;
- factory one is prime cost, which includes both direct costs of its manufacture, administrative and other operating costs;
- full one is production cost increased by the amount of administrative and sales costs; it integrates total enterprise costs related to both production and product sales;
- individual prime cost characterizes the costs of a particular enterprise for

outputs;

- corporate prime cost includes the cost of production and sale of products by group of companies belonging to the merger, firm, and trust.

- average industry prime cost characterizes the industry average costs for the production; it is calculated by the formula on the basis of the individual cost of the industry.

- planned prime cost includes the maximum allowable costs of the enterprise for the manufacturing of products, provided by the plan for the next period.

- actual prime cost characterizes the amount of money actually expended for the output.

It should be noted that the Law of Ukraine on Accounting and Financial Reporting in Ukraine nominates actual prime cost as one of the basic principles of accounting and financial reporting, that is, priority is given to the assets of the enterprise based on the cost of its production and acquisition.

According to the results of the analysis, we propose a generalized classification of the product's prime cost, which combines more conceptual needs for the management of prime costs and its types, and therefore allows making an effective management decision in time (Fig.4.1) [13].

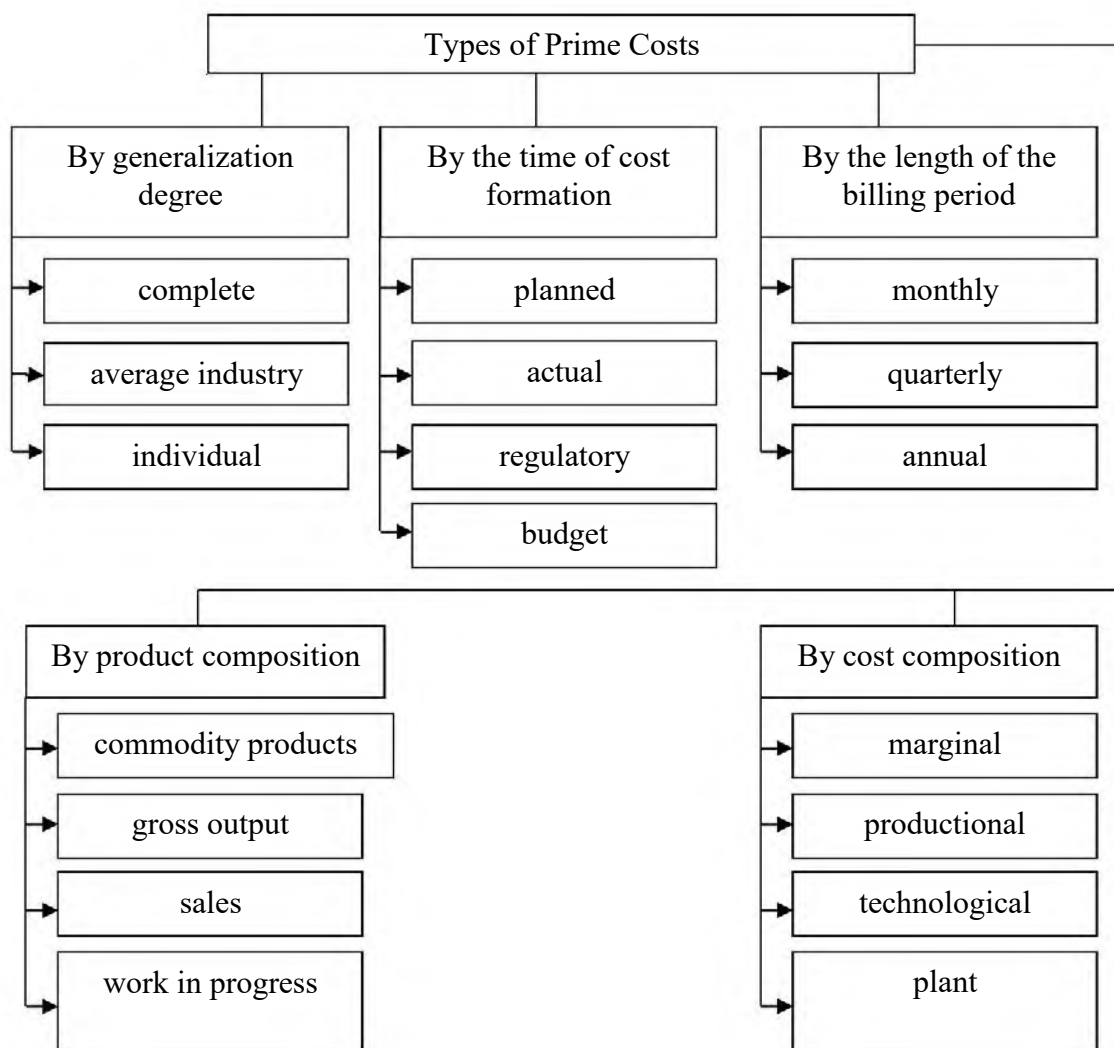


Fig. 4.1. Classification of Prime Costs

I.M. Boichyk adds the following types of prime cost [12]:

1. By the time of cost formation: planned, actual, regulatory, and budget.
2. By the length of the billing period: monthly, quarterly, and annual.
3. By product composition: commodity products, gross output, sales, work in progress.

Costing is called **calculation**. It is a calculation of any business process result in the money meter, i.e. the procurement of material resources, production of goods by the main and auxiliary industries, sales of goods or material values.

Calculating is a system of scientific and economic calculations for prime cost determination cost accounting of individual objects.

The production costs and the amount of output is measured, the product's prime cost is calculated, the production economic feasibility is determined by calculating.

Calculation uses item grouping.

The calculation is based on accounting data relating to the determination of the actual cost of production, and the appropriate methodological basis is used to determine the estimated prime cost.

Industrial enterprises both calculate the main production and auxiliary production, except their small quantities and complete consumption at the enterprise.

The subject of calculation is the prime cost of whole production at the enterprise and in the context of its structural units, cost centers and areas of responsibility.

The purpose of the calculation is to obtain information for management systems on the formation of product's prime cost at all stages of the production process and at cost centers.

The task of costing products as an integral part of management accounting is to provide information about the formation of cost management personnel who make decisions aimed at improving production efficiency.

The main tasks of product's prime cost calculating at enterprises include:

- providing management personnel with information on the product's prime cost by stages of cost formation of certain products, productions and centers of responsibility;
- detection of variances from standard (normative) production costs and analysis of variances;
- determining the efficiency of introduction of new types of products, production equipment, production technologies, etc.;
- ensuring comparability of calculations in costs planning and accounting;
- determination of prices for products, profit and level of profitability of production;
- determination the dependence between output, sales prime cost and profit etc.

Costing of products (works, services) can be divided into three stages:

At the first stage the prime cost of all manufactured products at the enterprise is calculated, at the second stage the prime cost of each type of products is calculated, at

the third stage the prime cost per unit (works, services) is calculated.

Calculation techniques are the technical methods of product's prime cost calculating using certain procedures.

Calculation techniques supplement the calculating methods. **Calculating method** is a set of methods of analytical accounting of production costs by calculation objects and methods of determining the prime cost of calculation units.

There are the following calculation techniques:

1. The technique of accumulation (summing) costs means that the prime cost of the calculation object and the calculation unit is determined by summing parts of products or products, by processes, and redistributions.

For example, the production cost is determined by sequentially stratifying each redistribution costs by the preliminary cost accounting method.

2. The technique of cost sharing is used in processing of raw materials, in the production of several types of products by one technological process and the inability to account the costs of calculation object, as well as for the organization of analytical cost accounting for homogeneous products groups.

For example, several types of alcohol products are produced simultaneously as a result of one technological process in the alcohol industry. Costs between alcoholic beverages are apportioned by the coefficient established on the basis of wholesale prices.

3. The technique of direct calculation means that the collected production costs are divided by the number of calculation **units** for each object by the items of costing or cost elements. This method is universal for the final calculation of product's prime cost; it is also used in other calculation techniques. However, it is not called in combination with other calculation technique but it is required.

For example, to calculate the prime cost of one ton of bread, the production prime cost must be divided by the number of manufactured products.

The technique of cost exclusion is used for the division of common costs and determining the prime cost of the main products and by-products obtained in one technological process.

For example, related products are firstly estimated in meat production, it is excluded from the total cost, then the meat prime cost is calculated in the meat industry

One or more calculation techniques are used depending on the production technology and the nature of the products being manufactured.

Different **types of calculation** are used in practice depending on the purpose and task of costs managing.

The actual calculations are divided into periodic, individual and intermediate ones by the nature of production.

Periodic calculations are made over a certain period of time to calculate the average prime cost of a homogeneous products group or one type of product. For example, the calculation of the average prime cost per group of smoked sausage products and by type of sausage products for January, February and March of the current and previous years makes it possible to make a comparative analysis of the change in the prime cost of the product group and its individual types.

Individual calculations are made after the completion of a single order or products group calculations. Individual calculations at the food industry enterprises are made performing repair works and fulfilling individual orders for food production.

Intermediate calculations are made for the stages of work on objects with a long production cycle. For example, the Institute of Milk and Meat Technology of UAAS develops technological documentation for the production of a new kind of baby food “Rodzynka”, which is financed from the state budget. The deadline for implementation is one year according to the calendar plan, the financing is carried out quarterly by stages of the completed works. Thus, in order to receive financing from the budget for the quarter, it is necessary to make a scientific report and an interim calculation for the completed stage of work.

The calculations are divided into two types, i.e. **directive (preliminary) and reporting** ones by the drafting time.

Directive calculations are made at the planning stage. Such calculations provide management personnel with information on future costs of production, workshops, responsibility centers, types of products, etc. This information is necessary for the substantiation and improvement of standards of production costs, prices, establishment of permissible limits of labor and material costs by costing items, etc.

Standard (normative) calculations are used to determine eligible costs for production based on scientifically sound standards. Standard calculations are implemented in those enterprises where there is a well-established regulatory economy and the calculations are based on the currently in force rules.

Planned calculations are made on the basis of production standards and they allow you to determine the allowable amount of production costs based on the achieved level of labor and management organization, engineering and production technology, enterprise scale, etc.

The basis of planned calculation at the enterprise is technically sound regulations of materials and labor costs, standards and specifications established for these products. These standards are determined on the basis of the current (or expected) standards at the beginning of the planned period, taking into account the economic efficiency of the measures developed to further production improve.

Planned prime cost calculation of products made for the first time in the planning year and products manufactured at new capacities is based on the draft indicators according to technological documentation based on the standards in force at the beginning of the reporting period; it is the basis for accounting production costs, operational control over production costs and prime cost reduction tasks.

Planned calculation differs from the standard one because it is calculated according to the average norms for a certain period (quarter, year), and standard calculation is made according to the current norms for each period.

Planned calculation is used to determine the expected economic efficiency of production, assessment of finished products, work in progress, lack of production, etc. at food processing enterprises.

Estimate calculations are generally used by construction organizations; they are the price of construction products. As far as the food industry is concerned estimate calculation is mostly used at industry-based scientific institutions in determining the

price of scientific and technical products. Estimate calculation is an integral part of the contract between the contractor and the customer. Separate cost estimates are for general production costs, equipment maintenance and operating costs, administrative costs, marketing costs, and so on at food processing enterprises.

Cost-information reports are made on the basis of accounting data on actual production costs. There are variations for individual cost items comparing directive calculation and cost-information reports. Thus, the analysis of these variances is carried out.

The calculations are divided into sectoral, complete, production, intracompany, variable costs, and technological by the enrolment rate of costs and the place of their implementation.

Sectoral calculations show the level of the similarly named product's prime in a specific industry. For example, sugar prime cost calculation in the sugar industry, prime cost calculation of Ukrainian bread in the baking industry, etc.

Complete calculations reflect the costs associated with the production and marketing of the product. Complete calculations are used to set product prices, calculate profitability of production, and calculate break-even point.

Production calculations are made on the input costs. Such calculations provide management personnel with information on input costs of homogeneous product groups and their individual types.

Intracompany calculations are made for the production of separate workshops of main and auxiliary production and semi-finished products of own production.

Variable cost calculations include only variable production costs. Such calculations are used to determine the marginal revenue calculated as the difference between sales revenue and variable costs, as well as to analyze direct costs of production.

Technological calculations include production costs related to the production of products at the enterprise without the works and services of third parties and the organization, purchased semi-finished products and components. Such calculations characterize the technical level of production technology and make it possible to calculate the cost of work performed on its own. For example, the brewery produces beer, its main raw material is malt purchased from another enterprise. The technological cost of the beer will include the costs associated with the technological process at the enterprise, and the costs associated with the malt purchase will be included in the beer production cost.

The calculations are divided into general, parametric, and cost centers ones by the properties of the calculation object.

Total calculations show the prime cost of production at the enterprise.

Parametric calculations give an idea of unit prime cost per one parameter. That is the prime cost of one machine-hour of equipment operation, one horsepower of the engine, tonne-kilometer transportation, etc.

Cost centers show the product's prime cost by the responsibility centers established by the management of the enterprise.

4.2. Cost Accounting and Calculation Objects

Cost accounting is a set of procedures aimed at reflecting the operations that occur at the enterprise over a certain period, related to the processes of supplying resources, production and sale of products, work performance and provision of services based on their reporting, measuring, evaluating, systematizing and grouping costs according to a specific system of features.

The purpose of cost accounting is to determine their value objectively and timely. Cost information is needed to determine the price of a product, work, and service, to analyze which production process is the most cost-effective, which unit uses the resources most efficiently, and to make many other management and financial decisions.

According to National accounting standard 16 Costs **the object of cost accounting** is the products, works, services or the enterprise activity, which need to determine the costs associated with their production (execution). The objects of cost accounting can be their separate types grouped on different grounds (material costs, labor costs, overhead, variable costs, etc.).

Calculation objects are types of products, semi-finished products, orders, works, services, their prime cost must be determined.

Unit of calculation is a unit of measurement of certain types of products (works, services), their prime cost is determined by ton, pc., pair, m³, conventional unit.

Cost accounting and calculation objects may or may not be the same. These concepts coincide if costs are calculated for each type of product, which prime cost is determined. However, cost accounting can be organized into groups of homogeneous types of products, and each type of production within that group is subject to calculation.

Cost accounting and calculation objects are selected by the company depending on a number of individual factors caused by particularities of the enterprise, such as industry affiliation, size, technology, product range, etc. At the same time, the company uses regulations on the organization of production costs accounting, definition of accounting objects and calculation.

For example, cost accounting and calculation objects for agricultural enterprises are defined by sectoral guidelines for planning, accounting and calculation of products (works, services) (Appendix 1).

Certain objects of production costs accounting and prime cost calculation of products (works, services) are the basis for the organization of analytical accounting of production costs.

Cost accounting for production are carried out in the following main stages:

- ✓ initial recording of resources consumed during the production process;
- ✓ localization of data on costs by their types, places of origin, structural units, types of products, types of activities, centers of responsibility, etc.;
- ✓ localization of costs by the time of their occurrence and inclusion in the cost of production (past costs, costs of future periods, etc.);
- ✓ distribution of costs of auxiliary industries and farms between their products

and work in progress and the redistribution of these costs by production units – consumers of products (works and services) of auxiliary industries and farms;

- ✓ distribution of total (indirect) expenses between accounting objects;
- ✓ cost sharing between work in progress and finished goods and determining the cost of certain types of products (works, services), etc.

4.3. Methods of Cost Accounting

Cost accounting method is a set of methods of production costs recording and accounting which allow you to determine the actual production prime cost and provide the necessary information to control the process of production cost formation; a set of methods of analytical accounting of production costs by cost objects and methods of calculating the cost of units; research of production costs and sales and cost control, determination of the cost of products and works; the set of methods and techniques by which the accounting reflects the costs and process of forming the cost of production; determining the composition and size of costs for individual products, types, product groups, redistributions, orders, works, and services.

Methods of cost accounting can be divided into two groups:

1. methods based on cost accounting for a product, part or groups of products;
2. methods based on cost accounting for technological processes.

The first group includes methods of cost accounting for items, units, products, group products or orders. The second group costs are accounted by operations, stages, processes or production.

Production costs and prime cost calculation are organized by different methods depending on the area of enterprise activity.

Modern methods of cost accounting and prime cost calculation can be divided into two groups:

1. traditional methods that have been used in domestic accounting practice for decades:

- ✓ procedural,
- ✓ process-wise,
- ✓ order-wise,
- ✓ standard.

2. borrowed methods that have been formed and developed in other countries of the world; they became known in Ukraine only in the early 90s. Nowadays they are used at the enterprises oriented to European standards, exports, cooperation with foreign partners or foreign investors:

- ✓ direct costing,
- ✓ standard costing,
- ✓ ABC method,
- ✓ target costing,
- ✓ Kaisen-costing,
- ✓ benchmarking,

- ✓ life cycle costing, etc.

Let's consider the cost accounting methods used in domestic accounting practices.

The following operations are carried out by this method:

- ✓ cost accounting based on primary documents;
- ✓ distributing of costs by defined processes, distributing by defined categories;
- ✓ calculation of the total amount of expenses;
- ✓ distributing of costs depending on the type of products (Fig. 4.2).

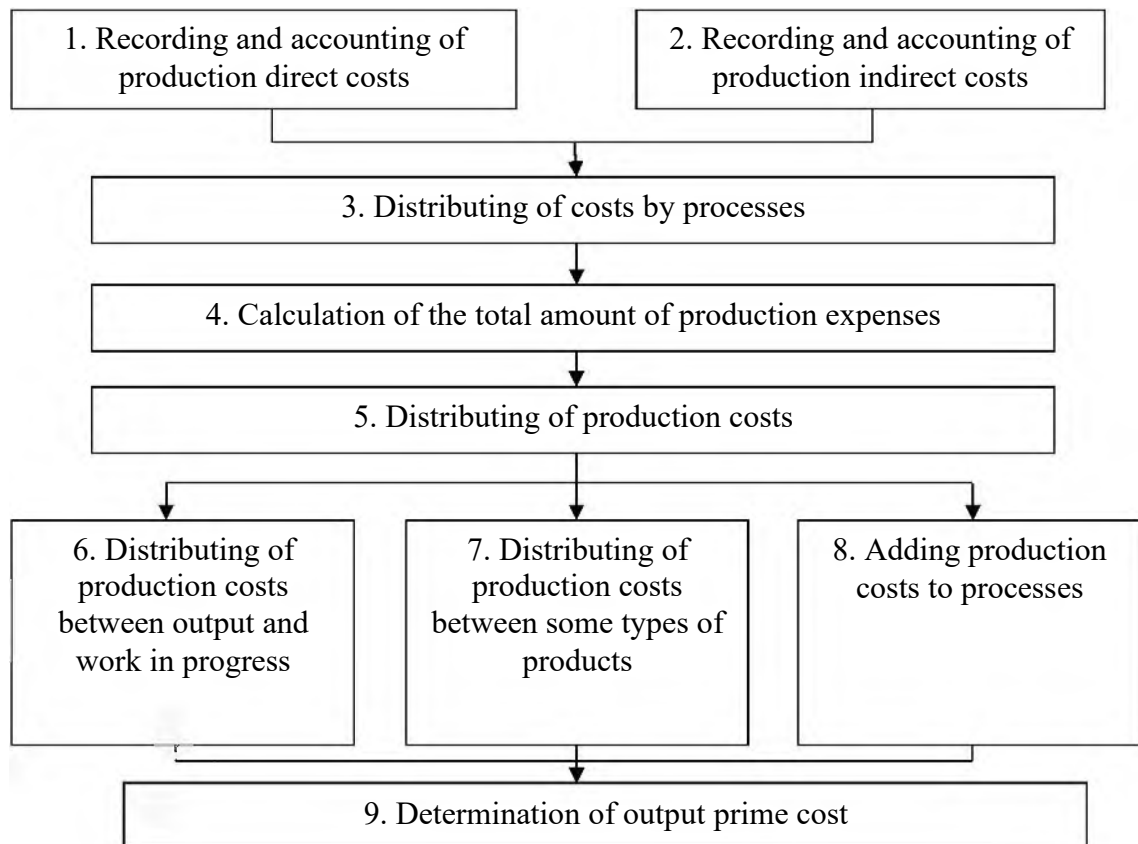


Fig. 4.2. The sequence of procedural method application of cost accounting process [23]

The procedural (simple, one-step) method of product's prime cost calculation is applied at the enterprises characterized by mass production of one or more homogeneous types of products and a short period of technological process. The examples are mining, electric and thermal power plants, some chemical companies etc. According to this method all production costs of the corresponding period relate to the entire output of the period. That's why, the unit prime cost is calculated by dividing all production costs over the period by the number of finished products for that period.

The **process-wise method** is used in industries characterized by the sequential processing of industrial or agricultural raw materials to produce a finished product on the basis of chemical, physical, biological or thermal processes. The peculiarity of such productions is the presence of technological stages, called redistribution. It is a set of technological operations that ends with the release of an intermediate or

finished product. These industries are characterized by the mass production of homogeneous products (oil refining, metallurgical, chemical, textile, etc.) (Fig. 4.3).

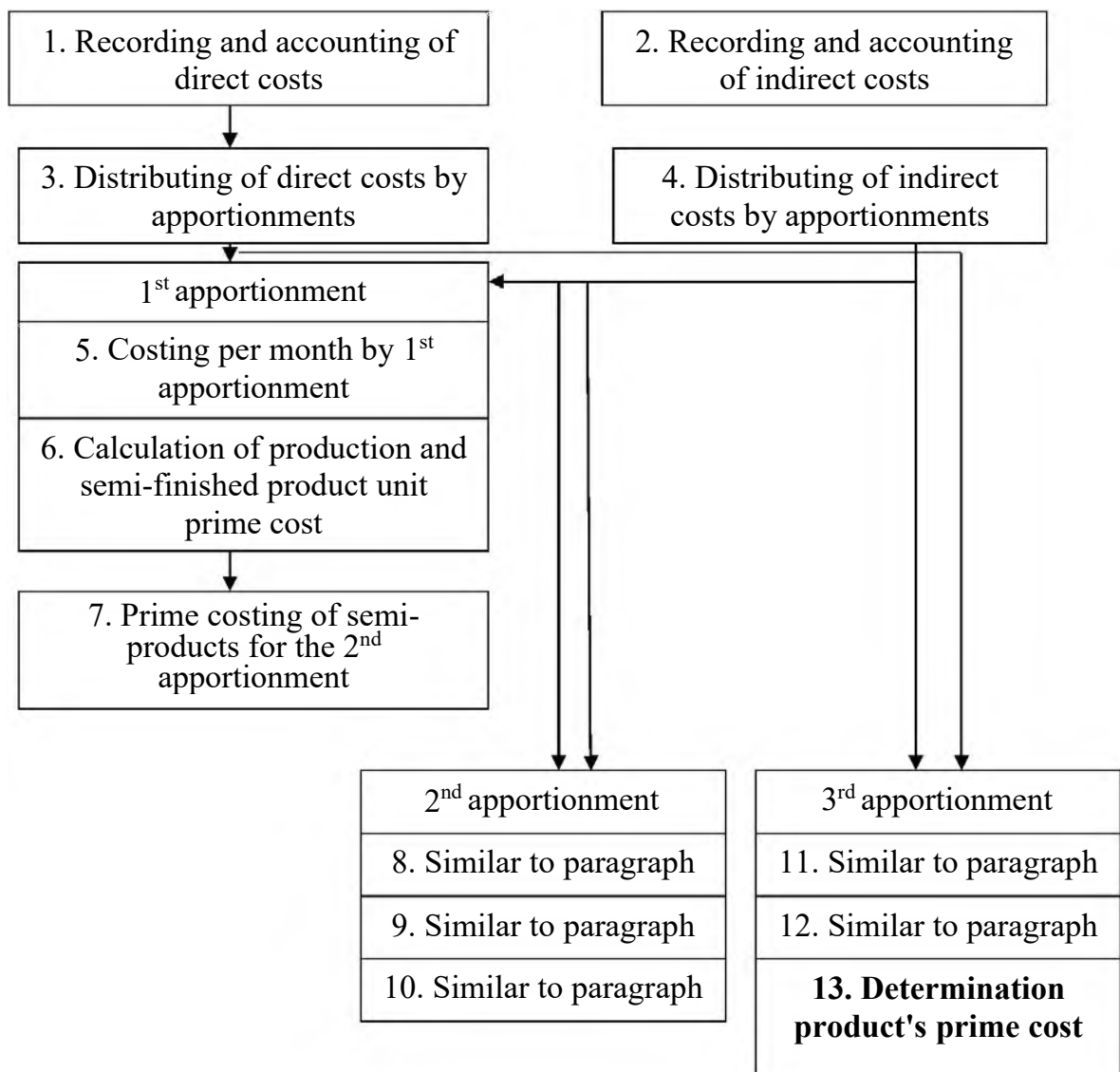


Fig. 4.3. The sequence of process-wise method application of cost accounting process [121]

The order-wise method is used at individual and small-scale productions. The object of accounting is a separate order executed by the contract between the manufacturer and the customer. Direct costs are accounted for individual production orders. Indirect costs are accounted by the place of origin and are included in the prime cost of individual orders according to the distribution base (Fig. 4.4).

The prime cost of orders (works) is determined by the method of summing up all costs from its 1st day until its completion, the calculation is made after the order is completed. This is a disadvantage of the order-wise method, because it is very difficult to determine the prime cost of a single order for a certain month in terms of continuous production. The difficulties are that indirect costs are apportioned at the end of the works. That's why the prime cost cannot be determined until the end of the reporting period. When production costs cannot be fully attributed to a single order or to some of them, they use the process-wise method or a combination of two methods, i.e. process-wise and order-wise.

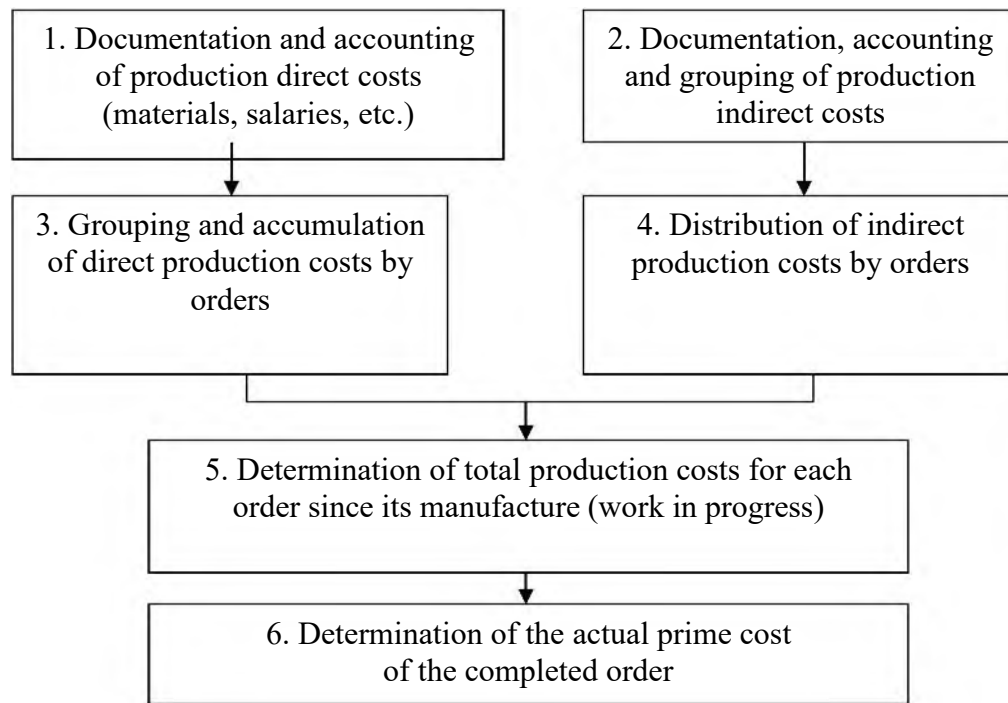


Fig. 4.4. The sequence of order-wise method application of cost accounting process [121]

The standard method of cost accounting and calculating is used to detect daily variances from current production standards to prevent excess costs. This method involves following a sequence and principles of its application:

- 1) development and preparation of standard calculations at the beginning of the reporting period for each type of production, orders or processing stages;
- 2) organization of current accounting according to norms and their variances;
- 3) accounting for standards and operational control changes;
- 4) preparation of accounting calculations (Fig. 4.5).

The regulatory costing system can be used as assistance in drawing up estimates and evaluating management effectiveness; control budget; a forecast of future costs that will be used for decision making; assistance in accounting for inventories; the source of the goals to be achieved. The standard is set from the previously defined costs of working time, materials and overhead. The regulatory costs for each element are combined to determine a single standard for the production unit. The standard accounting method is more appropriate for organizations whose activities consist of a series of simple or repetitive actions. Cost control is most effective when they occur.

Therefore, standards should be set for the number of consumables, labor and other resources for each operation. The regulatory costs of a product are calculated by the list of operations required to produce the product.

These methods have their advantages and disadvantages, so it is not possible to choose the best one. Taking into account the analyzed material, these pros and cons can be demonstrated (Table 4.1).

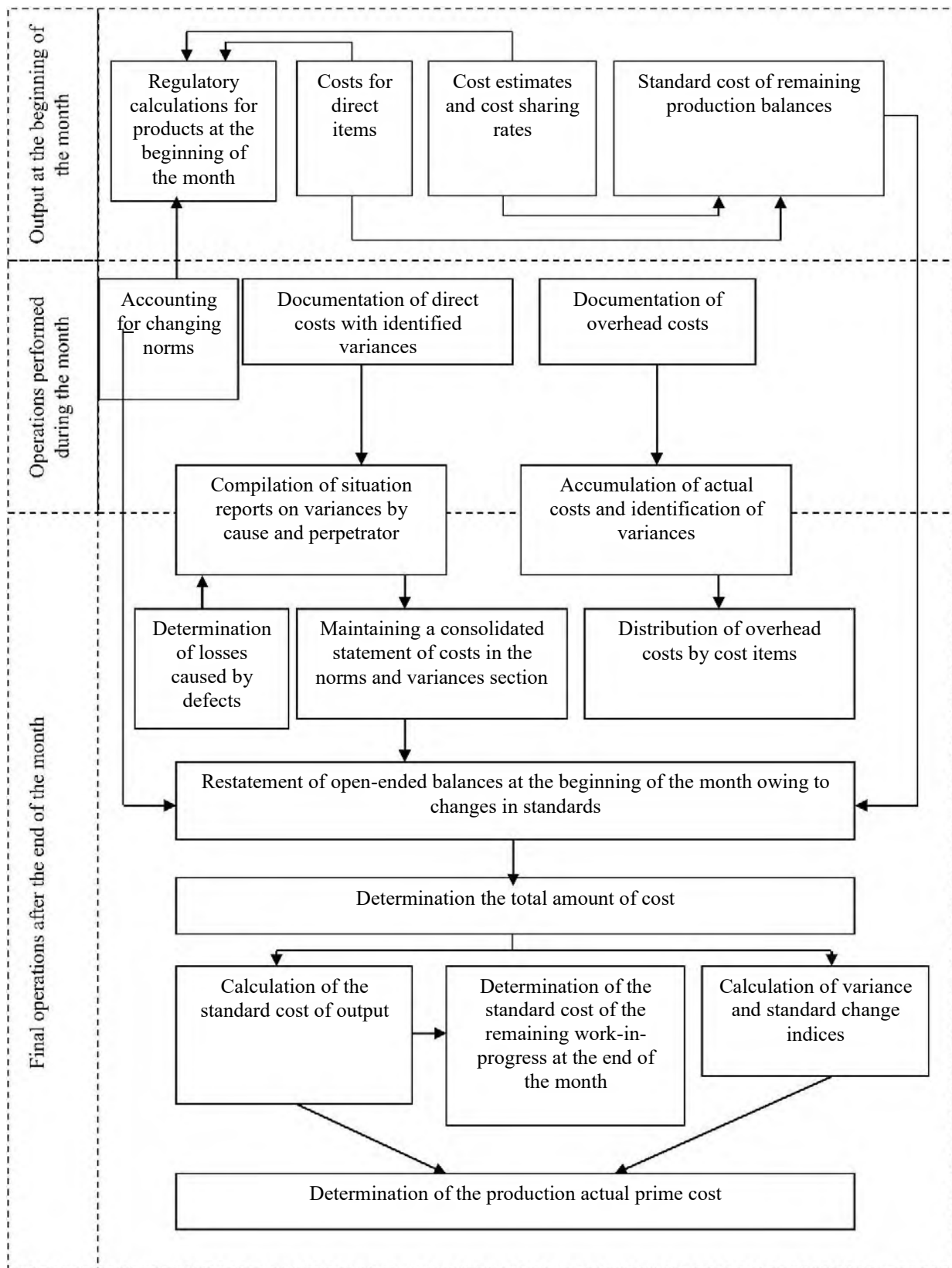


Fig. 4.5. The standard method stages of accounting production costs and products calculation [121].

Table 4.1

Advantages and disadvantages of traditional methods of cost accounting

Method of cost accounting	Advantages	Disadvantages
Procedural	This method allows you to calculate and distribute an equal amount of cost per product.	The complexity of this method of calculating consists in a significant number of processes, technologies, and in the presence or absence of unfinished production.
Process-wise	Collecting cost information is less time-consuming than in order-wise method, and the information displayed in accounts is more transparent. The distribution of overhead costs in the workshops is more accurate.	Inability to group costs by product type. A significant amount of accounts. The data do not provide information on the reasons for variances of actual costs from the regulatory ones.
Order-wise	Cost analysis of the completed orders allows to identify cost-effective orders, to determine sales prices for the future. The application of the order-wise method makes it possible to compare the costs of the same product (order) produced at different times.	It requires detailing of data that is associated with certain procedures for collecting and processing information, so this method is quite time consuming. The prime cost of production is determined after the end of the production cycle, when it is no longer possible to influence the costs.
Standard	Possibility of current operational cost accounting by taking into account variances from the norms. Separate accounting for changes in norms, that is, control over the implementation of the economy. The enlargement of objects, since standard estimates are for all types of products, and variances are taken into account for groups of homogeneous products, resulting in a decrease in the number of objects of calculation. Regulatory costing coverage of a significant portion of costs.	A significant part of variances from the norms associated with the use of raw materials and materials for production is detected using the inventory as a whole for structural units and for the entire reporting period. This leads to a lot of unaccounted expenses. Variance of costs for management and maintenance is shown without taking into account changes in production volumes, but mostly does not show at all, their actual value is distributed mainly in proportion to the basic wages of workers, which significantly reduces the information function of accounting.

Source: [81]

In market economies, **direct costing** is the most commonly used and popular cost accounting method. It originated in the United States during the Great Depression and became widespread in the 1950s. The name of the method was introduced in 1936 by J. Harris. It means accounting for direct costs. At the first stages of its practical application only direct costs were included in the cost calculated for variable costs, and all types of indirect costs were written off directly to the financial results. As a result, the total variable cost was the same as the direct cost, which is reflected in the name.

According to this method costs are divided into fixed and variable. Only

variable costs are included into the prime cost. To determine it, the amount of variable costs is divided by the number of products produced.

Of course, direct costing system (or variable cost system) has both advantages and disadvantages. We will further consider them in the table. 4.2. However, it is still used by large companies in many advanced economies.

Table 4.2

The main advantages and disadvantages of the variable costs (direct costing) calculation system

Advantages	Disadvantages
1. Variable costing reports are more relevant to the interests of an enterprise and its departments managing, as they enable the performance of individual segments to be evaluated and cost-effective decisions are made quickly.	1. Reporting using this method does not meet the generally accepted principles and requirements for income taxation.
2. Products calculating is simplified, and inventory is estimated in accordance with the running costs required to produce individual products.	2. Complex additional calculations are often necessary to divide the costs into variables and constants, they do not always provide an accurate result.
3. The amount of operating profit is directly dependent on the volume of sales (due to the amount of marginal revenue per unit of output).	3. The necessary information about the total costs of the enterprise for making strategic decisions, evaluating investment projects, etc., this necessitates the extra-systematic distribution of fixed production costs.
4. Possibility to define the optimal program of production and realization of services (products, works); possibility to carry out comparative analysis of profitability of various types of services (products, works).	The dumping application creates a risk where the mass of constant expenses cannot be covered by marginal income, that is, the enterprise falls into the loss zone; in practice, it is difficult to allocate costs to constant and variable.
5. Possibility to determine the threshold of profitability, safety factor of the enterprise and the lower limit of the price of services (products, works) or order.	5. Accounting of production cost.

Source: [81]

Direct-costing expands analytical accounting capabilities. The information obtained in this system makes it possible to find more favorable combinations of price and volume, to carry out an effective price policy, to achieve more efficient management. Unfortunately, this system is hardly used in Ukraine.

The **standard-costing** system is a standard method of costs accounting. This cost accounting system appeared in the United States in the early twentieth century. The American experience was borrowed; it is now used by many countries in the world. This method provides cost data that can be used for various purposes, such as inventory estimation, planning, cost control, decision making, and performance

evaluation. According to this method accounting and calculating of production costs are divided into variables and fixed. Thus, fixed costs are considered as expenses of the current period, they do not attribute to prime cost, do not distribute between products, and directly attribute to the results of economic activities (losses). Cost accounting and determination of finished products prime cost are only variable costs. Variable costs estimate work in progress and finished product balances.

The ABC calculation method involves the overhead grouping by main activity, and then splitting it between product types based on what kind of activity is required to produce the product. Let's identify the main advantages and disadvantages of the ABC method (Table 4.3).

Table 4.3

The main advantages and disadvantages of the ABC method

Advantages	Disadvantages
1. The ABC method makes it possible to more accurately determine the costs of unused capacity for their periodic write-off to the expenses of the period. The prime unit cost calculated using this method is the best financial estimate of consumed resources, it takes into account complex alternative ways of determining the relationship between products and resource use.	1. A problem in time, effort related to staff training, data collection both during system implementation and its application.
2. The application of obtained information on the production prime cost for pricing purposes increases the competitiveness of products in market conditions.	2. The system is burdensome for manufacturers because of the long and complex production chains presence.
3. The method can be a justification for costs reducing and increasing the enterprise efficiency, in particular, the method provides significant cost savings for personnel.	3. There is a risk of obtaining overly detailed information about expenses, which can lead to information overload of enterprises.
4. This method provides information about the enterprise profitability or loss in terms of customers.	4. The ABC method requires a more bureaucratic regime than traditional methods.
5. This method provides more information for managing costs, making sound management decisions for strategic planning.	
6. This method provides new information on costs, it also generates a number of indicators of a non-financial nature, mainly measuring the volume of production and determining the production capacity of an enterprise.	

Source: [81]

The traditional costing system is built on the principle that resources are used to produce products, activity-based costing calculating implies that products are manufactured in the course of production (operations), and processes consume certain resources.

Activity Based Costing or the **ABC method** is one of the tools for improving accounting systems and innovative management accounting methods. This method of calculation has become widespread in at European and American enterprises. The ABC method development is caused by certain changes occurring in the economic structure, namely the change of views on the method of cost accounting and the

calculation of prime cost production. The activity-based costing (ABC) method has originated in the United States and has become widespread since the late 1980s, thanks to the researches of G. Beret, R. Cooper, T. Johnson, and R. Kaplan. This method is used by about 10% of companies, including businesses in the US, UK, continental Europe, Australia, and Japan. It increases the reasonableness of overhead costs for a particular product, makes it possible to calculate the cost more accurately, ensures the correlation of the information received with the process of cost formation. The ABC method application enables the manager to more accurately determine the value of a particular product, especially in cases where indirect costs exceed the direct costs.

Two main approaches to cost optimization, i.e. target costing and Kaizen-costing, have gained the most recognition in international practice. **Target-costing** is a method of strategic cost management of an enterprise, it involves the calculation of the target production prime cost based on a pre-set price, its purpose is to ensure the optimization of production costs. The target-costing system appeared in Japan in the 1960s, although the early forms of the method were used by General Electric in 1947 and became widespread in the United States in the 1980s. Toyota Corporation first implemented this method in 1965. Target-costing involves calculating the production prime cost at a predetermined sales price determined through marketing research. The standard formula for price calculating according to the target costing system is form.4.1, 4.2:

$$\text{Prime cost} + \text{Profit} = \text{Price} \quad (4.1)$$

Japanese scientists propose a new formula that reflects targeting:

$$\text{Prime cost} = \text{Price} - \text{Profit} \quad (4.2)$$

Price is the products market value determined by market research. Profit is the value that the company seeks to receive as a result of the sale of these products. The main advantage of this method is that the cost is formed at the draft stage and depends on the planned profit. The use of target-costing in cost optimization will allow businesses to apply a systematic approach to new product development. The method optimizes the level of costs, increases the transparency of resources use in production, improves the structure of costs and improves the quality of products.

Kaizen-costing is a holistic cost management system that supports a cost-optimization strategy; it aims to improve the efficiency of production processes and deliver the intended results. It is used in the Japanese strategic cost management model alongside target costing; it is its continuation. Both methods pursue the same goal, namely, i.e. achieve the target prime cost. Target costing is used at the stage of designing a new product, and Kaizen-costing is applied at the stage of its production. The main objective is to eliminate the difference between actual and target prime cost by attracting all company staff [91].

New cost management techniques include cost **benchmarking**. This method is

a way to evaluate the strategies and goals of an organization versus successful business organizations to determine their place at a particular market. The advantages of cost benchmarking are the lack of need to invent their own ways of reducing costs and improving processes in an enterprise because it has already been done by a market leader or a sample company; the ability to combine different methods that have succeeded in reducing costs to other businesses. This method can be used by companies that need to make decisions about their positioning in the market and choosing a development strategy. You can gradually improve cost management based on their experience and technology exploring the process of generating costs at industry-leading industry leaders, using management benchmarks and cost management techniques.

Life Cycle Costing is used in strategic management because it covers several years. It is the only cost management method that takes into account the impact of inflation by discounting cash flows in decision making. It is advisable to use the LCC for enterprises that produce a range of non-standard products and are unstable in terms of market niche demand parameters.

4.4. Accounting for Indirect Costs and their Attributing to the Production Prime Cost

Indirect costs include costs that cannot be directly attributed to a particular accounting entity by a cost-effective way. Indirect costs are also called overhead. Overheads can be classified by function, such as production and non-production. Non-productive are divided into administrative and sales. This classification makes it possible to relate costs to a specific production unit, if costs are production overheads; the costs are attributed to a period, if they are administrative or sales ones.

General production costs are costs that are included in the production costs of enterprises and associated with servicing the main and auxiliary industries. We distinguish between workshop and non-workshop management structure.

In the workshop management structure, the costs of maintaining and operating machinery and equipment and the costs of organizing and managing production in the context of each workshop of the main and auxiliary industries are classified as general production costs.

In the non-workshop management structure, general production costs include the costs of maintaining and operating machinery and equipment and the costs of enterprise organizing and managing.

Characteristics of general production costs:

- formation at the level of production and service units;
- planning at their occurrence site;
- the inclusion of various costs elements to their composition;
- control based on pre-established estimates;
- their indirect distribution between finished and unfinished products.

The indirect costs characteristic feature is the impossibility or impracticality

(the ratio of cost and benefit) of their direct distribution on a specific cost driver (type of products, works, services). The inability to distribute indirect costs implies the use of other (indirect) methods that are much more complex than the direct distribution and lead to inaccurate results.

In practice, various methods of allocating indirect costs are widely used to determine the full prime production unit cost. It is important to calculate the unit cost if the product selling price is determined on its prime cost basis. However, if you do not attribute indirect costs to the production prime cost it will lead to a decrease in the sale price, then to the inability to recoup all costs, which will have a negative impact on the financial condition of the enterprise.

On the other hand, full costs application to make decisions about expanding markets leads to erroneous conclusions. It concerns making decisions about optimizing financial results based on a situation analysis.

The indirect wages of workers unengaged in particular product manufacturing process is an example of general production costs. They include the salaries of structural unit heads, masters, and cleaners. Direct wages and general production costs are often combined into a separate group of costs, called added costs. The added costs can be described as the production costs required to convert material costs into finished products.

The problem of attributing general production costs to accounting objects is extremely complex. It was partially covered in previous chapters.

The process of attributing general production costs is carried out in three stages:

- at the first stage, the cost object is selected, that is the object to which it is attributed;
- at the second stage, the costs are identified, reflected and grouped;
- at the third stage, the cost sharing base is selected, which most closely corresponds to the general production costs of a particular structural unit.

The most common bases for cost sharing are:

1) the basic wages of production workers. The choice of this base is caused by significant share of wages compared to other costs; it is used in industries with low levels of mechanization and automation of work;

2) man-hours worked by production workers. The use of this base is due to the its simplicity and the availability of information in work orders;

3) machine hours. This base is widespread at high-density production with mechanized and automated works;

4) direct costs. According to this basis, it is considered that indirect losses should be allocated in direct proportion to the direct costs, i.e. the more direct costs, the more indirect costs are attributed to the entity;

5) direct material costs. This base is extended to productions where material costs occupy a significant share, it is characteristic of material-intensive industries;

6) estimates (standard rates). This rate is determined on the basis of a pre-estimate for general production costs (for the whole enterprise or a separate structural unit);

7) market prices. Its choice is driven by the demand for products. It is believed

that the higher the prices, the greater the share of general production costs should be attributed to this product;

8) production volume. This base, unlike the previous one, is focused on production. In addition, it can only be used for products with approximately the same labor-intensiveness, which reduces the chances of its application.

The principle of proportionality should be used choosing a base. This means that the indirect costs sharing and the chosen basis must be proportional.

General production costs can be classified into the following main groups:

- costs for the production organization and management;
- costs for the equipment maintaining and operating.

Each group includes different economic costs, so they need adequate economically distribution bases.

Production costs are shared by the enterprise accounting policy. They are shared by product type in proportion to the labor costs of the main production workers taking into account the maintaining machines and equipment costs. The general production costs attributable to work and services performed for other workshops are defined as the total volume of these costs and written off for the costs of the workshops, i.e. consumers of works and services. In the case of works and services provided by the workshop for their own needs, the costs of labor and social security deductions, as well as the cost of basic materials, include in the cost of products, works and services of the relevant unit (shop).

The main directions of indirect production costs formation include:

- manufacturing activities, i.e. costs associated with production activities that occur at production departments, such as control departments, service departments; fixed assets repair departments, water supply and drainage departments, production departments;
- activities of separate services, i.e. costs associated with the operation of services involved in the loading, transportation and unloading of materials and products, as well as the technical control department;
- the costs for buildings operation and production management; they include the wages of production management equipment, local taxes, fees for light, heating, and rent for premises.

The process of indirect costs sharing is much more complicated than the process of assigning direct costs to an entity. It has been previously noted that attribution of overheads allocation is a phased process. It consists of the following main steps:

- the first: collecting and displaying overheads accounts by items;
- the second: the allocation of cost centers and the allocation of responsibility for the costs amount between individuals;
- the third: the attribution of overheads by cost centers;
- the fourth: the attribution of auxiliary shops (service centers) costs between production centers costs;
- the fifth: choosing the base of distribution and production centers costs attributing to types of products.

Discussion and self-review questions

1. *What is prime cost? What is its classification?*
2. *What is calculation? What are the techniques of calculating?*
3. *What are calculation types?*
4. *Give examples of costs accounting objects, calculation objects and calculation units.*
5. *What are traditional cost accounting methods?*
6. *What is standard method?*
7. *How to calculate the costs by orders?*
8. *How to calculate the costs by processes?*
9. *What is process-wise method?*
10. *What are advantages and disadvantages of traditional cost accounting methods?*
11. *What are foreign cost accounting methods?*
12. *What are indirect costs and bases for their attribution?*

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THEME 5. ACCOUNTING AND CALCULATION OF FULL AND VARIABLE COSTS

5.1. Accounting and Calculation of Full Costs

Production costs management system is determined by three interdependent elements, i.e. accounting of production costs; accounting of outputs; determining its costs. That's why, production costs management system should express a certain relationship of methods and means of costs generalizing by composition, content, purpose, places of origin and responsibility centers, by types of products or works, their homogeneous groups, disaggregated parts of products, semi-finished products and controlling methods of production resources application in comparison with current standards and planned efficiency.

Technological and organizational production features, the production cycle duration, quantitative and qualitative characteristics of products require different combination of methods and means of accounting and calculation the product's prime cost.

Cost accounting and calculation systems are classified according to the following features:

1. by objects of grouping (calculation object selection):
 - the contracting system;
 - procedural (process-wise) system;
2. by the degree of standardizing (source information for costing):
 - system of actual costs,
 - standard costing system (standard costing),
 - mixed cost system (typical for foreign accounting systems);
3. by completeness of costs covering (degree of fixed costs absorption):
 - full cost system (absorption costing),
 - variable costing system (direct costing and variable costing).

The cost accounting and calculation systems application is determined by the management objectives and cost accounting objects.

Calculation with full cost-sharing among products (Absorption Costing) is the determination of the total production prime cost. The full cost includes both direct and indirect costs. Direct costs are credited directly to manufactured products. These are material costs, staff wages, variable overhead costs dependent on output. Fixed overhead and discretionary costs cannot be directly attributed to product's prime cost. Such costs are apportioned among the product types according to the chosen base. After the costs distribution they receive a prime cost calculation with a complete cost distribution between products.

The structure of full costs formation is schematically presented in Fig. 5.1.

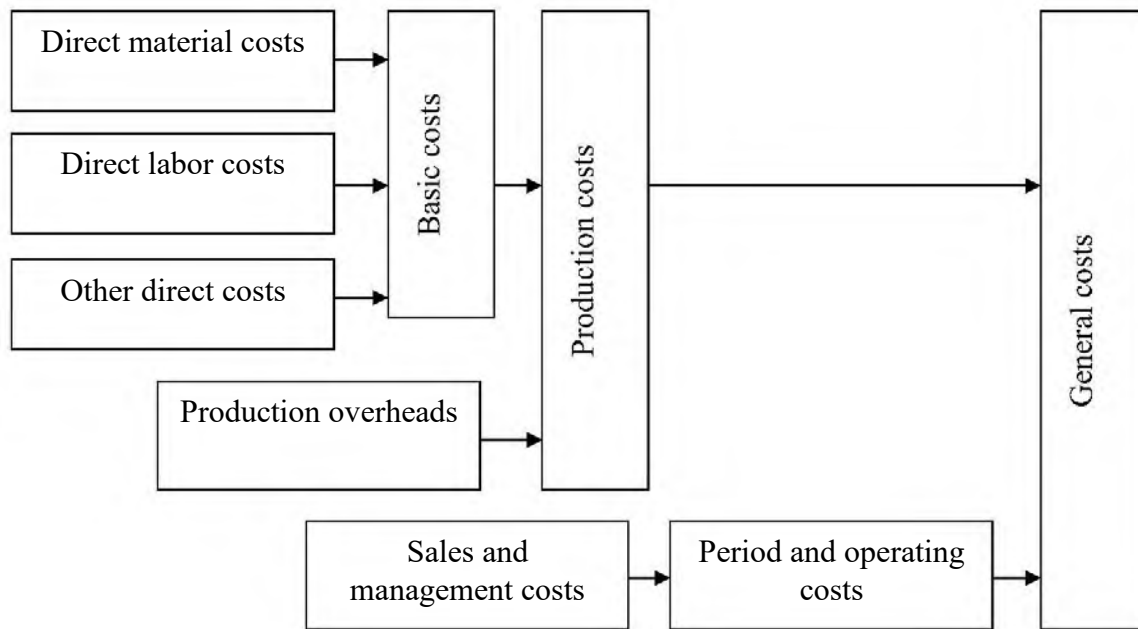


Fig. 5.1. Full costs calculation

The calculation of the basic costs is made by orders and by processes. The calculation method is reminiscent of the national one (chapter 4).

In management accounting it is advisable to use the full cost method (“absorption costing”) if:

- ✓ the enterprise produces only one product or several products (in a small amount relative to the main one), or there is a more or less stable range formed;
- ✓ the amount of overhead costs varies significantly between periods;
- ✓ the company’s work is based on long-term contracts for a certain amount of work.

In accordance with international standards and National accounting standards, inventory is estimated on the basis of production costs preparing financial statements intended for external users. Therefore, only production costs are shared between types of products. However, forecasting the selling price, the distribution is subject to indirect non-production costs. Gross profit (don’t confuse with the once notion in tax law) is used as the difference between revenue and production costs calculating on a full cost accounting basis.

There are two main options for cost accounting and total production prime cost calculation, it may be provided by alternative accounting policies of the company:

1) administrative and overhead costs are attributed to the product, and sales costs are attributed to period costs;

2) general production costs are attributed to the product, and administrative and marketing costs are attributed to period costs.

The first option of costs accounting and prime cost calculation includes the following main steps:

1) direct material cost, labor costs, general production costs and administrative costs are attributed to product’s prime cost;

2) distribution of production costs between finished and unfinished products. The production prime cost is defined as the balance of work in progress at the beginning of the period plus the cost of production for the reporting period minus the balance of work in progress at the end of the period;

3) calculation of sold products prime cost and estimation of finished product balances. The sales prime cost is defined as the balance of finished goods at the beginning of the period plus the cost of manufactured goods over the reporting period minus the balance of finished goods at the end of the period;

4) attribution of sales costs to the financial result.

The second option of costs accounting and prime cost calculation includes the following main steps:

1) direct material costs, labor costs, and general production costs are attributed to product's prime cost;

2) distribution of production costs between finished and unfinished products;

3) calculation of sold products prime cost and estimation of finished product balances;

4) attribution of administrative and marketing costs to the financial result.

The principle of costs formation and product prime cost calculation operating in accordance with National accounting standard 16 Costs is demonstrated in Fig. 5.2.

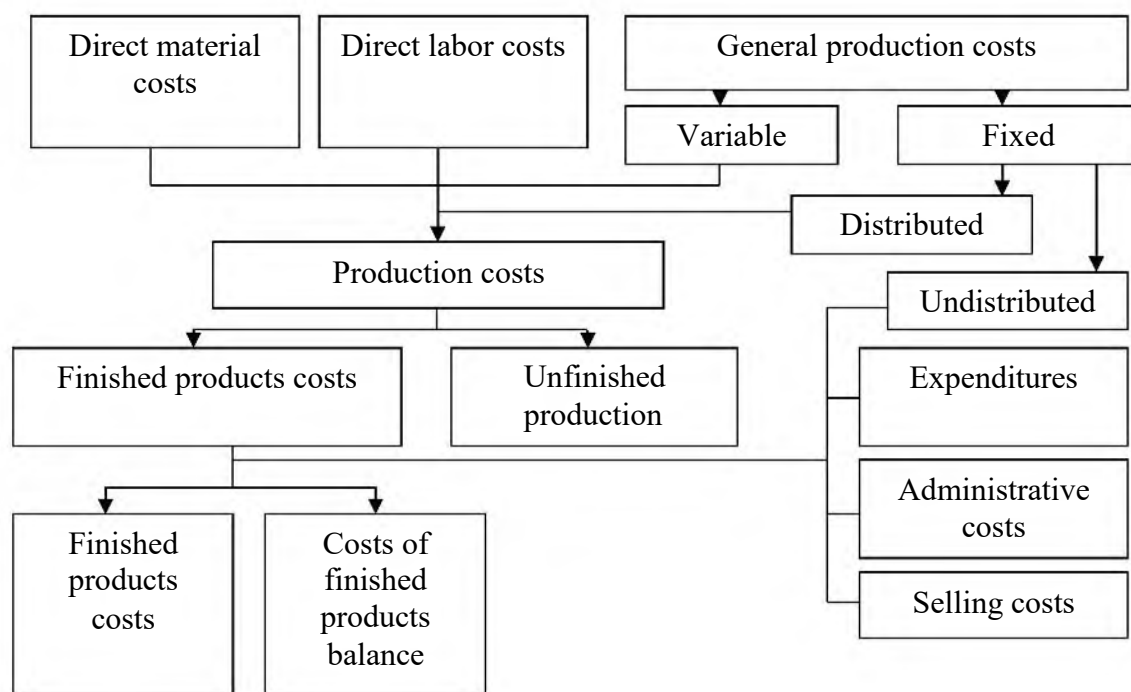


Fig. 5.2. Cost accounting system and calculation in accordance with National accounting standard 16 Costs

The above-mentioned variants of costs accounting and prime cost calculation do not take into account such an important fact that with the output changes cause unit costs changes, as well as changes in profit per unit of production. If an enterprise increases production and sales, the unit cost decreases and the profit per unit of output increases. However, if the volume of production and sales decreases, the unit

cost increases and the profit per unit of production decreases.

The national accounting system and prime cost calculation has changed significantly with the introduction of National accounting standard, it is explained by fundamentally different approaches to inventories valuation reflected in the forms of external reporting.

According to National accounting standards costs accounting and prime cost calculation includes the following main steps:

- 1) attribution of direct material costs, labor costs, and general production (variable and permanent distributed) costs of production cost of production;
- 2) the distribution of production costs between finished and unfinished products;
- 3) attribution of fixed undistributed and excess costs for the sales costs;
- 4) calculation of sold products prime costs and estimation of the finished product balance;
- 5) attribution of administrative and sales costs to the financial result of the enterprise.

The order of costs accounting and product's prime cost calculation should be reflected in the accounting policy of the enterprise. If direct costs can be directly attributed to a particular product type (cost driver), the special bases are needed to allocate indirect costs between product types.

The following direct costs are directly allocated:

- direct material costs;
- direct labor costs;
- other direct costs.

Indirect costs include costs that cannot be directly attributed to the accounting entity. That's why, it is almost unrealistic to determine exactly what proportion of indirect costs relates to a particular cost object. Indirect (overhead) costs are divided into production and non-production. Indirect production costs include costs that are associated with the production of several types of products (works, services) and are attributed to the prime production cost on the basis of special methods in proportion to the accepted distribution base.

The example of indirect production costs is general production (fixed) costs attributed to the prime production costs indirectly (in proportion):

- wages of the main workers;
- volume of production (works, services);
- the amount of direct costs;
- the direct material costs or any others.

Indirect costs also include non-production costs, they include sales and administration costs. Non-production indirect costs between accounting entities are also allocated in proportion to the specifically accepted allocation base.

Thus, indirect costs include:

- general production (fixed) costs;
- administrative costs;
- selling costs;
- others.

The activity-based costing (ABC method) is also widely used additionally to traditional method.

5.2. Accounting and Calculation of Variable Costs

Direct-costing is a management accounting system based on classification costs for fixed and variable ones, products calculations for variable costs, and analyzing different levels of cost of production. Calculating product's prime costs as variable costs means that operating costs, fixed production costs are treated as expenses of the period and written off at the expense of the financial result. Thus, the amount of variable costs overlaps with the amount of direct costs, it is reflected in the system name.

The main difference between this method is the prime cost calculation based on variable costs and the analysis and planning of the relationships and interdependencies between production volume, prime cost and profit. Fixed costs are accounted for separate accounts depending on the directions of their formation; they are written off at the end of the reporting period to the account of financial results (Fig. 5.3).

Today direct costing is used in the following variants:

- 1) classic (simple) direct costing involves the calculation of direct (variable) costs;
- 2) variable cost system (advanced), cost includes both variable costs and direct fixed costs;
- 3) cost accounting system depending on capacity utilization; the calculation includes all variable costs and variable parts of fixed costs, calculated taking into account the capacity utilization factor similar to the proposed one by National accounting standard 16 Costs.

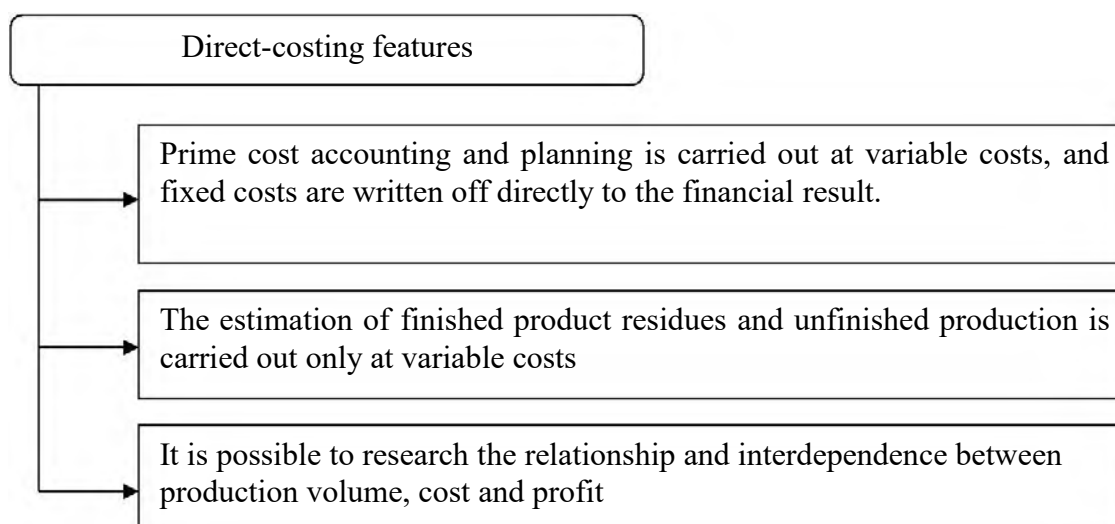


Fig. 5.3. Direct-costing features

Source: systematized on the basis of [77]

The costs coverage calculation has a different degree of details depending on the selected variant.

Table 5.1 shows the comparative characteristics of absorption costing and direct costing systems.

Table 5.1

The comparative characteristics of absorption costing and direct costing systems

Criteria	Absorption costing system	Direct costing system
Laboriousness	Low labor input	High labor input
Formation product's prime cost	The production costs (fixed and variable) are included	The variable costs (manufacturing, administrative and sales) are included
Period cost formation	The administrative and sales costs (fixed and variable) are included	The fixed costs (manufacturing, administrative, and sales) are included
Budgeting	It is impossible to plan the costs accurately, their changes are directly proportional to the changes in the production volume (works, services)	It is possible to plan the needs and direct costs accurately for the production (works, services) and to calculate for pricing policy
Analysis of the factors influencing the change in the activity end result	The complexity of determining effect of reducing or increasing variable costs on the end result making a management decision	It is possible to more accurately determine the effect of decreasing or increasing variable costs on the end result contributing to a sound management decision
Possibility of break-even point and cost-volume-profit analysis	It is impossible	It is possible to determine the break-even point and the dependence of the end result on changes in production and sales volumes and costs of the entity
Validity and quality of management decision	Inaccurate analysis results contribute to the wrong management decision	There are conditions for making a sound and qualitative management decision based on accurate analysis results

The main components of the method are:

- ✓ costs type accounting;
- ✓ cost centers accounting;

- ✓ cost drivers accounting (calculation of unit cost);
- ✓ cost drivers results accounting;
- ✓ period results accounting [44].

These elements are used for any forms of costs and results accounting organization; they are used for total and variable costs accounting. Some of the elements vary depending on the degree of prime cost inclusion completeness, but there are some that remain unchanged.

The direct-costing system makes significant changes to the traditional structure of financial reporting. The full costs calculation system involves all production costs of the reporting period into sales cost formation determining operating profit, the variable costing system involves the inclusion of variable costs into product's prime cost. Thus, this system doesn't determine profit, it determines marginal profit to cover fixed costs and profit.

So, marginal profit is the difference between sales revenue and variable costs:

Here are examples of forming an income statement for different systems of accounting production costs and production calculations using the initial information given in table 5.2.

Table 5.2

Information on the enterprise activities for 2018

No.	Indicator	Indicator value
1	Planned output, units	20,000
2	Output, units	17,000
3	Sold, units	14,000
4	The balance of finished products, units	0
5	The selling price per unit, UAH	285
6	Variable production costs per unit, UAH:	
6.1.	- basic materials	46
6.2.	- wages of the basic production personnel	31
6.3.	- variable manufacturing overheads	23
7	Variable sales costs per unit, UAH	17
8	Fixed sales costs, UAH	125,700
9	Fixed production overheads, UAH	450,000

Marginal profit is the result of the direct resources application in the production process, but it is not the result of the enterprise activity because the margin profit is used to cover the enterprise fixed costs and generate profits. There are different systems of production prime cost formation. That's why different definitions of profit are used, i.e. gross profit, and operating profit.

The direct costing system method helps to solve some of the such most important cost management tasks as:

- ✓ determination of products or orders lower price limit;
- ✓ comparative analysis of profitability of different types of products;

- ✓ determination of the production and sales optimal program;
- ✓ the choice between products or services production and their purchase;
- ✓ choosing the most economically viable production technology;
- ✓ determination of break-even point and safety margin of the enterprise, etc.

Direct costing method. Calculation of production prime cost per unit of production (variable costs):

- basic materials – 46 UAH;
- wages of the basic production personnel – 31 UAH;
- variable manufacturing overheads – 23 UAH;
- total unit cost – 100 UAH.

The concept of marginal profit is used in the process of preparing a multi-stage income statement in the direct costing system.

Marginal profit is the difference between product sales revenue and variable costs. It covers general fixed costs (commercial and administrative costs).

$$\text{Marginal profit} = \text{sales revenue} - \text{variable costs}$$

$$\text{Marginal profit} = \text{fixed costs} + \text{profit}$$

The income statement according to the direct costing system is shown in Table 5.3.

Table 5.3

Profit and loss statement (direct costing), (UAH)

No.	Indicator	Indicator value
1	Sales income (14,000 × 285)	3,990,000
2	Product balance at the beginning	0
3	Output (17,000 × 100)	1,700,000
4	Finished products balance at the end (3,000 × 100)	300,000
5	Sales prime cost (14,000 × 100)	1,400,000
6	Variable sales costs (14,000 × 17)	238,000
7	Total variable costs:	1,638,000
8	Marginal profit	2,352,000
9	Fixed overhead costs	450,000
10	Fixed sales costs	125,700
11	Total fixed costs:	575,700
12	Operating profit	1,776,300

Absorption-costing method. Calculation of unit production cost (variable and fixed costs):

- basic materials – 46 UAH;
- wages of the basic production personnel – 31 UAH;
- variable manufacturing overheads – 23 UAH;
- fixed production overhead costs (450,000/20,000) – 22.5 UAH;
- total prime unit cost – 122.5 UAH.

The basic principle of the profit and loss statement according to absorption costing system is as follows:

$$\text{Sales income} - \text{Sales prime cost (including all production costs)} = \text{Gross profit};$$

$\text{Gross profit} - \text{Administrative and implementation expenses (fixed + variable)} = \text{Operating profit}.$

Table 5.4 shows the profit and loss statement according to absorption costing system.

Applying these methods, we have a such difference in operating profit as $1,843,800 - 1,776,300 = 67,500$ UAH. This is due to the fact that fixed production overhead costs are deposited to finished products at the end ($3,000 \text{ units} \times 22.5 = 67,500$ UAH) using the method of absorption-costing. According to direct-costing method, the total amount of fixed costs is included in the costs of the period.

Table 5.4

Profit and loss statement (absorption costing), (UAH)

No.	Indicator	Indicator value
1	Sales income ($14,000 \times 285$)	3,990,000
2	Product balance at the beginning	0
3	Output ($17,000 \times 122.5$)	2,082,500
4	Finished products balance at the end ($3,000 \times 122.5$)	367,500
5	Sales prime cost ($14,000 \times 122.5$)	1,715,000
	Fixed overhead costs adjustment ($(20,000 - 17,000) \times 22.5$)	67,500*
6	Fixed sales prime cost	1,782,500
7	Gross profit	2,207,500
8	Variable sales costs ($14,000 \times 17$)	238,000
9	Fixed sales costs	125,700
10	Total operating costs:	363,700
11	Operating profit	1,843,800
* <i>unallocated fixed overhead costs are added to the sales cost</i>		

Source: [82]

5.3. Activity-Based Costing (ABC- method)

Activity-based costing (ABC- method) is a system of calculations that involves grouping the overhead costs by type of activity (processes, operations), and then distributing them between types of products (works, services) based on what activities are required for manufacturing of this product.

The ABC method is based on the fact that products are not the cause of costs, but the cause of operations (works), which result in costs. ABC-method provides

information on the prime cost production, it also helps managers reduce resource consumption. The ABC method can directly contribute to this by tightening control over other operations causing overhead costs. This method also ensures and controls the relationship between those who conduct business (or perform certain functions) and those who use products derived from the activities of the former.

There are **some differences between activity-based costing and the traditional accounting system.**

Firstly, according to traditional system, non-production overhead costs are subject to cost calculation; non-production overhead costs can be allocated along with production costs according to **activity-based costing** allowing to calculate the full cost of the product for the purpose of correct pricing.

Secondly, traditional production accounting systems use real production units to accumulate and redistribute costs. Activity-based costing systems use activities to accumulate costs. **Activities (operations)** are works or procedures that are regularly or periodically carried out in the process of production and commercial activity of the enterprise to create and maintain cost objects. Indirect costs relate to activities (operations) on the basis of their magnitude consumed in the performance of these activities.

Thirdly, a single base for the production overhead distribution and a single rate of distribution of these costs, calculated on this basis, or funnel overhead rates are used in the traditional costing system to attribute production overhead costs to cost objects. In the activity-based costing system, so-called **cost factors (drivers) of activity** identify the relationship between activities and cost objects. As the factor increases, the activity costs increase. Dividing the activity costs by the total number of the cost factor of activity determines the **cost factor of the cost of activity.**

Fourthly, the last stage of overheads attribution to cost objects is similar in both calculation systems. In traditional system it is calculated by multiplying the distribution rate to the value of the base for individual objects. According to ABC-method it is calculated by multiplying cost factor of the cost of activity to each object in the ABC. Costs can include buyers, sales channels, units, and more, in addition to products and orders according to ABC-method.

Fifthly, activity-based costing is a strategic calculation system; it cannot be used for operational control, that is, to ensure that processes and units are continuously linked to improvements that have occurred.

The traditional calculation system is built on the principle that resources are used to produce products. However, activity-based costing implies that products are produced during production processes (operations) and processes consume certain resources (Fig. 5.4).

The implementation mechanism of ABC calculation method includes the following stages of development and implementation:

1. Formation and approval of the functions (activities) register and classifier. The objects of business processes, costs and results of production and economic activity may be a unit of production, a batch of products, a line of production, sale of products, supply of raw materials, markets and channels of sale, purchase of products

and services of their order. Information about functions and processes across sections allows you to quickly influence the resources use.

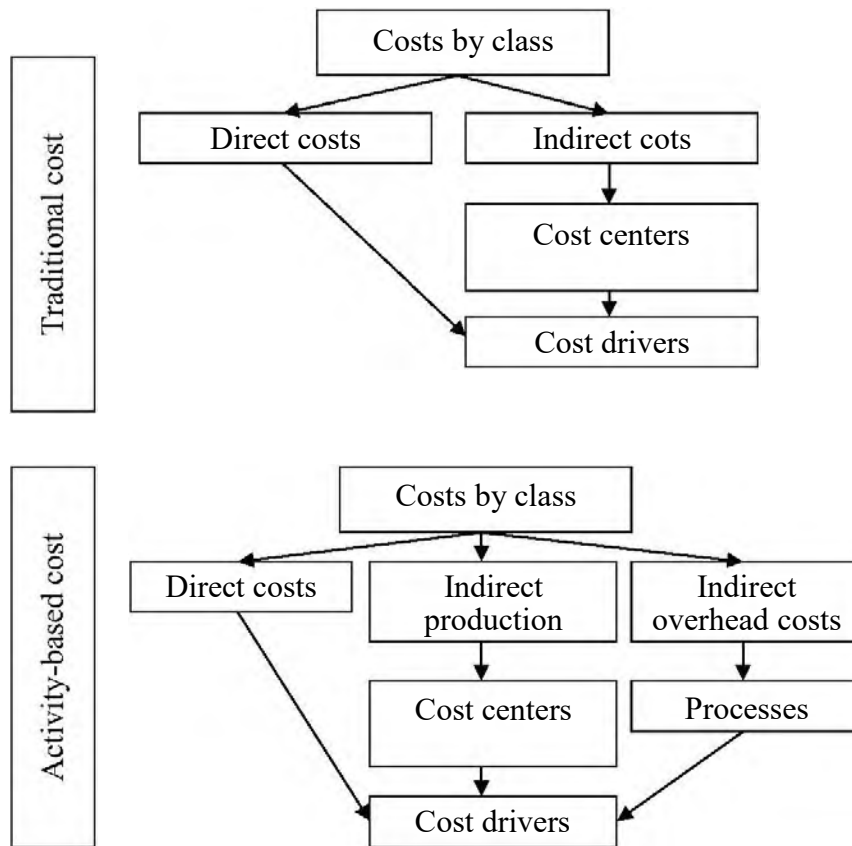


Fig. 5.4. Comparison of traditional calculation method and ABC method

2. Selection and approval of the cost driver for each function. The cost driver is the factor influencing process costs. It can be the number of resources delivered, purchase orders, number of equipment repairs, sales orders etc. This is an important indicator in cost management, since direct cost impact is a source of cost reductions.

3. Formation and approval of requirements for primary documents. At this stage, it is possible to obtain information on the amount of direct costs by product class, the costs associated with a particular function, the number of consumed drivers, the cost of certain types of products.

4. Registration of primary documents in accordance with the requirements of ABC.

5. Collecting and grouping of cost information for each process into a single cost complex.

The sequence of planning and cost control by the ABC method within the enterprise cost management system is shown in Fig. 5.5.

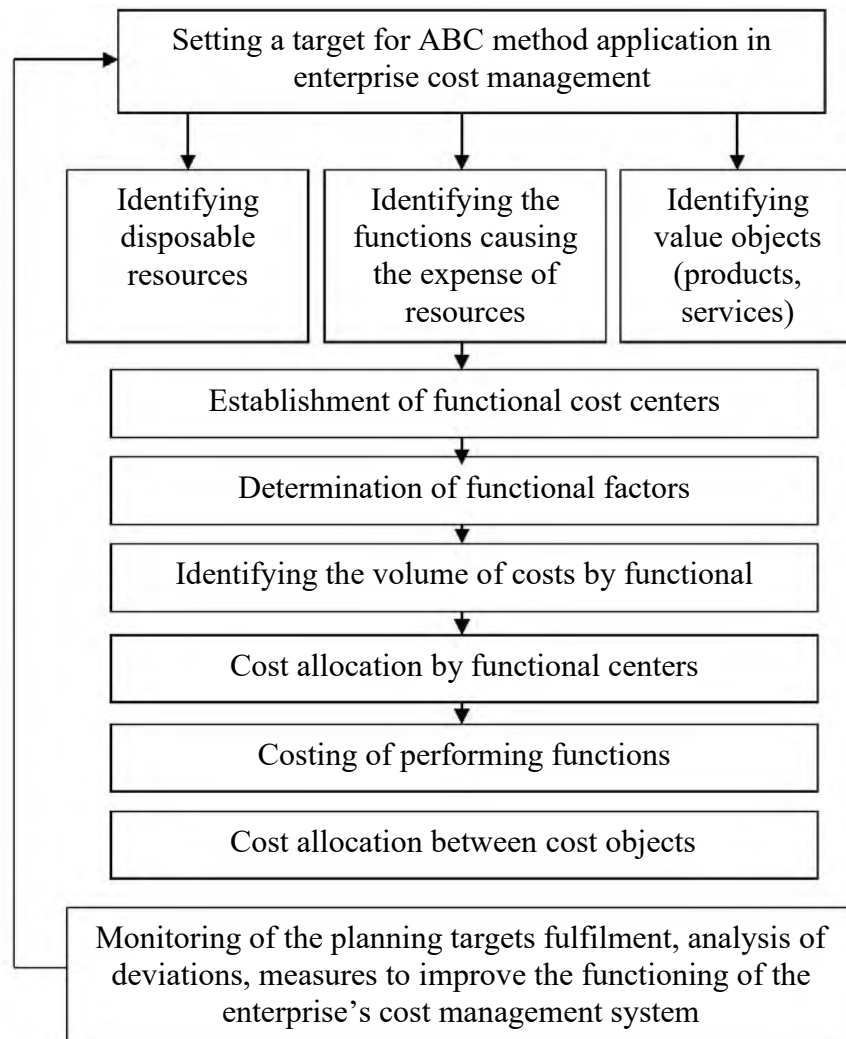


Fig. 5.5. The sequence of planning and cost control by the ABC method within the enterprise cost management system

6. Calculation of cost drivers by function.
7. Charging process costs to facilities according to the amount of consumed functions.
8. Object costing.

Table 5.5

The main advantages and disadvantages of ABC-method

Advantages	Disadvantages
1	2
1. The ABC method makes it possible to determine the costs of unused capacity for their periodic write-off. The unit prime cost calculated using this method is the best financial estimate of the resources consumed because it takes into account complex alternative ways of identifying the link between production and resource use.	1. There are problems with time, effort involved in staff training, data collection deploying and using the system.

Continuation of Table 5.5

1	2
2. The competitiveness of products in market conditions increases applying the information on the production prime cost for pricing purposes.	2. The system is burdensome for manufacturing companies due to long and complex product chains
3. The method can be a justification for reducing costs and increasing the efficiency of the enterprise, in particular, the method provides significant cost savings for personnel	3. There is a risk of overly detailed cost information, which can lead to information overload of the enterprise
4. This method provides information about the enterprise profitability or loss in terms of customers.	4. The ABC method requires a more bureaucratic regime than traditional methods
5. This method provides more information for managing costs, making sound management decisions for strategic planning.	
6. This method provides new information on costs, it also generates a number of indicators of a non-financial nature, mainly measuring the volume of production and determining the production capacity of an enterprise.	

Let us consider the application of the ABC method in comparison with traditional accounting using an example.

The enterprise produces two types of products, we have such information about them:

Product	Volume of production, units	Working hours, hours	Direct labor costs, UAH	Number of displacements	Number of material components	Number of design changes	Amount of equipment reconfiguration
X	1,200	1,000	20 000	42	11	4	8
Y	2,100	3,000	60 000	21	6	3	5
Total	-	4,000	80 000	63	17	7	13

Production overhead costs include, UAH:

Displacements	65,000
Storage of components (parts)	25,200
Design changes	59,000
Reconfiguration of equipment	50,800
Total	200,000

Direct material costs per unit of production:

X – 1,250 UAH;

Y – 1,350 UAH.

It is necessary to determine the unit cost of each type of product, using the distribution of production overhead based on working hours and using costing by type of activity. Let's compare the amounts of distributed overheads by different methods.

The types of the enterprise activities and the corresponding cost drivers

Types of activities	Costs, UAH	Cost drivers	Cost driver value	Including by product class	
				X	Y
Displacements	65,000		63	42	21
Storage of components (parts)	25,200		17	11	6
Design changes	59,000		7	4	3
Reconfiguration of equipment	50,800		13	8	5
Total	200,000	-	100	65	35

Calculation of the unit cost driver value by activity

Types of activities	Costs, UAH	Cost driver value	Unit cost driver value
Displacements	65,000	63	1,031.7
Storage of components (parts)	25,200	17	1,482.4
Design changes	59,000	7	8,428.6
Reconfiguration of equipment	50,800	13	3,907.7

Distribution of overhead costs by activity

Types of activities	Unit cost driver value	Product X		Product Y	
		Cost driver value	Costs, UAH	Cost driver value	Costs, UAH
Displacements	1,031.7	42	43,331.4	21	21,665.7
Storage of components (parts)	1,482.4	11	16,306.4	6	8,894.4
Design changes	8,428.6	4	33,714.4	3	25,285.8
Reconfiguration of equipment	3,907.7	8	31,261.6	5	19,538.5
Total production costs	x	x	124,613.8	x	75,384.4
Production volume, units	x	x	1,200	x	3,000
Production costs per unit	x	x	103.8	x	25.1

Traditional method of cost distribution

Product	Working hours, hours	Distribution coefficient	General production costs, UAH	General production costs per unit, UAH
X	1000	X	50,000	41.7
Y	3000	X	150,000	71.4
Total	4000	50	200,000	113.1

Comparison of results

Costs, UAH	ABC-method		Traditional method	
	X	Y	X	Y
Direct material costs, UAH	1,250	1,350	1,250	1,350
Direct labor costs per unit of product, UAH	16.7	20.0	16.7	20.0
General production costs per unit, UAH	103.8	25.1	41.7	71.4
Total production prime cost	1,370.5	1,395.1	1,308.4	1,441.4

5.4. Advantages and Disadvantages of Fixed and Variable Cost Accounting and Calculation

The difference between fixed and variable calculation methods is the procedure of production overhead costs accounting and its displaying in the Income Statement. Both methods treat marketing and administration costs as period costs. In addition, the variable of these costs is not part of the product prime cost by any method.

Table 5.6

Advantages and disadvantages of direct costing and absorption costing

Direct costing system	
Advantages	Disadvantages
- cost-based product calculation makes it easier to standardize, plan, record, and control them;	- there are difficulties in classifying costs into fixed and variable in practice;
- this method allows to concentrate attention on change of marginal profit on the enterprise and separate products, to identify types of products with the higher profitability, to pass basically on their release;	- while using dumping there is a danger that the amount of fixed costs cannot be covered by the margin income, the enterprise falls into the loss zone;
- the system provides an opportunity to quickly reorient production in response to changing market conditions;	- system is not recommended for financial reporting and taxation;
- simplification and accuracy of services (products, works) prime cost calculating; absence of complex calculations in the distribution of fixed costs;	- there are serious problems in determining the amount of income tax transitioning from a full cost sharing system to a direct costing system.
- the profit for a certain period does not change under the influence of fixed overheads while changing the stocks.	
Absorption costing system	
Advantages	Disadvantages
- this method avoids reporting fictitious losses;	- imputation of overhead costs;
- costs are not classified into fixed and variable;	- costs unrelated to production are included in the production prime cost;
- application for financial accounting purposes and the external reporting;	- the determination of the actual product prime cost is possible at the end of the period;
- increasing the reasonableness of selecting or rejecting an additional order;	- complications of accounting procedures.
- reflects revenue coverage of each product or activity, both direct variable costs and fixed overhead costs.	

The difference in net profit is attributed to the change in inventory levels using fixed and variable calculation. If inventories increase during the year with a relatively production constant level and production exceeds sales, net profit will be less in terms of variable costs than in fixed ones. Conversely, if inventories go down and sales exceed production, profits will be more cost-effective than fixed one.

Discussion and self-review questions

1. *What is full costs calculation?*
2. *What is direct-costing?*
3. *What are the differences between direct-costing and full costs calculations?*
4. *What are the types of direct-costing system?*
5. *What is marginal profit? How is it calculated?*
6. *What is activity-based costing?*
7. *What is the difference between activity-based calculating and traditional accounting system?*
8. *What is the mechanism of the ABC method implementation?*
9. *What are the main advantages and disadvantages of the ABC method?*
10. *What are the advantages and disadvantages of direct-costing and absorption-costing accounting systems?*

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THEME 6. CALCULATION OF REGULATORY COSTS AND ANALYSIS OF DEVIATIONS

6.1. General Characteristics and Basic Principles of the Standard Cost System

Trends in solving the organization of work and production management problems led to a revision of accounting production costs methods in the United States in the early 20s of 20th century. The standards for material and labor costs began to be developed for the calculation of unit prime cost, pricing, operational management and cost control. The method of the standard unit cost calculating has been called standard cost in the United States and the United Kingdom.

The British Institute of Chartered Accountants considers standard cost as the preparation and application of accounting system for standard costs, their comparing with actual costs, and analyzing the variances of the actual quantity of products from standard ones by reason and place of origin.

The content of the standard-cost system takes into account what is to happen. This system doesn't take into account what has happened. However, the variance that has arisen is reasonably reflected. It is based on an implementation of material, energy, labor, wage, and other costs associated with the production of any product or semi-finished product. In addition, the established norm cannot be underestimated. Exceeding the norm means that it was incorrectly set.

The basic principles of the standard cost system are:

- costs standardization and mandatory compilation of standard calculation for each product. Standard calculation as a means of accounting, planning, control, reflects already achieved level of progressive standards and organizational measures implementation in the production;
- systematic detection of variances of actual costs from current materials and wages rates;
- constant accounting of standards changes and determining their impact on the product's prime cost;
- preliminary costs control on the basis of primary documents and fixation of variances from the norms at the moment of their occurrence with simultaneous identification of their composition, place of origin, culprits and reasons for a deeper study of the possibilities of influence on their size;
- early compilation of the standard cost calculation and its analysis in order to identify the cost reduction reserves during the production preparation period;
- calculation of the actual prime cost of groups (types) of homogeneous products based on their standard prime cost and its variances;
- monthly or quarterly accounting of changes made to the established standards making it possible to quickly manage the process of organizational and technical measures implementation.

The basis of the standard-cost system is a preliminary (prior to the start of the

production process) rationing of costs according to cost items:

- basic materials. Material standards are mainly based on the prices level at the time the standards are developed or the average prices that will prevail over the period of the standards application;

- remuneration of basic workers. Wage rate standards for process operations are often average rates. The payment of all production operations in a piece form, and the release of all materials with specifications is the most suitable for practical application in the standard-cost system. The need to account for the wages of the main production workers disappears, since the piecework is standardized;

- production overheads (salaries of auxiliary workers, auxiliary materials, rent, depreciation of equipment, etc.). The overhead costs cover many separate items, which are difficult or inappropriate to measure accurately. That's why overhead costs are presented in monetary terms without quantitative norms specifying. The exceptions are the essential components of overhead costs which quantitative standards can be set in some cases;

- business costs (sales). Pre-defined standards are regarded as fixed rates in order to bring actual costs into line with standards through the enterprise skillful management. When variances occur, standard rates do not change, they remain relatively constant throughout the set period, except for major changes arising from new economic conditions, significant increases or decreases in the cost of materials, labor, or changes in production conditions and methods. Variances between actual and projected expenses arising in each reporting period are accumulated over the year and are completely written off to the financial results.

The standard cost system is one of the important cost control and management tools. Its advantages over other traditional accounting and control methods are:

1. Accounting records in special accounts, not their documentation, are the basis for detecting variances from standards in the process of resource consumption. Managers are tasked not to document variances, but to prevent them.

2. In accounting, the identified variances reflect only those companies that use current standards.

3. Allocation of special synthetic accounts for accounting of variances is carried out according to the items of calculation, by factors of variances.

4. Taking into account the established standards, it is possible to determine in advance the amount of expected costs for the production and sale of products, to calculate the unit cost of the product for the purpose of establishing contract prices, and to prepare a draft income statement. The management of firms is provided with information about the variances from the standards, the causes of their occurrence and uses it to make prompt management decisions.

5. The technique of production costs keeping and product's prime cost calculation is relatively simple because standard prime cost cards with the indication of the standard amount of production costs are printed in advance.

6. The standard cost system allows for a smaller number of employees because this accounting system is carried out by the principle of exclusion, i.e. only variances from the standards are taken into account. The more stable the enterprise is and the more standardized the production processes are, the less laborious it is to account for

costs and calculate the prime cost of production.

The standard cost system can influence the profitability of an enterprise by:

- detection of over expenditures reducing the enterprise profit;
- minimization of accounting work related to products costing;
- providing managers with accurate data on the cost of production, the sales department can plan sales volumes and set optimal prices on its basis.

The advantages of the standard cost system are providing information on the expected costs of production and sales of products; pricing on the basis of the unit cost calculated in advance; drawing up a statement of profit and losses, highlighting variances from the standards and the reasons for their occurrence.

The standard cost system has its drawbacks, too. For example, it is difficult to make standards in accordance with the technological map of production. Changes in prices caused by competition for commodity markets, and inflation complicate the calculation of work in progress and the value of finished goods at stock. However, standards can't be set for all production costs, it can sometimes weaken their control. Executing a large number of different orders, it is inconvenient to calculate the standard for each order in a relatively short time. The average cost is used in such cases instead of scientifically established standards for each product; it is the basis for determining the price of the product. Despite these shortcomings, executives from overseas firms use the standard cost system as a powerful tool for controlling production costs and calculating production prime costs, management and planning to maximize profits.

Historically, the standard cost system is a precursor to the national regulatory accounting system. In 1931 the Institute of Management Engineering began a detailed study of possible ways of implementation and practical application of the standard cost system. It was presented by Professor M. H. Zhebrak in the form of a standard method of accounting. Comparing the national regulatory method of cost accounting and standard cost system, we can draw the following conclusions:

- both methods take into account costs within the limits;
- both methods offer full cost accounting;
- over expenditures refer to the results of financial and economic activity and are not included in production costs;
- the traditional regulatory accounting system is not oriented to the implementation process (focused on production), so it does not allow to justify prices;
- there is no separate accounting of changes in the cost norms according to the standard cost accounting system because these norms are established for a long period; they are revised in case of important changes in the organization of production.

6.2. The Standard Method Calculation Features

The standard method of production costs accounting allows to identify and establish the reasons for the variance of actual costs from the current norms of basic costs and cost estimates for maintenance of production and management.

The variances should be documented and recorded. They are accounted in order to provide information on the amounts and causes of additional, non-standardized costs and to take the necessary organizational and technical measures.

According to the standard method, a systematic accounting of current standards changes should be carried out. This record is based on norm change notices and is used to clarify regulatory calculations.

The enterprises should establish the procedure for registration of changes in the rules, as well as notification of interested departments and workshops about these changes. According to the notice on changes in the technical and planning documentation are made for registration of primary documents (requirements, limit cards, working meetings, waybills, etc.). They specify the current expenditures for the issuance of raw materials and semi-finished products, as well as for salary.

That is why the organization of regulatory accounting is caused by the need to develop progressive, technically sound standards for the materials costs, labor costs and wages per unit of production and its components (parts, components and other assembly materials). The standards that characterize labor costs and wages are expressed in terms of production and pay rates and rates for each technological operation.

Regulatory data on material costs for calculations are taken from specifications developed by the Chief Technology Officer. Data on standard costs for wages (regulatory costs of time, quotes for transactions) are prepared by the Department of Labour and Wages.

Implementation of organizational and technical measures, more sophisticated equipment, and rationalization proposals leads to lower materials and wages costs per unit of production, and, consequently, to set norms changes. These changes are recorded by the Production Preparation Department in special messages separately accounted for changes in material cost standards, regulatory time and prices, workshop and other costs. The messages give the name of the part (product) that relates to the change of standards, the old and new standards, the difference from the change of the rule, the date and justification of the reason for the introduction of the new rule.

Accounting for standard changes requires timely standards clarification. The majority of changes relate to labor costs.

Standard changes are grouped for reasons, product names, their homogeneous groups, and workshops. They are made into regulatory calculations. New standards are usually introduced from the 1st of the month following the month (quarter) change.

Accounting for norm changes makes it possible to clarify the factors of actual prime cost formation and to find out the economic efficiency of the implemented rationalization proposals and conducted organizational and technical measures. If standard changes there is a need to reassess the work in progress at the date of change.

This is due to the fact that the balance of work in progress, which goes to the 1st of the reporting month, is calculated according to the old standards, and the accounting is calculated based on the costs of the new rules. The re-evaluation of

work in progress is carried out using coefficients (indexes of change in standards). The balance of work in progress transferred to the 1st day of the reporting month is calculated according to the old standards, and the accounting costing is based on the costs of the new standards. Revaluation of work in progress is carried out using ratios (indexes of changes in norms).

Systematic accounting of norms variances from the costs established at the beginning of the month, on materials (by each name), wages of workers and regulatory costs in the production process is an important and obligatory moment of the regulatory accounting organization. The structure of variances in the regulatory accounting system can be represented as a diagram in the modern interpretation.

The current norms are the norms by which the raw materials and materials are released and the work performed is paid by the technological process. Variances from the norms are considered as savings, additional costs of raw materials, wages and other additional costs (including those caused by replacement of raw materials, payment for work not provided by technological process, surcharges for deviations from normal working conditions, etc.) are also considered variances.

Variances from norms are taken into account by their place of origin (shops, sites, crews), causes and culprits on the basis of documentation, signal documentation usually having a different color or color band. Such signaling documents are material requirements for additional (extra-marginal) release of materials to fill deficiencies and lack of details, acts for replacement of materials, extra pay slips for pay, meetings for performing operations not foreseen by technology, etc. Some variances are revealed on the basis of other documents in which the actual expenditure is reflected in comparison with the standard (acts of cutting materials, charge notes, etc.).

At the end of the reporting period variances summary sheet is made separately by materials and wages.

The analysis of these variances gives the opportunity to take measures to eliminate over-expenditures, avoid losses, to spread the experience of economical waste of materials and use of working hours.

The standard costing is the basis for determining the actual prime cost according to the standard method of accounting for production costs and costing products. The basis for the preparation of regulatory cost estimates for individual types of products and semi-finished products is the developed cost standards. They are formed in accordance with the technical documentation for the production (production drawings of components and units developed by the design office).

Standard calculations are made according to the standards in force for this reporting period. However, the planned calculations are based on the average annual cost standards. Thus, the regulatory costing of a product reflects the technical level reached by a given enterprise on a certain date, and its value is different on different dates; planned calculation is the average between what was achieved by the enterprise at the beginning of the planning period and what should be achieved by the end of that period. Thus, the planned calculation is built on the product.

Standard calculations are used for:

=> determination of the actual production prime cost by algebraic summation of the standard cost and the norms and variances identified during the reporting

period;

=> identification of results of economic activity of workshops and precincts;

=> estimates of work in progress and defect, etc.

Standard calculations are made for all types of products manufactured by the enterprise, sequentially for details, units and products in general or, only for products in general. Calculation of parts and components is only made on the basis of cost items. The production and management maintenance costs are added to the calculation for the product. The material costs are decoded by separate groups of materials. The regulatory calculations are calculated for the enterprise under structureless management.

Consolidated production cost accounting data are used for calculation maintained in the accounting department in the special information on groups of homogeneous products and cost items.

The statement of production costs summarizes all the costs on the manufacture of a homogeneous group of products at the workshops of the enterprise. Data on material costs, wages and other costs are reported in a grouped form. For the sake of simplicity, only the variances from the cost norms are given, norms changes in the reporting month are taken into account.

The commodity products standard cost is calculated as the product of the quantity of goods shipped for the norms of expenses for each item of costing in the reporting period.

According to the standard accounting method, the actual production prime cost (homogeneous groups or types of products) is calculated as the algebraic amount of regulatory costs, norm changes and variances. It can be expressed by the formula 6.1:

$$A = C \pm V \pm Ch \quad (6.1)$$

where: C — current expenses according to the established plan norms;

V — variances in current consumption rates;

Ch — changes in current cost standards.

The actual prime cost of a production unit is determined using the indices of variances calculated as the ratio of the actual cost of the commodity to the standard one.

6.3. Advantages and Disadvantages of the Standard Method Calculation

The standard method of planning and cost accounting is one of the most common and effective methods recognized worldwide. However, it has both advantages and disadvantages.

The advantages of standard method of cost accounting are:

- ✓ the total production prime cost is known before the end of the operating cycle;
- ✓ this method meets the requirements of the legislation on financial

accounting and taxation;

- ✓ the standard method allows to coordinate the movement of resources in the course of production activity of the entity;

- ✓ this method makes it possible to carry out a detailed analysis by calculating variances of the actual indicators from the standard ones, which allows to identify problem areas requiring special attention of management personnel;

- ✓ setting product-specific standards helps employees generate awareness of similar costs;

- ✓ the standard method of cost accounting encourages the search for optimal opportunities for the use of resources by developing standards for their use.

The disadvantages of the standard methods are:

- ✓ the problem of developing and selecting acceptable standards that would be optimal for both management in its desire to improve the efficiency of the enterprise and workers;

- ✓ the application of the standard method is not justified in the case of product heterogeneity because this method is most effective for mass, batch production, when it is a sequence of standard operations;

- ✓ accounting for variances can be erroneous leading to inaccurate calculations and incorrect management decisions;

- ✓ it is difficult to develop and account for standards in the context of high inflation and unstable economic situation; that's why it becomes problematic to assess their impact on the composition of profit and loss of the enterprise;

- ✓ significant initial costs of implementing the regulatory method and significant costs to support its effective functioning;

- ✓ the high impact of the composition and quality of the regulatory framework on the successful implementation and activity of the entity;

- ✓ this method application does not provide the management apparatus with sufficient information to find ways to improve its operations, expand its product range, and make management decisions regarding demand or underutilization of production capacity.

6.4. Analysis of Costs Variances

Variances are the absolute differences from the current standards for materials, semi-finished products, wages and other direct costs application and the relative amount of the differences between the actual and standard overhead costs. There are such variances:

- 1) positive (savings) and negative (over expenditure);

- 2) material (they are distributed between the remnants of materials, work in progress and finished products) and value (they are attributed to the sales prime cost);

- 3) documented (defect, natural and technological losses) and undocumented (not taken into account) (theft), calculated (for example, manufacturing costs);

4) by budget type there are variances from the general static budget and the flexible budget;

5) favorable and unfavorable;

6) by factors (in terms of price and quantity, combination of sales and quantity, cost and price, market share size and market size);

7) by items (in the context of the above-mentioned splitting of the general variance).

The variances analysis is performed for each type of cost, using the methods of factor analysis:

a) direct costs of materials (actual volume of activity)

– variances caused by material consumption rates changes = (actual materials consumption – regulatory costs for actual production volume) x regulatory unit price of materials;

– variances caused by prices change for materials = (actual unit price – regulatory price) x actual volume of used materials;

– total variance of material costs = (actual quantity of consumed materials x actual price of materials unit) – (standard quantity of materials on actual volume of production x standard price of materials unit) = norms variance + price variance;

b) by direct labor costs (actual activity)

– variance caused by labor costs changes (labor productivity, production laborious) = (actual labor costs – standard labor costs for the actual production volume) x standard payment level for man-hours;

– variance caused by salary level = (actual level of man-hours payment – standard level of man-hours payment) x actual labor costs in man-hours;

– total wage variance = actual wage costs – regulatory amount of wages for actual production volume = variance at the expense of working time + variance at the expense of the wage.

c) by production overhead costs

– net overhead costs variance = actual overhead costs – distributed (written off) overhead costs at the standard rate for the actual volume of activity;

– variance caused by the cost rate change under the effect of production volume variance = total production costs on a flexible budget calculated on the actual volume of activity – distributed and written off the total production costs at the standard (static) rate on the activity actual volume;

– cost level variance = actual overhead costs – overhead costs on a flexible budget for the actual volume of activity;

– variance caused by changes in the volume of activity adjusted for the flexible budget and unincluded in the amount of net variance = distributed and written off general production costs at the budget rate for the actual amount of activity – overhead costs for a static (initial) budget (regulatory costs for regulatory activity).

–

Materials variances. Material variances mean that the materials used in the production depend on two factors: their price and their quantity. Thus, variances in the use of materials and variances in the price of materials can be calculated (Fig. 6.1).

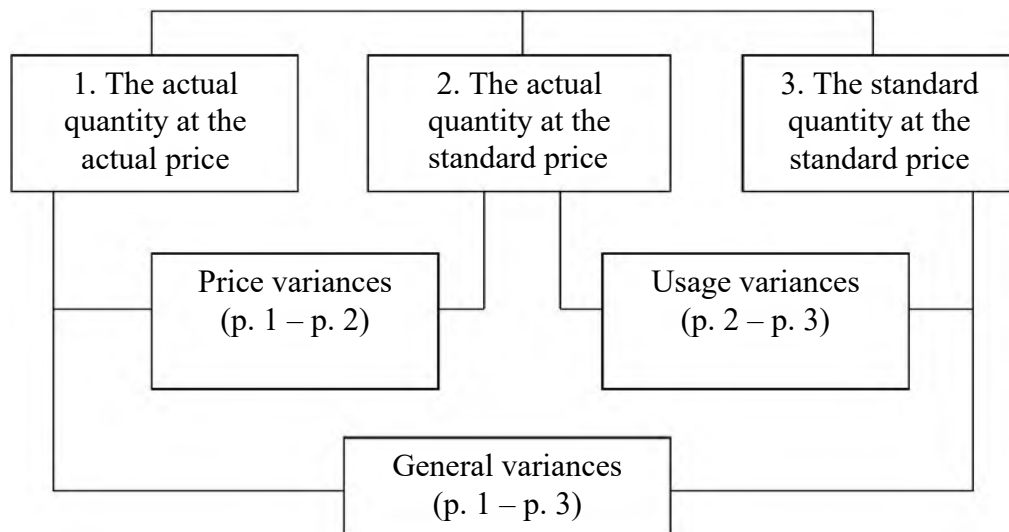


Fig. 6.1. Price and basic materials usage variances

Materials price variance. Price variance is the difference between output actual and standard price multiplied by output quantity.

The production plant usually sets a standard price for materials meeting certain technical requirements. Factors such as market conditions, producer prices and the order optimum size of are taken into account. The materials price variance (MPV) occurs when an entity pays a higher or lower price than the regulatory standard. MPV is the difference between the actual price (AP) and the standard price (SP) multiplied by the actual quantity of purchased materials (actual quantity – AQ). In the form of an equation, it looks like this 6.2 [118]:

$$\text{Price variance} = (\text{Actual Price} - \text{Standard Price}) \times \text{Actual Quantity} \quad (6.2)$$

Materials usage variances. Usage variance is the difference between the actual and the standard inputs, multiplied by the regulatory unit price of the input.

The standard amount of materials used in a product creating is significantly predetermined by the technical requirements or specifications of the product, it is usually set by the technological units of the enterprise. A variance due to a change in the volume of used material occurs when a larger or smaller amount is used to obtain a product compared to its regulatory volume. The variance shows differences from the regulatory amount and does not include any effect of the price difference. Thus, material usage variance (MUV) is equal to the actual quantity (AQ) minus the regulatory quantity (SQ) multiplied by the standard price (SP) 6.3 [118]:

$$\text{Usage variance} = (\text{Actual Quantity} - \text{Standard Quantity}) \times \text{Standard Price} \quad (6.3)$$

Labor rate variance. The standard labor costs for any product are equal to the standard amount of working time multiplied by the wage rate to be paid during that time. Thus, actual labor costs may differ from the standard ones due to changes in wages and the amount of labor. There are two types of variances: wage rate and labor productivity. Labor rate variance (LRV) occurs when the average wage rate is higher or lower than the regulatory rate. To calculate LRV the difference between the actual rate paid (AR) and the standard rate (SR) should be multiplied by the actual hours of direct labor worked (AH) 6.4 [118]:

$$\frac{\text{Planned cost}}{\text{Planned quantity}} = \frac{(\text{Planned cost} - \text{Actual cost})}{\text{Planned quantity}} \quad (6.4)$$

Labor Efficiency Variance. As a rule, the technological unit of the enterprise establishes the standard amount of direct labor hours required to produce the product. Labor efficiency variance (LEV) occurs when workers spend more or less than the standard amount of direct labor hours to complete the required operations. To calculate variance caused by a change in labor productivity (LEV), it is necessary to multiply the difference between the actual hours worked by direct hours (AH) and the standard (SH) by the standard direct labor hour rate (SR) 6.5 [118]:

$$\text{LEV} = (\text{AH} - \text{SH}) \cdot \text{SR} \quad (6.5)$$

In the system of regulatory costs, overhead costs are distributed among the products on the basis of the standard rate of overhead costs. The rate is set before the beginning of the period by dividing the planned cost of production overheads by the standard volume of products or activities. The total amount of production overheads varies according to different levels of the planned volume, and some overhead costs are constant, therefore, the total overhead costs do not change in direct proportion to the volume. **Overhead budget variance (OBV)** shows how was cost effective. OBV equals the difference between actual overhead costs (OH) and total budgeted overhead costs (BOH) for the actual output achieved.

Overhead volume variances (OVV) are caused by output at a level other than that used in calculating the regulatory overhead rate. OVV is the difference between the budgeted amount of overhead in actual achieved volume (BOH) and the applied overhead of planned production (applied OH) 6.6 :

$$\text{OVV} = \text{BOH} - \text{Applied OH} \quad (6.6)$$

OVVs show that an enterprise's assets produce more or less units of output than expected, since fixed overhead costs are not unchanged per unit of production, any variance from the planned output will cause the accepted overhead rate to be incorrect.

Discussion and self-review questions

1. *What is the standard cost system?*
2. *What are the basic principles of a standard cost system?*
3. *What is standard calculation?*
4. *What are standard calculations for?*
5. *What are the main advantages and disadvantages of the standard method of calculation?*
6. *How to calculate material variance?*
7. *What is the analysis of labor costs variance?*

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THEME 7. COST MANAGEMENT

7.1. Traditional Cost Management Methods

Effective work of the enterprise is to obtain the maximum possible profit, but in order to get this maximum profit it is necessary to allocate costs rationally.

Not all enterprises realize the need for continuous improvement of strategy, and accordingly of management methods, nevertheless, the executives of leading Ukrainian enterprises are actively seeking for innovative methods, paying more attention to management accounting. One of its priorities is to improve the methods of cost management, which are based primarily on the needs of strategic management[53].

While calculating the cost of products or services, the cost of consumed resources is allocated to the relevant accounting objects. The direct costs of materials and labor are spread on the basis of a direct causal link between them and the objects of accounting. The overhead distribution of the classic financial approach can be done using different distribution bases. Applying a proportional cost allocation to any of the bases is approximate and distorts the true cost of the assets, but it is the easiest and most convenient method to use. In fact, in the activity of enterprises there is always a disproportionate absorption of costs by different products or services.

The prospects for enterprise development depend to a large extent on the cost behavior and their management. The ability to manage them systematically and rationally in times of deterioration of market conditions increases the chances to survive. Cost management is an important function of the economic mechanism of the enterprise, which is confirmed by the numerous of scientifically substantiated conceptual designs, methods and models of the management system. Cost management, in turn, should be seen as a set of well-defined processes characterized by interconnections and continuity of realization.

However, the main problem is that in practice these costs are unjustifiably ignored. As a result, there are frequent cases of bringing to a loss level and sometimes to bankruptcy of enterprises. Accordingly, there is an urgent need to determine the nature and characterization of the components of each of the processes of the cost management system, which will further enable their implementation in practice[101].

Cost management is the process of purposeful cost formation in terms of their types, locations and carriers, while constantly controlling the level of costs and stimulating their reduction. The cost management system includes the following organizational subsystems:

- finding and identifying factors for saving resources;
- rationing of resources costs;
- cost planning by their type;
- cost accounting and analysis; stimulating resource savings and reducing costs.

Such subsystems are managed by the respective structural units of the enterprise, depending on its size (departments, bureaus, individual performers).

Cost management in the enterprise can be described as a process of purposeful formation of costs by their types, places and carriers and constant control of the level of resource consumption, savings stimulation.

Enterprise cost management involves performing of all the functions inherent in managing by any object: designing, making and implementing decisions, as well as controlling their execution.

Cost management functions are realized through the elements of the management cycle: forecasting and planning, organization, coordination and regulation, activation and stimulation for implementation, accounting and analysis.

The organization of a cost management system is associated with the identification of cost centers and centers of responsibility for their compliance, as well as the development of a hierarchical system of linear and functional relationships of the units and specific employees, who perform the entire complex of production and accounting work.

Cost formation of an enterprise can have both a financial aspect, an organizational aspect and a motivational aspect of cost management.

In the theory of loss management there are many methods of their accounting. Each of these methods has its essence, which is as follows:

- direct costing;
- absorption-costing;
- standard-cost;
- ABC method;
- target-costing;
- kaizen-costing;
- Cost benchmarking;
- SVP analysis (break-even point analysis);
- bone-killing;
- LSS analysis;
- VCC method
- EVA is an economic value-added method.

The name of the system "**direct costing**" (accounting of direct costs) was introduced in 1936 by the American D. Harris. Information-analytical capabilities of direct-costing allow to use it for making rational management decisions in the field of break-even production, pricing. Since the 1960s, "**direct costing**" provides for cost accounting not only in terms of direct variable costs, but also in terms of variable indirect costs.

The main feature of direct costing is the distribution of costs, depending on the nature of their relationship with production volumes. The main characteristics of direct costing are the following:

- compulsory classification of costs for fixed and variable;
- calculating of reduced cost (based on variable costs only) by assets or by responsibility centers;
- special scheme of construction of the income statement (margin approach);
- estimation of inventories of work in progress and finished goods at reduced cost.

The method involves the creation of an independent system of internal management accounting for medium and large, with complex internal structure, large-scale or mass type of production, enterprises.

It is more appropriate to use this method in the conditions of depression and inflation than in the conditions of economic recovery, because in conditions of depression the manager controls the variable costs more than the fixed ones. In this case, operational control is also carried out at fixed costs.

In this case, standard, regulatory costs are used to control cost, that is, "direct costing" is combined with "**standard costing**", the basis of which is the calculation of expected costs.

The term "standard cost" literally means "standard cost": "standard" - the amount of production costs (material and labor) required to produce a unit of production or the pre-calculated cost of producing a unit of production; "cost" is the monetary expression of the production costs per unit of output [15].

The system of "standard costing" was laid out in the first quarter of XX century. in the articles of the American scientist D.CH. Harrison, has been transformed into two positions:

- 1) costs should be reflected in comparison with standard (regulatory) ;
- 2) deviations detected by comparisons of actual costs with standard ones should be identified for the reasons, that caused them.

This made it possible to recalculate the actual use of enterprise resources.

Expected costs are determined on the basis of the norms and regulations, that the enterprise should strive for. In case of deviation of the set parameters, it is necessary to study the reasons for these deviations and take measures to bring the control system to standard, back to normal.

The "standard-costing" system in the framework of foreign experience was first used in machine-building enterprises, and then in other industries to calculate production costs, control of production and managing it.

For Ukraine it is recommended for use by industrial enterprises with mass production.

"**Absorption-costing**" originated in the 1930's in the US. The peculiarity of the method is that direct costs are directly attributed to the cost of individual products on the basis of primary documents, and indirect costs are allocated to specific objects on the basis of the distribution base. It is advisable to use if the enterprise produces only one or more products, but in a small volume; the amount of overhead costs varies significantly from period to period; in the presence of long-term contracts for the execution of a certain amount of work [90].

ABC-method – "Activity-based costing" (cost accounting by type of activity), because the method increases the validity of overhead costs for a particular product, allows for a more accurate costing, provides the relationship of the received information with the process of cost formation.

The essence of this method is to allocate the amount of enterprise costs over a period or the cost of a particular product is determined on the basis of the costs of the respective processes and operations.

“ABC Method” is based on cost sharing, based on their importance structure for product creation as follows:

- Group A - the most significant expenses (not less than 50%);
- Group B - significant costs (not less than 25%);
- Group C - other costs (does not exceed 25% of total costs).

The ABC method is a technology, that goes beyond simply accounting for costs and becoming an effective cost management technology.

In order for a product to be able to maintain its position in the market, it must be competitive, which implies a combination of, at first glance, incompatible characteristics - quality and relative cheapness. An effective way of achieving this is to use a targeting method of management, such as **target costing**, which is the concept of target cost management.

Target-costing method can be defined as a cost-benefit management model, that focuses on the continuous reduction and preventive control of costs, based on existing market conditions by combining the efforts of marketing, design, production and other business units.

The main difference between this method of cost optimization and other methods is the specific approach to cost formation. Instead of the usual way of forming the expense part of production at the enterprise and to demand the profit for it from the consumer, the focus should be placed only on his willingness to pay for the product, that is offered [106].

The main obstacles to the implementation of "target costing" in domestic enterprises is the need to create an effective and perfect management accounting system, good information support for management decisions.

The “**Kaisen-costing**” method is ideologically similar to the target-costing method. It is also used to achieve the target cost, but, unlike target costing, is in constantly improving the quality of processes throughout the enterprise with the participation of all its employees. The concept of Kaisen-costing provides the presence of individual employees, whose main task is the technical and organizational improvement of the business processes of the enterprise [37].

The interaction of target-costing and kaisen-costing methods will help to effectively manage cost, since they implement the ideology of reducing the level of individual cost items and the cost of the product as a whole to some required level. Herewith the target-costing solves this problem at the stage of planning and development, and kaizen-costing - at the stage of production.

Benchmarking or method of reference comparison can be characterized as a systematic search and implementation of the practices of the most successful enterprises, which should increase the potential and results of the enterprise.

The benchmarking process involves the following steps:

1. Establishment of indicators and functions to be studied in calibration.
2. Selection of benchmark companies, that show the best results from the indicators and functions selected in the previous step
3. Gathering and processing data to distinguish between the benchmark level of indicators or functions under consideration and the level, achieved by the enterprise, and to identify trends in the benchmark level.

4. Formulation of goals and development of the plan of actions.

While carrying out this procedure, it is necessary to take into account the dynamics of both the whole market environment of the enterprise and the changes that will take place for the enterprises- standards.

Another method of cost management is *CVP analysis* (break-even point analysis), which is based on a comparison of three values - enterprise costs, sales revenue and profit, the dependence of which allows to determine the volume of sales, which at known values of fixed costs of the enterprise and variable costs per unit of production will ensure break-even activity or planned financial result.

CVP analysis allows to determine the sales volume, at which break-even production or a given financial result is achieved, it is a simple, visual and operational method.

It is based on a comparison of three values - the cost of the enterprise, sales revenue and profit, which should provide break-even or planned financial result.

The goal of “*cost-killing*” method is to minimize costs without the damage to their activities and prospects. “Cost-killing” involves reducing costs, which are limited by businesses. Cost minimization in the context of cost-clearing is possible through the participation of the company in tenders, severe pressure on suppliers, reduction of the chain of raw materials, search for new suppliers or optimization of the structure of existing ones.

A fairly new method is calculating of costs by stages of the product life cycle - LCC analysis. The essence of the “*LCC-analysis*” method is to calculate costs by stages of product life cycle and is used in strategic management, covering a period of several years. It is expedient for Ukraine to apply this method to those enterprises, that produce non-standard range of products [97].

LCC analysis is the only cost management method, that takes into account the impact of inflation by discounting cash flow in decision making. The advantages of this method are to obtain in the long term an estimate of the costs incurred and to cover them with the corresponding income; providing an accurate forecast of all costs and the ratio of revenue and costs to the production of the product as a whole; providing a strategic vision of the cost structure and comparing it with the revenue structure. The disadvantages are the lack of periodization of financial results; uncertainty in accounting for overhead; may require a great deal of additional information [49].

LCC analysis should be used by the enterprises, that produce a range of non-standard products and are volatile in terms of market niche demand parameters.

The “*VCC method*” examines the consumer value chain, in particular, provides for the analysis of costs beyond the sphere of direct influence of the enterprise. It is used in strategic cost management. The peculiarity of the “VCC method” is the compliance of 2 conditions: high level of qualification of the management staff and employees of accounting and analytical services in the enterprise, where this method is applied.

For a successful choice of cost management method, it is necessary to determine, what the purpose of the enterprise is and what goals it seeks to achieve.

Based on this information, it is possible to choose an effective and efficient management model:

1. Exit to new markets - VCC method, LCC analysis, target costing, CVP analysis, cost benchmarking;
2. Strengthening in existing markets - cost benchmarking, kaizen-costing;
3. Growth of profit in the short term - ABC method, bone-killing;
4. Growth of profit in the long run - Target-costing, Kaizen-costing;
5. Increase of competitiveness of the enterprise at the expense of low costs and corresponding low price - VCC method, target-costing, benchmarking;
6. Output of new products and launching them into a new or existing market - LCC-analysis, target-costing [88].

The most recent method, that has recently become practically used in cost management, is EVA - an economic value-added method. This method allows to bind value creation to specific groups of employees or units and thus obtain the criterion for differentiated remuneration for the work done in the enterprise.

Nowadays, Ukrainian companies mostly use classic, traditional accounting methods, such as calculating the cost of production with full cost sharing, without paying due attention to foreign experience. All modern methods are effective tools for managing costs, but it is not always advisable to use them in the purest form, because the best combination of traditional and modern methods of cost optimization, depending on the situation, can give better results in achieving the success. The feature of the activity of enterprise, its organizational structure, priority areas of development and goals for choosing the optimal method of cost management also play role.

7.2. Calculation for “Kaizen system”

Globalization processes dictate new conditions for operators of now global market for goods and services. Competition is forcing Ukrainian companies to look for alternative approaches to profit optimization, in particular by minimizing costs.

The development of Japan's cost management system is not in place, and it has developed a kaizen technique, that has become the key to Japan's competitiveness in the global market.

The “Kaizen costing” method is gaining ground in US and European enterprises. It provides improvements and cost reductions, in which all employees - managers and workers - can participate, which makes it possible to reduce unproductive costs. It is predominantly used in sectors of economy with long life cycle of production [23].

The method of cost management - "Kaizen costing" is used to achieve the target cost, but unlike "target costing", is to improve constantly the quality of processes throughout the enterprise with the participation of all its employees, which makes it possible to reduce unproductive costs [49].

The Kaizen concept is a critical condition for understanding the differences between Japanese and Western approaches to minimizing costs. Due to its high

efficiency, this technique has been adapted and widely used by many leading companies around the world. Questions remain debatable, regarding the possibility of implementing this concept at Ukrainian industrial enterprises in order to improve the cost accounting system and to calculate the cost of industrial products as a whole.

The Kaizen costing concept was first introduced by Yasuhiro Monden in the late 1990s. In the Monden's presentation, kaizen-costing takes the form of a , that helps to reduce the cost of production and is closely related to the cost management system in the company [48].

In his work, Monden described two types of "kaizen costing".

The first type is aimed at achieving "eligible costs" through continuous steps, that help to reduce the gap between expected and target revenue.

The second type is responsible for actions, that are responsible for improving the process of activity, if, after 90 days from the release of a new product, the gap between the target and actual costs has little or no change at all. To control this process, a team (kaizen-cost committee) is created, which deals with functional-cost analysis.

Monden presented "kaizen costing" in the cost management system so, that it began to mean a tool, with the help of which the reduction of the cost production takes place. Thus, tandem target-costing and kaizen-costing formed into a single calculation of the entire product life cycle [34].

As for the concept of "kaizen-costing", it has more specific meaning. "Kaizen" translates as "improvement" (from "kai" - "change" and "zen" - "good") and is usually used to refer to the process of continuous and gradual improvement, that becomes possible due to the active involvement of all employees in the conducting of business activities of the company.

Thus, the essence of kaizen is perfection. The central idea behind this research concept is that without improvement, the company should not spend a day and means providing the necessary level of cost of the product and finding opportunities to reduce costs to some target level.

Kaizen's aim is to improve the operations of the company or its individual units with the help of internal reserves, without attracting large investments from the outside. That is, a predefined level of cost reduction is achieved, which is constantly adjusted towards its reduction.

Cost reduction targets are set on a regular basis, for example, monthly analysis and analysis of variance are conducted at the end of each period to compare target cost reduction with actual cost. Thus, Kaizen is the philosophy, that progressively improves business processes, product quality, and "Kaizen-costing" is a cost-cutting tool, used by managers to achieve target costs and ensure high profits.

Continuous improvement is achieved precisely at the expense of workers, who are the closest to the process and know better how to implement it. When Kaizen is used concerning the human activity in his workplace, it means a process of continuous improvement, that involves all employees of the company - from the senior manager to the employee.

The main ways to reduce costs are to eliminate seven major types of waste (Figure 7.1):

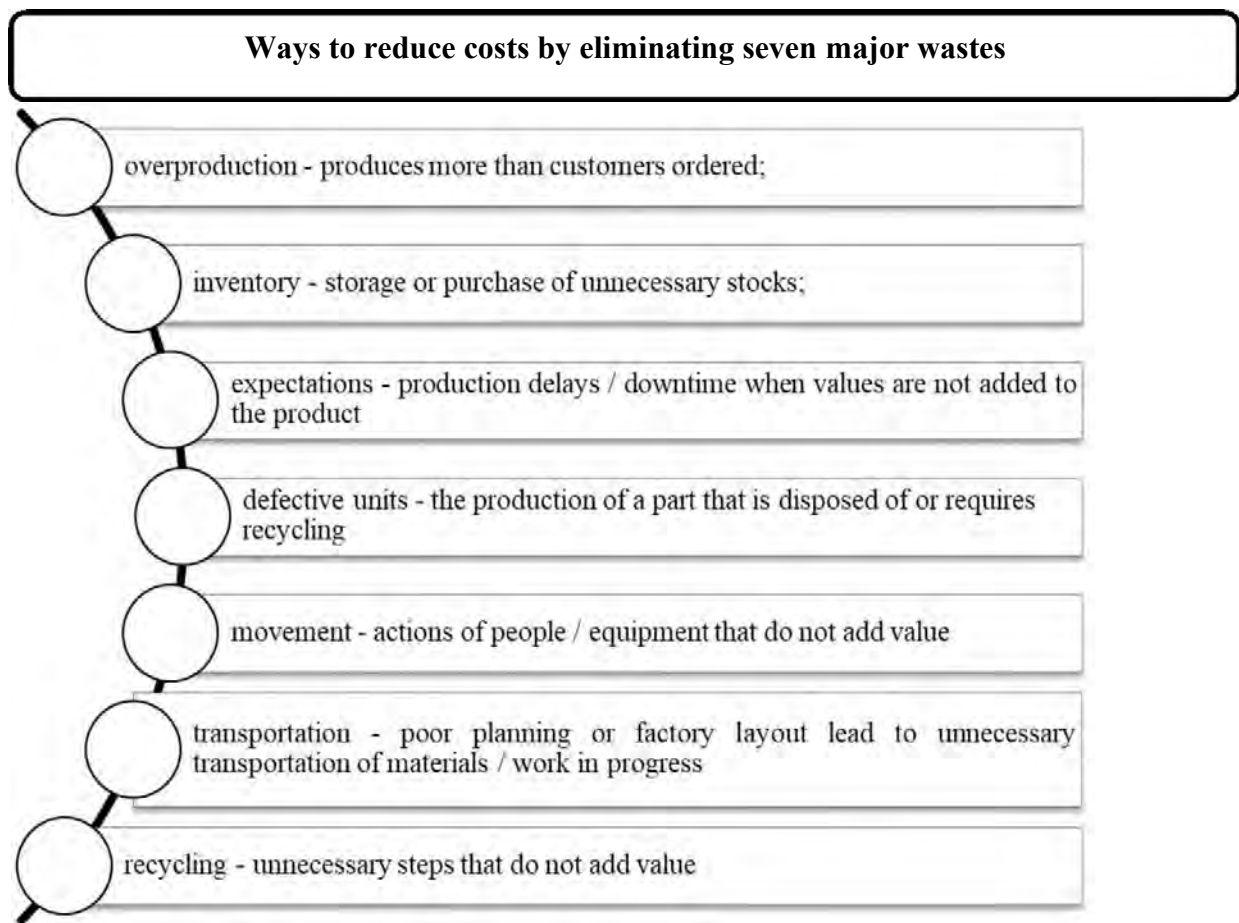


Fig. 7.1. Ways to reduce costs by eliminating seven major wastes

Source: formed by the author

Considering cost cutting methods, let's analyze some companies' statistics on using of this approach.

Many Japanese companies have introduced the “Kaisen-costing” approach. In such companies as Toyota and Canon, a total of 60-70 offers per employee are recorded and distributed annually. However, about 90% of these proposals were accepted by the company.

In 1999, over 7,000 Toyota employees represented more than 75,000 proposals at one US plant, 99% of which were implemented. It is also worth noting that the use of this system allows Toyota to reduce the negative impact of cars on the environment [28].

Consider graphically what the cost reduction of Japanese companies looks like according to Kaisen-costing (Fig. 7.2).

Enterprises that use this system increase the profitability and competitiveness of their businesses without making significant investments. Daily improvements do not require large financial costs.

For the implementation of “Kaizen”, all employees simply need to use their mind and focus on the work being done. In companies where the kaizen methodology is already implemented, every time a person sees the opportunity to do their job better, he must act and accordingly change the standards of performance of individual operations [79].

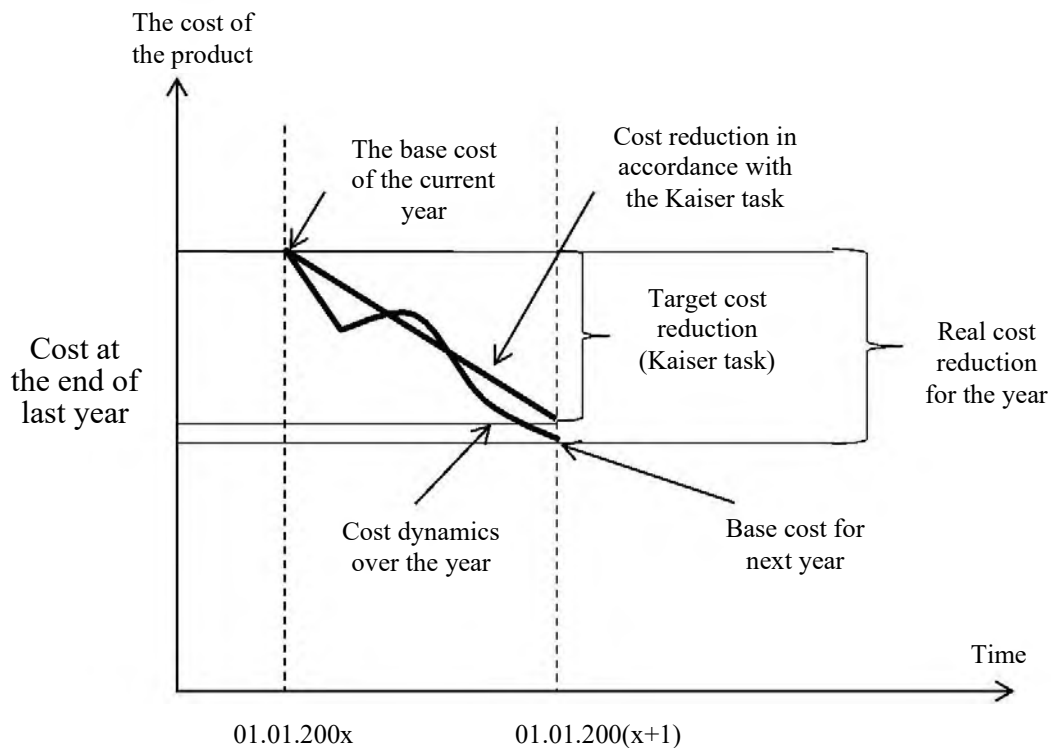


Fig. 7.2. Cost reduction at Japanese companies according to “Kaisen-costing”

All businesses face similar challenges in a globalized market environment:

- maximizing profits by minimizing all types of costs;
- stable development;
- providing advantages over competitors.

But if some companies succeed in achieving these challenges by becoming market leaders, the others are forced to constantly struggle for survival.

Today, there are two main approaches to solving the problem of improving the efficiency of the enterprise.

The first, mainly supported by Western companies, is based on innovations - the use of the latest expensive technologies, as well as the investment of huge funds.

The second, supported by Japanese global market operators, uses such tools as common sense, checklists, and methods that do not require significant expense. Just this approach is called "kaizen". The main differences between the two approaches considered, are presented in Table 7.1.

It is worth noting, that Ukrainian enterprises do not hurry to implement such a cost management system as Kaizen. There are many reasons for this.

First, lack of theoretical and practical basis, vivid examples of transformations, economic instability.

Secondly, the differences in mentality - Ukrainian employees are fearful and hostile to the changes, moreover to radical ones.

The kaizen-costing technique is widely used in Japan, the United States and European countries, but unfortunately, it has not become widespread in Ukraine. However, today we can mention examples of successful application of the Kaizen methodology in Ukraine.

Table 7.1

Comparative characteristics of innovative approach and kaizen

		Kaizen	Innovation
1	2	3	4
1.	Effect	long term	short term
2.	Tempo	slow	fast
3.	Changes	gradual and continuous	sharp, variable
4.	Practical requirements	few resources, but a lot of effort	large investments, but little ongoing effort
5.	Evaluation criteria	process is evaluated	the result is evaluated
6.	Conditions	slow economic development	rapid economic development

Source: [48]

In 2007, the “Coca-Cola Beverages Ukraine” company, led by CEO Marcel Martin, began the introducing of “kaizen-costing” or kaizen-calculating (method of cost calculation for Kaizen-based products).

From the very beginning, the company was faced with real difficulties - innovations were not supported by employees. However, the management took the task extremely seriously: the coaches were invited, the explanatory work at all levels was carried out. Today more than 90% of the employees of the Ukrainian plant are involved in “kaizen”. The company holds the leading position in its segment in the Ukrainian market.

During the implementation of the “kaizen calculating”, the “Coca-Cola Beverages Ukraine” was guided by three basic principles, namely:

1. maintaining order;
2. removal of mud (from the Japanese "loss");
3. standardization.

Maintaining the order is a necessary element of effective cost management. Due to exemplary order, employees acquire and develop self-discipline skills, without which they are not able to create products or provide high quality customer service.

Considering that losses are considered as a component of costs as a whole, their elimination is the most cost-effective way to increase productivity and reduce production and other types of costs [75]. The “kaizen method” emphasizes, that reducing losses (costs) at each workplace will have a synergistic effect to minimize them throughout the enterprise.

“Kaizen-costing”, as a way of identifying losses and reducing costs, is closely linked to the profit planning system and is based on the determining of the deviations of the actually achieved cost reduction from the plan. The essence of the method is that the improvements are made continuously, by small steps and without significant costs for their realization. Cost-reduction targets for continuous improvement are set and applied monthly. The analysis of cost variations is to compare their cost targets to actual ones. It should be noted, that when reducing the last base is considered the actual cost of production for the previous period, and the norm of the target reduction

of costs - the ratio of the planned amount of reduction to their base.

Thus, there is a process of continuous improvement, because the cost of each subsequent period will be lower than the cost of the previous one, that is, this indicator will constantly improve. The third, from mentioned above principles of "kaizen calculation" is standardization. To produce products, to perform works or provide services, a certain standard must be applied [108].

Considering the standardization as one of the principles of improvement, it should be emphasized, that kaizen-costing only at first glance has a lot in common with standard costing. As it was already mentioned, kaizen-calculation is based on achieving a set level of cost reduction, which is constantly adjusted in the direction of its further reduction. In the kaizen system the variance analysis of variance is a comparison of the target cost reduction with the actual amounts of their savings, that is the "deviation from deviations" is investigated.

It is important to note, that there are some differences between the standard costing system and kaizen costing.

Comparing the costing process with kaizen costing and standard systems, in the first case, these activities are held monthly, thus eliminating the difference between current and target costs. Based on this, research is carried out and necessary adjustments are made.

As for the calculation in standard systems, the methodology is much easier there, since they are carried out only a few times a year (1-2 times) and adjustments are made only if the costs exceed the standard level, that is, constant monitoring is not carried out, which leads to frequent inconsistencies. Also, under the standard system, the emphasis is on maintaining pre-existing conditions of production, without taking into account their changes.

If come back to kaizen-costing, the continuing of the process of its action after cost calculation is to plan the goal for the future expenses. Thus, there is a difference between the desired and the true. Then it is necessary to determine, why this goal was defined and how to achieve it. The entire cost reduction strategy can be carried out in stages, since creating of specific actions and activities at each stage can significantly simplify the task.

The advantage of "kaizen costing" is that it provides a constant reduction of costs and their maintenance at a set level, and the main disadvantage is the need to motivate employees and corporate culture, which supports the involvement of staff in the activities of the enterprise [49].

The Kaisen-costing system is also used when the production of the product is already started. It is at this stage of the life cycle that company employees can analyze the process of product creation and make suggestions, that can optimize production and thus reduce costs. That is, the use of this method at the stage of product development is impossible.

Another drawback is the dependence of this system on the product life cycle and its innovation. For example, if a product is innovative and its life cycle is short-lived, it should not focus all the attention on the system, since the benefits of its use are in many cases achieved through prolonged production. Given the variability of the external economic situation, it is not always possible to reduce to or below the target

cost price.

Thus, it can be assumed, that when deciding on the introduction of a new product in production, we must not forget about the "kaizen-costing" system, which allows a slow pace to continuously reduce the cost of production, with the help of various technical solutions, that the employees of the company find in the production process. At the same time, do not forget about the conditions limiting the use of "kaizen-costing".

“Kaizen-costing” provides the dialogue and creates a respectful atmosphere for those, who are tasked with reducing costs, which can often be seen as unrelated to value added.

The process of continuous improvement can be successful only if favorable conditions of production take place. To do this, you must meet certain management requirements, including:

- to formulate the strategy and tactics of the enterprise;
- develop a leadership style, that supports openness, trust and cooperation;
- maintain sustainability of goals;
- develop the system of rewards, that will stimulate the cooperation;
- implement ongoing staff training programs;
- keep a balance between short-term and long-term goals.

The implementation of “kaizen costing” should in no case to exclude the standard-costing system, that is rooted in many Ukrainian enterprises. Just their interaction will give a positive result, which is to minimize costs and optimize profits accordingly.

Summarizing, it is important to note that the effect of the kaizen-costing technique on the enterprise transforms the entire production process into an innovative one, while still maintaining certain limits of pre-installed restrictions.

7.3. Management by types of activity

Management practice requires the development of justified recommendations for improving the efficiency of production and commercial activity of enterprises. Most modern enterprises are characterized by depreciation of fixed assets, lack of financial resources, use of outdated technologies, low level of management, which significantly slows down their development. Today, continuous monitoring and improvement of business processes is one of the major enhancement tools.

“Management” category describes the ability of an enterprise as a set of socio-economic, material and technical, and organizational-technological systems to maintain its certainty, maintaining the state of dynamic equilibrium between internal and external factors of the enterprise. The activity, in this context, means the attitude of business participants to the socio-economic environment of the economy, which implies its transformation and subordination to their economic interests [86].

Management - is a purposeful activity of all economic entities that ensure the formation, stabilization, optimal functioning and obligatory development of the enterprise. The process of enterprise management is characterized by a constant and

systematic influence on the activity of its structures in order to ensure the coordinated work and the achievement of final positive result.

Depending on the needs of management levels, accounting and analytical information should be divided into strategic, tactical, and operational. Strategic accounting and analytical information is an important basis for management decision making. It allows to determine the vectors, in which directions the enterprise should move in achieving the goals of sustainable development. Tactical information helps to solve current tasks of economic, environmental and social activities. Online information provides timely response and, therefore, solutions to current issues and problems, that arise during the operation of the enterprise.

In today's conditions of management it is impossible to manage an enterprise without planning of economic activity at all levels: operational, tactical and strategic. The most important is the strategic level, at which vital management decisions are made for the further development of the enterprise.

The activity of any enterprise can be represented as a set of business- processes of production and non-production character. However, there is no standard list of business- processes, so each company must develop its own business – processes, based on the organization of an active, stable and balanced management mechanism. There are now many types and kinds of business- processes. As a rule, the four basic categories are the basis for the classification of business processes [66]: basic, ancillary, support and business development processes (Table 7.2).

Table 7.2

Characteristics of the main groups of business- processes of the enterprise

	Business process groups	Characteristic
1	2	3
1.	Basic	Processes focused on manufacturing products or providing services that are of value to the customer and provide revenue for the organization
2.	Providing	Processes, that are designed to ensure the execution of main business- processes and the functioning of infrastructure by providing the resources to all business- processes of the organization
3.	Auxiliary	Processes that cover the entire range of management functions at the level of each business process and the business system as a whole
4.	Development	Processes that provide for the development or improvement of activities that enable the creation of a value chain in the main and ancillary processes at a new level of indicators, as well as aimed at generating profit in the long run

Source: [56]

An effective management of processes in the organization requires their constant improvement and optimization, so it is very important to form a system for improving business- processes. On the basis of the research it is established, that there are several innovative approaches to business- processes management: methods of rapid analysis of decision, benchmarking, methodology of continuous improvement, reengineering, greenfield, combination of functional and process approaches [66].

The industrial production determines the level of economic development of the country, as it acts as an important source of replenishment of the budget. For successful management of the enterprise, increasing of profits and competitiveness, executives and managers need effective business management techniques. The effective functioning of an enterprise depends on the rational use of resources and cash.

The construction of a unified management system will ensure the competitiveness of the company's products at the expense of low costs and prices. In an unstable economic situation, cost management is increasingly characterized as a factor in ensuring the effective development of an enterprise.

In order the enterprise to function effectively, senior executives and managers must exercise strict cost control, plan costs, based on norms, that enable them to fulfill the required production tasks.

To save resources, consumed by the enterprise for the production of products, the system of structuring cost is used. Cost structure of an enterprise is the ratio of individual cost groups on certain grounds.

An example is the cost structure by economic elements, which clearly shows the ratio of consumed in the process of resource production. Depending on this share of costs by economic elements, the activity of the enterprise is divided into:

- material-intensive (material costs outweigh the cost);
- labor-intensive (dominated by labor costs and social programs);
- capital-intensive (the need for large investments in fixed assets).

The cost management system is most clearly manifested in its functions. These cost management features include: forecasting and planning, organization, coordination, regulation and control, motivation, accounting, and analysis [18].

Cost forecasting and planning are carried out at the stage of management decision making.

Costs are most significantly influenced by functional factors, that is, those that affect the costs of an enterprise and are associated with its ability to function successfully. For all functional factors, "more" always means "better."

German scientist G. Fandel, according to the cost theory, indicates, that all factors, that affect costs, are divided into production, which are the main and directly related to production, and non-production, which are related to other non-productive areas of the enterprise. That is, he considers factors from an economic point of view, but its approach is slightly different from that, existing in domestic and foreign literature. G.Fandel's proposed system of factors, affecting the cost of the enterprise, is presented in table.7.3.

Based on the data, we can say, that there is a certain interconnection and interdependence between the production and non-production factors. Changes in the volume of production organization at the enterprise cause changes in the quality of production factors and their proportions. In this case, each change in the volume of costs leads to a reverse influence on the quality of production factors and their correlation.

Table 7.3

Factors affecting enterprise costs

№	Production	Out of production
1	2	3
1	The size of the enterprise (total production capacity, differentiated by types, number and maximum return of available potential factors)	Sales of products (value of goods spent on sales of products)
2	Production program of the enterprise (specific for a certain period of production within the nomenclature specific to the production profile of the enterprise)	Financing (amount of own capital and the opportunity to receive the raised capital)
3	Depth of production at the enterprise (number of stages of production of production in multi-stage production)	Research and development (improvement of quality of production, factors of production and improvement of production methods)
4	Organization of production (level of automation, type and kind of production at the enterprise)	
5	Quality of production factors (technical equipment, personnel with high level of labor productivity and appropriate materials)	
6	Employment of an enterprise or potential factor (number of units produced over a given period)	

Source: [91]

In the presence of thorough studies of the classification of accounting and analytical information, relevant is the development and supplementation of the classification features, that take into account the goals and strategy of the enterprise.

Information, provided by management accounting, is focused on meeting the needs of both strategic and current management, optimizing the use of resources, providing an objective assessment of the activities of departments and individual managers.

7.4. Integrated quality management

In the context of market relations and Ukraine's participation in the World Trade Organization, an important issue is to increase the competitiveness of products of domestic enterprises. The membership in this organization opens the borders, the foreign high-quality products enter the domestic market, what can lead to a loss of market positions of the national producer. In this regard, it is vital to increase the competitiveness of domestic products and to obtain appropriate certificates of quality systems, which would not only assert their positions in their own market, but also to

enter the world market.

The financial and economic crisis and fierce competition place strict demands to Ukrainian enterprises to ensure the quality of their products. If for several decades the price was the main factor for making any managerial decision, then for today, when concluding agreements with manufacturing companies, quality is preferred. Ensuring a high level of quality allows enterprises to stay on the market, enter into new agreements and increase their productivity.

In publications in economics or in other fields of modern science, the concept of "quality" may be different from the philosophical content. In particular, quality often refers to a particular characteristic, essential feature or defining feature of someone or something, and most often- a set of characteristics of certain products or services, regarding their ability to meet the urgent human needs.

For example, product quality is defined as a concept characterizing the product's operational, consumer, technological, design properties, the level of its standardization and unification, reliability and durability, and so on. At the same time, generalized, individual and indirect indicators of product quality are distinguished.

In general, while analyzing the quality of products, specialists, as a rule, try to evaluate the dynamics of possible changes in terms of these indicators, bringing to consideration such characteristics of the production process as the rhythm of the enterprise, the coefficient of variability in the operation of equipment, the rhythm of production, etc.

Let us turn to the analysis of the concept of "quality management" ("management of quality"), based Kaoru Ishikawa's publication "Japanese methods of quality management" (English version - "What is Total Quality Control ? : The Japanese Way", 1985; translation - in 1988) and scientific works of other specialists.

According to the definition of the International Organization for Standardization (ISO), quality is a set of properties and characteristics of a product that give it the ability to meet specified or foreseeable needs. There is also a definition of product quality, given in Gosstandart 15467-79, according to which "product quality is the totality of product properties, that determine its suitability to satisfy certain needs according to its purpose" [127].

ISO 8402-94 International Standard Terms defines the content of modern quality management as an approach to the management of an organization (company, corporation, firm, enterprise or institution, or its departments, that perform independent functions and have an administration) that is focused on quality (set of characteristics of goods or services, demonstrating their ability to meet established and foreseeable needs), based on the participation (cooperation) of all members (employees) of the organization and aimed at achieving of long-term entrepreneurial success by satisfying the requests (demands) of consumers and the benefits for employees of the organization and society in general [47].

Quality management is considered to be a fruitful (effective) American invention, that has gradually spread all over the world.

However, in the Japanese version, the "quality management" method not only found real and active supporters, but also proved to be more promising for

implementation. This is primarily due to the fact, that Japanese quality management practices include in this process all entities involved in the production of products (services): from the managing director (president of the company) to ordinary workers producers.

In the USA and in some Western European countries, quality management is still often relied on by quality management consultants and experts, as the well-known founder of scientific management FW Taylor (1856–1915) insisted in his time (his method is based on the principle: production should be managed exclusively by specialists). This method involves the establishment of technical and production standards for production by specialists and engineers [123].

Production quality is a relative characteristic that is based on comparing the values of the quality indicators of a given product with the corresponding quality indicators of the basic products or other indicators established by the current standards and norms.

In a narrow sense, quality can mean product quality. In the broad sense, the concept of "quality" includes the entire process of performing works on the production of goods and services: the quality of the production process, the quality of work of units and staff (including workers, engineers, management and administrative staff), the quality of the firm as a system, quality (reliability of information, quality of customer service etc. The Japanese approach to quality management is to manage quality in any of these manifestations.

Thus, the level of efficiency of the quality management system is directly proportional to the level of competitiveness of products and the enterprise. An enterprise quality management system can become an instrument of competitive victory, considering, that the competitiveness of an enterprise is the level of its competence with respect to other enterprises competitors in the accumulation and utilization of production potential of a certain orientation, which is reflected in such indicators as product quality, production volumes, profit, etc. Not only interested, skilled workers, adequate facilities, but also a well-established quality management system is required to ensure the required level of quality. On this the success of many enterprises is built on [127].

The product quality management cycle can be described in fig. 7.3.

Taking into account all the factors of quality, coverage of all stages of work and linking the work of the units into a single quality assurance system is the integrated quality management (Integrated Quality Control).

In his writings, A. Feigenbaum advocated a complete, comprehensive approach to quality, that required the involvement of all functions, not just the own production. His idea was to *introduce* quality in the early stages of product creation, not to control the quality of what has already come out. A. Feigenbaum proposed to make a comprehensive quality management care of a special administrative unit, which specializes only in the analysis of product quality and performs only the function of quality control by the relevant specialists.

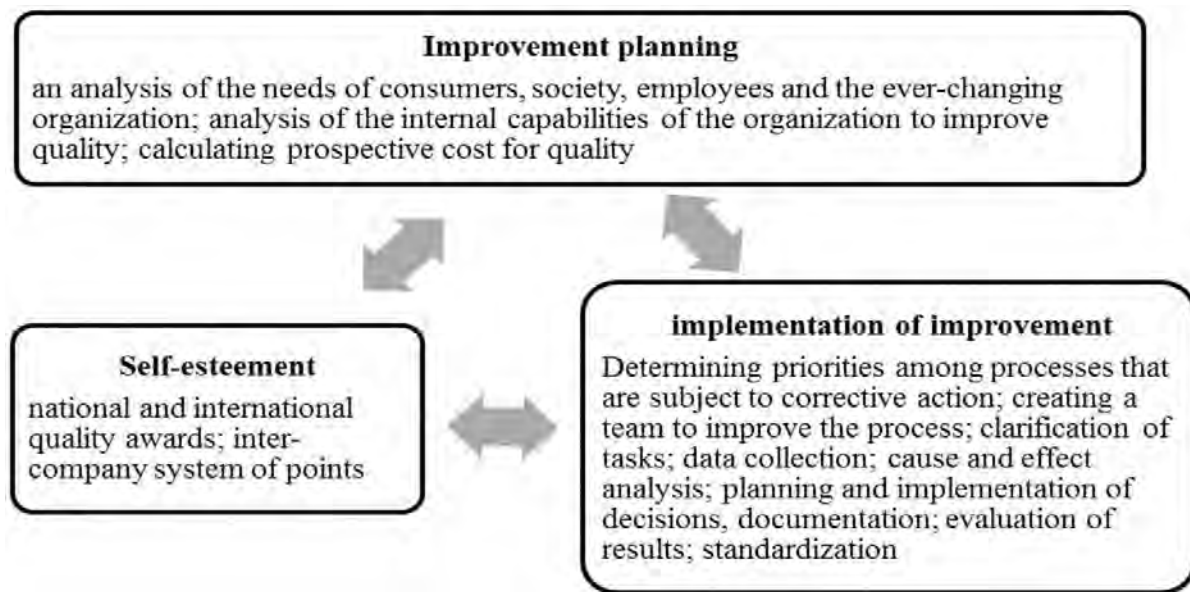


Fig.7.3. The cycle of quality management in the organization

Source: formed by the author

Integrated quality management has been formed not only in the US and Japan, but also in other countries, that currently hold strong positions in global markets due to the competitiveness of their products.

An integrated quality management was also formed in the former USSR through a number of stages when creating:

- Zapat system of defect-free production of products (GDP) - abroad it is "zero defects", the level of moral and material encouragement of the employee is established;
- defect-free work system - calculated not only the percentage of delivery of products from the first bearer, but also the rhythm and culture of production;
- CANAPSI system (quality, reliability, resource from the first products);
- a comprehensive product quality management system (CPQMS), that has absorbed the elements of GDP, SBP, KANARSPA, NORM and experience of other quality management enterprises.

The introduction of a comprehensive quality management system is an urgent need for enterprises as the volume of output of the enterprise is increasing, resulting in the need to expand the geography of sales of products and more efficient system of quality control of products.

Also, this system will allow the company to reach a new level of customer service, which will positively affect the image of the enterprise and will increase the profitability of the enterprise.

In his writings in the late twentieth century. A. Feigenbaum drew attention to the fact that for 80% of buyers of industrial and consumer goods quality became a more priority characteristic of the product than the price. Therefore, he considered the most reliable (but also time-consuming) way to promote products on the market by

improving its quality [40].

The concept of management by cost quality arose, on the one hand, from increasing consumer demands for product quality and, on the other, as a result of the business understanding that achieving and maintaining a high level of quality for cost objects at all stages of the production cycle saves resources and costs by reducing inventory, repeated work, waste and defect, warranty service costs etc. According to this model, all quality costs are divided into four groups:

The warning costs are associated with measures to prevent disadvantages and defects. They include quality planning costs, training of personnel, development and creation of control equipment, additional costs for purchase of higher quality materials, etc.

The costs of quality assessment are due to the measures, taken to check the materials and products for compliance with the established quality standards. They include costs for control of materials, parts, unfinished production, finished goods, maintenance of control equipment.

Costs due to internal disadvantages (defects) occur due to blemishes and defects, found during production. They include waste, incorrigible defects, costs of recycling, due to downtime, loss of profits as a result of reduced sales.

Costs due to external disadvantages (defects) occur after the sale of products to consumers. These are the costs of processing customer complaints, warranty repairs, when replacing the products, on obligations as a result of court decisions.

With the help of systematic reports monitoring and analysis of quality costs, based on which measures are being developed to optimize their structure and the level of these costs.

The introduction of quality management system not only improves production, but also helps to optimize the business processes of the company as a whole, leads to increased productivity, reduced resource dependence, and as a result, to the reduction of cost production, which directly affects the competitiveness of the enterprise in the market.

The need for a comprehensive approach to quality management and the accumulated experience have led to the fact that in 60-70 years, standards for quality management systems have been developed in a number of industrialized countries.

In the United States and the United Kingdom, these standards were first applied by defense ministries when inspecting suppliers, when contracts for the supply of military equipment were concluded, and then the customers' relationships with suppliers of civilian production began to use.

Based on these standards, the ISO 9000 standards for product quality management and quality assurance were developed and released in 1987 by an international standardization organization. These standards have conveniently summarized and presented the experience of integrated quality management, making this approach widely available.

ISO 9000 - a series of international standards, that describe the requirements for the quality management system of organizations and enterprises [27].

The conformity of ISO 9001 testifies to the existing levels of reliability of the supplier and the enterprise. For an enterprise, the conformity with the requirements of

ISO 9001 is the minimum level, that enables the entry into the market. The certificate of conformity of ISO 9001 itself is an external independent confirmation of achievement of requirements of the standard. The purpose of the ISO 9000 series of standards is the stable operation of a documented quality management system for the supplier's products.

The initial orientation of the ISO 9000 standards was directed on consumer / supplier relationships. With the adoption of the third version of the ISO 9000 standards in 2000, greater attention has been paid to the organization's ability to meet the requirements of all stakeholders.

ISO 9004 focuses on achieving lasting success. These standards help the businesses to formalize their management system by introducing system-building concepts, such as internal audit, process approach, corrective and preventive actions.

From a brief analysis of the requirements of the standard, it becomes clear, that quality management systems are an integral part of the control of management activities, production technology and products, aimed at increasing product quality.

The enterprise must determine the purpose of implementing the standard - for the sake of obtaining a certificate or for improving the quality of management. The formal implementation of the standard is a negative process and consists of the following points (Fig. 7.4).

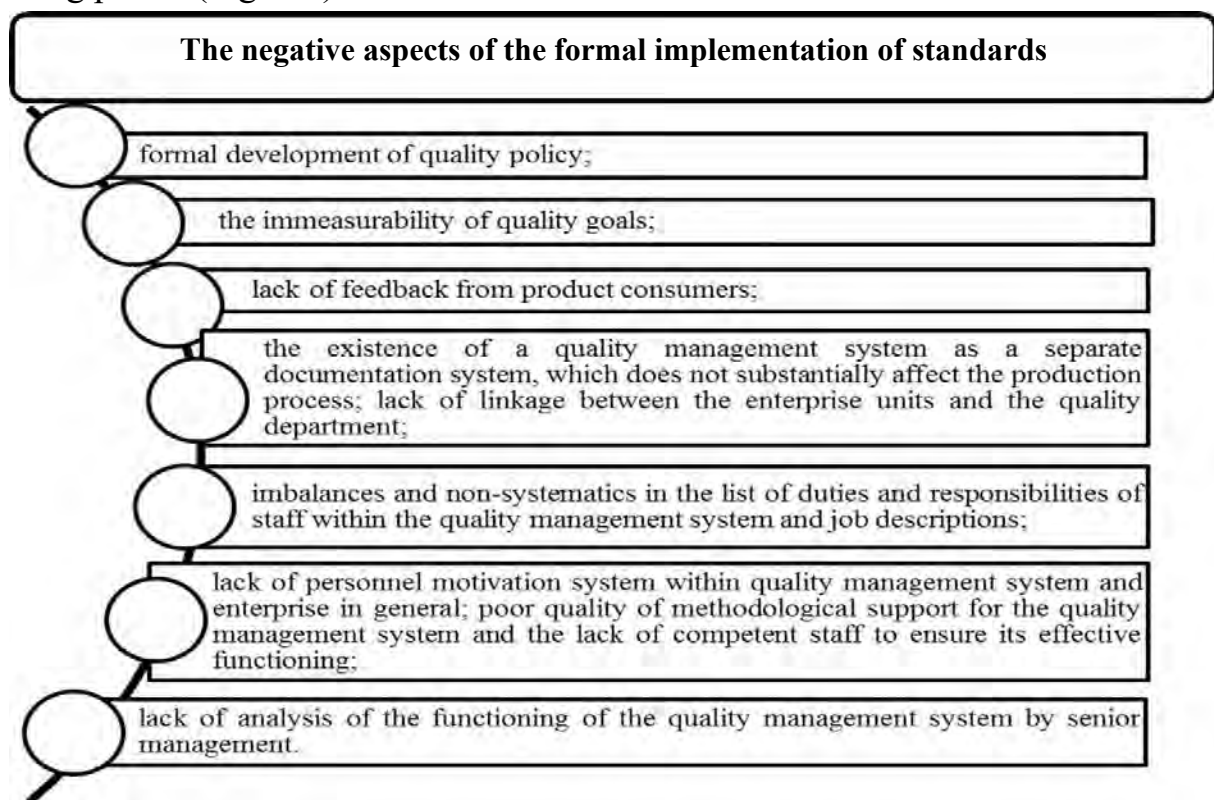


Fig. 7.4. The negative aspects of the formal implementation of standards

Source: formed by the author

Therefore, the indicators for evaluating an enterprise's quality management system may be the following indicators for process availability, process measurement and analysis, and product quality.

The concept of integrated quality management was introduced by A. Feigenbaum (USA) in 1957, when the article "Comprehensive quality management"

was published. This effective system combines the activities of various departments of the organization, responsible for the development of quality parameters, maintaining of the achieved level of quality and improving it to ensure the production and operation of the product at the most economical level, while fully satisfying the requirements of the consumer.

As because the quality is influenced by many factors, it is necessary, that all of these factors were influenced by quality management. And it is important, that this influence is exerted at all stages of production, where the quality of the product is formed (for example, in order to consider consumer claims you must have in advance contractors, the procedure and terms of their consideration).

The rebuilding of the economy is, first of all, the rebuilding of industry. And for this Ukrainian enterprises need to involve modern quality systems. Business leaders need to change their attitude to quality, as Japan and Germany did after World War II. The fight for quality must become Ukraine's national policy and strategy. Only this way will help to reach the world level of quality of competitive production and to enter the foreign markets.

And everything related to solving the quality problem must be done professionally with the implementation of technology, equipment, management system, staff and involvement of partners at different levels and quality assurance at the stage of sale and after sales service.

7.5. "Just in time" system (JIT)

In the conditions of development of competition of production of the domestic enterprises with the production of foreign manufacturers, management of competitive advantages, including advantages in economic use of resources, becomes especially actual.

In turn, for the real elimination of losses, it is strongly recommended to use "kaizen-costing" in combination with the Japanese approach "just in time" (JIT), which has a purpose of "... a constant pursuit for productivity by avoiding waste and losses "[35]. It cannot be called a costing method.

Most likely, this is a business philosophy, that should be adopted in addition to the already existing full-fledged cost accounting system.

The JIT approach was first introduced at the Toyota plant in Japan in the 1970s. Its essence was very aptly formulated by Western Professor Hansen: "to supply raw materials, that are needed, when needed, and in the required quantity" [35].

The original motto of the JIT concept was to exclude potential stocks of materials, components and semi-finished products in the production process of assembling cars and their main units. The initial task was as follows: if a production schedule is set, you need to organize the movement of material flows so, that all materials, components and semi-finished products come for production or assembly of finished products in the right quantity, in the right place (on the assembly line) and on time. Under such a task, large insurance stocks, which freeze the company's funds, were unnecessary.

The JIT (Just In Time) system provides an opportunity to reorganize most accounting systems into a system of saving resources in the enterprise. This is a technological method, in which the manufacture of products is done by selling a pre-ordered unit of product, while maintaining the current production of all products. The scheme of production "on needs", instead of "on a storage" is used [126].

The essence of the JIT principle is that the goods arrive at the enterprise at the time, when they are needed for use in the production process. The introduction of this method has largely solved the problem of inventory storage, which is exclusively prerogative of suppliers, not the company itself.

Improving of the supply, based on the JIT principle, contributes to the formation of a management culture aimed at improving quality. The solution, offered by the JIT system, is to enter into long-term contracts with several profitable suppliers, located close to the production capacity of the enterprise.

The prerequisites for the use of "Just-In-Time" concept should be sought in the postwar period. The development of a new philosophy of production was influenced by 3 factors:

- The financial crisis and the lack of cash flow made it impossible to finance large-scale methods of inventory production (as was customary, for example, in the United States).

- In Japan, there was not enough space to build large factories and warehouses for production and storage of products.

- high unemployment - the wage of a Japanese worker was several times lower, than the wage of an identical American, and women's labor was estimated at 40% lower than men's.

The main directions of activities of the JIT system are improving the quality, reducing the operating time of machines, changing production technology, reducing interoperational, interdepartmental and inter-shop inventories [126].

For perfect operation of Just-In-Time it is necessary to observe a number of conditions:

- stable production;
- highly qualified staff;
- no breakdowns in factories;
- reliable suppliers;
- quick installation and readjustment of the mechanisms responsible for the final assembly of cars.

The "just in time" system included both elements of theory and various practical developments. While theoretical elements are acceptable for any type of organization, practical elements are mainly acceptable for mass production operations, such as the production of cars or devices. A narrower concept of the essence of this system is identified with production, more precisely with the method of planning the level of inventories. Although the exact definition of this system has not been developed yet, but mainly it concerns the elimination of losses, avoiding the acquisition of excessive inventories and performing only those actions, that will be necessary for production entities at the next stage of the production process [9].

The application of Just-In-Time within the management accounting of overhead

costs is possible as follows:

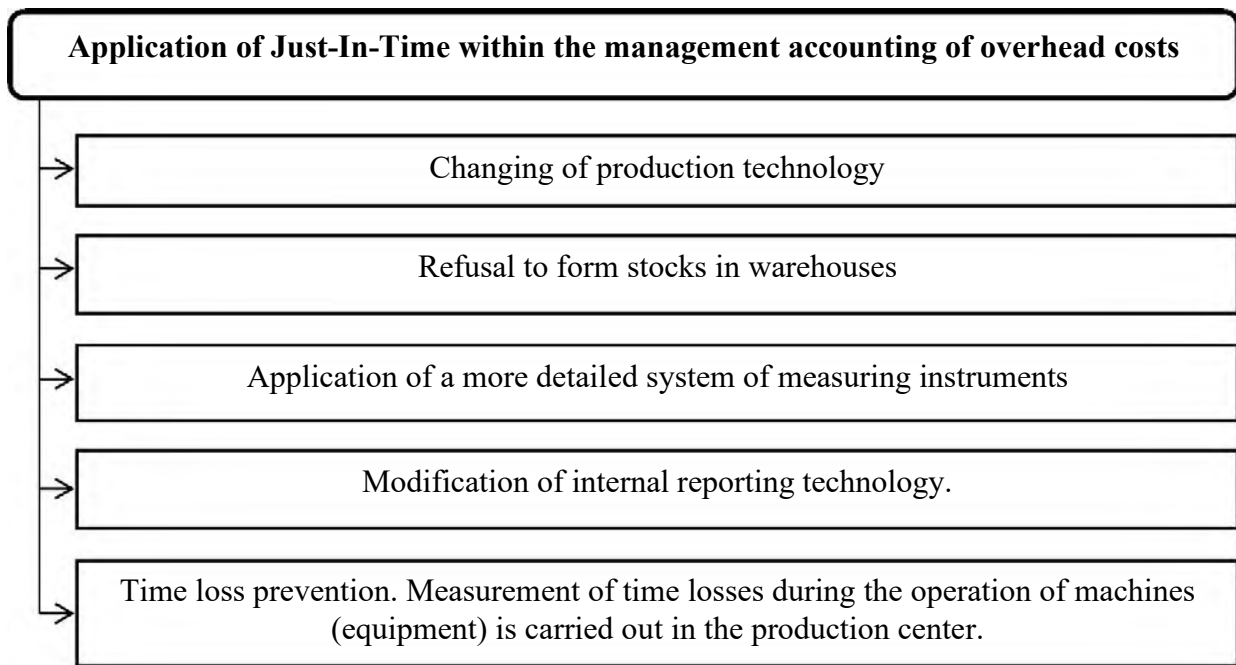


Fig. 7.5. Application of “Just-In-Time” system within management accounting
Source: [96]

In turn, the "Just In Time" system (JIT) has led to the emergence of a number of adequate accounting methods, including calculation by reverse flow (Backflush Costing), which refers to a variety of simplified costing methods of cost accumulation. The unit cost estimation system, that includes the reverse flow method, is fairly easy to understand and can be used with any inventory valuation method [9].

In contrast to traditional management methods, according to which the central link of production planning assigns the production tasks to all departments and industrial units, during the application of JIT centralized planning applies only to the last link of the logistics chain, that is, the warehouse of finished products. All the other production and supply units receive orders directly from the person on duty, which is closer to the end of the logistics chain.

An example is the situation when the warehouse of finished products has submitted to the assembly shop an application (which is equivalent to the issuance of a production task) for a certain number of products, the assembly shop gives orders to manufacture processing shops and the department of cooperation, etc.

The advantages of “Just-In-Time” include:

- maintaining the company's competitiveness - it becomes possible to better meet customer needs and at the same time to reduce costs (in particular, for storage of finished products).
- flexible response to changes in demand - production is sharpened for rapid readjustment. There is no accumulation of products - there is no moral aging in warehouses. A clear example of what will happen, if you do not use the "Just-In-Time" technique, was the game console Amstrad GX4000. Released in the early 90's, it was hopelessly obsolete in terms of technology, although it was well made. After the first six months, it became clear, that no one would buy a hopeless console, but

the production was not ready for such a turn. For 2 years, the developer has been constantly lowering the price, trying to sell at least something, and as expected, went bankrupt.

- reduction of the production cycle - in addition to the obvious advantage in the form of production speed, provides another advantage - a quick return on investment in production.

- release of resources - can be directed to the manufacture of other products or tasks that previously lacked the budget and time.

The system is not without its drawbacks, which include:

- high dependence on suppliers - it is extremely important to find such suppliers who will be territorially close to the production facilities or can quickly provide the necessary materials in a limited time;

- possible increase in the cost of materials - ordering small batches of parts leads to an increase in their cost;

- labor vulnerability of employees - despite the increased competitiveness of the company, and hence - employment guarantees - attempts to respond in a timely manner to the conditions of supply and demand lead to the spread of non-traditional mechanisms of labor regulation (contracts, temporary / project work);

- in some cases it is more profitable to keep the goods in the warehouse, than constantly to deliver it - it is relevant mainly for small businesses or industries, whose suppliers are located in another region / country;

- increase in transport costs - because the goods are delivered as needed, rather than stored in a warehouse and issued from there;

- increased requirements for project management - in case of improper workflow, the downtime among employees is likely. You can't do without a personal task manager;

- increased vulnerability to the deterioration of the international and national economic situation - for example, fluctuations in prices for the production of fuel for transport will significantly affect the cost of logistics, and hence the profitability of production.

The implementation of the JIT system requires the organization to make great and long-term efforts.

The key success factors in implementation are:

- support by managers of all levels of management of the organization;
- adequate allocation of resources;
- building long-term, trusting relationships with suppliers;
- changing of corporate culture of the organization;
- changing the flow of processes and principles of organization of production;
- optimization of loading and operation of equipment;
- optimization of equipment maintenance management in order to reduce the number of breakdowns;
- implementation of quality improvement programs;
- shortening delivery times and increasing their number. Introduction of a system of frequent deliveries by small parties;
- introduction of a system of search, analysis and reduction of losses;

- JIT implementation process is long and time consuming.

To operate the system it is necessary to use various methods, tools and quality techniques. But most importantly – it is very important to change the minds of employees and corporate culture.

The JIT method has shown such high efficiency, that today all large organizations use elements of this approach to some extent.

Conceptually, “Just-in-Time” leads to a change of views in the following areas (Fig. 7.6.):

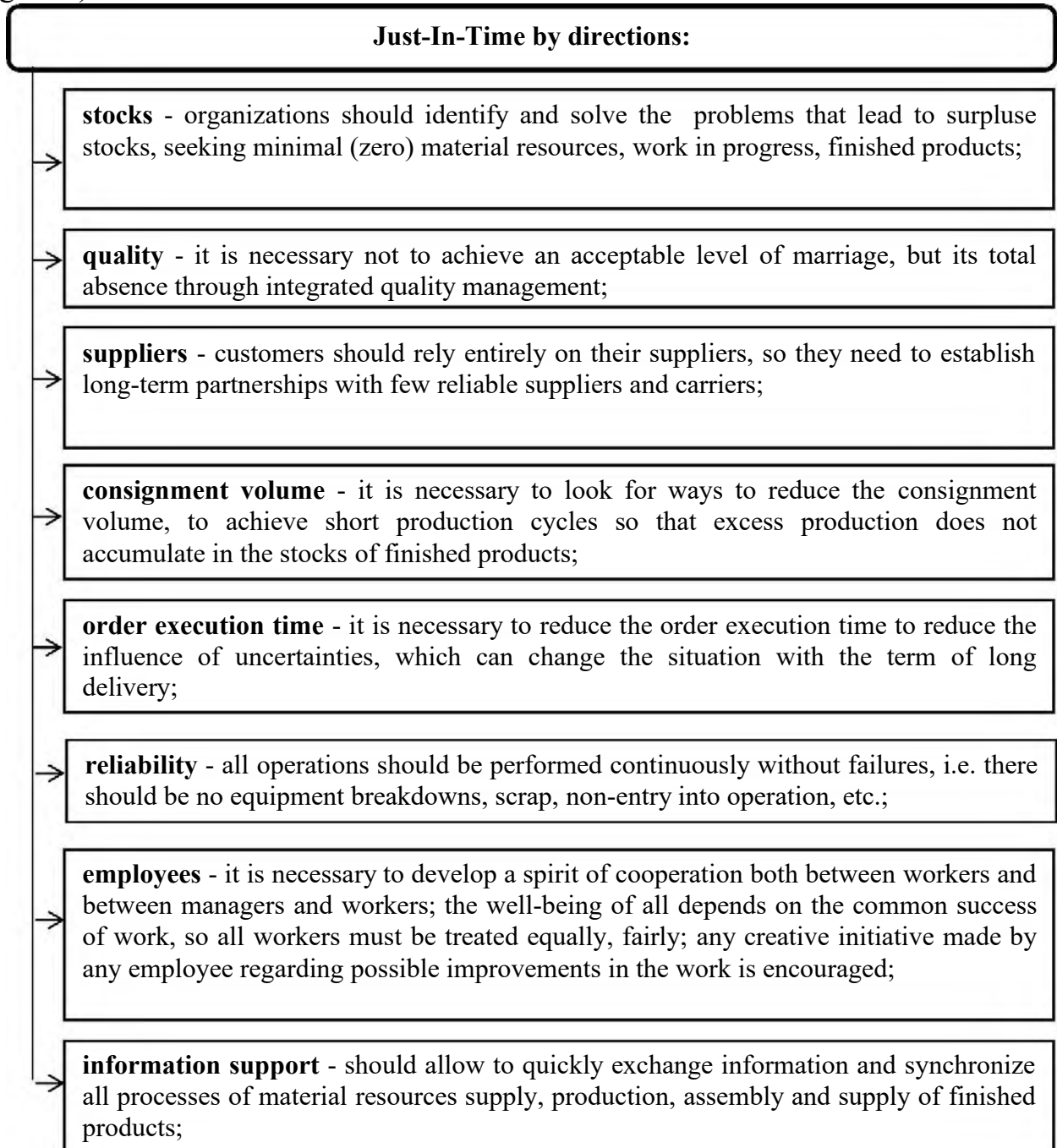


Fig. 7.6. Changes of views at “Just-in-Time” by directions

The use of JIT-system, and hence JIT-calculation is limited by certain factors: the proximity of suppliers to the enterprise, as the whole system is built on small in volume and frequent deliveries; a narrow range of similar products; constant level of production; stable market environment [30].

Thus, JIT is a way not only to minimize stocks, but also to eliminate waste from all kinds of resources, improve coordination and increase efficiency.

In the JIT-system, the technological process is organized on the principle of "continuous flow" (pipeline), when each subsequent operation is a continuation of the previous one. Production costs for each stage of product manufacturing are not accounted for, but are reflected at the beginning of the reporting period, and then it is fixed at the end of the reporting period as the cost of the finished product. The calculation is performed on the last operation, at the last point of the material flow. The last operation is the shipment of finished products to the buyer, that is, its realization. The object of calculation is the finished or sold products.

Discussion and self-review questions

1. *Explain the essence of the term kaizen.*
2. *Name the differences between the Kaizen method and the target calculation.*
3. *Expand the concept of ABC - calculation.*
4. *Describe the algorithm of ABC construction - calculation method.*
5. *Name the principles of quality cost quality.*
6. *What are the objectives of a JIT system?*
7. *What are the common approaches to decision-making in the face of uncertainty?*
8. *Give a characteristic of the techniques for determining the optimal stocks size.*
9. *What does the next stocks order depend on?*
10. *What is the value of the JIT system?*
11. *How is expenditure classified relative to delivery volume?*
12. *What types of costs are classified by component?*
13. *How do you classify costs by impact - controlling the total cost?*
14. *Give a list of internal qualitative factors that influence the decision to "produce or buy."*
15. *Give a list of external qualitative factors that influence the decision to "produce or buy."*
16. *What is the purpose of optimizing the stock consignment volume?*

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SECTION 3. ANALYSIS OF THE RELEVANCE OF INFORMATION

THEME 8. ANALYSIS OF THE RELATIONSHIP BETWEEN COSTS, VOLUME OF ACTIVITY AND PROFIT

8.1. Purpose and methods of analysis of the relationship “cost-volume-profit”

Ensuring the competitiveness of enterprises on the basis of a system of optimal decision-making, involves the selection, analysis and evaluation of a huge number of factors that carry risks and threats.

Analysis of the relationship between costs, volume of activity and profit (further - CVP analysis) is a tool of management accounting, which reveals the relationship between total costs, sales and profits. The cost-benefit ratio is one of the important methods of cost accounting and management. It is a powerful tool that gives an almost absolute picture of the profit structure and helps in its planning. It can also answer the question "what if" by disclosing the amount, needed for production. This concept is relevant in all areas of decision-making, especially in the short term.

CVP analysis is a method of systematic study of the relationship between costs, volume of activity and profit of the enterprise with **purpose**

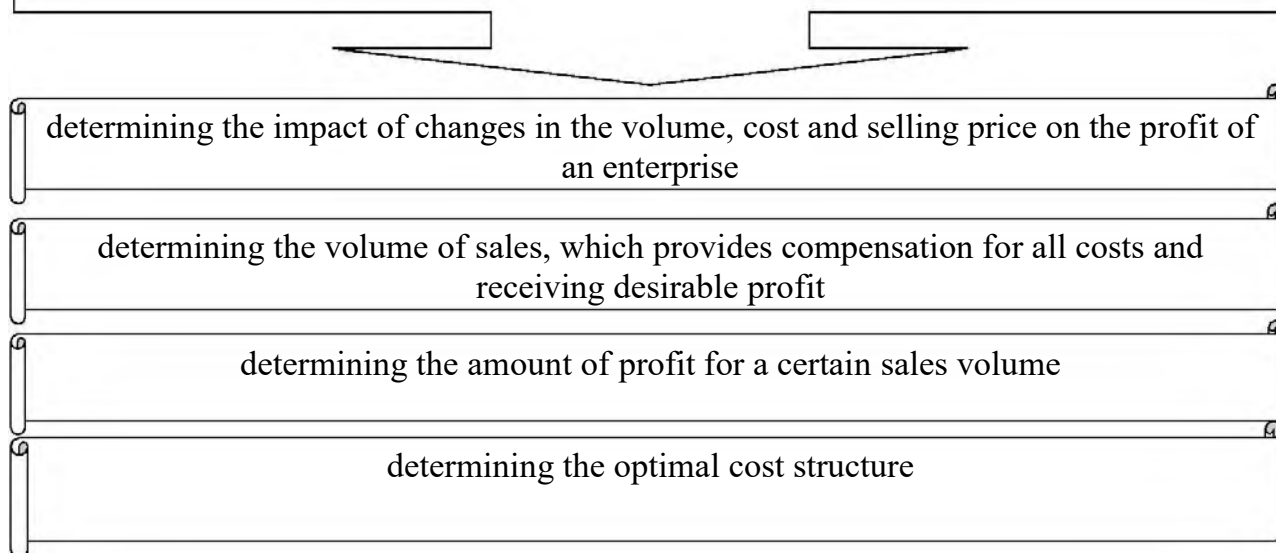


Fig. 8.1. Analysis of the relationship between costs, volume of activity and profit

Thus, the **main purpose** of CVP analysis is to establish the changes, that will occur with a profit if a certain level of productivity or production volumes change. This information is significant because the most significant variable, that affects income (revenue) is the volume of production.

CVP analysis requires, that all enterprise costs, including production, administrative and marketing costs, were defined as variable or fixed.

The *methods of CVP analysis* include *mathematical* (equation method, marginal method) and *graphical* (break-even chart, the relationship "*cost - volume - profit*", marginal revenue).

Break-even point - the level of activity at which the total income of the enterprise is equal to the total cost. This is the volume of activity of the enterprise, when revenues are equal to costs. Accordingly, the financial result is zero. That is, the volume of sales, after which the company begins to make a profit.

Display as a formula 8.1:

$$\text{Break-even point} = \text{variable costs per unit} \times \text{amount of sale} + \text{fixed costs} \quad (8.1)$$

The dependence of profit on the volume of activity and the amount of costs is usually presented as follows (form 8.2):

$$\text{Operating profit} = \text{Total income} - \text{Total expenses} \quad (8.2)$$

The result, obtained using this formula, corresponds to the construction of the statement of financial results, because it is intended to disclose the information about income and expenses of the enterprise for the reporting period.

If we take into account the level of activity, namely sales and cost behavior, this equation can be transformed as follows (form 8.3):

$$\text{Operating profit} = (\text{sales price} \times \text{sales quantity}) - [(\text{variable costs per unit} \times \text{sales quantity}) + \text{fixed costs}] \quad (8.3)$$

From here we obtain the formula 8.4:

$$\text{Operating profit} = \text{number of sales} \times (\text{selling price} - \text{variable costs per unit}) - \text{fixed costs} \quad (8.4)$$

Break-even point is considered as break-even volume of sales in natural units or in monetary terms (formulas 8.2; 8.3), as well as break-even production capacity.

In fig. 8.2 the main ways to increase the enterprise profit are considered:

The marginal method is based on the definition of *marginal profit* - the difference between sales revenue and variable costs of the enterprise.

Marginal profit is a reserve that is formed in the course of the enterprise activity to cover fixed costs and profit, and therefore the increase in marginal income always means an increase in profit.

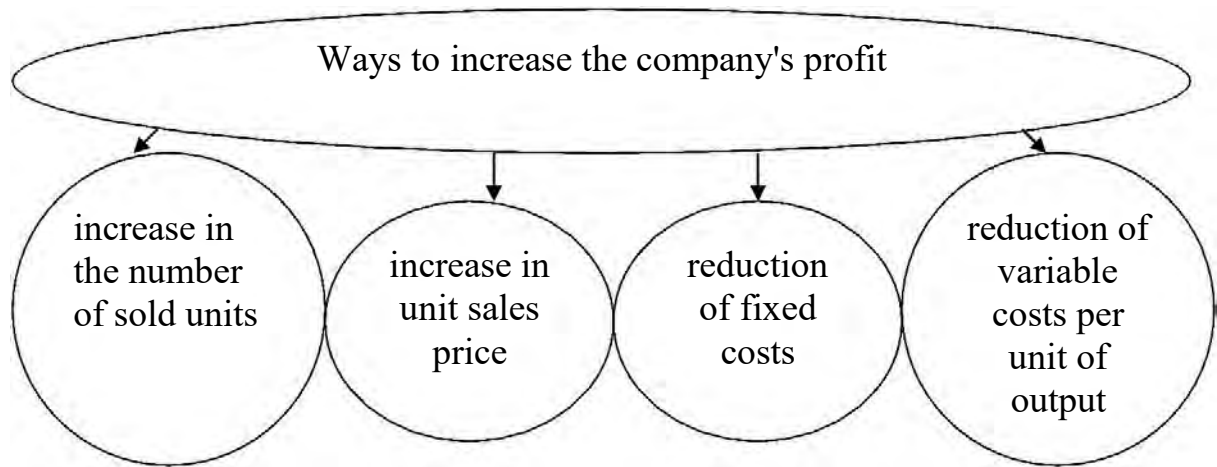


Fig. 8.2. Four main ways to increase company's profit

There are two types of marginal profit: per unit of output and total (form. 8.5; 8.6):

$$\text{Marginal profit per unit} = \text{Sales price} - \text{Variable costs} \quad (8.5)$$

$$MD \text{ total} = \text{Operating profit} - \text{Fixed costs} \quad (8.6)$$

The marginal revenue ratio means the amount of marginal profit each UAH (hryvnia) brings in sales revenue to cover fixed costs and reserving profit. It characterizes the amount, by which the profit changes with changes in sales (form. 8.7):

$$\text{Coefficient of marginal profit} = \text{Marginal income} \frac{\text{Sales price} - \text{Variable costs per unit}}{\text{Sales price}} \quad (8.7)$$

Thus, the **marginal revenue ratio** is used to calculate the impact of changes in the volume of activity on the amount of profit. Since it does not depend on the volume of production or sales, it better characterizes the efficiency of production of a particular product in the short term than profitability.

In natural units, the volume of sales to obtain the planned value of operating profit is determined by formula 8.8:

$$\text{Sales volume in physical units} = (\text{fixed costs} + \text{planned profit}) / \text{marginal profit per unit} \quad (8.8)$$

In monetary units, the volume of sales to obtain the planned value of operating profit is calculated by formula 8.9:

$$\text{Sales volume in UAH} = (\text{fixed costs} + \text{planned profit}) / \text{marginal profit ratio} \quad (8.9)$$

For example, an enterprise that manufactures one type of product has variable costs per unit of output - UAH 20, and total fixed costs - UAH 20,000. The selling price of a unit of production is UAH 40. The company seeks to make a profit of 45 thousand UAH. What sales volume will provide such a profit?

According to formulas 8.8-8.9, we determine, that to make a profit of UAH 45,000. the company needs to sell 3,250 units or reach the level of sales - UAH 130,000:

Sales volume in natural units = (fixed costs + planned profit) / marginal profit per unit = $(20,000 + 45,000) / 40 - 20 = 3,250$ units

Sales volume in UAH = (fixed costs + planned profit) / marginal profit ratio = $20,000 + 45,000 / 0.5 = 130,000$ UAH.

And if the company will be forced to reduce the current volume of its activities by 600 units, then we should expect a decrease in profit by UAH 2,500. (8.10):

Change in the amount of profit = planned change in sales in UAH x marginal profit ratio = $600 \times 40 \times 0.5 = \text{UAH } 12,000$.
(8.10)

Thus, in the process of **CVP** analysis, the interdependence between changes in production volumes and sales revenues, costs and net profit is constantly studied.

8.2. Profit sensitivity analysis

The **CVP** analysis is also called the **sensitivity analysis**. With its help the changes which are carried out with the operating profit of the enterprise under the influence of certain changes of parameters of its activity are investigated. Such factors are: sales volume, selling price and costs of the enterprise.

The interdependence between costs, volume of activity and profit is the basic model of financial activity of enterprises. With its help you can get answers to the questions[20]:

- *how many products should be sold in order to obtain the planned amount of profit;*
- *what profit the company will receive for a certain amount of activity;*
- *what should be the amount of activities to cover all costs and profits;*
- *what amount of costs for a certain volume of sales can afford the company to avoid losses.*

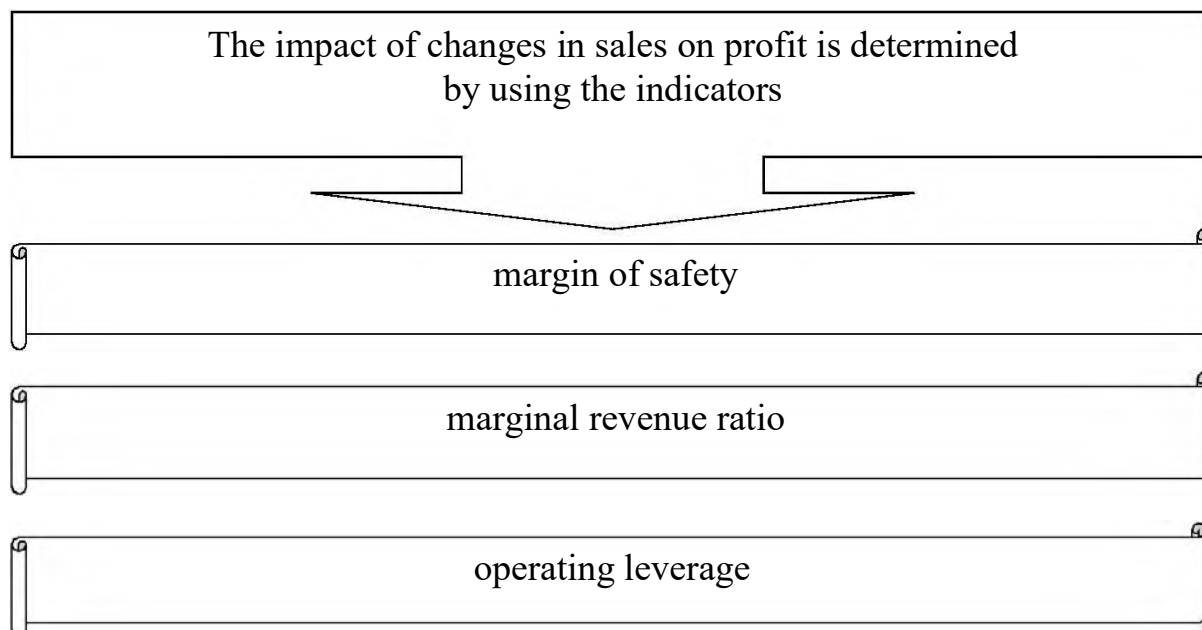


Fig. 8.3. Profit sensitivity analysis

Determining the impact of changes in sales on profit is determined using the marginal revenue ratio (form 8.7):

Indicators such as margin of safety and operating lever are also used.

Margin of safety - the amount, by which the actual (or planned) sales volume exceeds the non-cash sales volume (form 8.11):

$$\text{Margin of safety} = \text{profit} - \text{break-even point} \quad (8.11)$$

or

$$\text{Margin of safety} = \text{sales volume} - \text{break-even sales volume} \quad (8.12)$$

The margin of safety reflects the limit of the decrease in sales without the risk of loss.

For example, the company planned to sell 2,000 units at a price of UAH 30. per unit, and the break-even point is 1000 units.

The enterprises can reduce sales within 1,000 units (2000 - 1000) or 30,000 UAH. [(2,000 x 30) - (1000 x 30)] without risking losses.

Enterprises also use the safety margin. **The safety margin** is the ratio of the safety margin to the actual (or planned) sales volume (8.13; 8.14):

$$\text{Strength margin} = \frac{\text{Safety margin}}{\text{Profit}} \quad (8.13)$$

or

$$\text{Strength margin} = \frac{\text{The volume of the safety margin}}{\text{Sales volume}} \quad (8.14)$$

According to our example, the strength margin is: $1,000 \div 2,000 = 0.5$.

The greater the margin of safety is, the less likely it is that the enterprise will get losses, when sales decrease.

The operating leverage is the ratio of fixed and variable costs, and this provides an increase in profit than when sales increase.

Quantitative indicator of the operating leverage is its factor, calculated by the formula 8.15:

$$\text{Operating leverage} = \frac{\text{Profit}}{\text{Marginal profit}} \quad (8.15)$$

Profit making and its maximization are facilitated by current management decisions (for example, acceptance of a new order, termination of production of certain products, optimization of production structure, determination of the minimum possible sales price, etc.).

The task of management is to manage every factor that affects profits, to increase the profitability of the enterprise as a whole.

Therefore, we can assume that the purpose of sensitivity analysis is to determine costs, sales and profits at given parameters of other indicators.

8.3. Analysis of the relationship "cost - volume - profit" under the terms of range

In practice, most companies produce or sell several types of products (goods, works, services). At the same time, the **CVP analysis** is complicated and is based on the combination (structure) of sales and the indicator of weighted average marginal revenue.

A combination sales is the ratio of different types of products in total sales.

1. This ratio can be expressed as a percentage or in the proportion of products (for example, 1 to 2).

For example, an enterprise manufactures two types of products: "A" and "B". There are the following data on these products for the reporting period (Table 8.1).

The above data show that the company has the following combination of sales: 70% of total sales are products "A", and 30% - product "B".

2. **The CVP** analysis in terms of range assumes that all fixed costs are indirect for specific types of products. In practice, most fixed costs are of this nature [39].

Table 8.1

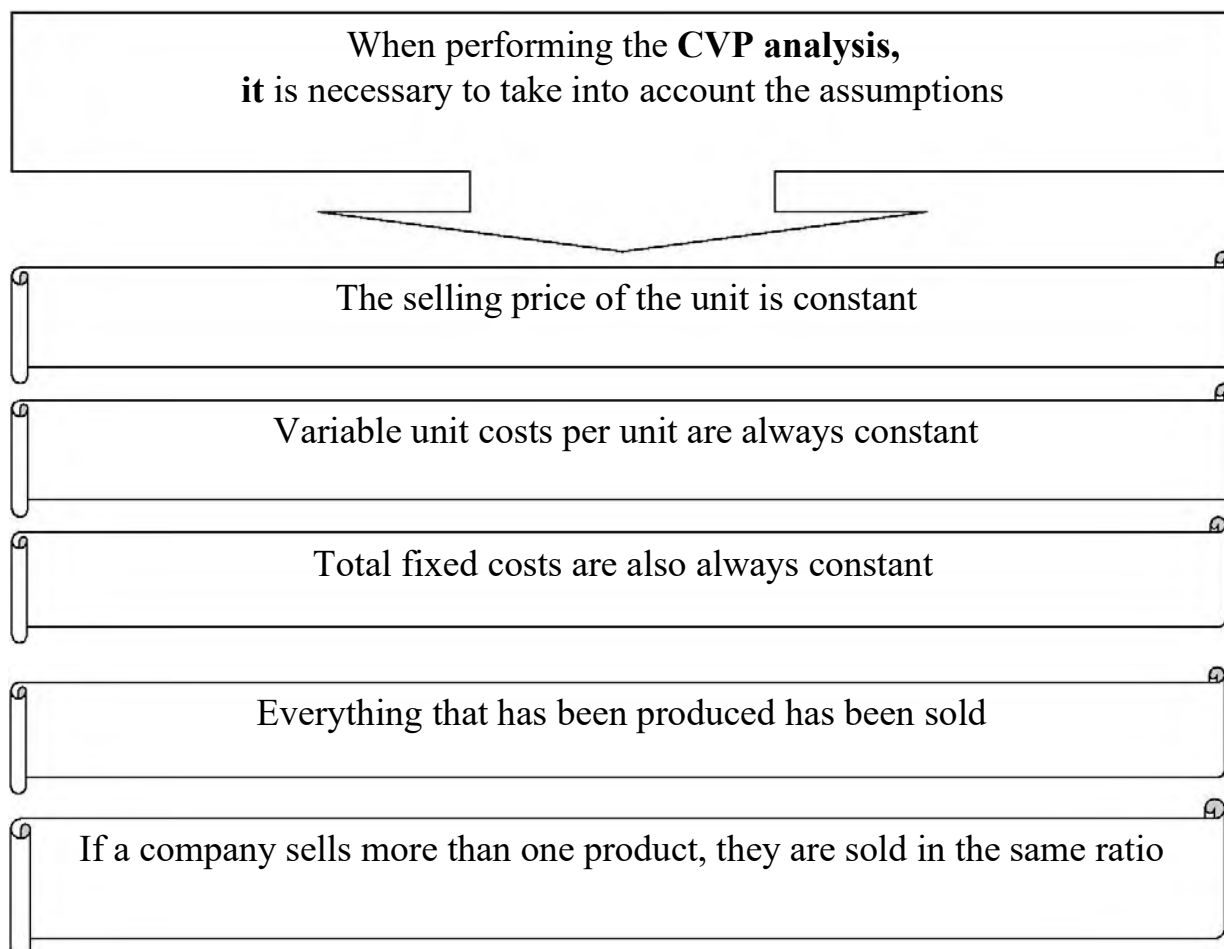
Data on the enterprise for the reporting period

	Indicator	Product		Total
		Ä	Å	
	Sales volume, units	70 000	30 000	100 000
	Price per unit, UAH	14	6	Ö
	Variable costs per unit, UAH	9	4	Ö
	Total fixed costs, UAH	Ö	Ö	250 000

However, if certain types of fixed costs (for example, depreciation of special equipment) are associated with the production of a particular type of product, then apply the analysis for each individual production line, and not for production as a whole.

8.4. Assumptions underlying the analysis of the “cost-volume-profit” relationship

The **CVP** analysis is used to determine, how changes in costs and facilities affect the company's operating and net income. When performing this analysis, it is necessary to take into account several assumptions shown in Fig.8.4.

Fig. 8.4. Assumptions are the basis of **CVP** analysis

If one or more assumptions are not met, then the application of this analysis can lead to incorrect results, and, as a consequence, making the wrong decisions based on them.

Thus, the main purpose of **CVP** - analysis is the ability to determine the essence of its components, providing changes in the activities of the enterprise.

Discussion and self-review questions

- 1. Purpos and methods for analyzing the cost-volume-profit relationship.*
- 2. Assignment of a profit sensitivity analysis.*
- 3. Features of cost-volume-profit relationship analysis in assortment conditions.*
- 4. What are the assumptions underlying the cost-volume-profit relationship analysis?*
- 5. Which indicators are used to determine the impact of changes in sales volume on profit?*

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THEME 9. ANALYSIS OF THE RELEVANCE OF INFORMATION FOR MANAGEMENT DECISION MAKING

9.1. The essence of a relevant approach to management decisions

The company's management constantly makes management decisions, that relate to both daily activities and future development strategy.

The decision-making process itself is one of the functions of the management process, and management decision is based on the analysis of operational and reliable information that sets goals, contains a defined program of action and formulates a real management situation (Fig. 9.1) [39].

Requirements for accounting information
Certainty
Significance and timeliness
Comparability and consistency
Significance
Conservatism
Completeness

Fig. 9.1. Requirements for accounting information

The accounting information, used by the manager to make management decisions, must be relevant, operational and reliable.

Providing the manager with such information is one of the tasks of the accountant.

The main characteristics of accounting information include the fact that:
firstly, accounting reveals the economic consequences of previous decisions;
secondly, accounting is a key source of information for proper control over the efficient use of resources;
thirdly, accounting is an information support for management decisions.

Management decisions are classified by objects, time horizon, the content of the management process, the degree of participation of specialists, they are organizational, economic, technical, social, etc. (Fig. 9.2) [20].

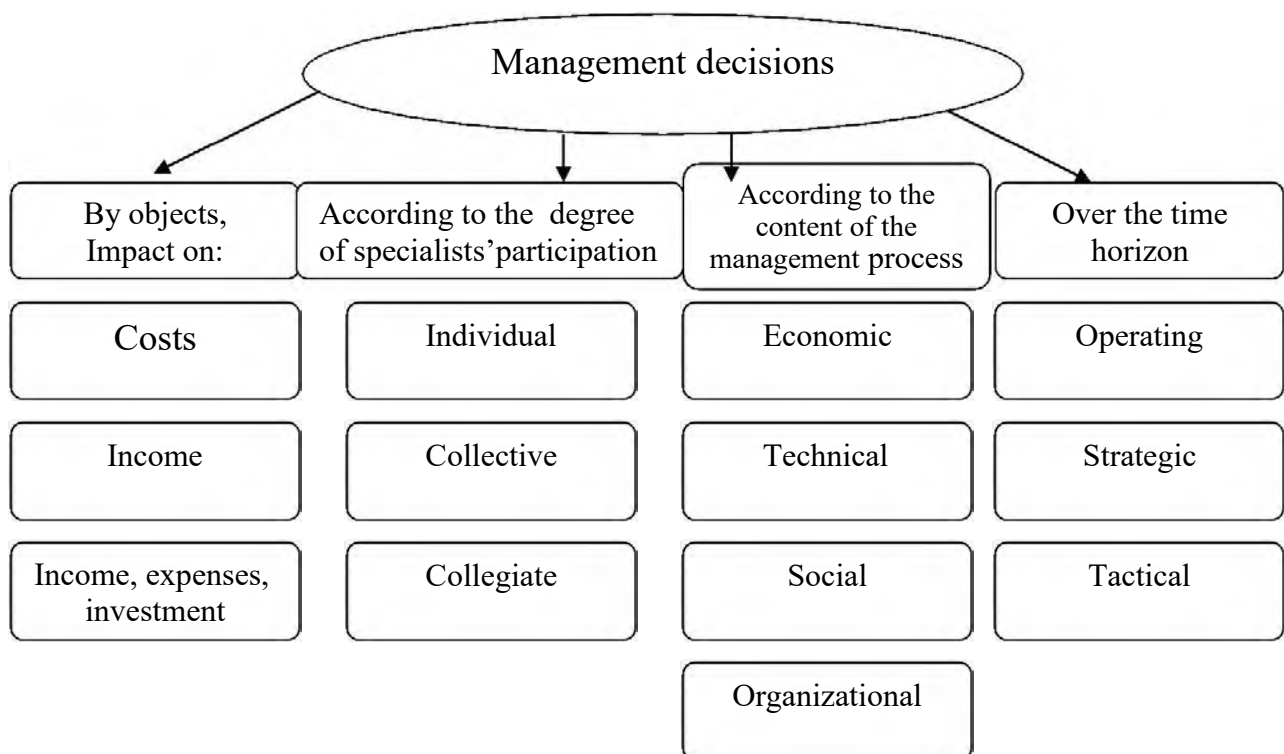


Fig. 9.2. General classification of management decisions

Management decision - is the choice of one of the possible alternatives aimed at achieving of the goal.

For example, the purpose of non-profit organizations is to provide services to consumers within their capabilities, and the purpose of commercial enterprises - to maximize profits and minimize losses, etc.

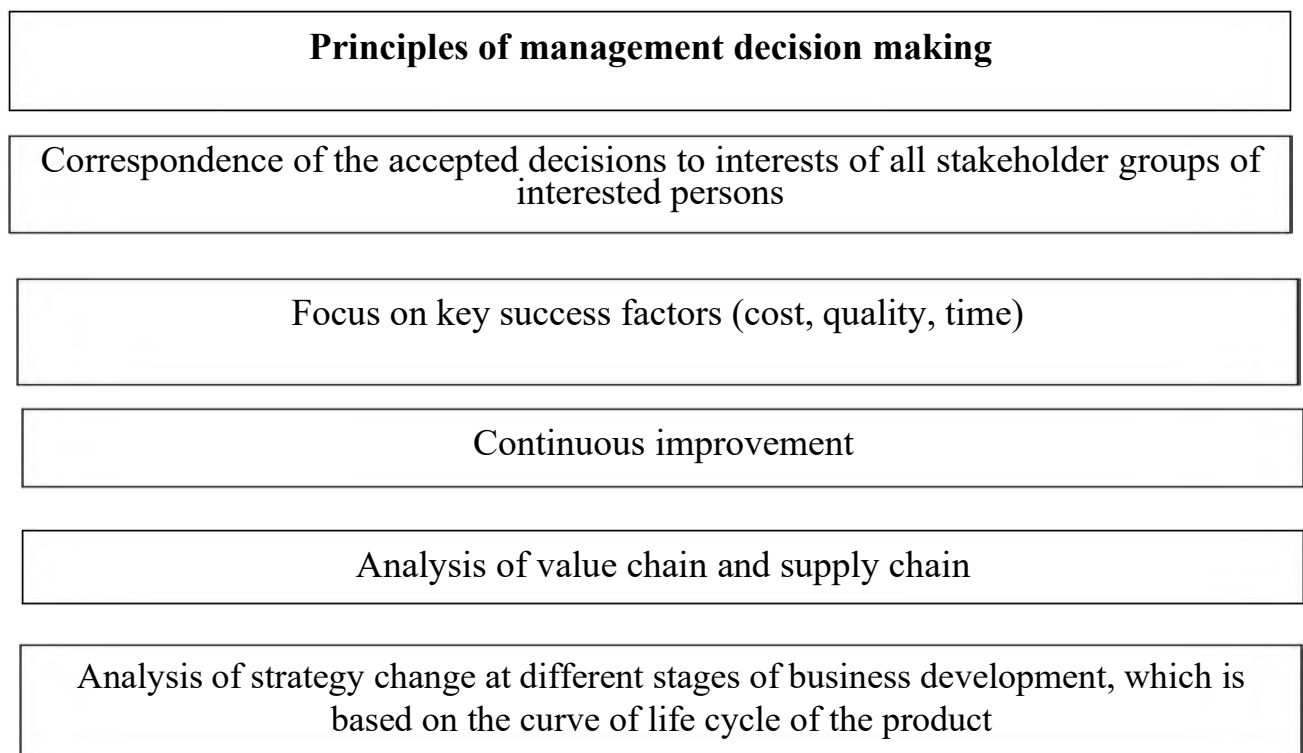


Fig. 9.3. Principles of management decision making

The decisions are made at the level of: management; managers; heads of departments; shops; districts in the form of orders, directives, plans, etc. If the accounting data meets the clearly defined needs of users - this information is **relevant**.

There is a relevant approach to management decisions.

1. Accounting data must meet certain information needs of users.
2. Only operational information is considered as relevant, because over time its value is lost.
3. Only costs and revenues that can be changed as a result of the decision are relevant and this applies only to future revenues and expenses.

The decision-making process is considered as the choice of the best of the possible alternatives in the narrow sense and as the ordering of existing alternatives in the broadest sense and contains several stages (Fig. 9.4):

In general, the decision-making process is the final stage of management. The main stages of management decision-making include not only the identification of the problem and the development of solutions, but also the implementation, monitoring and evaluation of its implementation.

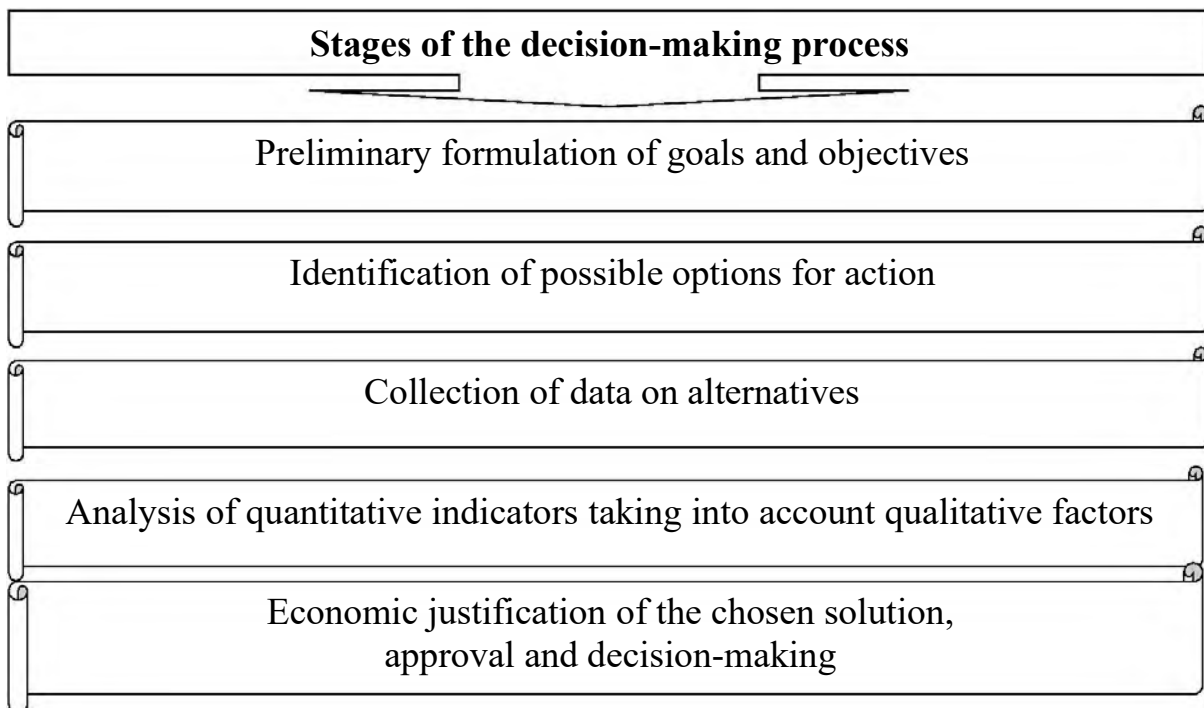


Fig. 9.4. The decision-making process

Therefore, the management accounting system should be directed not only at providing information, but also at ensuring, that the interests of all internal and external users are taken into account when making management decisions.

9.2. Analysis of relevant information in the presence of alternative solutions

The decision-making process is first of all the process of choosing between different alternatives. The term "alternative" means one of the possible options for obtaining the planned result in the most optimal way.

Thus, to make a decision means to choose one of several options that meets the goal set for the company. And the decision-making process itself can be seen as choosing the best of the possible alternatives or as ordering existing ones.

When analyzing relevant information for management decisions, not only actual (real) but also alternative costs are taken into account (Fig. 9.5):

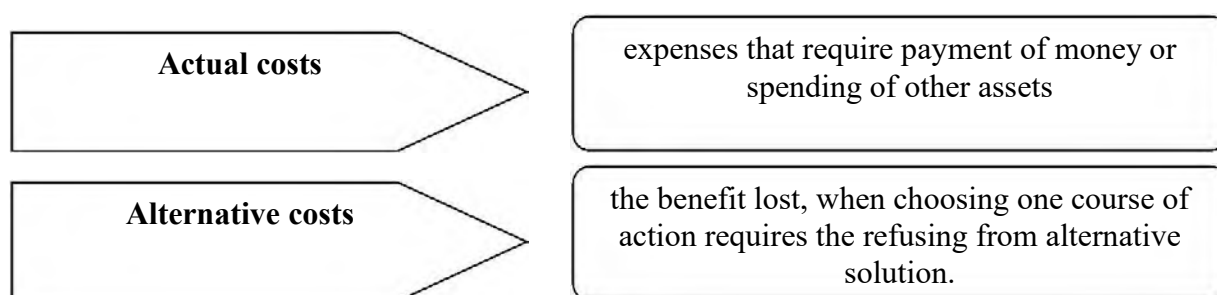


Fig. 9.5. Determination of actual (real) and opportunity costs

In the accounting records, the actual costs are reflected as they arise. In general, accountants in the course of current activities constantly analyze the relevant indicators of the solution of issues and take into account the factors, influencing them.

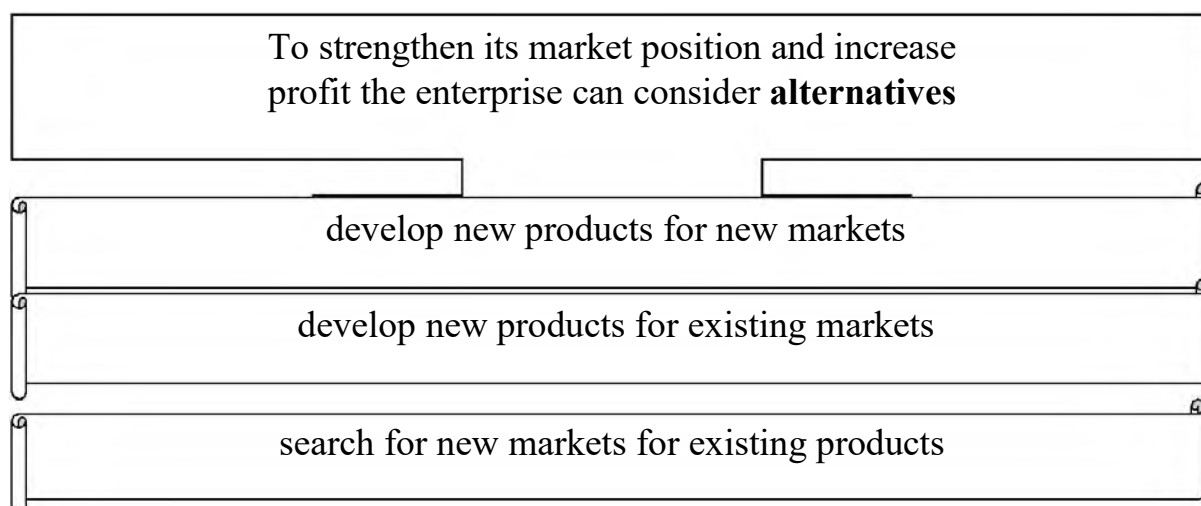


Fig. 9.6. Consideration of alternatives to increase profits and strengthen the company's position in the market

In turn, managers, analyzing situations, arising in the course of current activities, constantly choose among alternative solutions. Typical options for alternative solutions include (Fig. 9.7):

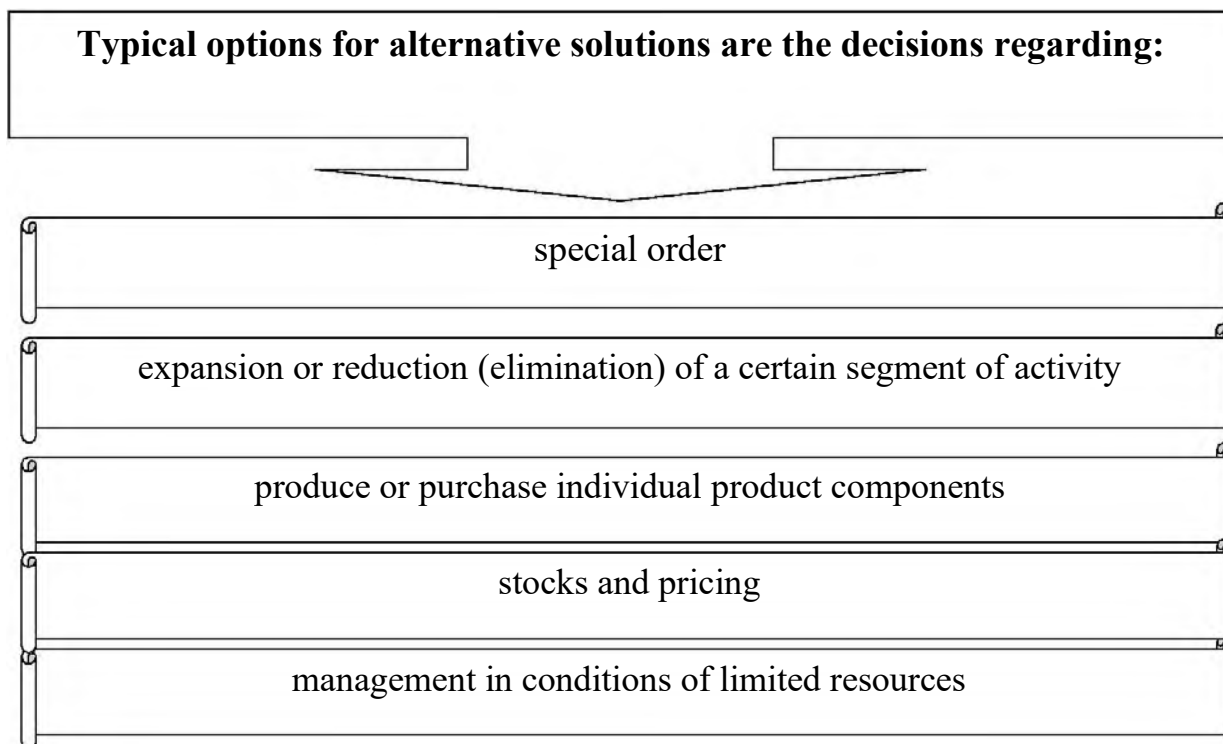


Fig. 9.7. Typical alternative solutions

Consider the options for alternative solutions in more detail in Fig. 9.8:

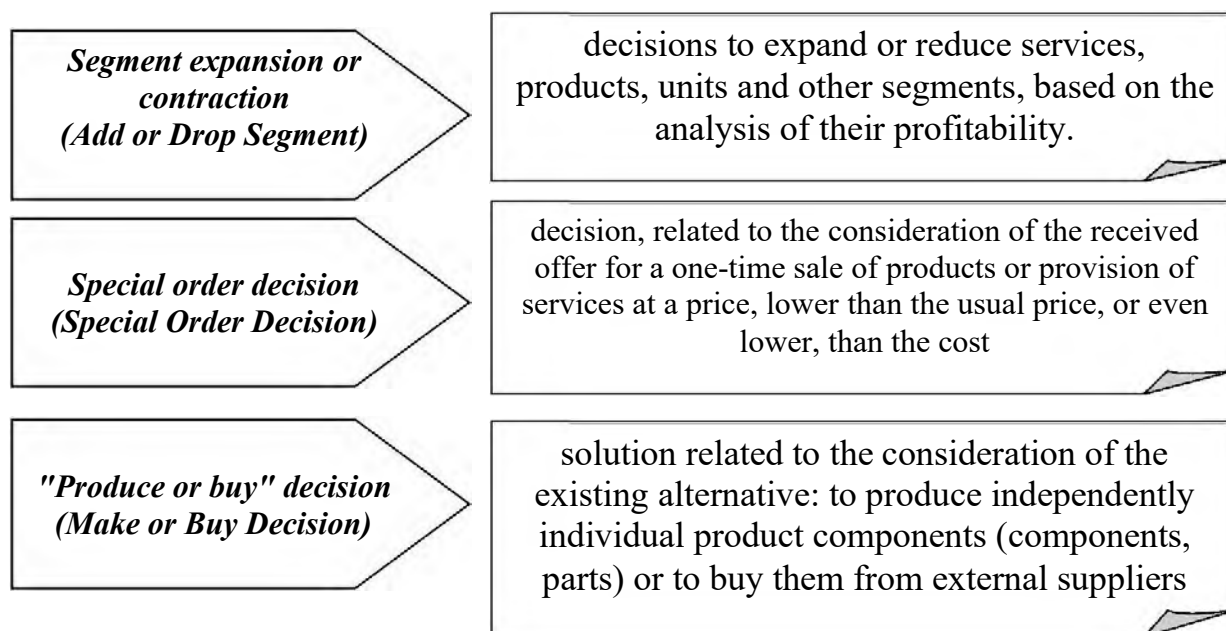


Fig. 9.8. Variants of alternative solutions

The choice among several options for the optimal solution is made on the basis of differential analysis of relevant information (Fig. 9.9).

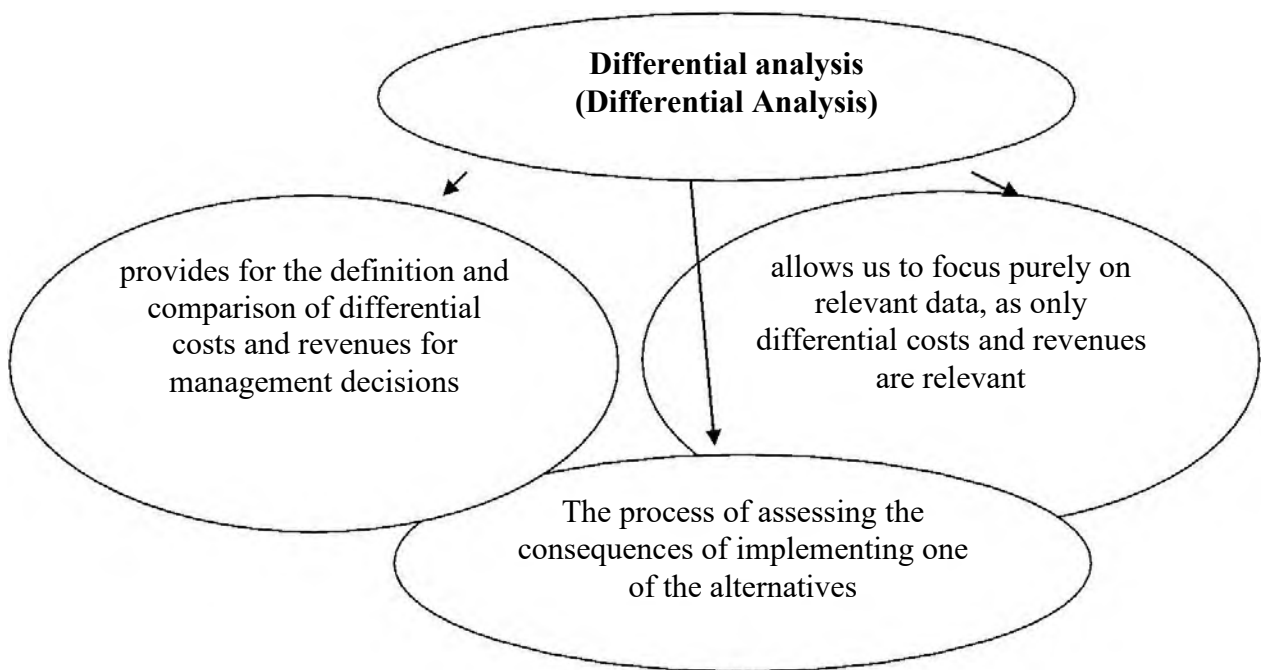


Fig. 9.9. Determination of differential analysis of relevant information

Relevant approach - is the concentration of attention only on relevant information in the decision-making process, which with a significant amount of information can speed up and facilitate the process of making effective management decisions (Fig. 9.10) [39].

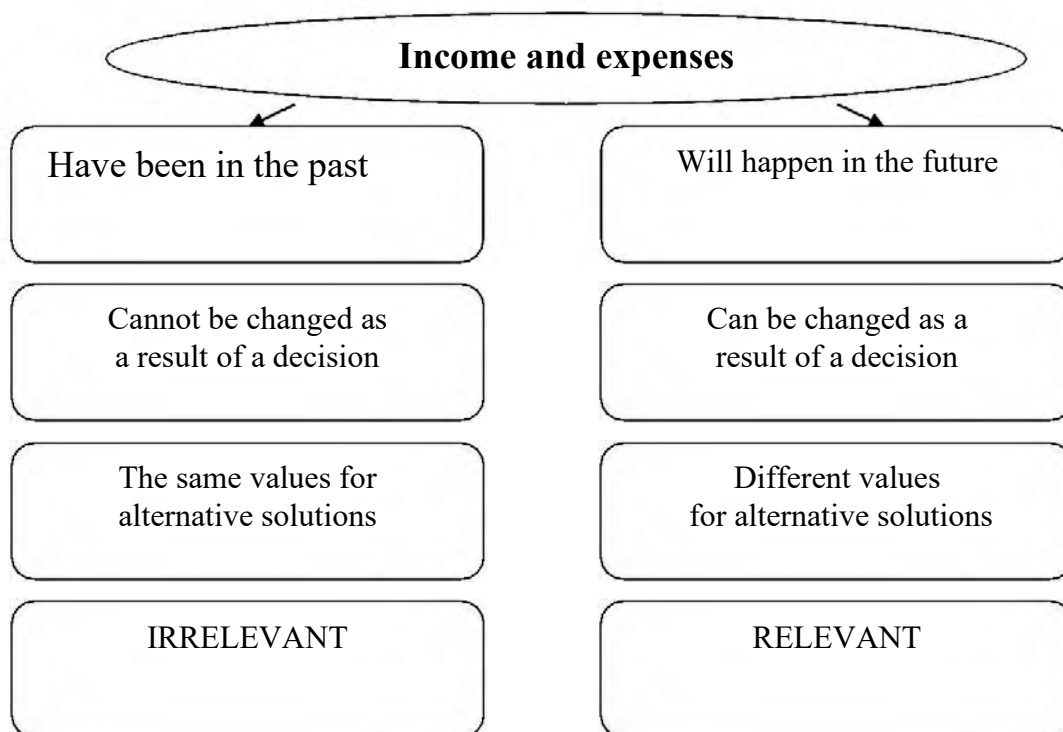


Fig. 9.10. Relevance criteria [100]

The method of comparing differential costs and revenues can be used to determine the differential profit (or loss), which characterizes the economic benefit of a decision (Fig. 9.11).

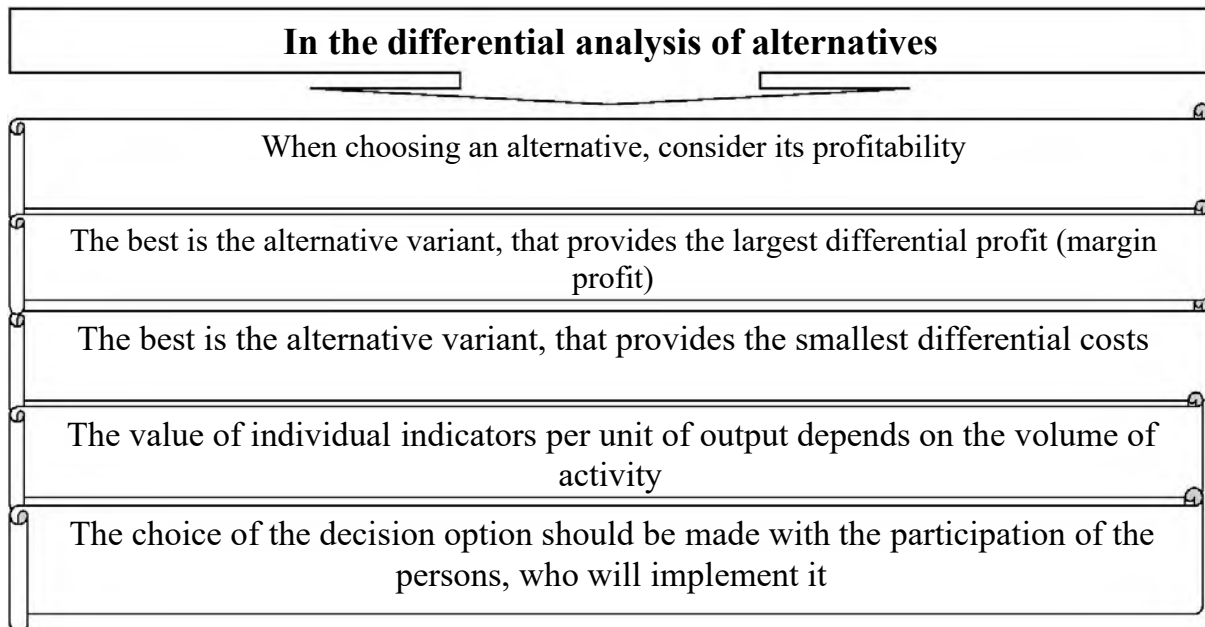


Fig. 9.11. Application of differential analysis to select the best alternatives

Thus, the analysis of relevant information for management decisions is the key to finding the best alternative to determine the company's income and expenses.

9.3. Making management decisions on the optimal use of resources under limited conditions

Management decisions on the optimal use of limited resources are due to the existence of certain factors, that limit the production or sale of products (works and services).

In the course of current activity, each enterprise periodically has, *for example*, insufficient availability of working capital, material resources (raw materials), production capacity, etc.

Restrictions are factors, that limit the production or sale of products (works and services).

For example, restrictions include: labor, cash, demand for products, material resources, production capacity.

Acting under existing restrictions, the company is forced to choose those types of products, works or services, the production of which is the most profitable. Restrictions are classified by a number of factors (Fig. 9.12):

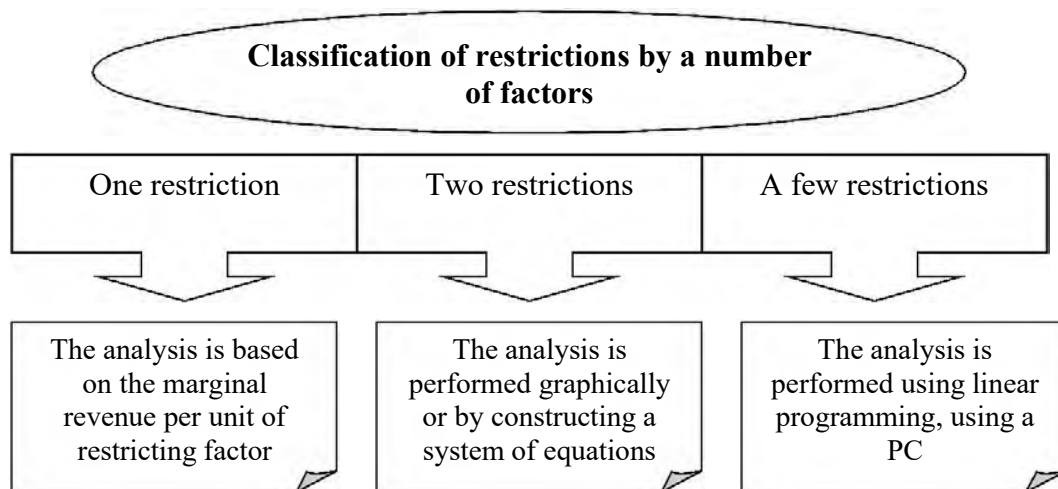


Fig. 9.12. Methods of production optimization with different number of restricting factors

It is necessary to decide, which products (works, services) are the most profitable. The results of the decision - the choice of the optimal combination of products.

The analysis in the presence of one restriction is carried out in stages (Fig. 9.13):

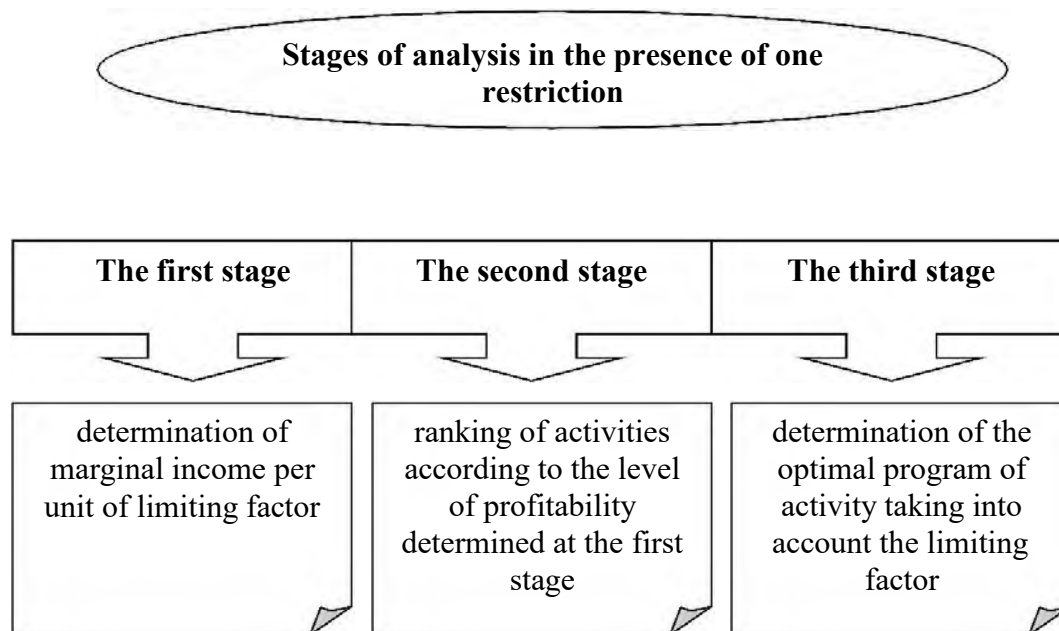


Fig. 9.13. Stages of analysis in the presence of one restriction

During the analysis in the presence of one restriction, it is necessary to take into account the needs of minimum demand for all types of products or compliance with the mandatory range and the fact, that the analysis is based on marginal revenue per unit of limiting factor (unit of raw materials, man-hours, unit of power, machine - hour, etc.) [39].

When performing the analysis in the presence of two restrictions, a coordinate system is built, along the x-axis of which denote one type of product (for example, A), and along the y-axis - the second (B) or a system of linear equations with two unknowns is solved.

The analysis in the presence of three and more restrictions is carried out by means of linear programming (fig. 9.14).

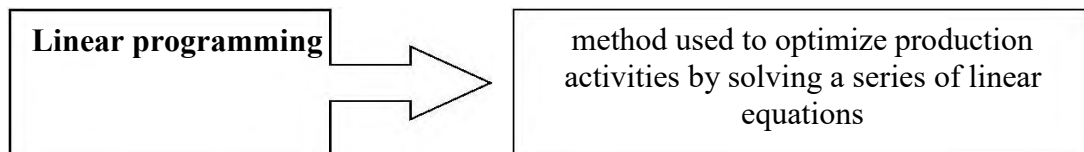


Fig. 9.14. Definition of linear programming

The process of linear programming is carried out in the order shown in Fig. 9.15:

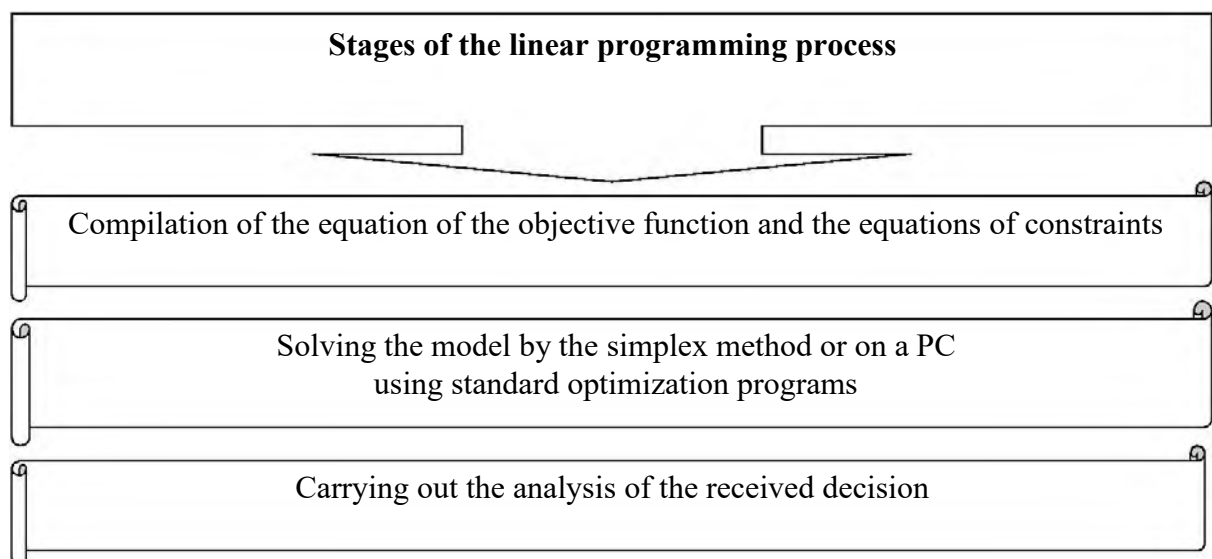


Fig. 9.15. Stages of the linear programming process

To compile the equation of the objective function, it is necessary to determine the variables (production volumes of certain types of products) and the objective function, that is, the goal we want to achieve (a certain amount of profit or the amount of marginal revenue).

Model solutions are usually performed using a PC. The result is an equation, the parameters of which show how many units of each type production it is advisable to produce (x) and what amount of income it will provide [100].

9.4. Substantiation of decisions on stocks and pricing

An important component of optimizing the supply process is to determine the size of the batch of raw materials and supplies received from the supplier.

Trading companies, *for example*, invest heavily in inventories. There are several reasons for this (Fig. 9.16), but the main factor in the policy of logistics is considered to be the calculation of the optimal size of the order or batch [100].

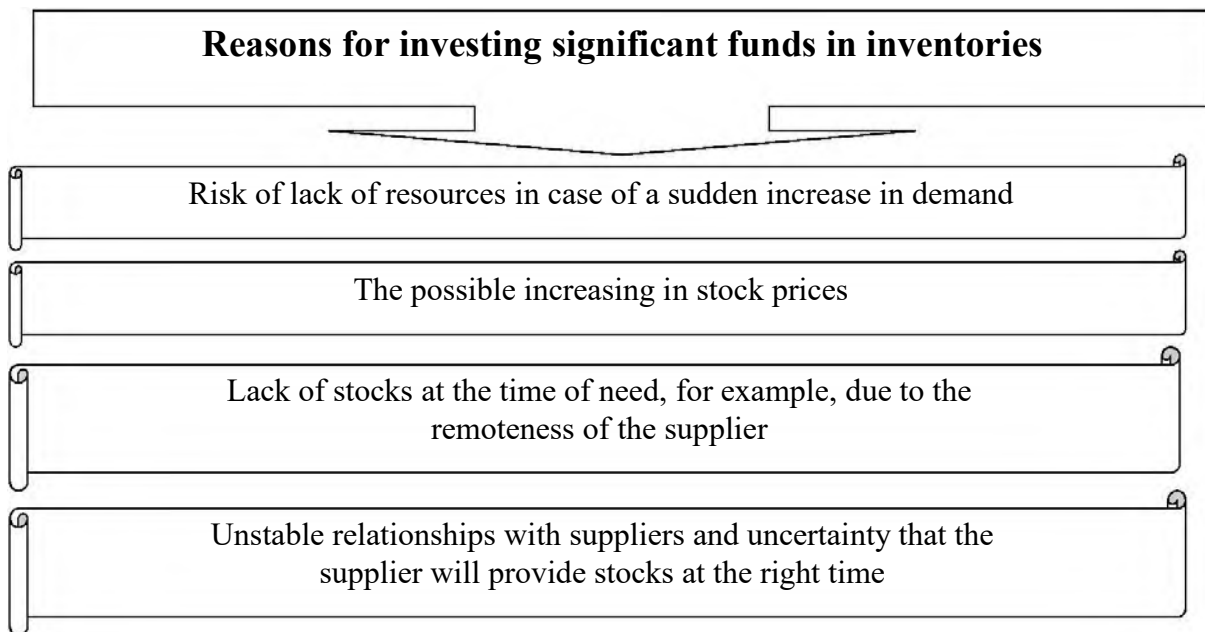


Fig. 9.16. Reasons for investing significant funds in inventories

There are two options for the supply of raw materials: supply of small volumes at short intervals, supply of large volumes at long intervals. The influence of such factors as the size of the enterprise, the quality of materials and raw materials, the cost of storage of stocks, the need for production of raw materials for the planning period, the size of prices, etc. is also very important

The main factor in the policy of logistics is the calculation of the optimal size of the order or party - the method of "economic order quantities" (**EOQ**).

Using the **EOQ** method allows to achieve the minimum cost associated with maintaining stocks, and answer the question of how much the order costs and when to place an order [39].

Form.9.1 is used to determine the optimal batch of supplies. 9.1:

$$\bar{A} = 2 \bar{A} R / Z, \text{ where} \quad (9.1)$$

$\bar{A}$ – order quantities,

$\bar{A}$ – annual demand for stock units,

R – costs, of fulfilling quantities

Z – current storage costs of the order unit.

If you know the quantities of the order (E), you can specify the number of orders to be placed within one year (form. 9.2):

$$n = A/E, \text{ where} \quad (9.2)$$

n - number of quantities.

The interval between two consecutive orders (provided that in a year there are 250 working days) makes (form. 9.3):

$$t = 250 / n \quad (9.3)$$

Total costs can be calculated, using formula 9.4:

$$C = A \times R / E + E \times C / 2, \text{ where} \quad (9.4)$$

E is the value of any batch of supplies (not necessarily optimal).

In practice, ESO is often calculated by formula 9.5:

$$EOQ = \sqrt{2D \times P / H}, \text{ where} \quad (9.5)$$

EOQ - economic size of the quantities,

D - the need for stock units during a certain period,

P - the cost of fulfilling the order,

H - storage costs of the order unit during a certain period. (Head. P. 244)

The model of economic order quantities is based on assumptions, in particular (fig. 9.17):

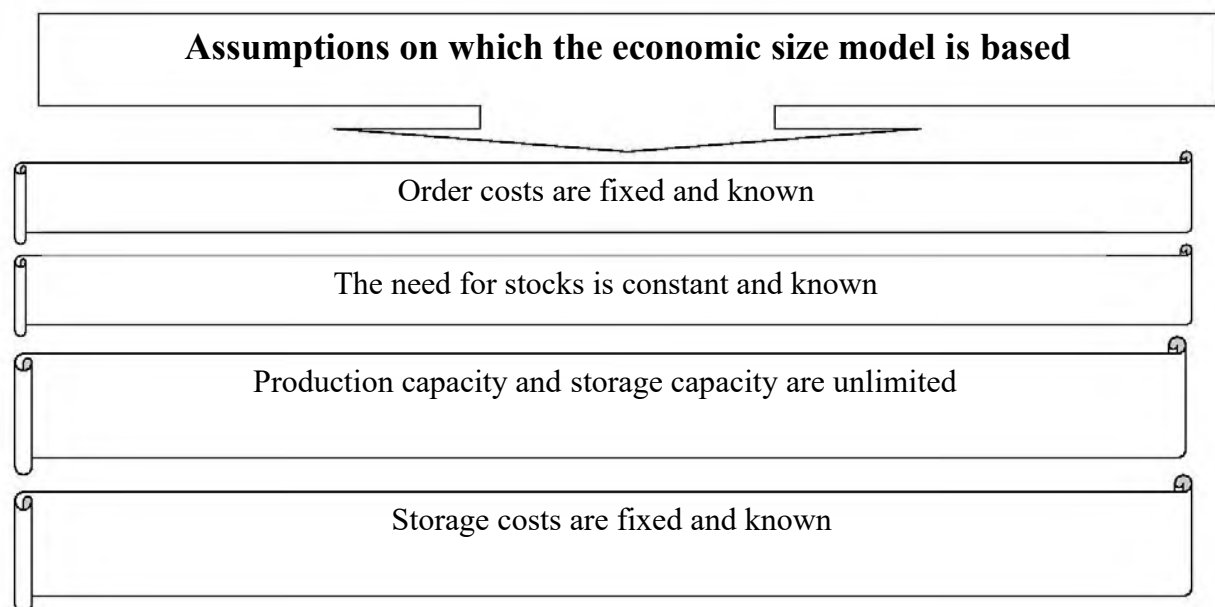


Fig. 9.17. Model of economic order quantities is based on assumptions

In addition, the profitability of the activity directly depends on the establishment of the optimal selling price at the existing cost, combination and sales volume.

Pricing decisions

Important management decisions include setting prices for products, works or services of the enterprise, while having to take into account many factors.

The main factors influencing pricing include (Fig.9.18):

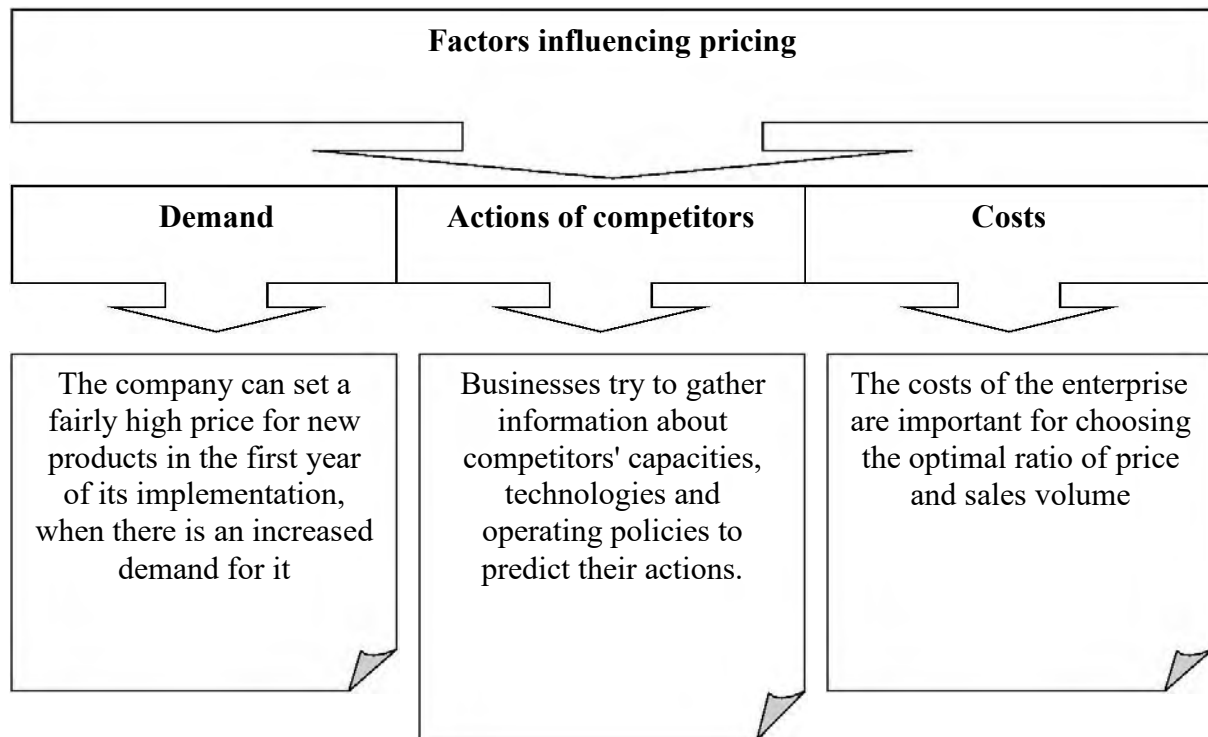


Fig. 9.18. Factors, influencing pricing

At all stages of the product life cycle, demand is extremely important for the company. Also, companies must respond quickly to changes in prices by competitors and when prices are reduced by competitors - to review the prices of their products promptly.

Thus, the choice of pricing model and strategy of the enterprise depends on the purpose of the firm, the time aspect and the results of market research.

Usually two pricing models are considered: economic and cost-based pricing.

The economic pricing model is based on the assumption that the firm tries to set the selling price at a level that provides maximum profit.

In monopolistic competition, the change in price directly affects sales. Predicting price elasticity makes it possible to establish the dynamics of marginal income, which decreases as sales increase (Fig. 9.19).



Fig. 9.19. Determination of price elasticity

Along with the marginal income it is necessary to determine the marginal costs. Analysis of marginal costs and revenues makes it possible to establish the optimal selling price. In practice, it is quite difficult to establish accurately the relationship between sales price and demand [39].

To determine the optimal price, the costs for each level of sales must also be calculated.

The final stage is to calculate the profit for each level of sales and to select the most profitable combination of price and volume

The considered pricing model has significant restrictions, that prevent its wide application (Fig. 9.19):

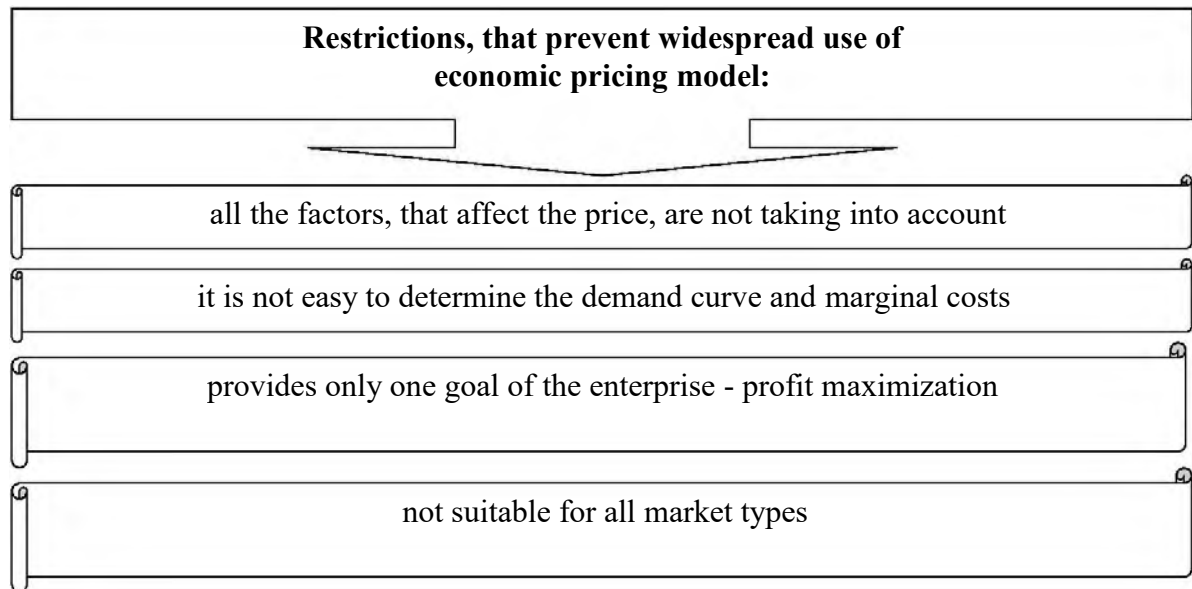


Fig. 9.19. Restrictions, that prevent the widespread application of the economic pricing model

One of the main issues of enterprise management is to set a price that will provide a satisfactory level of profitability.

And because the profitability of the business depends on the establishment of the optimal selling price at the available amount of costs and sales, the decision on pricing is a prerequisite for doing business.

Half of the enterprises prefer to use cost-oriented approaches. The most common is to determine the final price, based on the principle of "cost plus" and pricing, based on target profit. In general, the selling price is calculated by the following formula 9.6:

$$Price = Cost + Markup \quad (9.6)$$

When setting the price on the principle of "cost plus", the selling price is calculated on the basis of the costs of the enterprise, which are increased by the amount of the markup, which corresponds to the planned rate of return. Sales volume is not taken into account.

In turn, the amount of the markup is calculated as a percentage of costs, that are the basis for calculating the price (form 9.7):

$$\text{Markup} = \text{Costs} \times \text{Percentage of Markup} \quad (9.7)$$

Hence the percentage of the markup is calculated by formula 9.8:

$$\text{Markup percentage} = \frac{\text{Planned profit} + \text{Not basic expenses}}{\text{Annual sales volume} \times \text{Basic costs per unit}} \quad (9.8)$$

When pricing on the basis of target profit, the establishment of the selling price should ensure the receipt of the planned amount of profit for a certain volume of sales.

In practice, most management decisions are often considered in the context of a specific problem.

Therefore, it is always important to accurately set the minimum possible selling price of additional products, taking into account all alternatives to the use of production equipment.

Discussion and self-review questions

1. *The essence of the relevant approach when making management decisions.*
2. *What are the main characteristics of the account information?*
3. *Expand the steps to perform the analysis when there is one constraint.*
4. *What is an important component of supply process optimization?*
5. *Name the assumptions on which the model of economic quantities is based.*
6. *Reasons for investing significant funds in trade stocks.*
7. *Name the stages of the process of linear programming.*
8. *How is the final price determined on the basis of the "cost plus" principle?*
9. *Features of target profit-based pricing.*
10. *What constraints prevent the widespread application of the economic pricing model?*

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THEME 10. BUDGETING AND CONTROL

10.1. The essence of budgeting and its organization

The term “budget” corresponds to the concept of “plan”, comes from the Old Norse “budgie” and means “bag”, or “wallet”.

Defining the financial structure of an enterprise

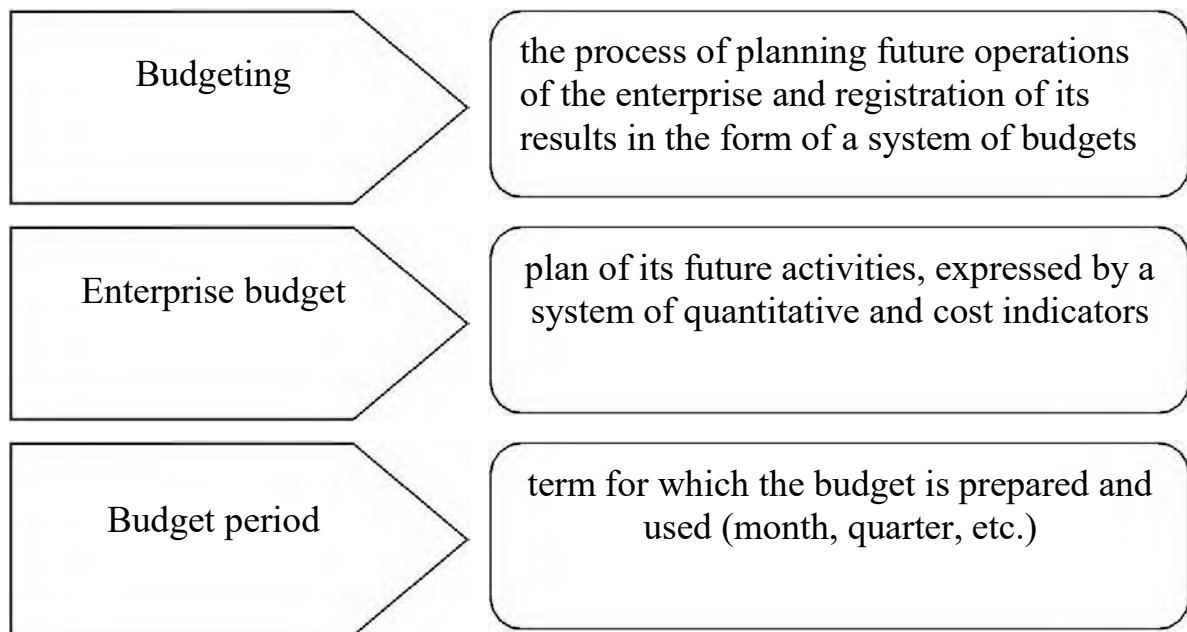


Fig. 10.1. Defining the main terms of the topic

According to the budget method (the method of using budgets), the activity of the enterprise is presented as balancing of incomes and expenses, the places of origin of which must be clearly defined and assigned to the manager of the appropriate level.

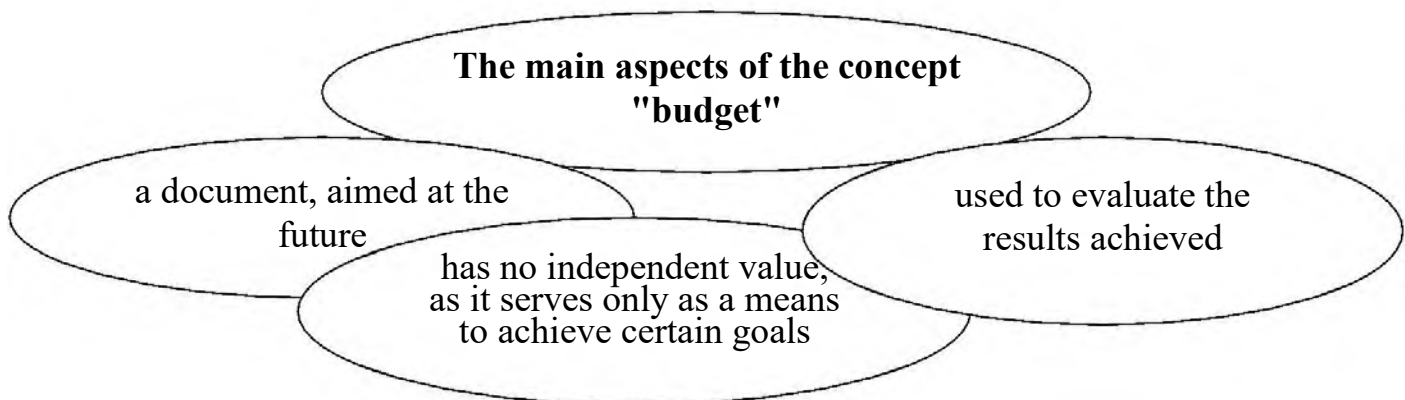


Fig. 10.2. The main aspects of the concept "budget"

Thus, the budget is a financial plan created according to clear principles, which assesses the expected course of action and highlights the future operations to achieve operational and strategic goals of the enterprise (Fig. 10.3).

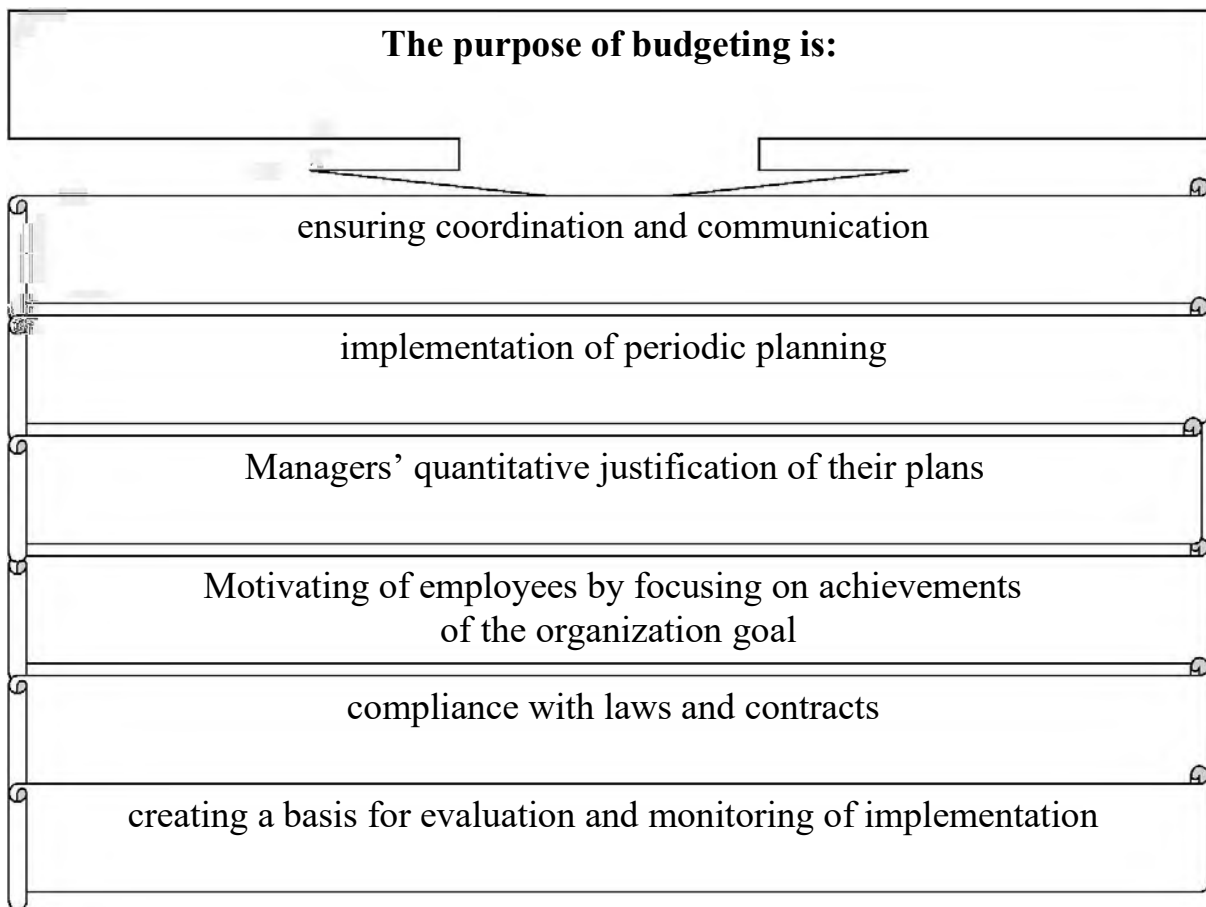


Fig. 10.3. Defining the purpose of budgeting

To achieve these goals, budgeting is carried out in two directions (Fig. 10.4):

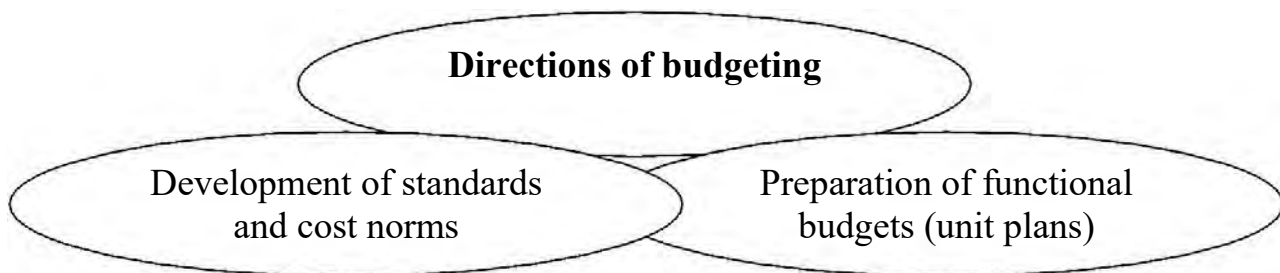


Fig. 10.4. Defining budgeting directions.

The relationship of these directions is reduced to the fact, that on the basis of the budgets of individual units the rate of distribution of their overhead costs between certain types of products is determined.

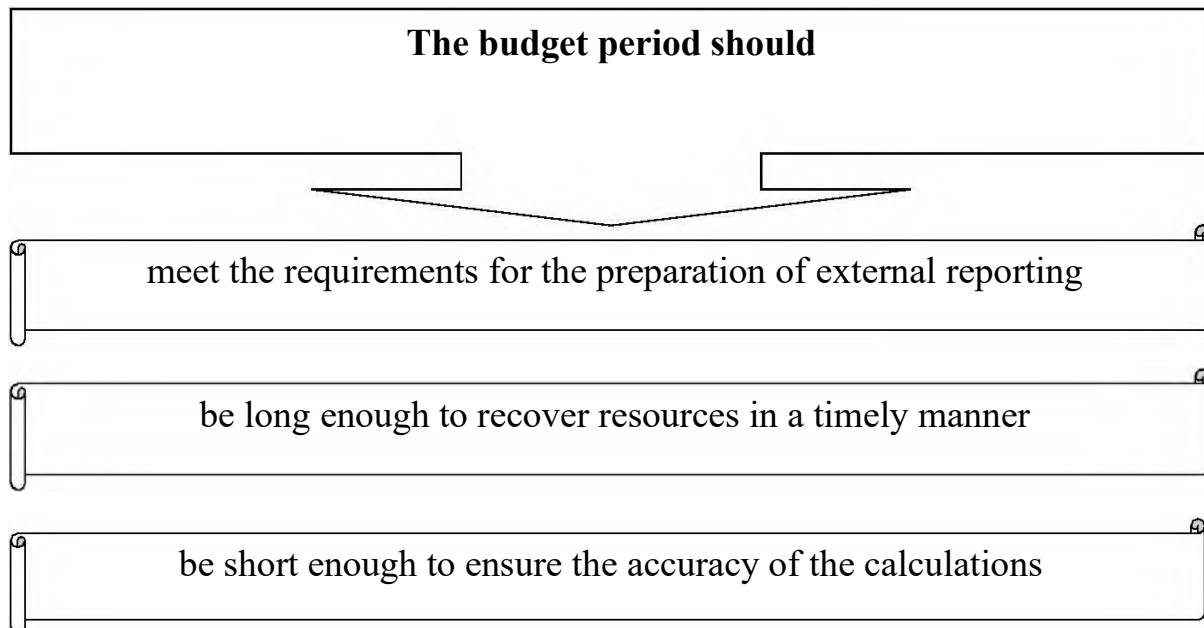


Fig. 10.5. Defining the budget period

The budgeting process usually covers the following main stages (Fig. 10.6):

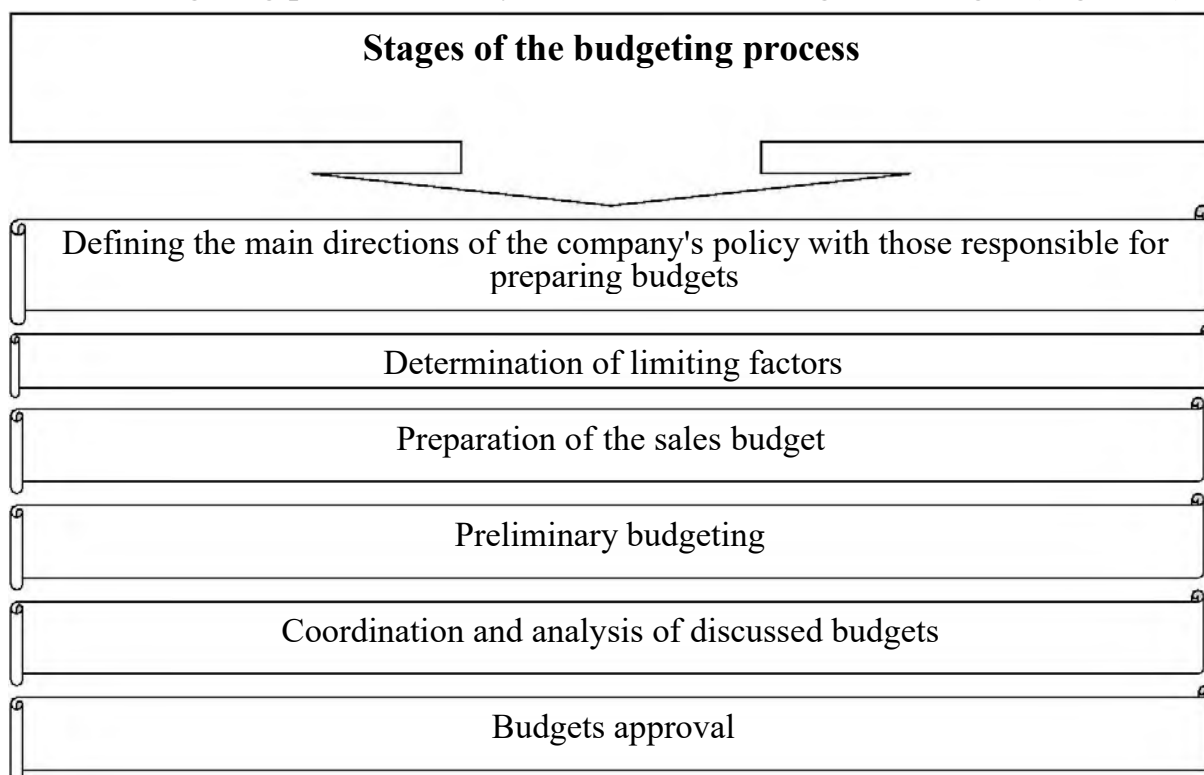


Fig. 10.6. Stages of the budgeting process

There are several **types of budgets**, the classification of which is carried out on such grounds (Fig.10.7).

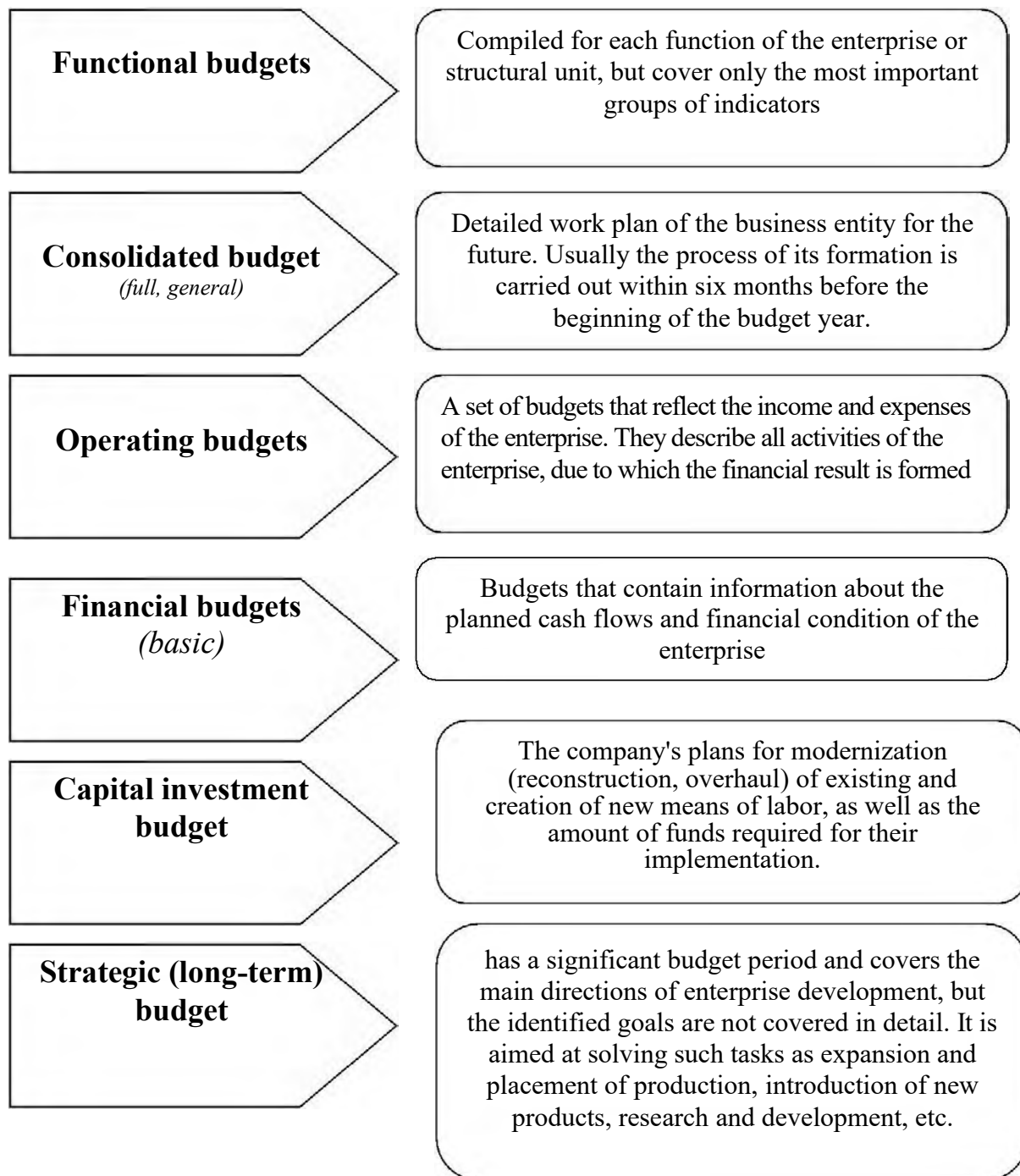


Fig. 10.7. Types of budgets

Strategic, tactical and current budgets differ from each other in the budget period (time interval to which the budget applies).

Budgets are usually considered **complete**, in other words, those, that reflect future operations for a clearly defined period and level of activity.

However, in modern conditions, a completely **different method of budgeting** is often used – the formation of **continuous** budgets.

During the execution of the budget in the reporting month (quarter), new budgets for the month (quarter) are constantly added to the existing annual budget after its completion, so, that each time there was a budget drawn up for the year. This allows to predict future deviations and take the necessary measures to prevent them.

But at the same time, such budgeting techniques are extremely time-consuming and require significant additional costs.

Depending on the methods of calculating budget indicators, distinguish (Fig. 10.8):

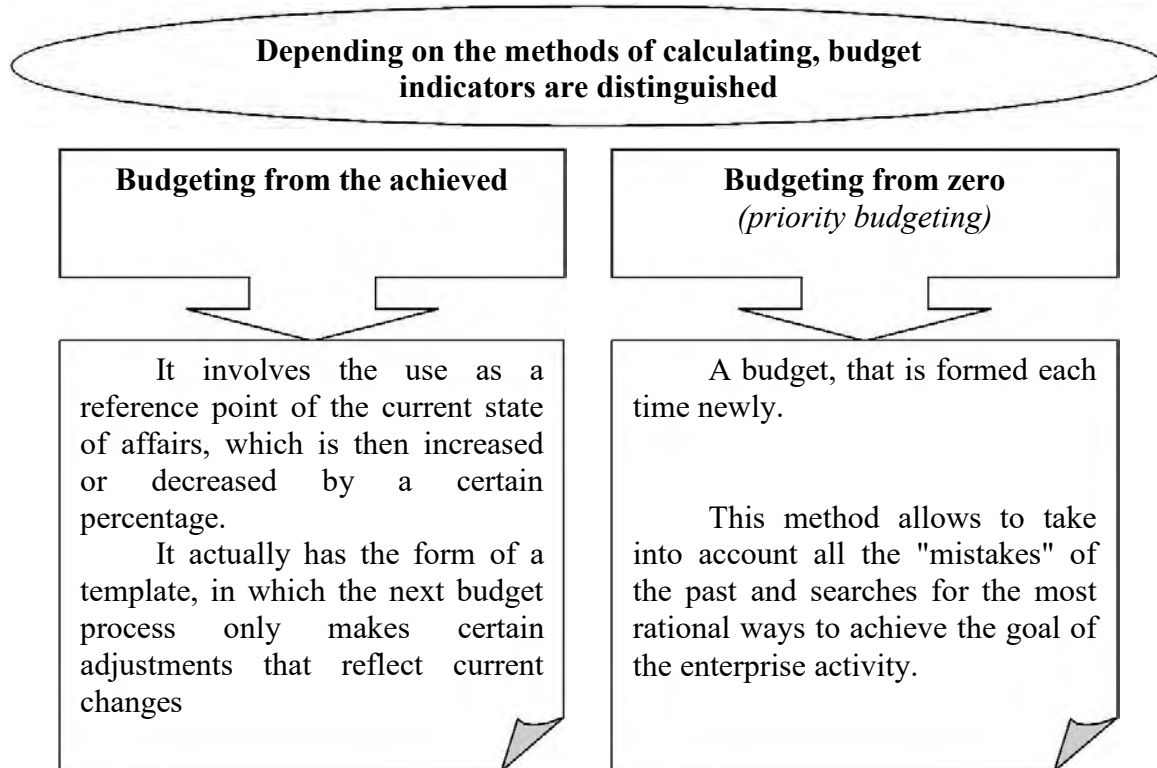


Fig. 10.8. Classification of budgets, depending on the methods of calculating indicators

Thus, budgeting "**from zero**", in terms of planning, is a more effective method, than building budgets from what has been achieved, although such a path is very expensive and can cause a conflict of interest among employees. Depending on the nature of the object, the budgets are classified (Fig.10.9):

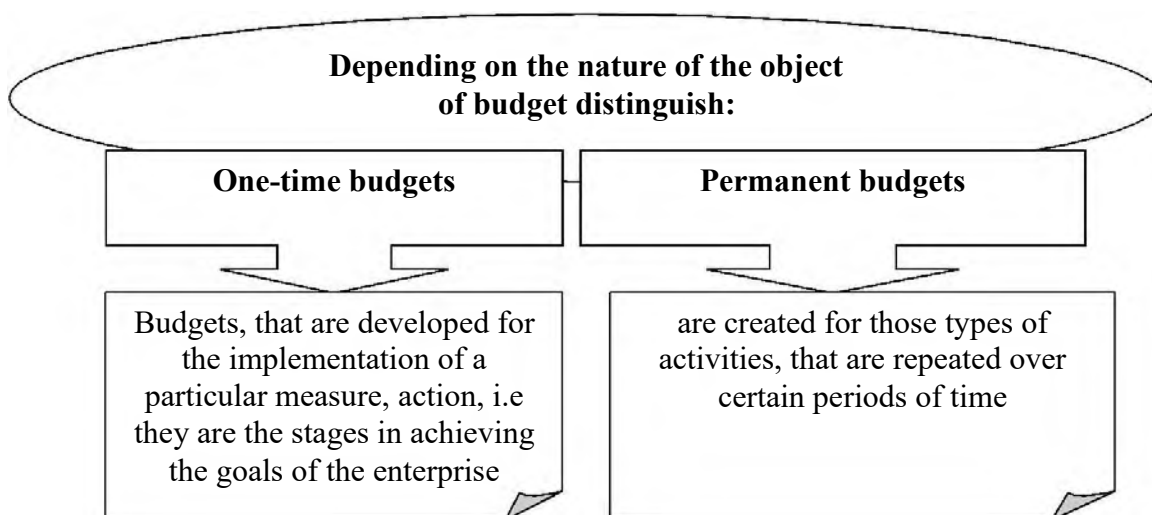


Fig. 10.9. Classification of budgets depending on the nature of the object

Budgeting helps **to make management decisions**, because due to the formation of budgets determination of the income and expenses, necessary to obtain it, take place. As a management technology, **budgeting contains three components** (Fig. 10.10):

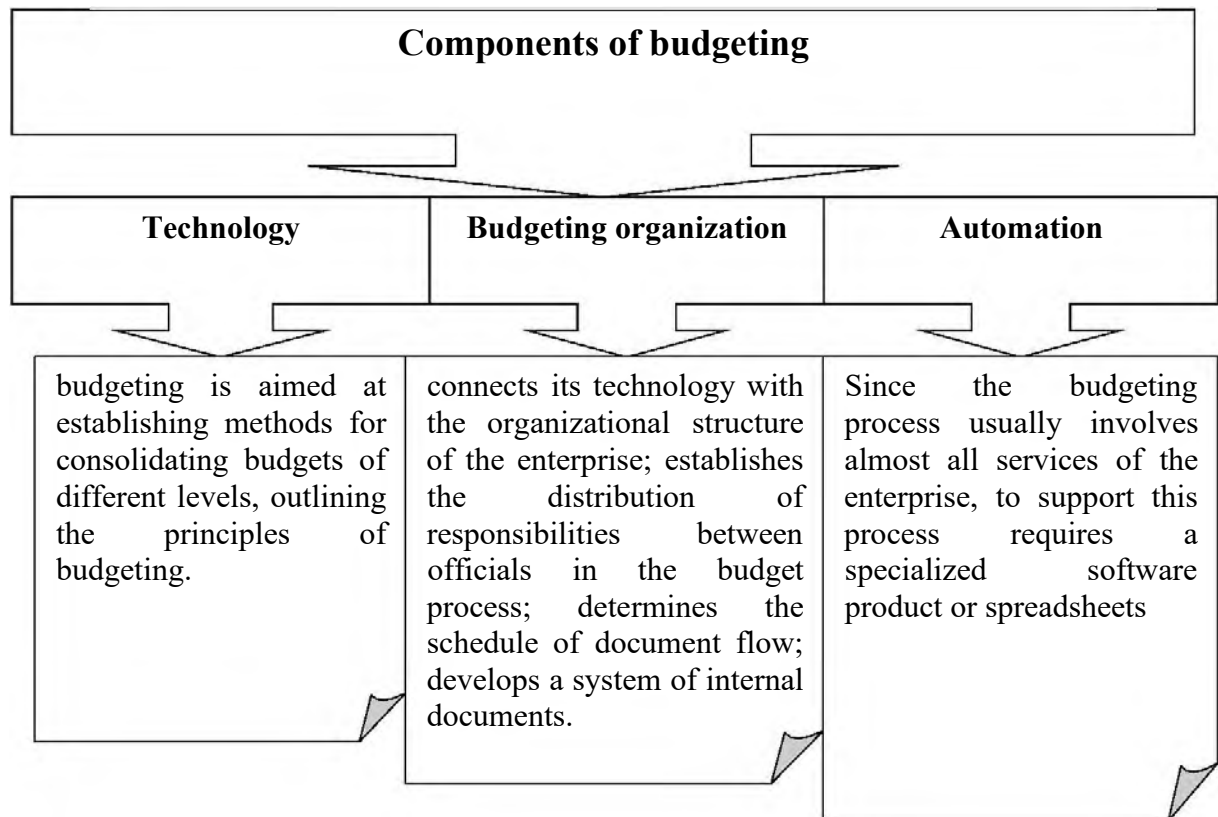


Fig. 10.10. Components of budgeting

In today's software market, the development and automation of business planning and budgeting systems is based on SAP SEM (Strategic Enterprise Management) BPS (Business Planning and Simulation). The constant increase in data on the activities of the enterprise and the processes of their collection for further analysis and decision-making, requires significant time and manpower to process them [7].

The following sequence of actions is recommended for the organization of budgeting (fig. 10.11):

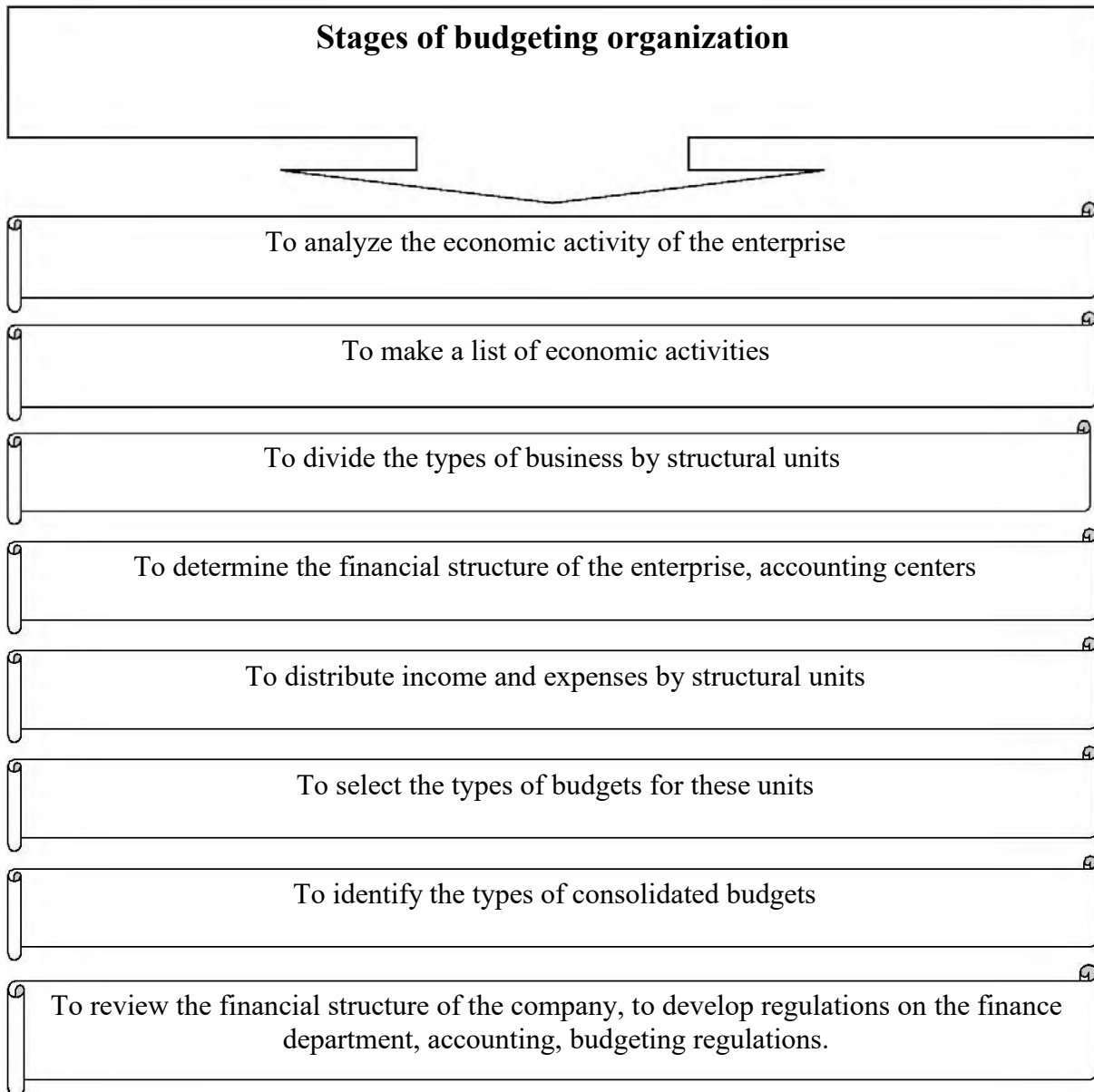


Fig. 10.11. Sequence of actions for the organization of budgeting

In the economic literature, the following **budgeting functions** are distinguished as a management tool (Fig. 10.12):

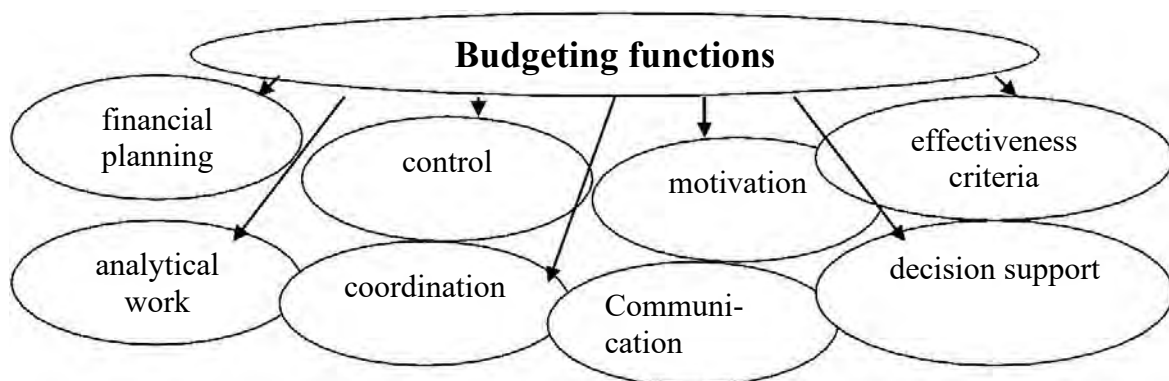


Fig. 10.12. Definition of budgeting functions

There is a classification of functions, proposed by German experts in the field of controlling A. Tsund and P. Horvach [42]:

- forecasting function (future operations of the enterprise find their financial expression in budgets);
- motivation function (implementation of budget indicators is a criterion of efficiency of activity of individuals, structural units etc.);
- the function of regulating financial competencies (determining the need for financial resources needed to achieve the goals of individual units of the enterprise);
- coordination function (available and mobilized financial resources should be used to achieve the goals defined in the development strategy of the enterprise).

Thus, budgeting is a dynamic process that combines goals, plans, decisions to achieve them, evaluation of their implementation and, if necessary, changes in both strategic plans and budgets for next year.

10.2.Preparation and coordination of budgets

Budgets preparations are closely related to the specifics of business operations of the business entity and is carried out according to the principles (Fig. 10.13):

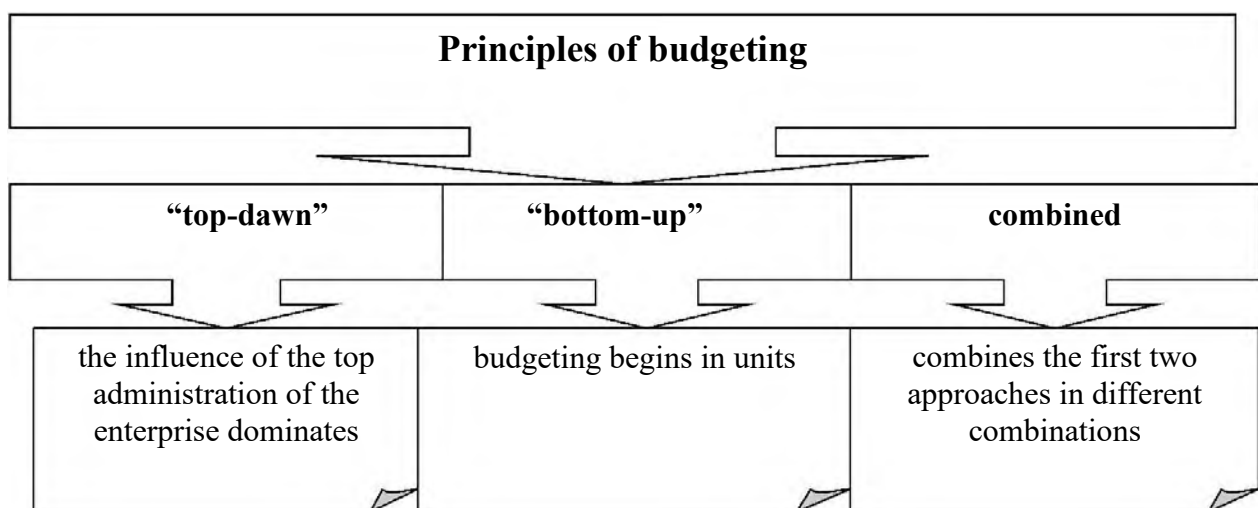


Fig. 10.13. Definition of budgeting functions

When drawing up a budget on the principle of **“from the top” “to the bottom”**, the budget goals of the enterprise as a whole are considered first, then - the budgets of large units of the enterprise and at the end – the budgets of the lowest level.

The advantages of this method include clear goals and objectives of management, and the disadvantages – the high cost of developing enterprise strategy, building a realistic forecast and the fact, that it does not take into account the specifics of each forecast.

And vice versa, when drawing up the budget on the principle of “**from the bottom**” “**to the top**” first of all the plans of separate units, further – budgets of bigger enterprises and then – the main budget are made.

The advantages of the method **from the bottom**” “ **to the top**” include the fact, that they take into account the peculiarities of real work in the field, reducing management costs, the disadvantages include the fact, that conditions for artificial understatement and overstatement of planned costs by units to create more comfortable conditions for themselves are created.

The relationship between the budgets of a commercial enterprise

The sales budget is based on the forecast of specialists about the potential level of prices and sales volumes in the next budget period.

The drawing up of all other budgets is based on the sales budget, because it determines sales revenue, volume and price of sales by product types, cash flow, production and marketing costs, and so on.

Forming the **sales budget** is the most difficult aspect of budgeting. This document should reflect the possible volume of sales in kind and value for the year, as well as for shorter periods of time - quarter, month, etc. [65]. Herewith the sales volume can be determined at least in two directions: by orders, by types of products (Fig. 10.14).

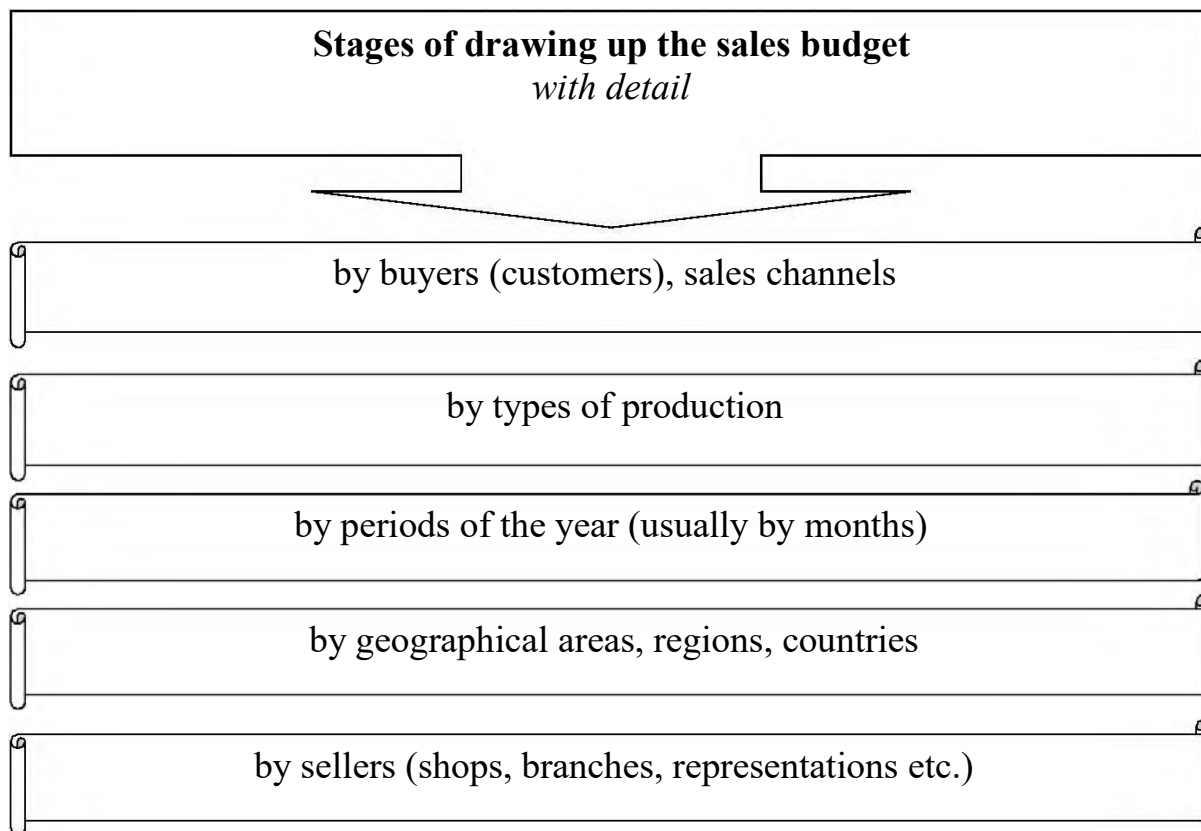


Fig. 10.14. Stages of drawing up the sales budget

Simultaneously with **the sales budget**, a **schedule of sales proceeds** is drawn up. This takes into account the terms of payment for the sale of products on credit (with payment in 30, 45 or 60 days or more).

To respond to market demands in a timely manner, the enterprise needs coordination of actions of production unit and sales department.

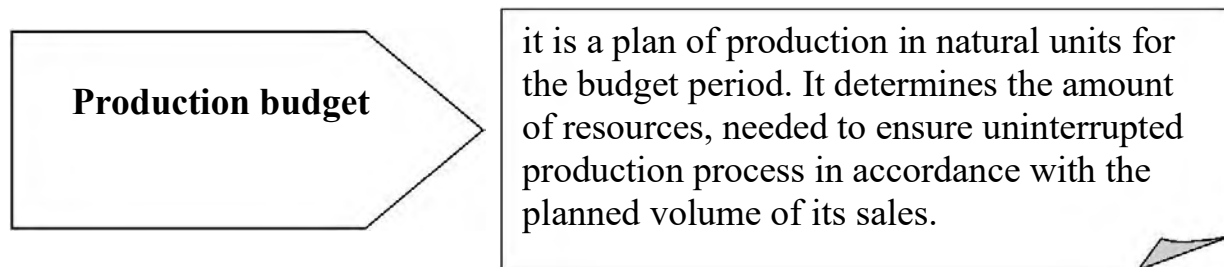


Fig.10.15. Determination of the production budget.

The **production budget** is calculated on the basis of **sales budget** data, taking into account changes in the remnant of finished products by formulas 10.1 and 10.2.

$$\begin{array}{l} \text{The required volume of production} \\ \text{Planned sales for the period} \\ + \\ \text{Finished goods balances at the end of the period} \\ - \\ \text{Finished goods balances at the beginning of the period} \end{array} \quad (10.1)$$

$$\begin{array}{l} \text{The required amount of purchase of inventories} \\ \text{the amount of inventories, required to manufacture products} \\ + \\ \text{the amount of inventories in the remnant at the end of the period} \\ - \\ \text{the amount of inventories in the remnant at the beginning of the period} \end{array} \quad (10.2)$$

Thus, the **production budget** is formed on the basis of sales budget data, taking into account changes in the remnant of finished products at the beginning and the end of the budget period. The required stock of finished products is determined based on the rhythm of receipt of finished products from production, the planned sales of the next period, the expected change in demand for products, and so on. Usually, the volume of stocks of finished products is planned as a percentage of sales for the next period.

The production budget is the basis for the preparation of other operating budgets, related to the planning of production costs (Fig. 10.16).

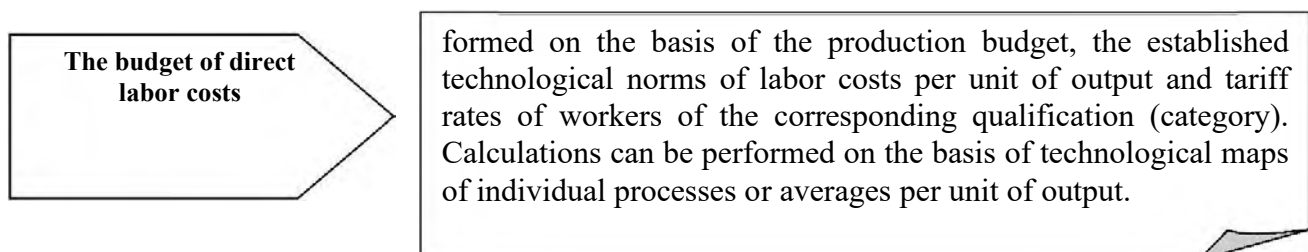


Fig. 10.16. Determining the budget of direct labor costs

Such calculations are performed in particular for each type of product, and then determine the total labor costs.

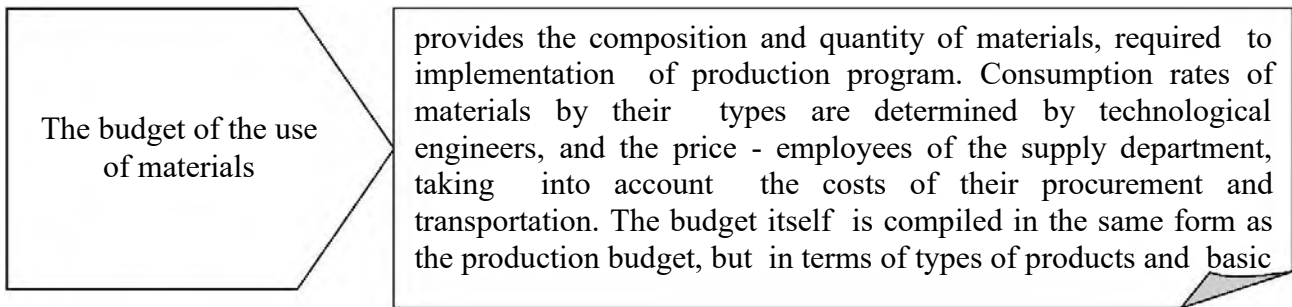


Fig. 10.17. Determining the budget for the use of materials

The same calculations are performed for each type of product, and then establish the general needs of each type of material and the total material costs of production in the enterprise as a whole (Fig. 10.18).

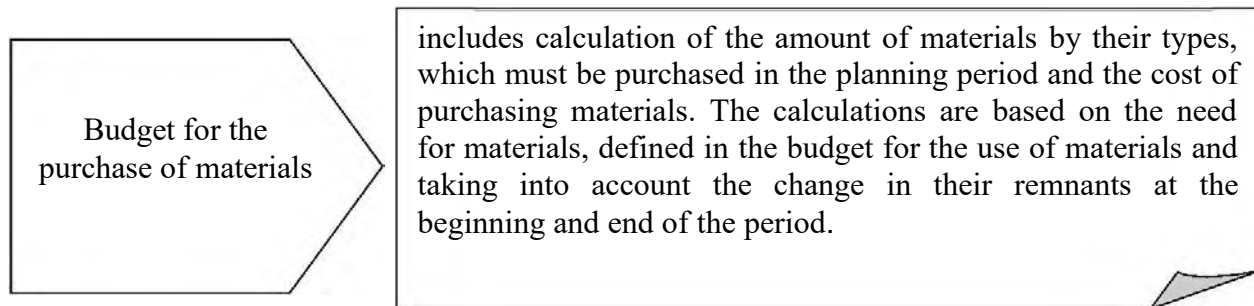


Fig. 10.17. Determining the budget for the purchase of materials

The budget is formed for each type of materials separately, and the total cost of purchasing materials is determined for the enterprise as a whole.

Simultaneously with the budget for the purchase of materials, **a schedule of payment to suppliers for materials** is drawn up, which is then used in planning the cash flow and forming the budget balance.

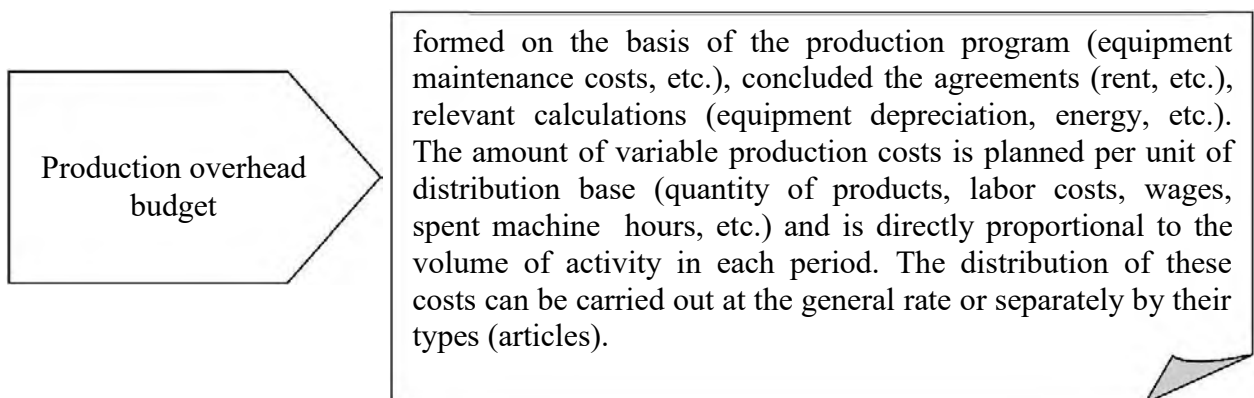


Fig. 10.19. Determining the budget of direct labor costs

The budget of production overheads is formed in the context of individual cost items. The rate of production overheads is calculated in terms of individual periods or on average per year.

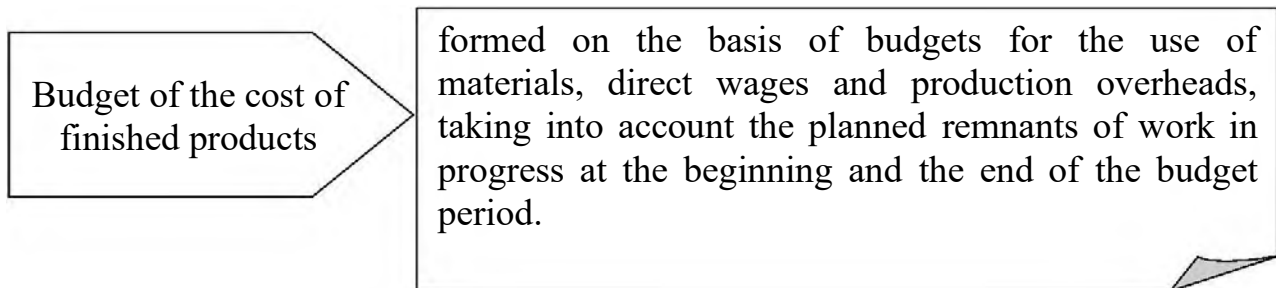


Fig. 10.20. Determining the budget of the cost of finished products

If the remnants of work in progress are not planned, the cost of production is equal to the sum of production costs.

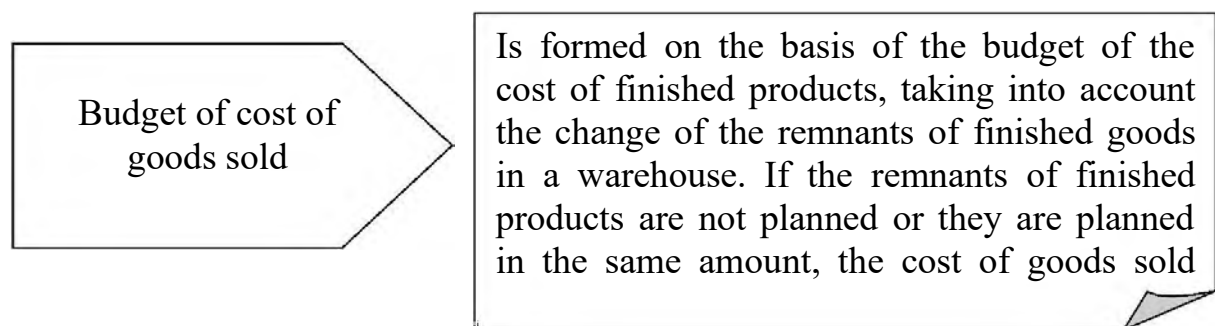


Fig. 10.21. Determining the budget of cost of goods sold

The budget of general and administrative costs reflects the planned costs of management and maintenance of the enterprise as a whole (Fig. 10.22):

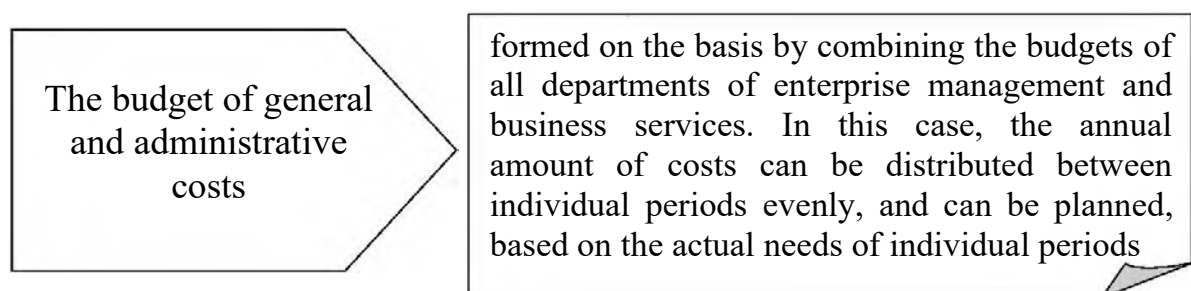


Fig. 10.22. Determining the budget of general and administrative costs

All these costs are fixed, so they are planned in terms of individual cost items on the basis of special calculations: depreciation of non-current assets, staff schedule, utility contracts, rent and so on.

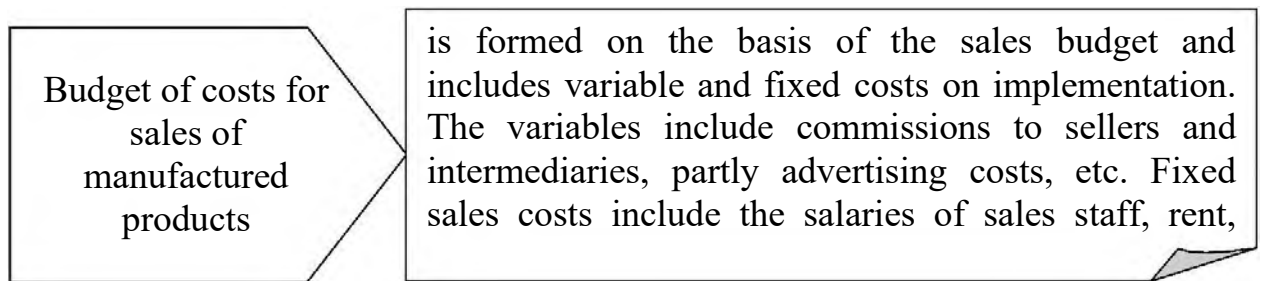


Fig. 10.23. Determining the budget of costs for sales of manufactured products

When budgeting the costs for sales of manufactured products, variable costs are planned, based on sales; and fixed - on the total amount.

The funds budget is a plan of cash flow and payments for the next period (Fig. 10.24).

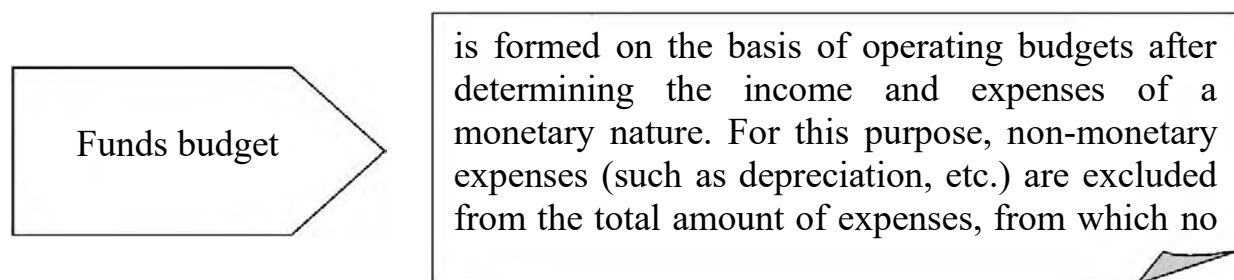


Fig. 10.24. Determining the budget funds

The exceptional attention is paid to those incomes and expenses, that are received or paid not in the period, when they are accrued and reflected in the account (income from sales, costs of purchasing raw materials, wages, interest on loans and promissory notes, taxes, etc.).

Based on the above operating budgets, **a budget statement on financial results** is prepared - a reporting form generated before the beginning of the reporting period. On the basis of this budget many important financial and economic indicators are determined: financing of capital investments, expected profit, the amount of income tax, and so on.

Some indicators of this budget can be detailed by year periods. The formed budget balance is the basis for the analysis of the expected financial condition of the enterprise at the end of the budget period, which will show the expediency of planned activity and its economic efficiency.

Budgeting can be static, when the budget is made for a certain period of time (usually a year with details by months or quarters), and dynamic (continuous), when after the end of the each intermediate period (month, quarter) budgeting will be continued for the same period in the future. In this case, the company will always prepare an annual (sliding) budget for the next 12 months.

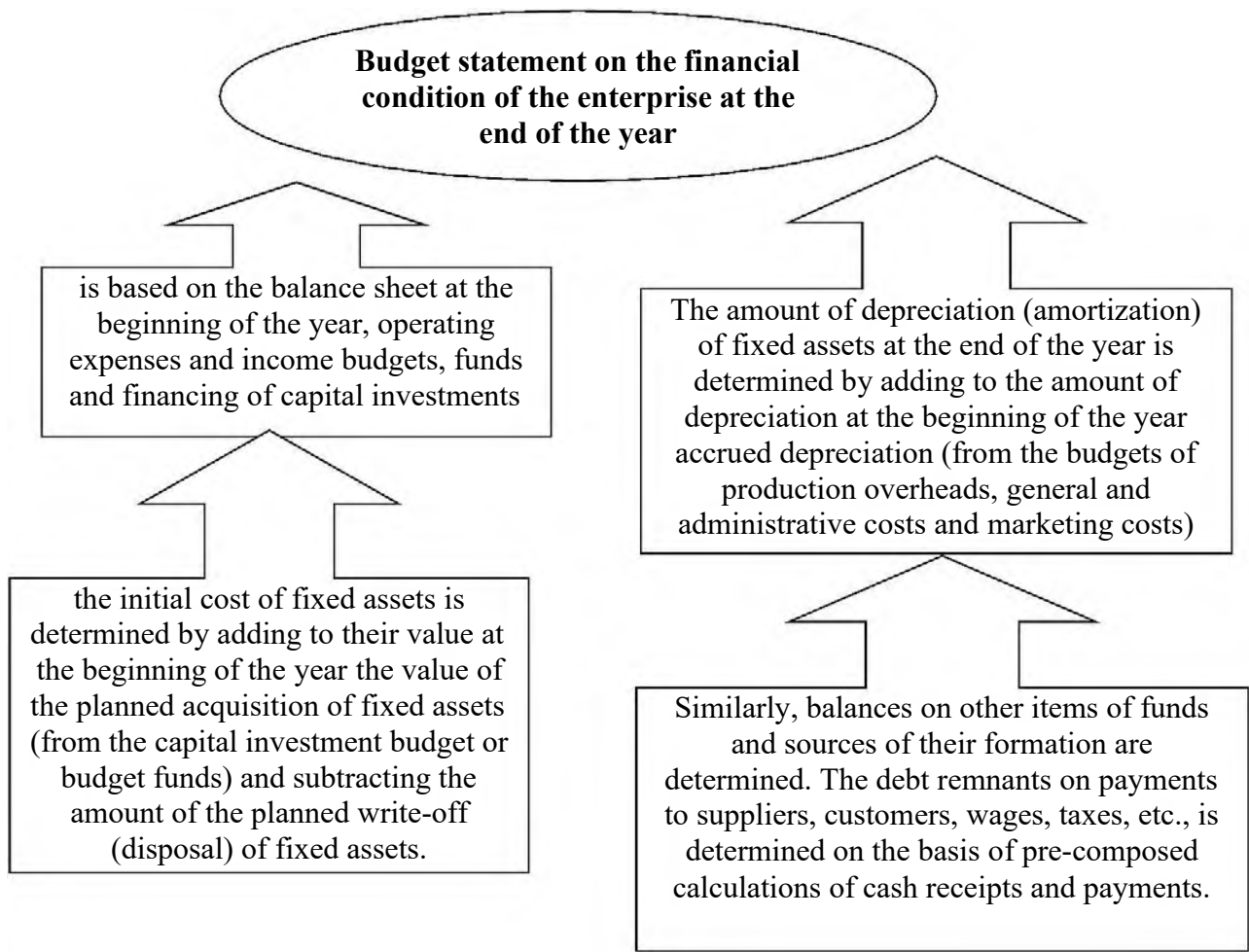


Fig. 10.25. Budget report on the financial condition of the enterprise at the end of the year

After the approval of general budget by senior management, functional budgets are sent to departments, and they are the basis for organizing their activities, the basis for monitoring, analysis and evaluation of departments and their heads.

10.3. Budget execution control and analysis of deviations

Budgets are controlled and adjusted through multi-level analysis of deviations.

Budget control is carried out on the basis of the Budget Execution Report, which is formed by an accountant-analyst.

Deviations are the differences between actual and budget data.

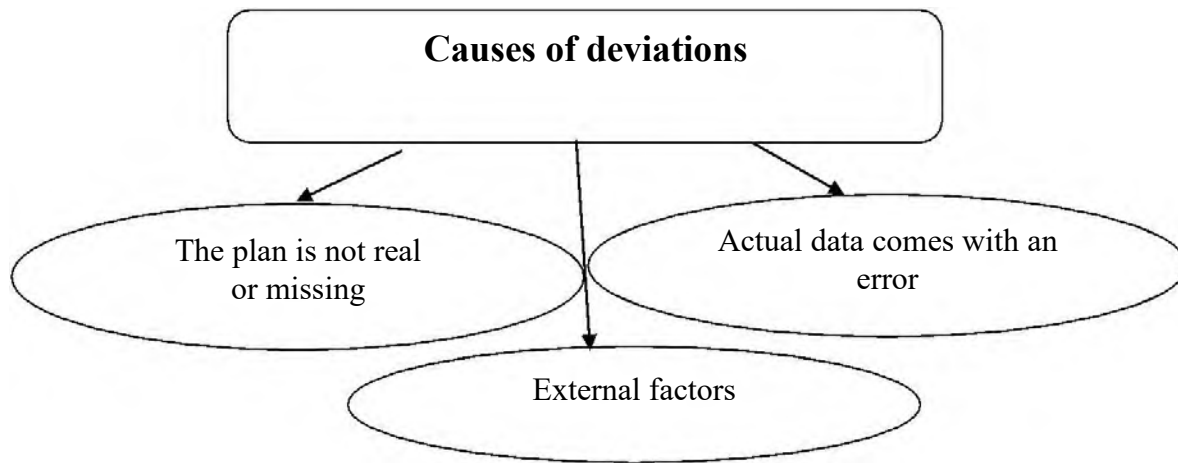


Fig. 10.26. Causes of deviations

Each level of analysis is characterized by the degree of detailing of indicators.

1st level – determination of general deviations between actual and budget data, i.e. any changes in operating conditions are not taken into account;

2nd level – drawing up a flexible budget;

3rd level – implementation of factor analysis.

The deviations, obtained as a result of the comparison, are divided into positive (favorable) and negative (unfavorable).

Deviations are considered **favorable**, if the actual income exceeds the planned one, and the actual costs are less than the budget ones.

Deviations are considered **unfavorable** if the actual income is lower than planned and the actual costs are higher than the budget ones.

To make an adequate comparison of actual and budget data, a **flexible budget** is used (second level of analysis).

Flexible budget – a budget, compiled on the basis of planned data on income and expenses of the enterprise for the actual volume of sales. The value of fixed costs usually remains the same, and variable costs change in proportion to changes in the volume of activity, and they are determined and calculated for different activities.

The deviations on a flexible budget is the difference between the actual amount and the amount of the flexible budget for the actual level of activity.

The advantage of this approach is that it eliminates the influence of the volume of activity factor, which may be out of control, and the responsibility of the manager of a particular unit. Therefore, flexible budget indicators are suitable for further comparison with actual data, and the deviations, obtained in this way, can be used to determine the effectiveness and efficiency of the unit.

Flexible budgeting is a key point in providing feedback for control and management. The advantage of this type of budget is that it eliminates the influence of the volume of activity factor, which may be outside the area of control and responsibility of the manager of a particular unit, on the dynamics of revenues and expenditures in the budget execution report.

The process of monitoring budget **execution** is shown in Fig. 10.27 [65].

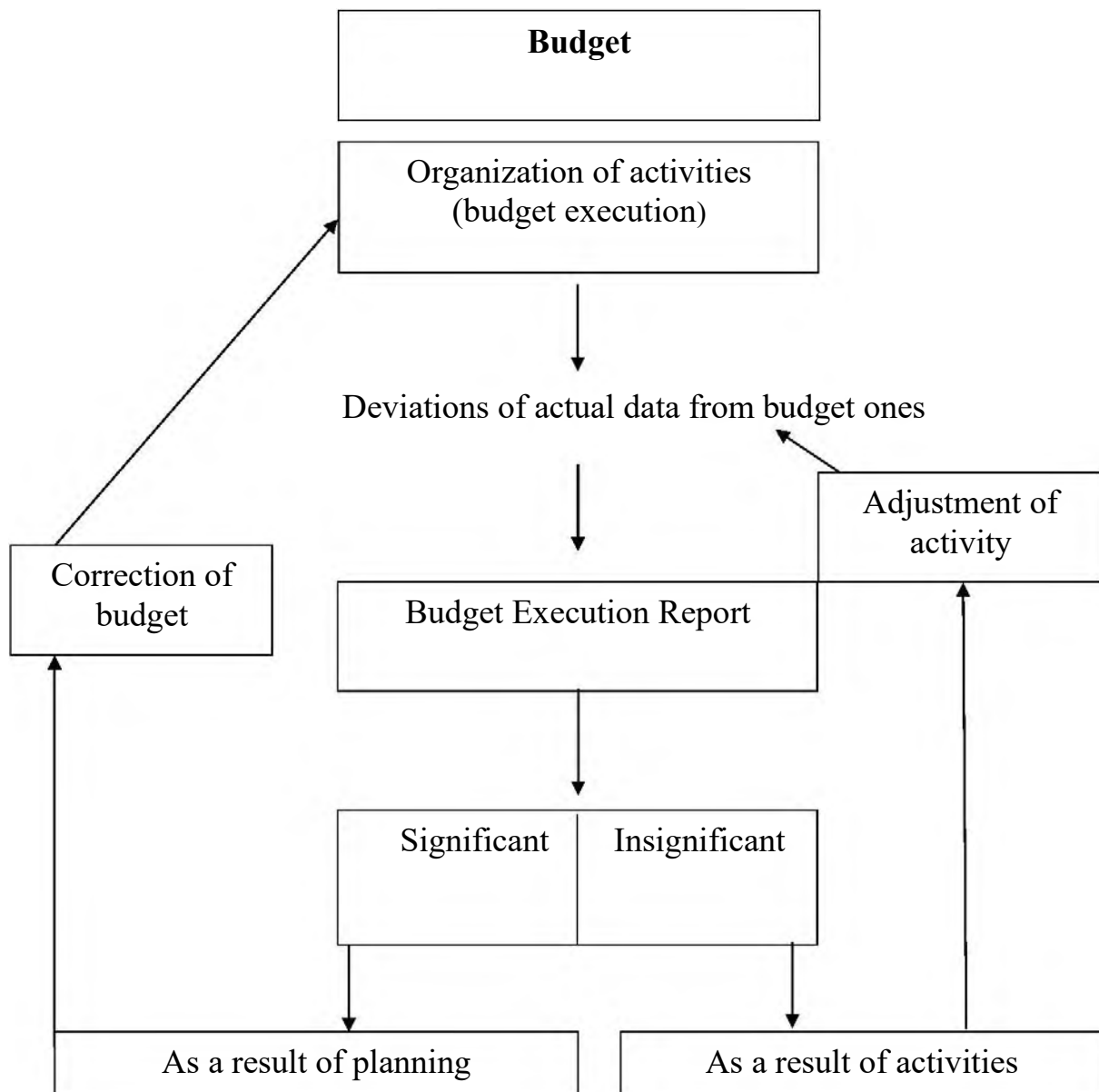


Fig. 10.27. Budget control system

The Budget Execution Report provides feedback, drawing analysts' attention to significant deviations from expected results, which helps to manage deviations.

Also, the success of the budget system in the enterprise depends mainly on how seriously the human factor is taken into account.

The ideal is a budget system, in which the agreement between the goals of the organization and specific managers-executors are achieved, and at the same time there is a comprehensive incentive for the latter to achieve the goal.

A reasonable budget is the basis for the formation of an effective system of accounting, analysis and control in the enterprise.

Discussion and self-review questions

1. *The essence of budgeting and its organization.*
2. *Name the purpose and objectives of budgeting*
3. *What budget is based on the forecast of specialists on potential price levels and sales volumes in the next budget period?*
4. *What are the types of budgets?*
5. *What are the stages of budgeting and approaches to budgeting?*
6. *Give the sequence of budgeting of the production enterprise.*
7. *What is the method of drawing up separate operating budgets: sales, production?*
8. *What are the features of funds budget and budget balance?*
9. *Give the concept of flexible budgets, the purpose of their preparation and the order of use.*
10. *Name the causes of deviations.*
11. *Name the budgeting method when the budget is re-formed each time.*
12. *What are the benefits of budgeting?*

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THEME 11. ACCOUNTING AND CONTROL OF RESPONSIBILITY CENTERS

11.1. The concept of responsibility centers

In today's environment, due to the complexity and large number of business operations, it is often necessary to divide the organization into separate segments and give managers who are responsible for these structures, a greater degree of independence through the delegation of certain powers.

Thus, **the center of responsibility** is a subdivision of the enterprise, the head of which is responsible for a specific set of activities.

Consider the interpretation of this concept by important scientists (Table 11.1):

Table 11.1

Interpretation of the concept " responsibility center"

p / p	Author	Definition
1	2	3
1	A. Upcherch	The division of the organization into centers, management of each of them is delegated to the responsible manager [5]
2	S.F. Golov	Sphere (segment) of activity, within which the personal responsibility of the manager for the indicators of activity, which he controls, is established [39]
3	K. Drury	A unit of the company, in which the manager of the center is personally responsible for the performance of this unit [24]
4	V.S. Len	Any unit of the enterprise, which controls the occurrence of costs, income or use of investments and which is managed by a single manager [63]
5	R. Hensen	A unit of the enterpris, in which the manager is personally responsible for the performance of this unit. Business segment, the manager of which is responsible for a specific set of activities [35]

The first stage in the formation of responsibility centers, is the definition of responsibility centers in order to consolidate the responsibility.

The determining factors are the organizational and technological structure of the enterprise, job descriptions, that establish the rights and responsibilities of specific employees [24].

To create a system of accounting for responsibility centers (further – RC), first of all, the centers of responsibility centers are determined (Fig. 11.1).

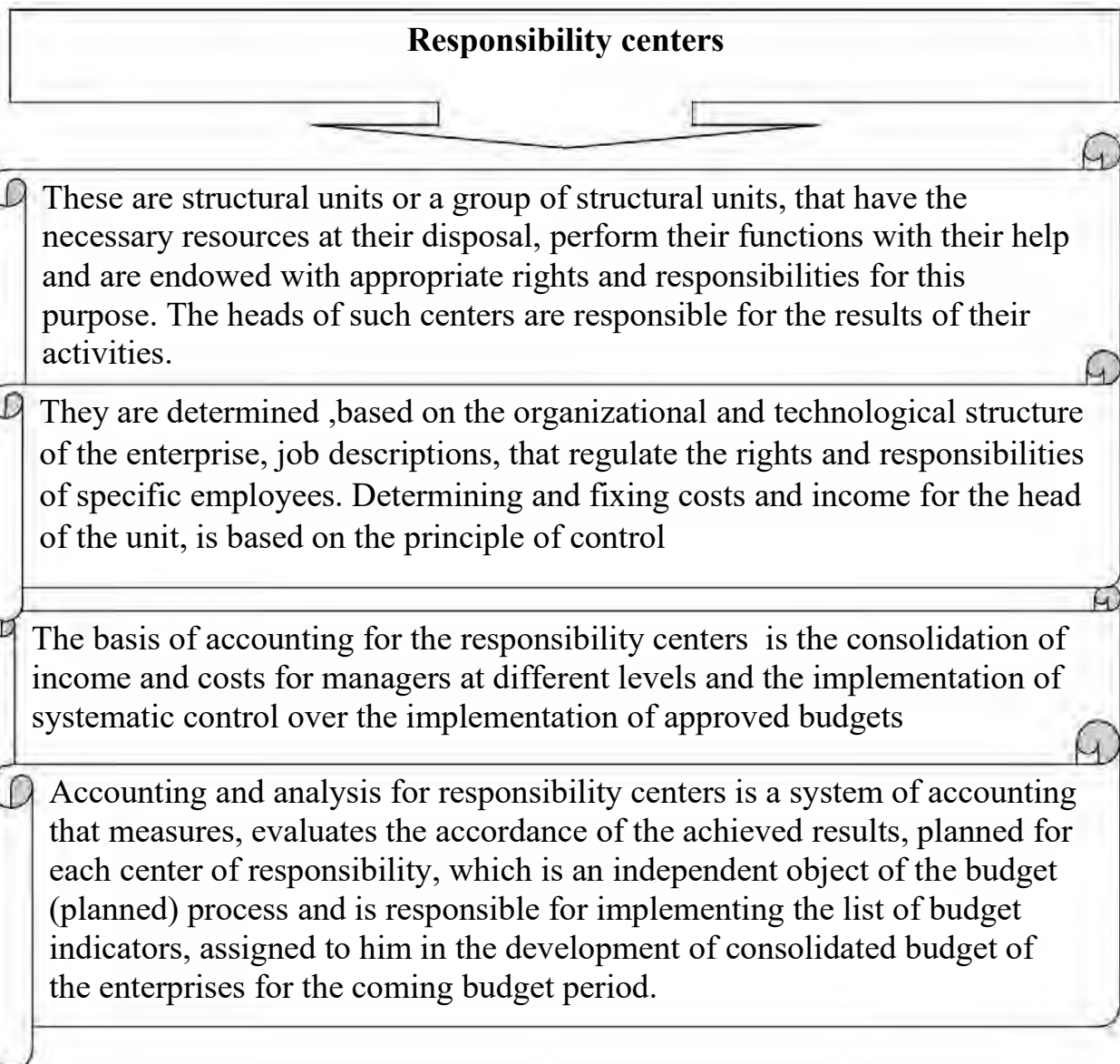


Fig. 11.1. Separate aspects of creating an accounting system for responsibility centers

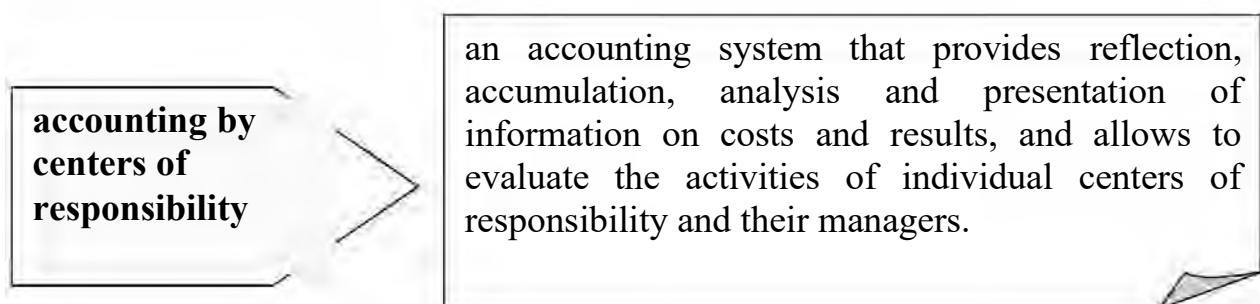


Fig. 11.2. Accounting for centers of responsibility

The choice of the method of division of the enterprise into centers of responsibility is determined by the specifics of a particular situation, it is necessary to take into account the following requirements (Fig. 11.3):

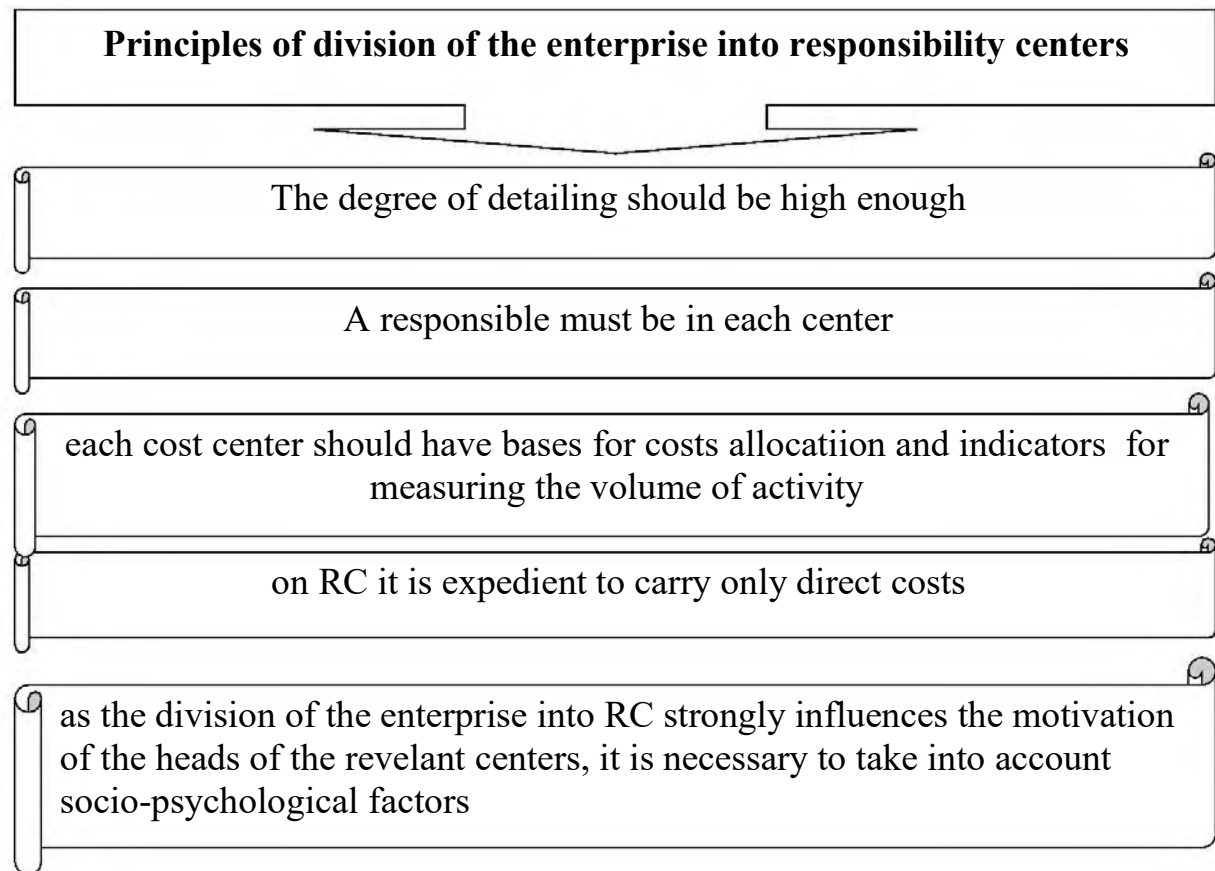


Fig. 11.3. Principles of division of the enterprise into responsibility centers

The manager is responsible only for those incomes, costs and investments, which are controlled by employees of this unit, only for activity which is under his control and it allows to allocate four types of RC (fig. 11.4):

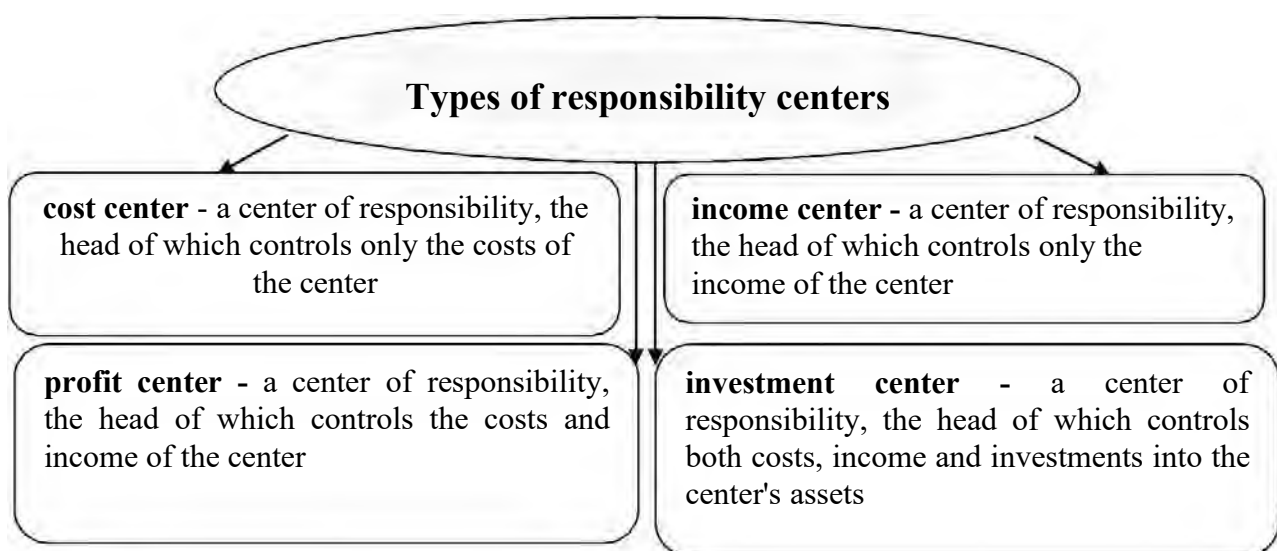


Fig. 11.4. Types of responsibility centers

The principle of accounting for the centers of responsibility means, that the organization is divided into separate segments and the managers, who are responsible for these structures, are allowed to act independently. But power, together with the

need to make decisions, entails the responsibility of managers for the financial consequences of these decisions.

In general, an effective RC accounting system is based on the following principles (Fig.11.5):

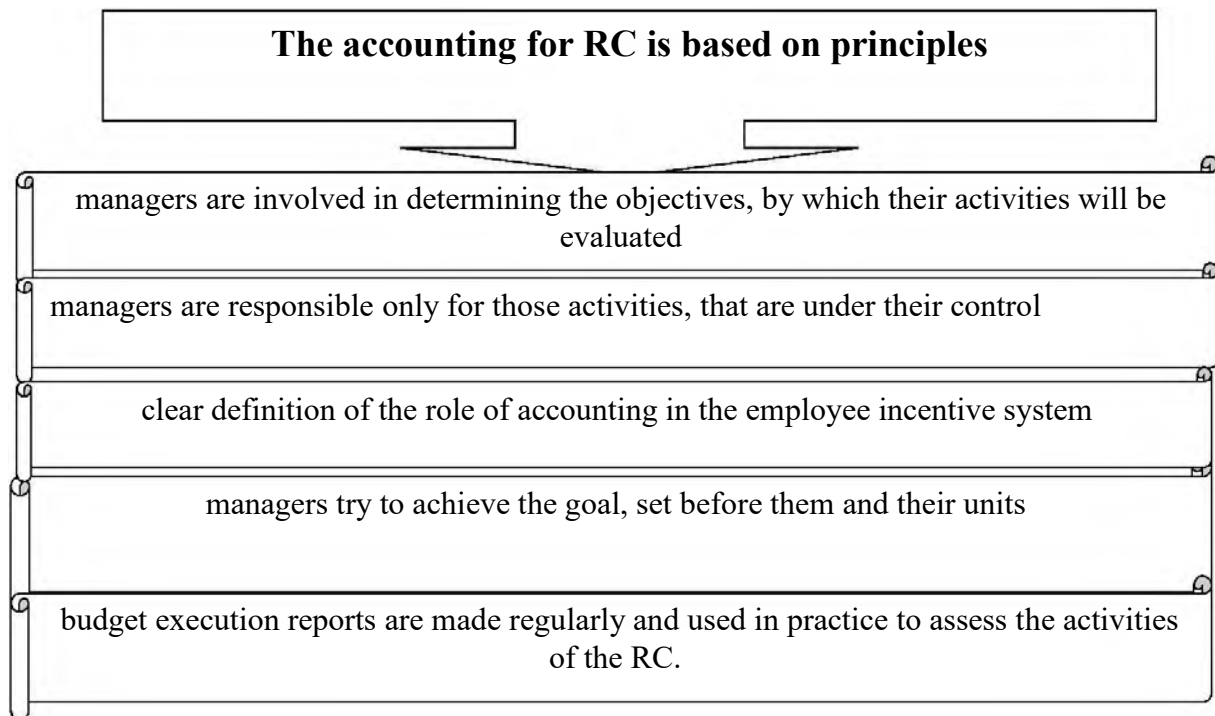


Fig. 11.5. Principles, on which the accounting of responsibility centers is based

The purpose of each center of responsibility is an efficient activity, that is, the production of a given volume of products with a minimum use of production resources, or maximum production of a volume of products at a given size of production resources.

There are two important aspects of setting financial objectives for the RC (Fig. 11.6):

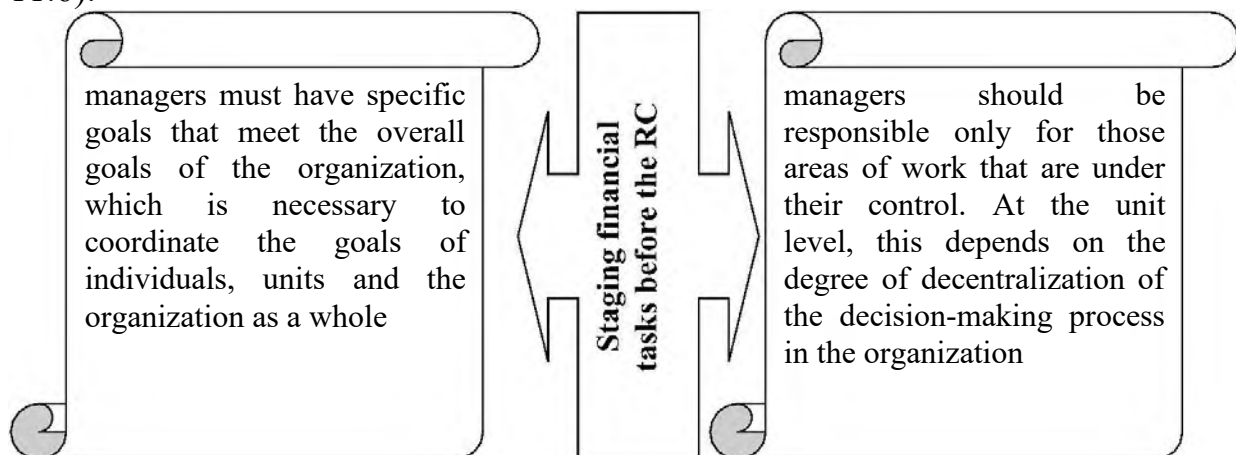


Fig. 11.6. Peculiarities of setting financial tasks before the RC [21]

The basis of liability accounting is the principle of control, which means the inclusion in the sphere of responsibility of the manager of a particular responsibility center only those areas of activity, that he can really influence (Fig. 11.7).

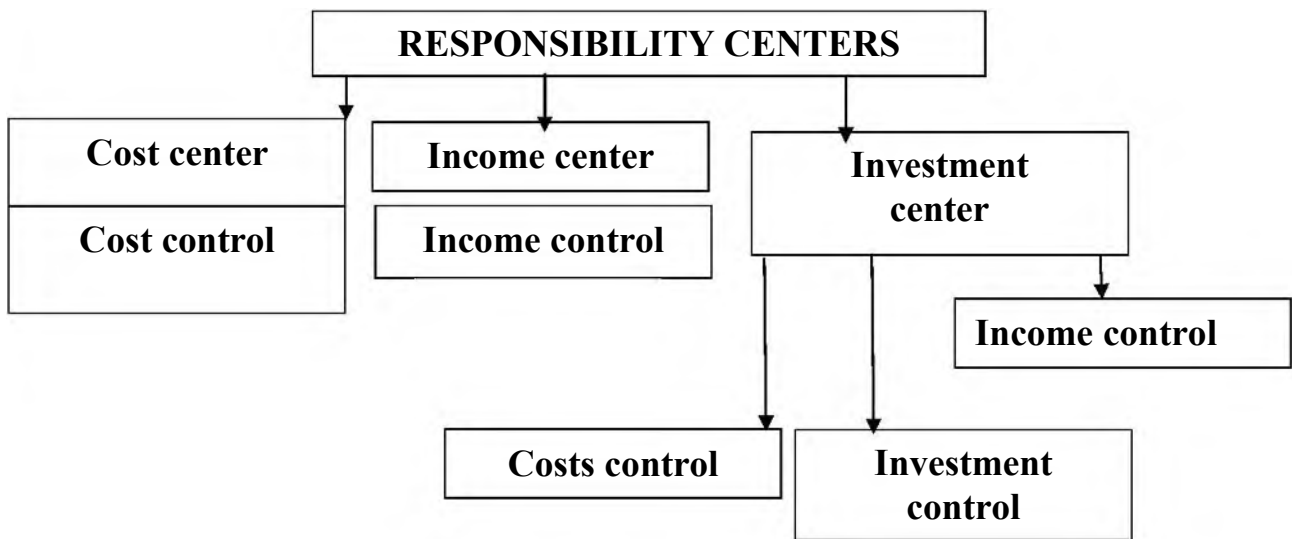


Fig. 11.7. Responsibility centers on the principle of controllability

The system of responsibility, accountability and performance appraisal is often called responsibility accounting.

To organize the responsibility accounting, a system of accounting accounts is used (Fig. 11.8).

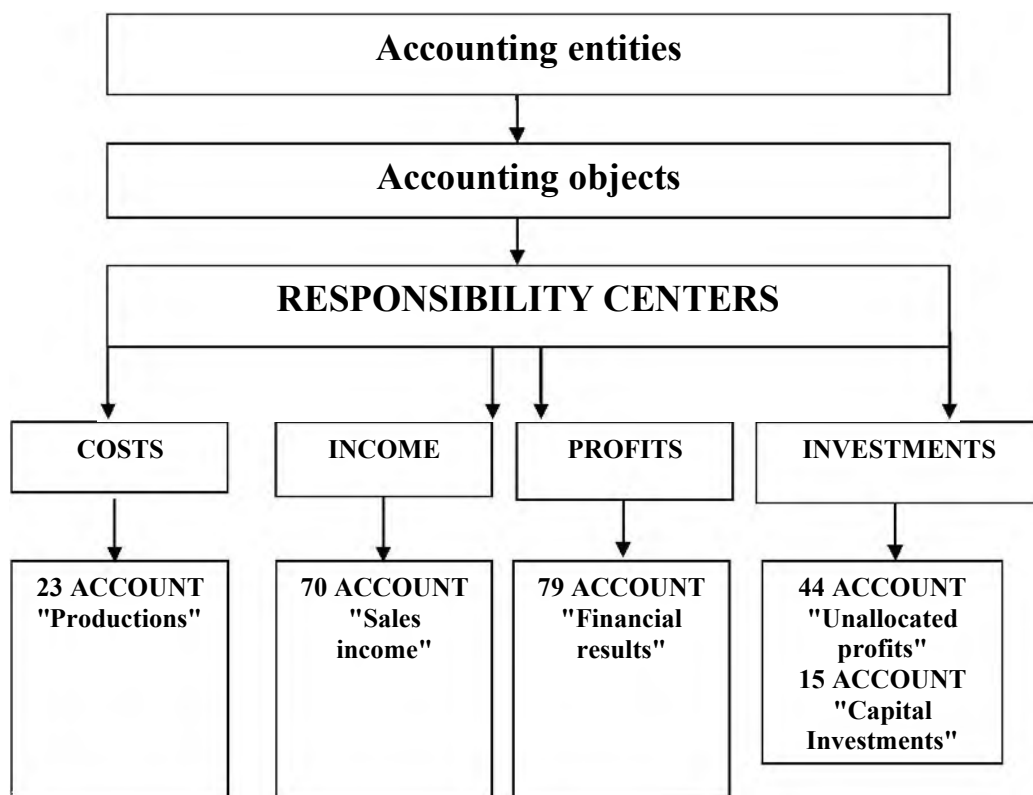


Fig. 11.8. Organization of accounting by responsibility centers

The control of the organization's reporting is based on the principles, that should be the same for all (Fig. 11.9):

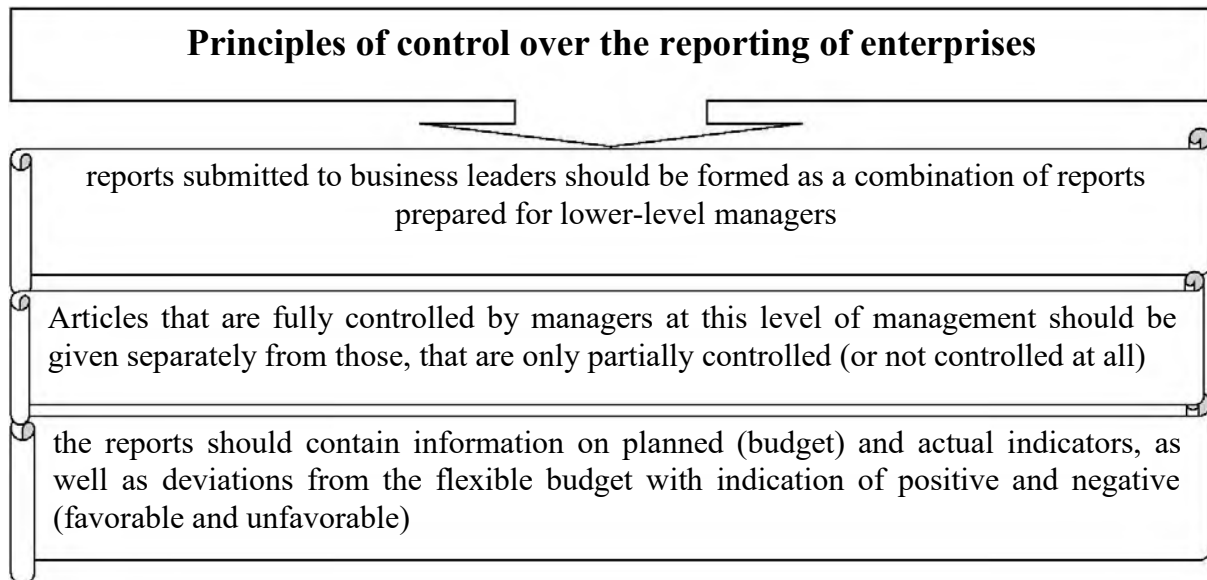


Fig. 11.9. Principles of control over the reporting of enterprises

By means of **accounting responsibility**, the deviations from target indicators of activity (as a rule, estimated) are defined, and the information, which centers admitted them, is clearly traceable.

Accounting of responsibility is carried out through reports, in which managers of responsibility centers are informed about deviations from estimates for those areas, for which they are responsible.

The format of reports and especially their content depend on the characteristics of the center of responsibility and indicators of their evaluation. In the following sections we will consider the activity of RC in more detail.

11.2. Evaluation of the cost centers' activity

Cost centers are centers of responsibility, the head of which, *compared to other types of centers*, has the least managerial authority and responsibility for the results obtained (Fig. 11.10).

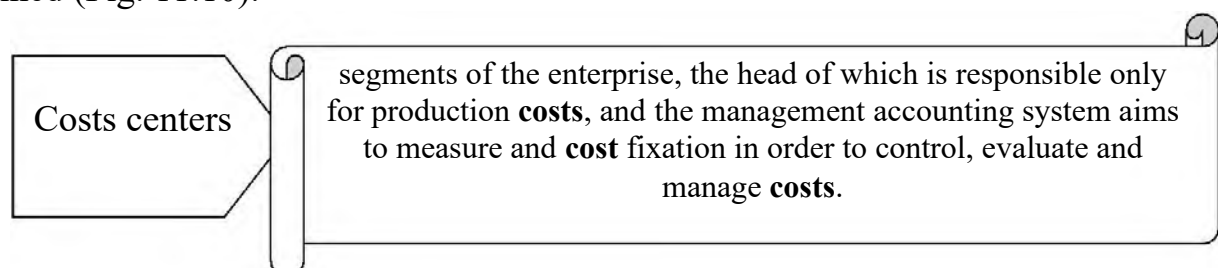


Fig. 11.10. Identification of cost centers

The head of the cost center is responsible only for the costs, usually it is the smallest unit.

Determination of cost items for which responsibility is established, should be based on the principles (Fig. 11.11): [5]

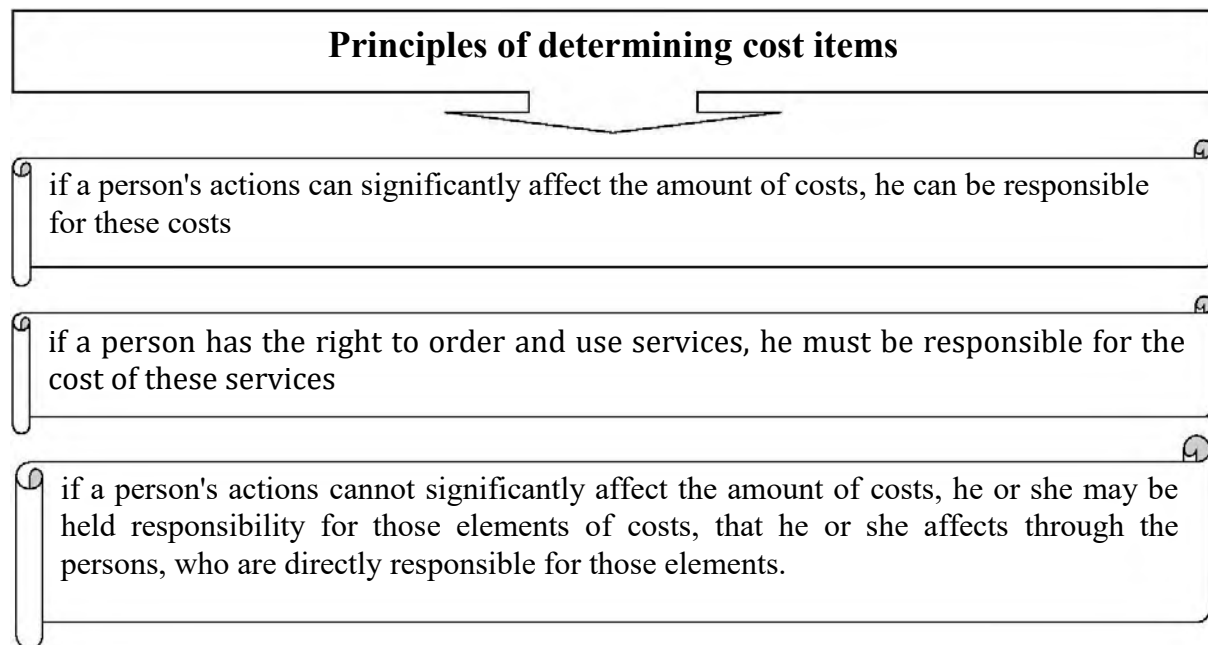


Fig. 11.11. Principles of determining cost items

Reporting of cost centers depends on the categories of cost centers: center of regulatory (technological) costs; discretionary cost center (Fig. 11.12):

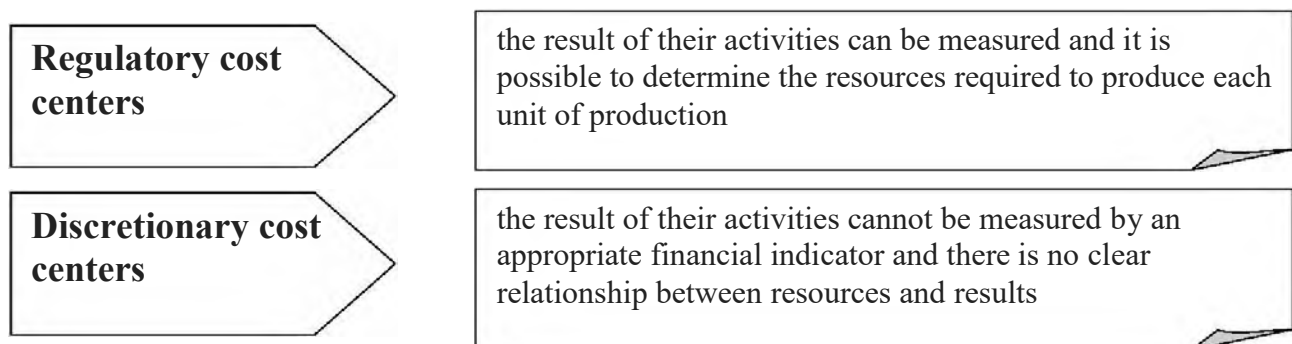


Fig. 11.12. Categories of cost centers

For example, the centers of regulatory costs include shops of main and auxiliary production (production units of the enterprise).

Their activities are evaluated based on the preliminary rationing of costs, control is carried out by comparing regulatory costs with the actual costs of the center. Deviations, defined as the difference between actual and regulatory costs, are analyzed in detail.

The centers of discretionary costs include such departments as: administrative, research and development, advertising and so on.

In turn, in accordance with the control of their costs, **cost centers** are classified as follows (Fig. 11.13):

For example, in the center of regulated costs – in the production shop there is a normative labor intensity of a unit of production, norms of consumption of materials, and total costs of materials and wages are determined by multiplying the planned output by standard costs per unit of output.

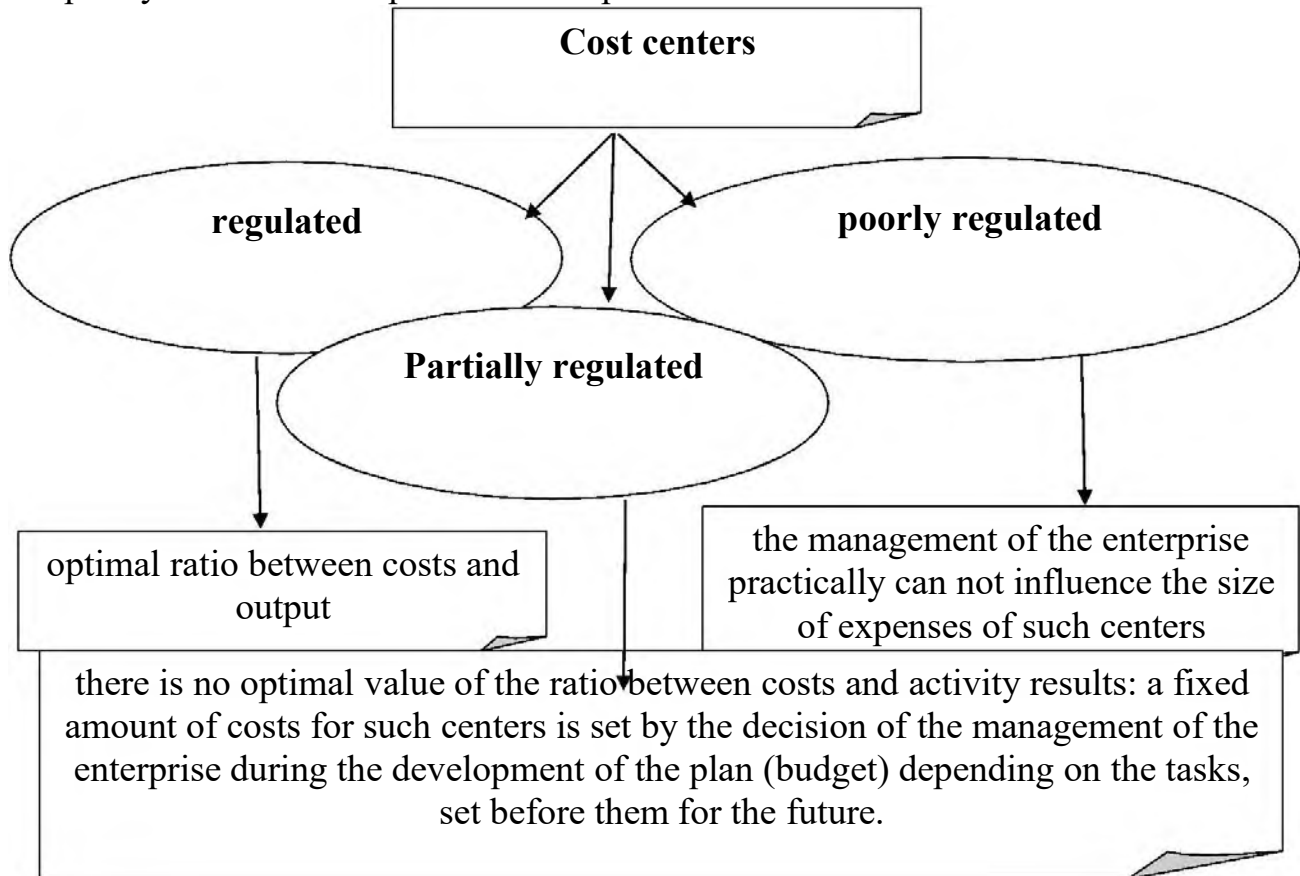


Fig. 11.13. Classification of cost centers

Managers of arbitrary (partially regulated) cost centers, such as the marketing department, are responsible for budget compliance as well as for quality indicators of work.

Managers of poorly regulated cost centers, such as laboratories, as they can hardly influence the amount of costs, take their value as a fact.

The achievements of planned goal testifies to the effective work of the cost center. **For example**, if the research department has significant cost savings, but the research is not performed in full, it does not deserve the award.

11.3. Evaluation of the activity of income centers

The functions of the heads of income centers in the system of management accounting and control include the receiving of enterprise income, and therefore the task of accounting is the fixation of the results of the activities of RC.

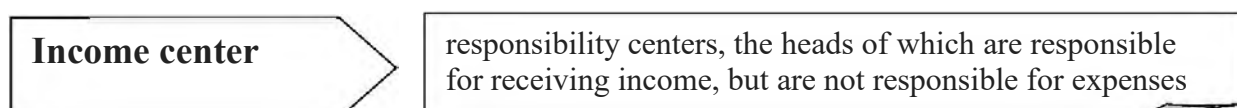


Fig. 11.14. Definition of income centers

In revenue centers, managers are responsible only for the income, they receive in the form of sales revenues.

For example, such centers include representative offices, located in other regions and their managers are responsible for ensuring the volume of sales.

Managers of income centers, as well as cost centers, can be responsible for achieving a non-financial goal: to ensure the ability to compete only in those markets, where the firm occupies the first or second position in sales.

For example, income centers include the wholesale department of a trade organization.

Variations of income centers are sales centers, which include the segments of sales activities, the heads of which are responsible not only for income from sales of products, goods and services, but also for the costs, associated with their sale.

For example, data on deviations from sales can be used to analyze the performance of the sales department (income center). Deviations of receipts (incomes) at the price of a product (goods) and volume of realization are usually defined.

The difference between the actual and estimated price of the product, multiplied by the actual sales volume, will show, what share of income is obtained from prices. However, due to the fact, that the main purpose of implementation - a positive impact on total profit, more useful results for analysis can be obtained, if compare the actual sales with the estimated not because of income, but because of the amount of profit or contribution to profit [20].

When using the variable cost calculation system, the profit contribution margin is applied (sales price minus production variable costs per unit of output), and when calculating deviations, using the costing system with full cost allocation, the sales margin is applied (profit, which is defined as the sales price minus total production costs per unit of output).

Planning in the income center is done by setting targets for implementation. In industries, where the share of product returns is significant, target installations for net sales (sales less returns) are used.

11.4. Evaluation of the activity of profit centers

The purpose of the profit center is to obtain maximum profit by the optimal combination of price, parameters of invested resources and the volume of output.

The heads of profit centers are obliged not only to make decisions about the amount of resources, consumed and the amount of expected receipts (at the planning stage), but also to control the implementation of approved indicators.

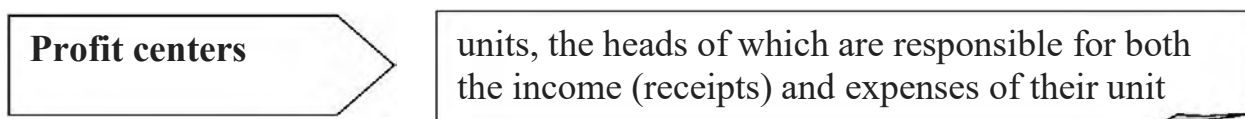


Fig. 11.15. Definition of profit centers

The company is divided into separate centers, usually by organizational structure, in which units are independent in making operational decisions, and management exercises only general control over strategy and financial flows.

There is a relationship between input and output - reflected in the model of operation of the profit center (Fig. 11.16):

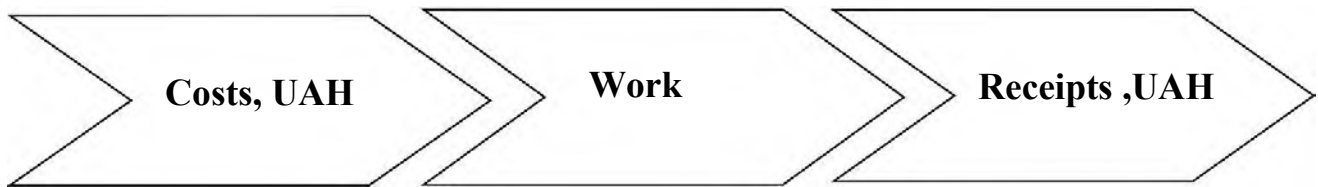


Fig. 11.16. Model of profit center operation

For example, such centers include sales offices, individual enterprises within a large association, branches, subsidiaries, and so on.

At the, depending on the chosen indicator, the report on profits of the unit is formed, *for example* (tab.11.2).

Table 11.2

INCOME STATEMENT

Indicators	Profit Center "1"	Profit Center "2"	Enterprise in general
1. Income (receipts) from sales	3000	4000	<i>7000</i>
2. The cost of goods sold	1000	1800	<i>2800</i>
3. Profit	<i>2000</i>	<i>2200</i>	<i>4200</i>
4. Administrative costs	—	—	600
5. Sales costs	—	—	700
6. Other operating expenses	—	—	500
7. Operating profit	—	—	<i>2400</i>
8. Tax profit	—	—	? ...%
9. Net profit	—	—	?

When the company uses the direct costing system, the reports are compiled in the form of reports on marginal income.

11.5. Evaluation of the activity of investment center

The units of the enterprise, the heads of which control not only the income and costs of the subdivisions, but also monitor the efficiency of the use of the funds, invested in them (or by them) (Fig. 11.16).

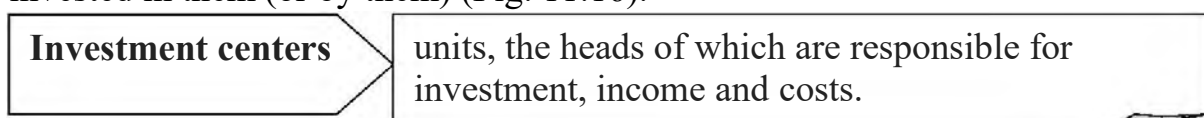


Fig. 11.16. Definition of investment centers

There is a relationship between profit and invested capital - reflected in the model of functioning of the investment center (Fig. 11.17):

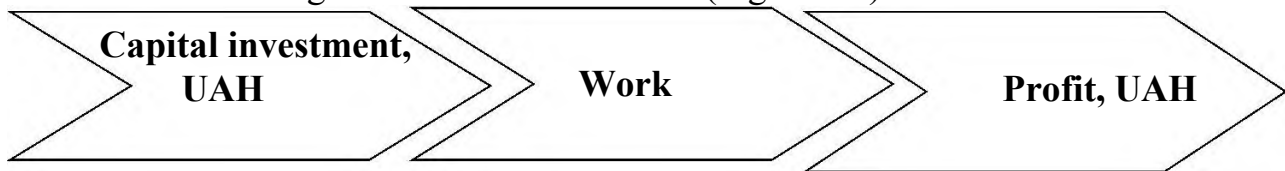


Fig. 11.17. Model of functioning of the investment center

The purpose of the investment center is not only to obtain maximum profit, but also to achieve maximum return on invested capital, its quick payback, maximum return on investment, increase the shareholder value of the company, their leaders (compared to other centers of responsibility) have the greatest authority and responsibility for decisions. In particular, they are delegated the right to make their own investment decisions, i.e. to distribute the funds allocated by the administration of the enterprise for individual projects [20].

With the help of reports, the costs of the investment center are managed (Fig. 11.18):

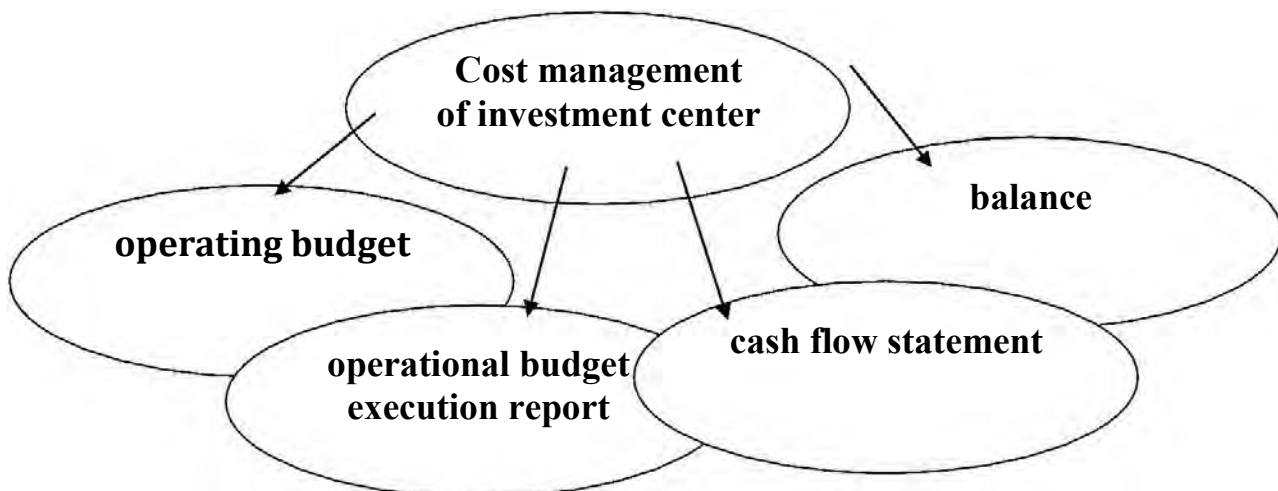


Fig. 11.18. Cost management of investment center

Investment centers, **for example**, include: new production facilities under construction, subsidiaries that invest their profits, companies merged into a corporation or consortium.

The effectiveness of investment centers is assessed by comparing their profits, always taking into account the amount of assets involved in obtaining these profits (Form 11.1).

ROI - the most common performance indicator for the investment center;

operating profit is the profit before interest on the loan and profit tax,

operating assets are all assets, invested to generate operating profit, including cash, inventories, receivables, etc.

The **ROI** discloses the amount of profit per unit of investment, ie shows the return on invested capital.

The application of the rate of return on investment (ROI) has its advantages (Fig. 11.19) and disadvantages.

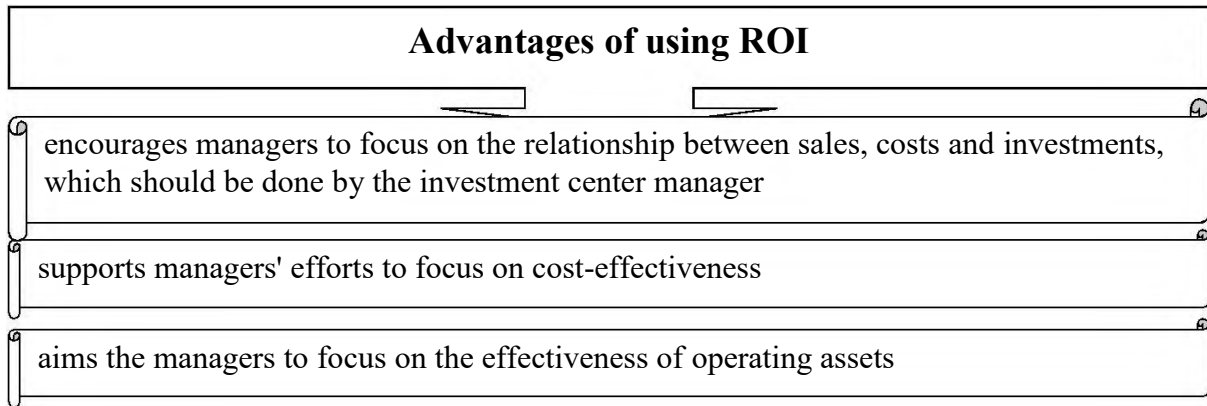


Fig. 11.19. Advantages of using **ROI**

However, it is not necessary to place excessive emphasis on ROI, there are also negative aspects, associated with ROI (Fig. 11.20):

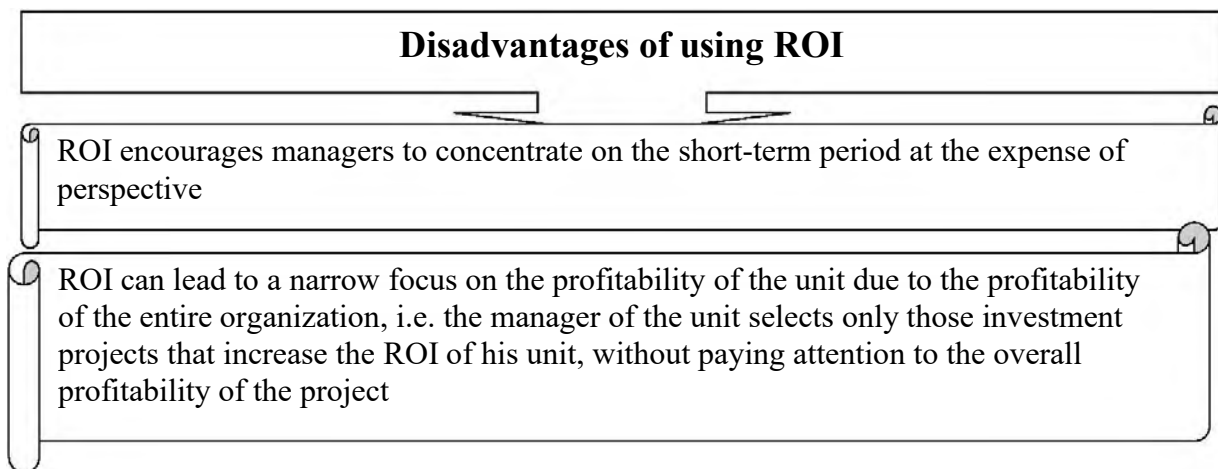


Fig. 11.20. Disadvantages of using ROI

One of the main disadvantages of ROI is the fact that it is measured as a percentage and department heads can manipulate this proportion by increasing profits rather than reducing investment.

In order to neutralize the trend of the ROI indicator, companies use alternative criteria for measuring performance, known as residual income and economic added value (form. 11.2).

Residual income equalizes the disadvantages of ROI, as the minimum required profit is defined, as the product of invested capital and the minimum rate of profit, that is, take into account not only the amount of capital, but also its value (the so-called fee for capital).

$$NOPAT = \frac{\text{net operating profit after tax} - \text{the total annual cost of capital involved}}{(11.2)}$$

Where NOPA is an economic added value.

If the NOPA is positive, then the company earns money, that is profit grows; if it is negative, the company destroys the capital. It is clear, that in the long run only those companies, that generate capital, can survive.

The advantage of NOPA is its monetary dimension, not as a percentage, as a profitability ratio. However, economic added value is similar to profitability ratios, such as ROI, because it combines net income with operating profit.

The concept of economic added value is successfully used abroad. However, Ukrainian companies still use it little in their activities. This is mainly due to the difficulty of adapting it to the conditions of Ukraine.

11.6. Transfer pricing

To assess the activities of responsibility centers, Western theory suggests the use of transfer prices in the domestic market (Fig. 11.21).

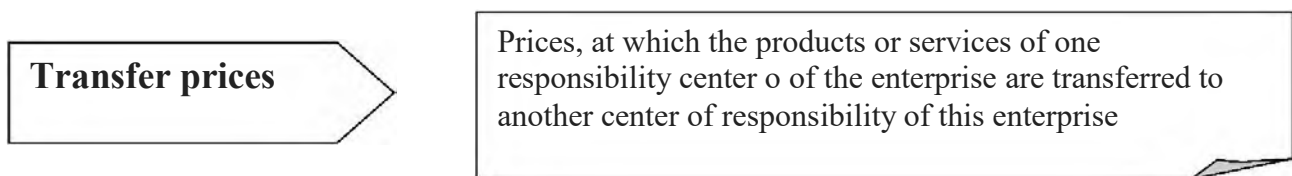


Fig. 11.21. Determination of transfer prices

The choice of one or another basis of the **transfer pricing** determines the method of internal transfer pricing, which allows to reconcile the results of individual units and the enterprise as a whole.

When using market prices as a basis for transfer pricing adhere, the principles are followed (Fig. 11.22):

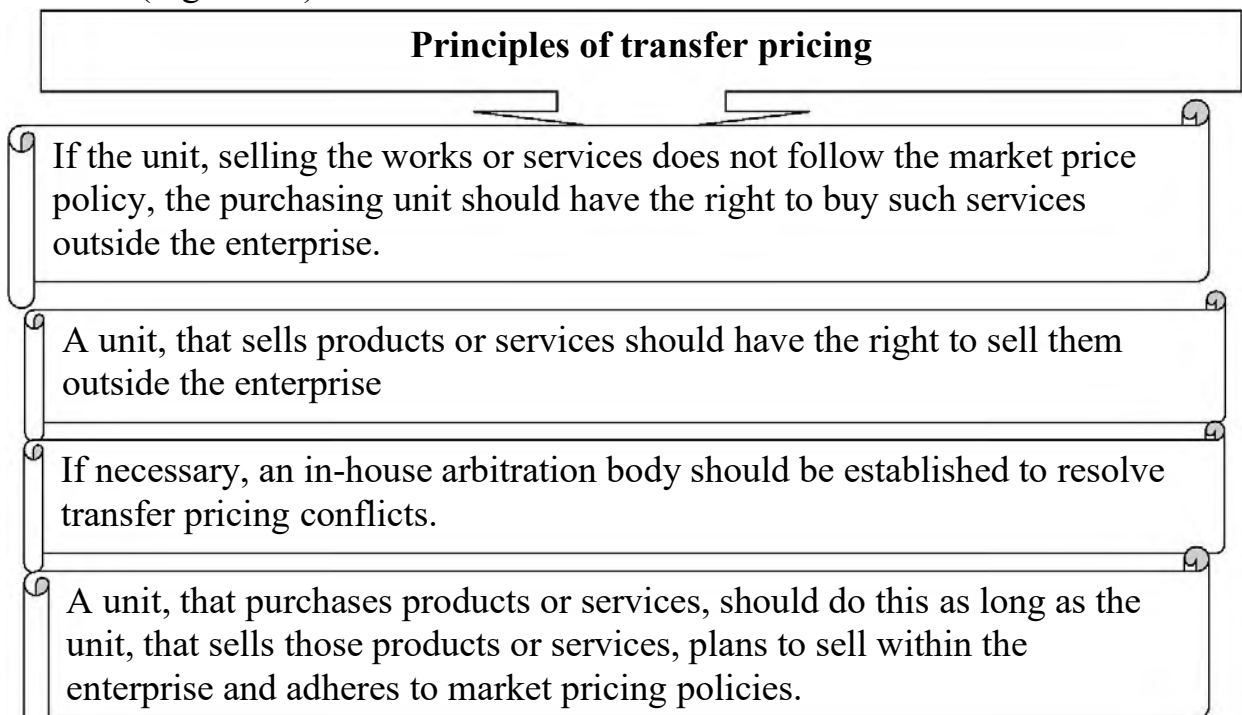


Fig. 11.22. Principles of transfer pricing

Prices may vary between different units, according to the pricing method. The choice of one or another method of internal pricing does not affect the profit of the enterprise as a whole, but it has a significant impact on the profit of divisions. After all, within units, a high transfer price increases the profit of the seller -unit, and low - the profit of the buyer-unit. Double pricing is used to ensure that the sales unit makes a profit and minimizes costs for the purchasing unit. In this case, the sales unit reflects the domestic sale of products or services at one price (market or contract), and the buyer - the received products or services at a price, that is based on costs [20].

Criteria for choosing the method of transfer pricing is shown in Fig.11.23:

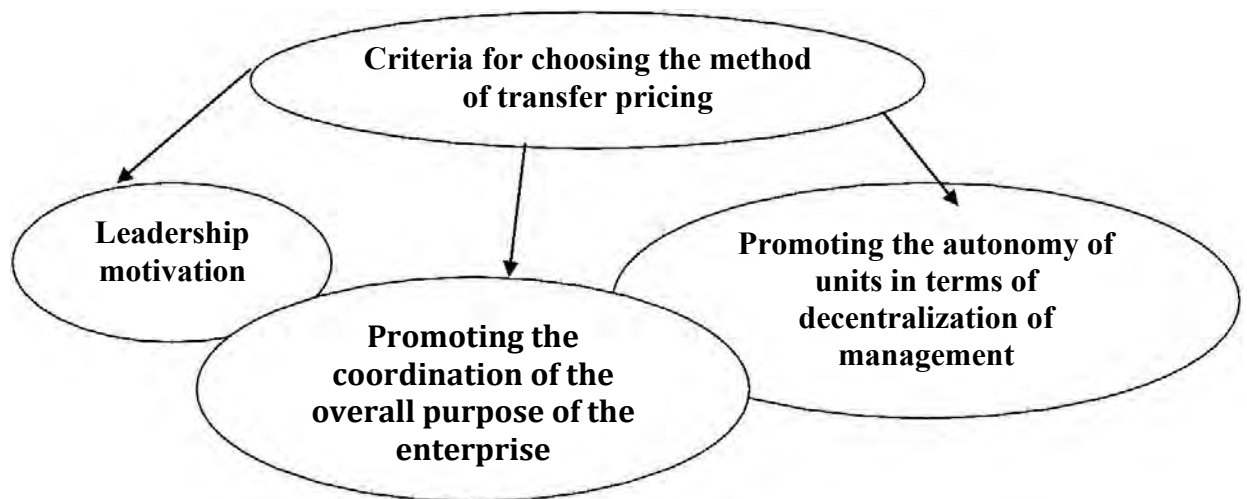


Fig. 11.23. Criteria for choosing the method of transfer pricing

The transfer price can be based on: variable costs, contractual and market prices, production cost (form. 11.3):

$$\text{Transfer price} = \text{actual unit cost} - \text{possible costs per unit of output} \quad (11.3)$$

Thus, the transfer price must reimburse the costs of the unit for production and its losses due to the refusal to sell products to another company.

Transfer pricing affects both the unit and the organization as a whole. This is due to the impact on the performance indicators of the unit, the profit of the organization as a whole and the autonomy of the unit.

Thus, the transfer pricing system must meet three objectives (Fig. 11.24):

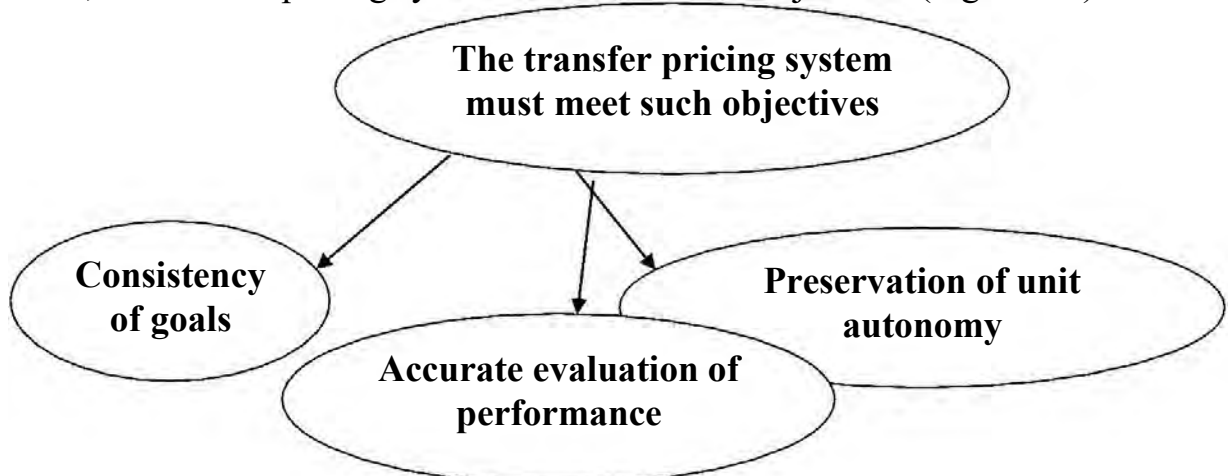


Fig. 11.24. The transfer pricing system must meet such objectives

Accurate evaluation of performance means, that no unit head should improve their performance at the expense of another.

One of the principles of transfer pricing is the opportunity cost approach, which determines the minimum price, that the seller will agree to,, and the maximum, that the buyer agrees to pay. The minimum and maximum prices for each of the units are determined in a similar way (Fig. 11.25):

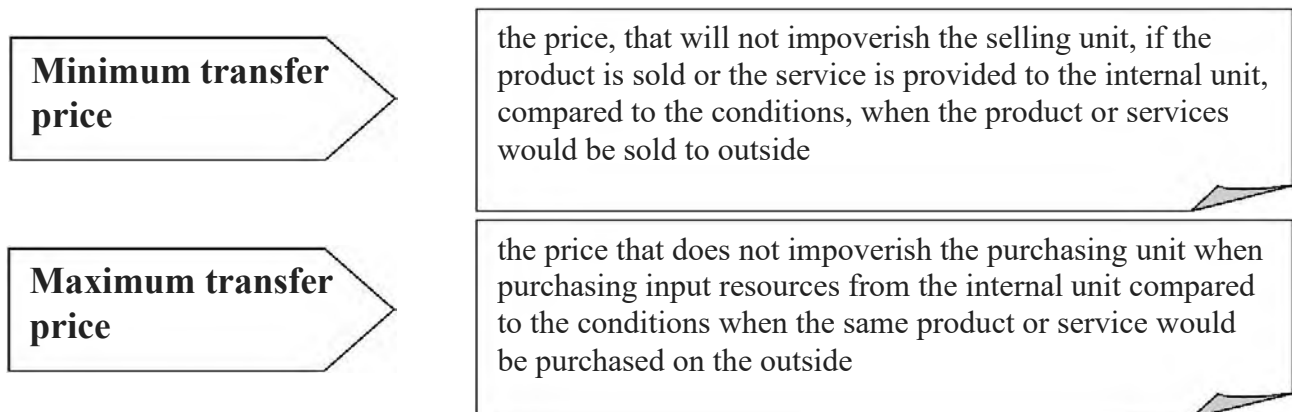


Fig. 11.25. Determining the minimum and maximum price for each of the units

Minimum transfer price - must reimburse the amount of variable costs per unit of production of the sale-unit and the profit, which this unit loses, due to the refusal to sell these products to external buyers.

Maximum transfer price - at which the product is to be released or the service is provided internally each time the opportunity cost (minimum price) of the selling unit is less, than the opportunity cost (maximum price) of the buying unit.

The minimum and maximum prices correspond to the possible or opportunity costs of domestic product release.

Transfer pricing can also be based on cost. There are three methods of such pricing (Fig. 11.26):

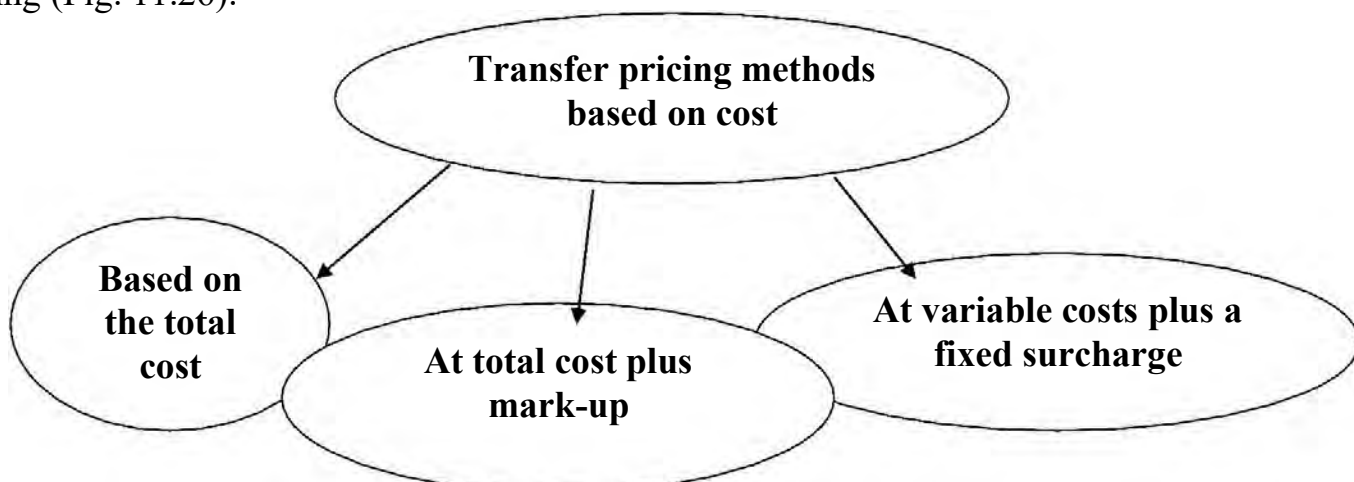


Fig. 11.26. Transfer pricing methods, based on cost

In all three cases, to avoid the transfer of inefficiencies from one unit to another, regulatory costs should be used in determining the transfer price. For cost centers, the price, based on the full cost is more acceptable, because it allows to reimburse all production costs, including fixed one.

Cost-based transfer pricing is quite common, mainly due to the simplicity and objectivity of these methods.

Transfer prices should be set so, that for each of the centers it would be possible to determine not only the real value of costs, but also profits, which in the future will allow to form a comprehensive information system of objective assessment of performance. Thus, transfer pricing is the basis for methods of evaluating, measuring, stimulating and monitoring the activities of responsibility centers.

Discussion and self-review questions

1. *Essence of the concept of "center of responsibility."*
2. *What is the first step towards the establishment of centers of responsibility?*
3. *What are the basic principles for dividing an enterprise into centers of responsibility?*
4. *What principles is an effective accounting system for responsibility centers based on?*
5. *Describe the types of responsibility centers.*
6. *Define cost, revenue, profit, investment centers.*
7. *What are the advantages and disadvantages of using the ROI?*
8. *Essence of the concept of "economic value added."*
9. *Name the principles of transfer pricing.*
10. *Define the minimum and maximum transfer price.*

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THEME 12. COST ACCOUNTING OF AUXILIARY PRODUCTIONS

12.1. Nature, Meaning and Types of Auxiliary Productions

Farms additionally organize productions to serve the main ones. They are workshops and others that must ensure the smooth functioning of the main production providing them with energy, tools, transportation and utilities.

Organization of auxiliary industries accounting depends on their type, functions, technological process, products, volume of production, and organizational forms of management.

The auxiliary production is divided into six groups by type and function:

1. instrumental (production, repair and restoration of tools, devices, molds, and models);
2. repair (installation, repair, modernization, maintenance of fixed assets, production and repair of spare parts);
3. energy (production and distribution of electrical, thermal and other energy, water supply, sewage treatment, ventilation, installation, repair and maintenance of energy systems);
4. transport (handling, transportation, repair and maintenance of vehicles);
5. package (production and repair);
6. domestic services (cleaning of premises, washing and repairing of special clothing, avalanche and mountain rescue).

By technological process the auxiliary productions are divided into **individual** (production by single orders for unique tooling, non-standard equipment, modernization and repair of single objects of fixed assets), **serial** (production of series of tools, spare parts), **mass** (production and distribution of energy, transport and others).

By the same type of production, ancillary production is divided into **simple** and **complex**. Simple productions produce simple homogeneous products (energy, transport, maintenance), they have no semi-finished products and work in progress. Manufactures supplying a variety of products, having semi-finished products and work in progress (tooling, repair, package) are complex.

The auxiliary productions are divided into large and small **by production volume**.

By management organizational we distinguish shops for production of containers, tools, performing repair, transport and other auxiliary works; auxiliary workshops, divisions and crews of industrial enterprises; support services in the form of cooperatives, collectives, and others.

The agricultural enterprises have such auxiliary industries:

- repair shops;
- road transport;

- live power (haulage, draft horses);
- electricity supply;
- heat supply;
- water supply;
- gas supply;
- refrigeration facilities;
- others (by type).

Cost accounting of auxiliary productions should ensure accurate recording of costs for each type of production, a reasonable distribution between the consumers of work performed and services provided, the correct calculation of auxiliary productions works (services) costs.

Auxiliary manufacturing costs are grouped by items that are independently identified and recorded in the accounting policy order.

The recommended list of objects of expenditure of auxiliary productions is given in the Methodical recommendations for planning, accounting and costing of production (works, services) of agricultural enterprises No. 132 of May 18, 2001.

It includes:

- salaries;
- fuel and lubricants;
- feed;
- raw materials (without recyclable waste);
- works and services;
- repair of fixed assets;
- other expenses for the maintenance of fixed assets;
- other expenses;
- total expenditures.

Costs, work, services, auxiliary productions products shall be accounted for the appropriate sub-account to account 23 Production. The sub-account 234 Auxiliary Productions is mainly used to account for the costs of auxiliary industries in the economic literature. It has got such second-order subaccounts:

- 2341 Repair Shop (Repair Production);
- 2342 Freight Vehicles (Road Transport);
- 2343 Animal-Drawn Transport;
- 2344 Energy Production;
- 2345 Water Supply;
- 2346 Other Productions.

Direct material, labor and other direct expenses, losses from the products (works, services) are debited to account 234 Auxiliary Productions. The actual production prime cost of completed production, performed work and provided services are credited.

Auxiliary production calculation objects are presented in Table 12.1.

Table 12.1

Auxiliary production calculation objects

Production	Calculation objects
Repair shop	Repaired object, manufactured product
Road transport	10 ton-kilometers, 1 car-day, 1 car-hour
Live power	1 horse working day
Power supply	10 kWh of electricity
Heat supply	10 Gcal of heat energy
Water supply	1 m ³ of water
Gas supply	1 m ³ of gas 1 kg of liquefied gas
Refrigeration facilities	1 quintal-day storage of each product

12.2. Recording of Costs at Workshops

In order to preserve the operational qualities and ensure the high-performance of fixed assets usage, they should be repaired in a timely manner. It considers the machinery, tractors, freight vehicles, and equipment. The current repair and maintenance of equipment are carried out mainly at the workshops of the farms.

Ongoing repairs are carried out more often than capital ones, usually it is carried out once year. Some worn parts are replaced or restored.

The interval between capital repairs is more than a year. The purpose of the capital repairs is to restore to some extent the value of the fixed assets, their initial capacity or their operational properties. It is the replacement of important components and assemblies, which is therefore more complex than the current repair. Plows, seeders and other agricultural machines are currently being repaired.

The maintenance of cars, tractors, combines are also periodically carried out. They replace waste oils, lubricate parts, regulate equipment, and wash cars.

The frequency and types of repair of cars, tractors, and combines are determined taking into account the amount of work performed, from and to the last repair of the machines or the beginning of their use in the farm. The chief engineer-mechanic draws up a **schedule of repair work**, which within quarters, months and decades is brought to the repair shop of the farm. According to the schedule units and details come to the repair shop to perform repair work taking into account the **requests of the head of the garage, the foremen** of the tractor crews, heads of other structural divisions, technical means or units. Requests are registered in the **repair orders book**, indicating the date, the transfer of funds to the workshop, the type of repair. In the process of inspection with the participation of the head of the workshop, the mechanic who handles the car for repair, the mechanical engineer determines the list of works that must be performed in the repair process.

The separate order for each repair of complex machines, tractors, cars, combines, etc. is opened in the **accounting log** to account for the repairing equipment cost. Such an order is opened for a group of homogeneous objects for the repair of simple machines and implements (plows, harrows, etc.).

The **clean-up sheet** is formed considering the inspection of the means, which have been repaired according to the need for spare parts, the amount of repair work is determined by the estimated cost of repair. This information is the basis for a **limit card or invoice** for the receipt of spare parts and work orders for repair work. According to the limit-collection cards, invoices, work orders, details of the distribution of overhead costs make records in the logbook of cost accounting repair shop separately for each order. It is possible to calculate the actual cost of repair, each inventory object, which will allow to provide a clear control over the level of expenses of self-supporting units.

The clean-up sheet is made in two copies. One copy is handed over to the head of the warehouse for selection and delivery of the necessary spare parts and materials for the repair. The second copy is left in the repair shop as an estimate document for the repair.

The **acceptance certificate on repaired, refurbished and upgraded vehicles** is made after the repair. According to it the repaired objects are transferred for further operation.

Auxiliary production costs are recorded in the balance sheet 23 Production on the subaccount 234 Auxiliary Production including a sub-account of the second order by type of production, i.e. 2341 Repair Production. Its debit includes the amount of expenses for repair work, its credit includes writing off repaired objects costs.

The direct costs are accounted for:

- ✓ wages expenses;
- ✓ deductions for social events;
- ✓ fuel;
- ✓ building materials;
- ✓ spare parts;
- ✓ low-value and high-wear items;
- ✓ works and services.

The wages expenses take into account the amount of basic and additional wages for the workers of repair shop engaged in repair of machines, equipment, tractors, etc., as well as for the manufacture of products and equipment.

The amount of wages (salaries) is recorded on the debit of subaccount 2341 Repair Productions and credit of subaccount 661 Payroll.

The labor costs of repair and mechanical workshops workers of in the established amount are recorded to Deductions for social events. The amount of deductions is debited to subaccount 2341 Repair Production and credited to the account 65 Insurance Payments.

The cost of fuel spent on running machines after repair and washing parts during repair is debited for Fuel. The cost of written-off fuel is debited to subaccount 2341 Repair production for each repaired facility and credited to subaccount 203 Fuel.

The Building Materials account includes the cost of construction materials spent on repair. Each repaired item is debited to 234 Substation Manufacturing account and credited to subaccount 205 Building Materials.

The Spare Parts credits the cost of spare parts, tires, batteries, finished products

used on the day of replacement of parts, components and equipment during the repair of fixed assets. The cost of the object spare parts debits subaccount 2341 Repair Production and credits subaccount 207 Spare Parts.

The Low-Value and High-Wear Items accounts the cost of low-value and high-wear items used for the repaired object. The subaccount 2341 Repair Production is debited and the account 22 Low-Value and High-Wear Items is credited.

The Works and Services account includes the cost of works and services performed by third parties or their own facilities. The subaccount 2341 Repair Production is debited and accounts 63, 68 and others are credited.

The general production costs of the repair shop are accounted for separate analytical account. They are distributed monthly between the individual orders in proportion to the direct wage.

Table 12.2

Accounts correspondence for cost accounting and work performed by the repair shop

No.	Operation	Debit	Credit
1	Accrued payroll for employees engaged in the repair	2341	661
2	Unified social contribution from the wages of repair workers	2341	657
3	Charged to petrol, oil and lubricants	2341	203
4	Spare parts on the facilities repairing	2341	207
5	Charged to low-value and high-wear items	2341	22
6	Distributed overhead costs of the repair shop	2341	2341.1
7	Written off costs for completed repairs	234, 235, 91, 92	2341

Actual prime cost of the performed work in the repair shop is determined **monthly** and written off to the service customers. There may be work in progress, its cost is determined by inventory. The amount of work in progress at the beginning of the month is added to the costs of the current month, and the work in progress at the end of the month is subtracted from the total cost. Thus, calculating production prime cost, work in progress is taken into account the sum of its difference at the beginning and end of the month.

12.3. Recording of Costs and Work Performed by Trucks

Freight transport provides the need for road haulage of enterprises, it also provides car services to employees of the enterprise and to third-party customers.

The main primary documents for cost accounting and works performed by truck transport are:

- international travel sheet of the truck;
- travel sheet of the truck;
- travel sheet of the car;
- transportation of passengers by bus;
- consignment note;

- coupon of the customer.

Typical forms of a single primary transport document are strict reporting documents, they are prepared according to the approved rules and accounted for in accordance with the established procedure.

According to the data of the travel car sheet, they carry out an account of work performed on the carriage of goods (passengers), fuel costs, calculation of salaries to drivers, payments with customers.

Transportation of goods by transport is carried out in the presence of duly executed invoices. They are the basis for writing off the material values of the shipper and posting them with the consignee, as well as for their warehousing, operational and accounting.

Lorries transportation of citizens belongings by their orders is carried out on a travel sheet with the receipt of profitable cash order for transport services.

The travel sheet data are recorded to the **Truck accumulation report**. At the end of the month, the data are calculated, the **consolidated statement** is written, the data used to complete the Report on costs and output of products (works, services) of other industries No. 5.6.

Costs for freight vehicles are accounted by the debit of subaccount 234 Auxiliary Productions (2342 Freight Vehicles (Road Transport)). The subaccount credit reflects the write-off of costs for consumers according to the volume of completed road transport in ton-kilometers or time spent (transportation of people, operation of special machines).

Analytical accounting of freight vehicles is carried out in the context of the following articles:

- basic and additional wages of drivers, garage manager, mechanic and other garage workers;
- deductions for social events;
- fuel and lubricants;
- depreciation and repair of fixed assets;
- other direct costs (occupational health and safety, cost of low-value and high-wear items, etc.);
- general production costs.

General production costs are distributed between modes of transport in proportion to the wages of the principal workers.

Transportation of goods by road is recorded in ton-kilometers, and the work of special machines and the volume of transportation of people are recorded in car hours, their number is converted into car days.

Freight vehicles calculations are drawn up by **accounting ñcertificate**. Firstly, car days prime costs are calculated to determine the cost of finished works. The expenses for the motor transport maintenance are divided by the number of car-days spent on all kinds of works. The cost of car days is determined by the costs associated with the transportation of people and other services that do not account for ton-kilometers. The other costs are the cost of the works and the transportation of the goods. Actual expenses are written off to accounting items on a monthly basis, accounts 20,22,23,15,91,92,93 are debited and 2342 are credited.

Example. Monthly expenses for the maintenance of the vehicle fleet were 10,000 UAH, the number of car-days was 200, the transportation of people was 40 car-days, the transportation volume is 80,000 ton-kilometers.

1. the cost of one car-day is 50 UAH ($10,000 \text{ UAH} : 200 = 50 \text{ UAH.}$);
2. the costs of people transportation is 2,000 UAH ($50 \text{ UAH} \times 40 = 2,000 \text{ UAH}$);
3. the costs of goods transportation is 8,000 UAH. ($10,000 \text{ UAH} - 2,000 \text{ UAH} = 8,000 \text{ UAH}$);
4. the prime cost of 10 ton-kilometers is 1 UAH ($8,000 \text{ UAH} : 80,000 \times 10 = 1 \text{ UAH}$);
5. consumers should be charged 1 UAH for 10 ton-kilometers of cargo transportation.

Table 12.3

Accounts correspondence for cost accounting and work performed by motor transport

No.	Operation	Debit	Credit
1	Accrued payment to vehicles drivers	2342	661
2	Unified social contribution from the wages of vehicles drivers	2342	657
3	Charged to petrol, oil and lubricants	2342	203
4	Spare parts on the facilities repairing	2342	207
5	Charged to low-value and high-wear items	2342	22
6	Depreciation applied to trucks	2342	131
7	Charged to motor transport services on:		
	– crop production	231	2342
	– animal husbandry	232	2342
	– general costs	92	2342
	– house maintenance	949	2342
	– industrial production	233	2342
	– general production needs	91	2342

The register of synthetic accounting of costs and works performed by truck vehicles is the Journal-order No. 5, and the register of the analytical accounting of costs is the Report on costs and output of products (works, services) of other industries No. 5.6.

12.4. Recording of Costs and Work Performed by Live Draft Force

Live draft force accounting is maintained on subaccount 2343 Animal-Drawn Transport. The debit of this account is the direct costs, and the credit is costs charged for consumers according to the volume of work performed.

Drawn transport costs are calculated on the basis of primary documents for the tangible assets:

- feed cost statement
- invoices

- records on labor and performed work
- salaries for livestock workers.

The offspring are procured on the basis of the animal offspring receipt.

Analytical accounting of the costs and works performed by the drawn transport is carried out according to the items of calculation:

- salary expenses;
- deductions for social events;
- works and services;
- feed;
- depreciation and repair of fixed assets;
- other expenses;
- general production costs.

The unit of live draft force work accounting is a work day (horse-day). Their number is set by the records of work and other primary documents.

Horse-day is the work of one head of animals during the day not taking into account time. The prime cost of one working day is determined by dividing the total amount of live weight maintenance costs (excluding the cost of breeding, manure and other by-products) by the number of horse-days.

The manure is estimated by the litter cost and the regulatory costs for its removal from the livestock premises.

The cost of one offspring head is equal to the cost of 60 feed days for keeping one head of adult draft cattle.

The prime cost of one feed day is calculated by dividing the total cost of keeping the livestock by the number of feed days.

Table 12.4

Accounts correspondence for cost accounting and work performed by live drive force

No.	Operation	Debit	Credit
1	Accrued payment to cattle rangers	2343	661
2	Unified social contribution from the wages of cattle rangers	2343	657
3	Charged to feeding	2343	208
4	Charged to drugs	2343	209
5	Charged to low-value and high-wear items	2343	22
6	Charged to construction materials for the stables repair	2343	205
7	Obtained manure	27, 208	2343
8	Registered offspring	21	2343

Example. Cost of live drive force keeping was 17,120 UAH during the reporting year. 1,340 horse-days were produced, 3 heads were obtained, estimated at 80 UAH. The number of feed days is 2,850.

Calculate the prime cost of 1 offspring head of live drive force, 1 working day.

Solution. Prime cost of 1 offspring head = $\frac{\text{offspring costs}}{\text{number offspring}} = 1080/3 = 360$

or $(60 \times 6 = 360)$;

Offspring costs = 60 feed days * 1 feed day prime cost * number of offspring = $60 \times 6 \times 3 = 1080$

1 horse day prime cost = $\frac{\text{keeping costs} - \text{by} - \text{products}}{\text{number of horse days}} = 17120/1340 = 12.72 \text{ UAH.}$

1 feed day prime cost = $\frac{\text{keeping costs}}{\text{number of horse days}} = 17,120 / 2,850 = 6 \text{ UAH.}$

12.5. Recording of Costs for Electricity, Water Supply and other Auxiliary Industries

An agricultural enterprise may have electricity, heat, water and other auxiliary industries. The costs are recorded in a separate analytical account for the established articles. They write off expenses on a monthly basis by assigning them to consumers according to the volume of services provided or work performed.

Electricity is used for basic production, auxiliary and industrial production, housing and communal services, etc. Farmers receive electricity from the outside or produce at their own power plants.

Separate analytical account Electricity is opened to account **electricity supply**. These costs are accounted according to the established articles. If the company has its own power plant, then the records of its work are kept in the **power generator logbook**. It records the operation of the generator and the amount of electricity produced daily. The **power plant operation report** is prepared at the end of the month on the basis of such records.

The costs of electricity supply are reflected on the basis of primary documents on the calculation of wages, tangible assets write-off and so on.

If electricity is received from power plant, its cost is recorded on the basis of received invoices from suppliers, i.e. debit account 234 Auxiliary Productions and credit account 63 Payments to Vendors and Contractors or 68 Payments on other Transactions.

The head of the power plant or electrician reports on the electricity application stating the distribution of electricity by consumers. Data for the report are taken from the counters.

The prime cost of 10 kilowatt-hours of electricity is calculated monthly by dividing all costs (the cost of electricity received from a power plant plus the cost of own electricity utility) by the amount of electricity consumed (excluding electricity used by the electricity industry) (Fig. 12.1).

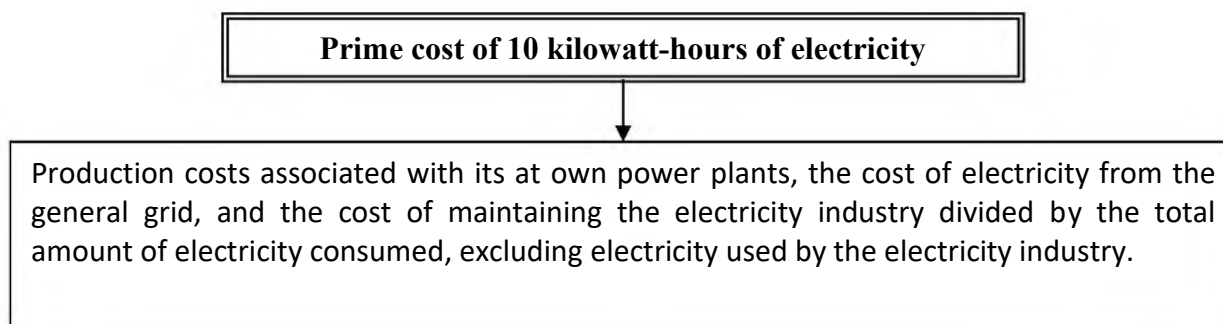


Fig. 12.1. Electricity costing

The prime cost of electricity is charged to consumers by the number of kilowatt-hours monthly. Recording is made on debit bills 23 Production, 91 General Production Costs, 92 Administrative Expenses and others depending on the channels of electricity consumption and credit subaccount 234.

Maintenance costs for power generators assembled with milking, shearing, welding and other units are directly attributable to the productions.

A separate analytical account records the costs of maintaining the boiler rooms and the **heat supply** services. The accounting is carried out in the same way as for electricity supply. The cost of 10 units of heat (Gcal) is calculated here. The calculation is made by dividing the amount of costs for the production, purchase and transmission to heat energy consumers by its total amount (without taking into account the energy used for the boiler house own needs and its losses in the network) (Fig. 12.2). Heat is charged to the users monthly taking into account its quantity and prime cost.

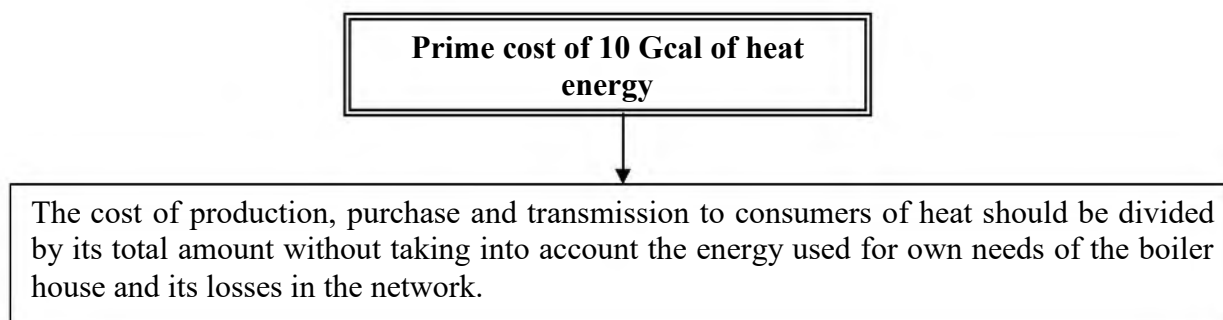


Fig. 12.2. Heat energy costing

If boiler rooms and other thermal installations are located on a farm as auxiliary industrial production or other structural units and serve only these units, the costs of heat are accounted as a part of the costs of these units.

Water supply is one of the auxiliary industries. They open a separate analytical account water supply in a production report or production accounting book, which records the costs of articles and other auxiliary industries.

Costs for water supply include the cost of maintaining their own water pipes, water lines, pumping installations and other units used for supplying water for production and domestic needs of the enterprise, as well as the cost of water received

from water supply organizations according to their accounts.

The prime cost of 1 m³ water is determined by dividing the cost of water supply by the total amount of water received (Fig. 12.3). Discharged water is charged to consumers monthly taking into account its quantity and prime cost recording on debit accounts 23, 90, 91, 92, 93 and others and on subaccount credit 234.

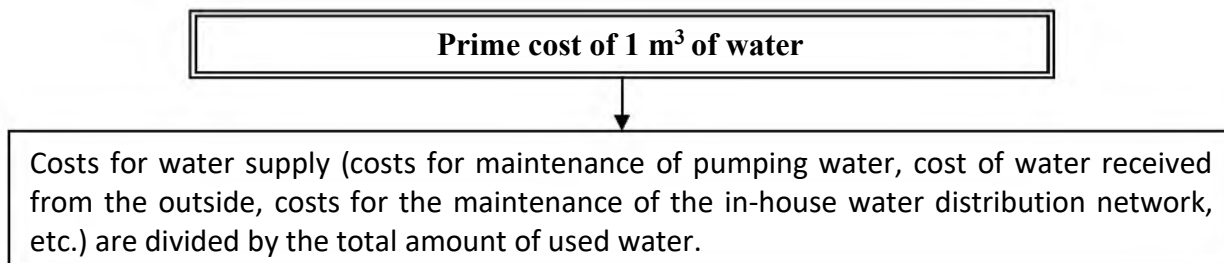


Fig. 12.3. Water supply costing

The distribution of water to consumers is made according to report filled in according to the meters or by calculation. Maintenance costs of pumping installations serving fields, farms, pastures, ponds, structural units are charged to the costs of crop production, animal husbandry and other units.

Gas maintenance costs are recorded in a separate analytical account Gas Supply according to the established articles. These costs include the cost of the gas produced, as well as other costs of maintaining the gas enterprise in the same way as electricity.

The prime cost of 1 m³ of gas is calculated by dividing the cost of gas supply by the total amount of gas (Fig. 12.4).

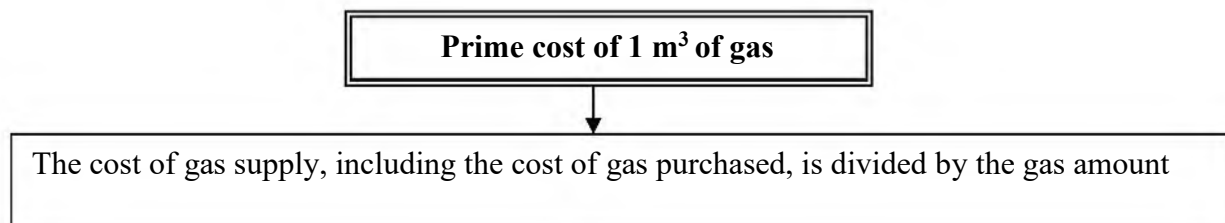


Fig. 12.4. Gas costing

Gas is charged to consumers monthly based on its quantity and cost, recording on debit bills 23, 90, 91, 92, 93 and others and on subaccount credit 234.

It is advisable to calculate the prime cost of 1 kg of gas and charge to consumers at enterprises using liquefied (balloon) gas.

Costs for the maintenance of refrigeration units are kept in a separate analytical account. Costs are distributed monthly by facilities in proportion to the quintessential days of product storage in refrigeration chambers or special storage facilities.

If there are other types of auxiliary industries at the enterprise, the costs of the established articles for each of them are accounted for separate analytical accounts and distributed monthly to consumers, choosing the appropriate base for distribution.

Discussion and self-review questions

1. *What are the cost items for keeping records of repair and mechanical workshops?*
2. *What information does the statement of fixed assets defects include? How many copies is it written out?*
3. *What kind of journal is used to summarize information on the cost of auxiliary production?*
4. *How often is the actual prime cost of the work performed at the workshop calculated?*
5. *What is the main document for accounting of the freight vehicles work?*
6. *What are the forms of travel sheets?*
7. *What is written in the travel sheets?*
8. *Which unit is the calculation one for freight vehicles?*
9. *What document accounts electricity produced at the farm?*
10. *What auxiliary industries do you know?*
11. *How to calculate the cost of 10 kW per h and 10 units of heat energy?*
12. *What is the accounting and calculation unit of gas supply?*
13. *How is the cost of 1 m³ of water calculated?*
14. *Where is the volume of work performed by live weight recorded?*
15. *How to calculate the prime cost of 1 working day of live weight?*
16. *Describe the account on which the auxiliary production costs are recorded.*
17. *What productions are auxiliary ones? What is their value?*
18. *What are the tasks of accounting for costs and work performed by repair shops?*
19. *What is the basic correspondence of invoices for accounting of repair shop costs?*
20. *Name the main accounting entries for accounting for freight vehicles.*
21. *Name the main accounting entries for accounting for electricity costs.*
22. *Name the main accounting entries for accounting for costs and works performed by live weight.*

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THEME 13. COST ACCOUNTING FOR PRODUCTION AND MANAGEMENT

13.1. Accounting and Distribution of General Production Costs

Costs for production and management are divided into general production and general administrative.

The tasks of accounting of costs for production and management are correct and timely documentation of operations, accurate accounting of expenses by their types and items, control over the observance of plans, estimates, standards of the specified costs, the correct distribution of overhead costs for accounting objects and calculation and attribution of administrative expenses for financial results.

General production costs are the costs for production and management of specific industrial centers of the enterprise.

To research the general production costs, it is necessary to analyze this concept, considering the views of modern scientists, and formulate definition revealing its meaning (table. 13.1).

Table 13.1

General production costs definition in economic literature

Definition	Source
General production costs as an integral part of the production cost of products (works, services), do not have a direct connection with the technological process of the main and auxiliary structural units of the enterprise, they are related to its organization and maintenance and creation for the units of the necessary conditions of production and implementation management.	Yu.S. Tsal-Tsalko [Tsal-Tsalko Yu.S. Enterprise Costs: [textbook] / Yu.S. Tsal-Tsalko. – Ê. : TSUL, 2002. – 656 p., p. 62]
General production costs are the costs of servicing the main and auxiliary production shops and managing them, and the costs of organizing and coordinating the production process in them.	M.S. Pushkar [Pushkar M.S. Accounting Philosophy: [monograph] / M.S. Pushkar. – Ternopil: Kart-blansh, 2002. – 156 p., ps. 330]
General production costs (overheads) are those costs not related to the basic costs associated with production technology; they don't form the technological cost of products (works, services): the cost of technological materials, labor and operation. These are all other costs of workshops, sites, which are organizational and management, additional, i.e. production overheads. This is the cost of units for production and management of production processes.	V.O. Lastovetskyi [Lastovetskyi V.Î. Industry Accounting: Problems of Theory and Practice: [scientific publication] / V.Î. Lastovetskyi. – Chernivtsi: Prut, 2005. – 200 p., p. 78]
Production costs for production and management of workshops, divisions, departments, crews and other units of the main and auxiliary industries, as well as the costs of maintaining and operating machinery and equipment, other costs associated with the production process, which cannot be directly attributed to a particular cost object is called the general production costs.	T. Voitenko, N. Vornaia [Voitenko Ô. All about cost accounting at a manufacturing facility: [scientific publication] / Ô. Voitenko, Î. Vornaia. – Kh.: Faktor, 2005. – 266 p., p. 30]

There are general production costs in crop production, animal husbandry, auxiliary and other production depending on the place of their origin. There are also

general production costs of crews, farms and other structural units. General production costs include the costs of organizing and managing individual industries, other indirect costs that, when incurred, cannot be directly attributed to a specific accounting entity because they are related to the work of the unit or the manufacturing unit as a whole.

The general production costs are indirect by the way they are included in the production prime cost. They are attributed to the production cost by distribution.

According to National accounting standard 16 Costs general production costs include:

- costs of production management (salaries for managers of shops, sections, etc.; deductions for social events and health insurance for managers of shops, sections; costs for business trips of staff of shops, sections, etc.);
- depreciation of general-purpose fixed assets (workshop, precinct, linear);
- depreciation of general-purpose intangible assets (workshop, precinct, linear);
- costs of maintenance, operation and repair, insurance, operating lease of fixed assets, other non-current assets of general purpose;
- costs for improving technology and production organization (wages and deductions for social activities of employees engaged in improving technology and production organization, improving product quality, improving its reliability, durability, other operational characteristics in the production process; costs of materials, purchase of accessories and semi-finished products, payment for services of other organizations, etc.);
- costs for heating, lighting, water supply, sewerage and other industrial premises;
- costs for the production process (salaries of general production personnel; deductions for social measures, health insurance of workers and managers; costs for the implementation of technological control over production processes and quality of products, works, and services);
- expenditures on labor protection, safety and environmental protection;
- other expenses (defect losses, payment of downtime, etc.).

According to National accounting standard 16 Costs general production costs are divided into **fixed and variable** ones.

Fixed production costs include costs of production management that remain unchanged (or almost unchanged) when the volume of activity changes. Fixed production cost is allocated to each cost item using a distribution base (hours of work, wages, activity, direct costs, etc.) at normal capacity.

Normal capacity is the expected average amount of activity that can be achieved in the ordinary course of business for several years, taking into account the planned maintenance of production.

Normal capacity is the amount of activity. Production in quantitative terms is usually the basis of distribution in the case where the enterprise produces one type of finished product, which is rare. Therefore, the calculation of normal production capacity depends on the enterprise's distribution base. For example, if the base is the wage of production workers, then its average level over several years is determined.

The normal production capacity will be the volume of activity in which the wage bill is a calculated average value.

If the amount of direct costs is the basis of distribution at the enterprise, in order to determine the normal production capacity, it is necessary to determine the average amount of direct costs in terms of past years. In this case, the normal capacity of the enterprise for the purpose of distributing fixed production costs will be considered the amount of activity at which the amount of direct costs for the production of products will be the calculated value.

Thus, in determining the normal capacity by the indicators of the past years, the average amount of direct costs of production, hours of work, wages, activities, etc., can be calculated, depending on what base is adopted for distribution. If the company is just starting out, it is necessary to calculate planned amounts.

The normal production capacity is determined by the enterprise independently and reflected in its accounting policy. Then, using the allocation base, you can determine the standard of fixed general costs per unit of direct costs.

Thus, variable overhead costs are allocated to each cost item (per unit of finished product) using the selected distribution base (hours, wages, activity, direct costs, etc.) based on the actual capacity of the reporting period, and fixed costs based on normal production capacity.

The amount of fixed production costs, which does not exceed their value at normal production capacity, is distributed and included in the production prime cost of production. The amount exceeding normal is considered as an undistributed part of general production costs. Unallocated fixed production costs increase the cost of sales in the period in which they occur.

According to National accounting standard 16 Costs, methodology for calculating the distribution of general production costs is presented, by which the overhead costs are included in the costs of products, works, services (account 23 Production) and the cost of sales, works, services (account 90 c). According to National accounting standard 16 Costs, the cost of sales consists of their book value and the costs associated with their sale.

General production costs are recorded in account 91 General Production Costs. This account is active, operational, and distributive.

The debit of the account 91 represents the costs amount in accordance with the National accounting standard 16 Costs, the credit of the account 91 represents write-offs on the account 23 Production and 90 Sales Prime Cost monthly.

However, the Methodological Recommendations for Planning, Accounting and Calculation of the Prime Cost Production (Works, Services) of Agricultural Enterprises approved by the Order of the Ministry of Agrarian Policy of Ukraine No. 132 of May 18, 2001, stipulates that the agricultural production costs are not divided into variable and fixed costs. They are apportioned between the main industries and the cost objects in proportion to the amount of direct costs (excluding the costs of basic materials: feed, seeds, and raw materials).

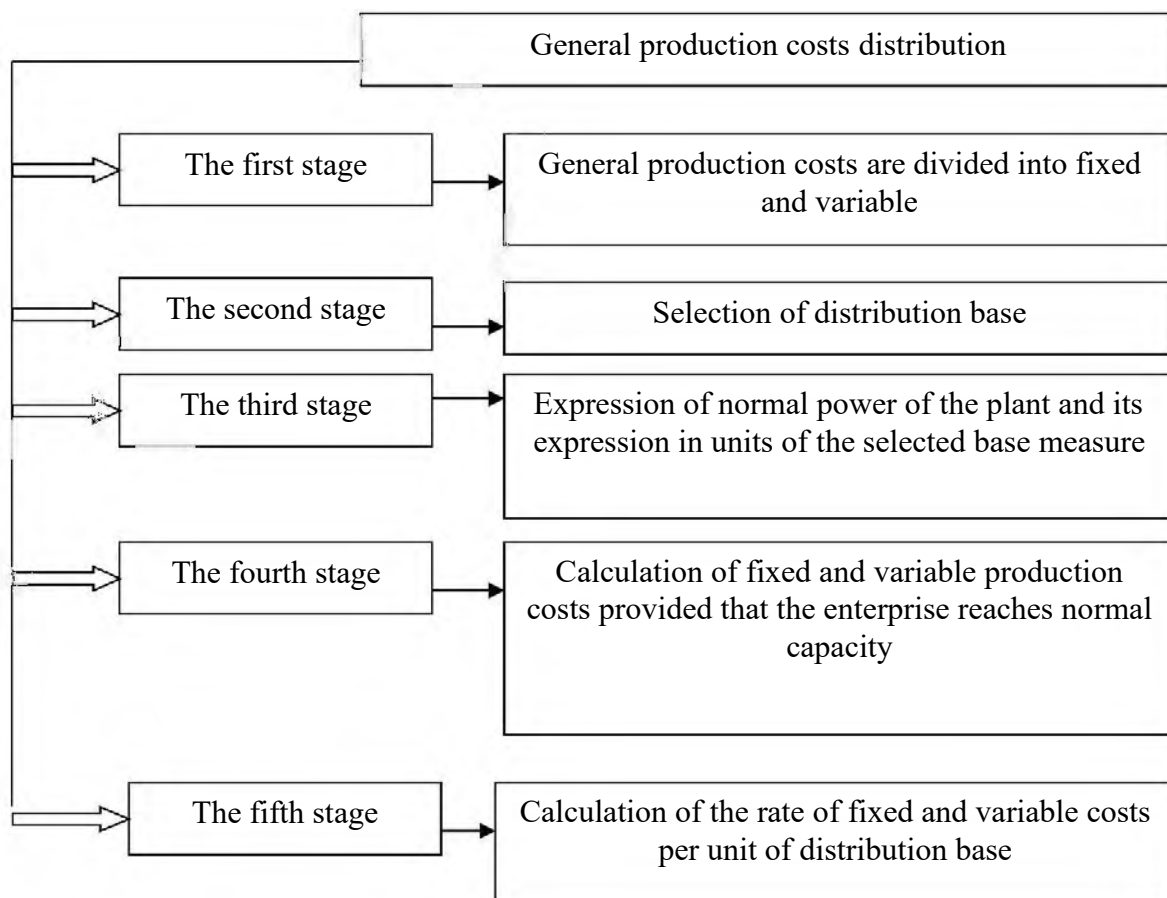


Fig.13.1. The order of general production costs distribution

Bases of distribution of general production costs in agriculture:

- crop production (direct costs without the cost of seeds and planting material);
- livestock (direct costs without feed costs);
- industrial production (direct costs without the cost of raw materials and semi-finished products).

Account 91 General Production Costs should be closed monthly, i.e. overhead costs are allocated to cost objects at the end of each month. Taking into account the features of agricultural production, production costs should be written off at the end of the year. Special report is compiled for distribution.

Analytical accounting of overhead costs is maintained by cost centers and items (benefits).

Businesses independently establish items to accumulate general production costs. Accounting can be carried out on the following items:

1. Basic and additional wages with deductions for social activities.
2. Occupational health and safety.
3. Costs for trips and allocations.
4. Maintenance costs of fixed assets.
5. Temporary facilities maintenance.
6. Transportation service works.

The item Basic and Additional Wages with Deductions for Social Activities refers to the basic and additional wages (including deductions for social activities)

according to the nomenclature of positions related to the management apparatus:

- crop production: agronomists, engineers, agroforestry, hydrotechnical engineers, plant managers, tractor and field crews, manager and employees of the grain stock;
- animal husbandry: zootechnics, breeding zootechnics, labor-intensive process engineers at livestock farms, veterinarians, paramedics, and other veterinary staff; isolation and milk workers, lab technicians in charge of animal husbandry;
- industrial production: workshop chief, master.

The item Occupational Health and Safety includes the cost of manufacturing and storage of working machines fences, hatches and ventilation devices for the purpose of security; emergency stop devices for operating mechanisms, etc.; costs for the use and storage of disinfection chambers, washbasins, showers, baths, laundries, changing rooms, wardrobes, dryers and other equipment; other costs associated with the provision of occupational safety, including materials spent on the use and storage of funds intended for occupational safety and the wages (including deductions for social activities) of workers engaged in the repair and maintenance of equipment and occupational safety and health devices.

Costs for trips and allocations include the cost of maintaining a car and a ride horse intended for service personnel travel (crop, livestock and industrial production).

Maintenance costs of fixed assets include depreciation, repair costs, heating, lighting and cleaning of general-purpose facilities, i.e. grain dryers, vet bureaus, agrarian cabinets, laboratories, brigades, veterinary vehicles and others.

Temporary facilities maintenance includes the cost of constructing temporary structures and sheds, sheltering equipment for workers, storing tools and equipment in the field, expenses for arranging field meals (salaries for cooks, fuel costs, etc.).

Transportation service work includes costs associated with the transportation of workers to field camps, crews and other places of work, as well as the transportation of water, implements, agricultural machinery, delivery of fuel to tractors, combines, the cost of domestic transportation of materials and other transport work. Costs for the delivery of mineral and organic fertilizers, poisonous chemicals to fields, and forage shall not be taken into account under this item.

A separate item can be allocated to the cost of using low-value items (with a lifetime of more than one year) for general purpose. This is the value of low value items and overalls of general purpose intended for use in crop, livestock or industrial production (tarpaulin for shelter of cars during transportation of grain, mixed fodder and other bulk cargoes, tools, equipment and stock of veterinary points, isolators, laboratories, etc.; special clothing issued to guards and staff of crews and farms).

At the agricultural enterprise the following subaccounts can be opened in the account 91 General Production Costs:

911 Crop General Production Costs;

912 Livestock Production Costs;

913 Industrial General Production Costs;

914 General Production Costs of Other Industries;

915 Maintenance and Operation of the Machine and Tractor Park;

916 Maintenance and Operation of Self-Propelled Machines;
917 Fixed Agricultural Tax.

Report on General Production Costs No. 5.7 (agriculture) is used for the accounting of general production costs. The register is intended for analytical accounting of subaccounts for certain items, it is opened by production units, industries, and subaccounts. The register is monthly by compilation period; it is annual (costs are calculated as a result from the beginning of the year) by appointment.

Journal-order No. 5 (agriculture) is register of synthetic accounting at agricultural enterprises

The general scheme of general production accounting is presented in Fig. 3.6.

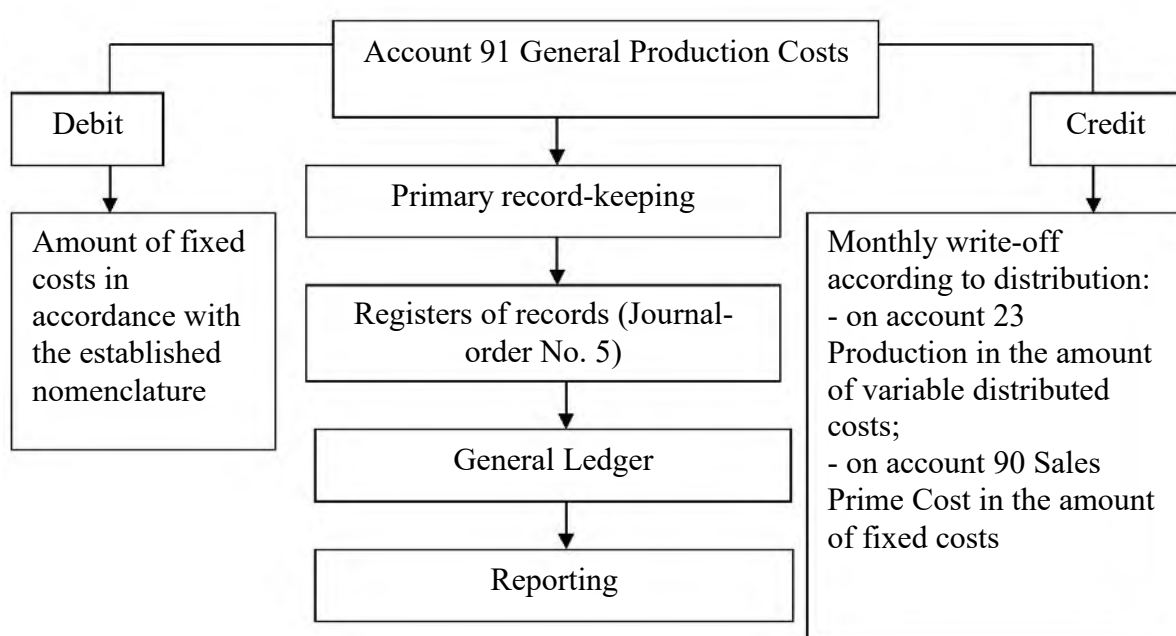


Fig. 13.2. General scheme of General Production Costs Accounting

Table 13.2

Accounts correspondence for general production costs accounting

No	Operation	Accounts correspondence	
		Debit	Credit
1	2	3	4
1	Accrued payroll for general production employees	91	661
2	Contributions to the compensation fund for these workers	91	65

Continuation of Table 13.2

1	2	3	4
3	Charged to costs of construction materials for the working machines fencing for the safety purpose	91	205
4	Charged to petroleum products used for passenger vehicles	91	203
5	Charged to costs of the fuel used to heat the animal breeders room	91	203
6	Charged to costs of electricity consumed for illumination of farm area and general-purpose premises	91	234
7	Charged to costs of freight trucking services transporting workers to and from work	91	234
8	Charged to material assets used for general production needs: • raw materials	91	201
9	Charged to services of other auxiliary industries for general production	91	234
10	Charged to services of a machine-tractor park	91	915
11	Depreciation on buildings and equipment for general purpose	91	131
12	Charged to materials used to repair the general-purpose building	91	205, 209
13	Charged to low value items received for the laboratory and the farm veterinary station	91	22
14	Charged to cost of the clothing and footwear to the farm employees (gatekeeper,	91	22
15	Created staff pay reserve	91	471
16	Costs of future periods are charged to general production costs	91	39
17	Charged to repair shop costs	91	234
18	Charged to outsourced disinfection and disinfestation of farm premises	91	631
19	VAT tax credit	641	631
20	Charged to the amount of expenses for the personnel business trip (without VAT)	91	372
21	Charged to contractors and other third organizations for work and	91	631, 685
22	General production costs attributed to the objects of accounting of production costs:	231 232 233	911 912 913
23	Charged money to land share rent	91	661
24	Charged products to land share rent	91	685
25	Allocated variable general production costs	23	91
26	Allocated fixed general production costs	23	91
27	Unallocated fixed general production costs attributable to sales cost	90	91

13.2. Accounting for Administrative Costs

Administrative costs are costs associated with managing and maintaining the enterprise. They are not involved in the creation of products but are necessary for the normal functioning of production. Administrative costs are not included in the production prime cost, but they are written off for financial results.

In modern conditions accounting for administrative costs requires new approaches to the selection of features of their classification, which allow to organize a system of cost management. Classification features of the administrative costs of the enterprise and their accounting system determine the following basic criteria:

- type of economic activity of the enterprise;
- organizational construction of economic activity, which may be characterized by a shop or shopless structure of production;
- branch and sub-branch of activity, each of which should be separated in a single accounting system at the enterprise;
- type of products manufactured at the enterprise;
- methods of valuation of accounting objects and determination of transfer prices;
- system of organization of internal economic relations;
- methods of formation of cost of production.

Developing an economically sound classification of administrative costs is an important prerequisite for ensuring the financial stability, competitiveness and economic development of an entity, helping to identify cost objects, organize according to a single methodology for planning, accounting, analysis and day-to-day control, and therefore to create the proper cost management mechanism.

In scientific publications, administrative costs are classified according to different characteristics, i.e. relation to the main processes of the enterprise, complexity of costs (nomenclature of items), grouping by economic elements, ratio of business activity, frequency, and possibility of regulation.

Analyzing the basic processes of the enterprise, it is possible to make a preliminary classification of administrative costs.

A special group consists of the administrative costs not directly related to the production; they are caused by managerial, organizational and administrative functions to coordinate and regulate the processes of supply, production and marketing. Management costs include the costs for management apparatus, the payment for services of other production management companies, the costs of maintaining fixed assets related to production management, depreciation and amortization.

Production administration costs include costs associated with the maintenance of the production process (costs related to security, recruitment, maintenance and depreciation of fixed capital equipment, etc.).

The accounting of the enterprise administrative costs by the centers of responsibility needs a developed classification of administrative costs that would fully meet the needs of each responsibility center taking into account the

organizational structure and management characteristics. It is advisable to group the administrative costs of enterprises by such centers and cost items (Table 13.3).

Table 13.3

Grouping of administrative costs by responsibility center

Center	Administrative costs items
1	2
Administration	Maintenance costs for administrative management staff
	Total corporate costs
	Costs for general-purpose communications
	Costs for professional services
	Costs for resolving conflicts in the judiciary
	Other general costs
Business Department	Costs for the maintenance, operation and repair of fixed assets, other non-current tangible assets of general purpose
	Costs for the general-purpose objects guarding
Mechanics Department	Costs of transportation services associated with the management of the enterprise
Department of Labor Protection	Health and safety costs
Supply Department	Costs for purchasing raw materials, fuel, energy, tools, appliances and other tools and supplies
Human Resources Department	Costs for recruitment, training or retraining of management staff and other employees
Accounting Department	Costs for services of commercial banks and other financial institutions
	Repayment of property, plant and equipment, intangible assets, depreciation and amortization
	Costs for property and risk insurance
	Taxes, levies and other statutory payments (except those included in the prime cost of products (works, services))

It should be mentioned that this classification of administrative costs in practice is possible for analytical purposes. It is inappropriate for accounting, because the costs of production management and maintenance may be included in various items of costing (for example, management costs are included into general production ones or administrative ones). Administrative costs are complex by nature, and they include general economic expenses for servicing and managing the enterprise. The cost structure is determined National accounting standard 16 Costs.

Each item in the grouping of administrative costs by responsibility centers can be specified by subheadings.

Administrative costs are complex costs, so their classification by economic elements is of particular importance (Fig. 13.2).

It should be noted that the classification of costs by economic elements is used by enterprises mainly to build a system of financial accounting, whereas in the management accounting system costs are considered in the context of costing items. If the item classification shows the total amount of administrative costs, then only the part of the item costs that can be included in the price of individual products is included in the relevant item of costing.

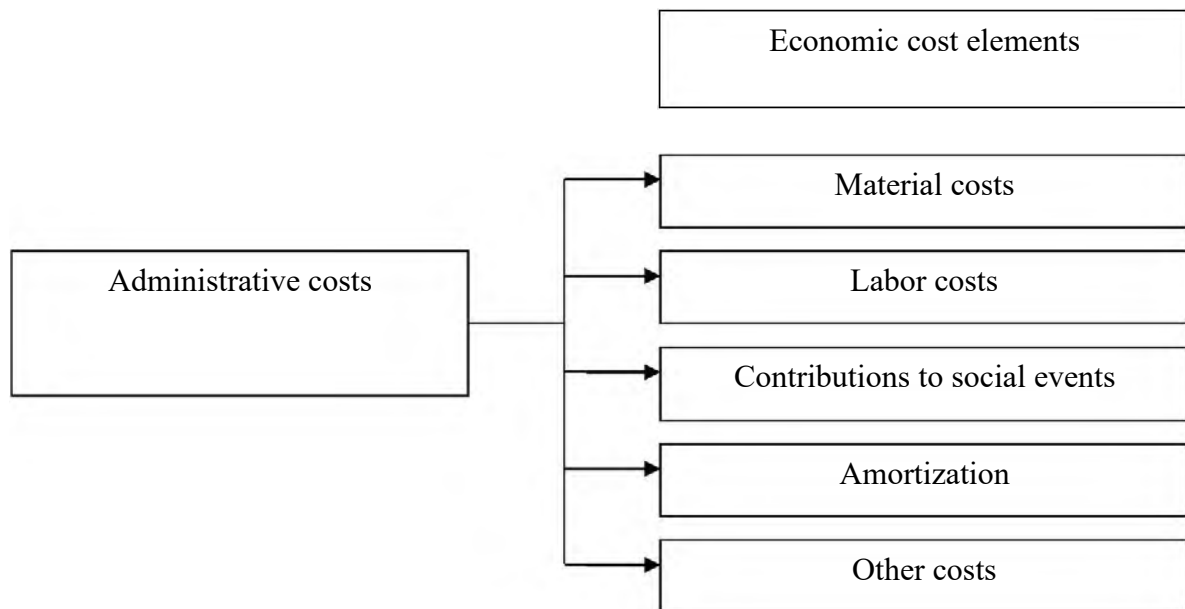


Fig. 13.2. Classification of administrative costs by economic elements

In terms of planning and control, the most important feature for the classification of administrative costs is how their dynamics change depending production volume or other indicators.

In terms of output, administrative costs are divided into fixed and variable.

Fixed costs are costs that remain unchanged (or almost unchanged) when the volume of activity changes. Variable indirect costs change directly or almost directly in proportion to production changes. J. K. Shim and J. G. Sigel speaks on mixed (semi-variable or semi-fixed) costs. Mixed costs are costs varying with production but they are not in direct proportion. In other words, these costs contain both fixed and variable components.

By periods administrative costs are classified into current, past and future ones.

It is advisable to classify administrative costs as regulated and unregulated by their importance for planning, controlling and making effective management decisions.

Unregulated administrative costs include costs, which are mainly determined by the capacity of the enterprise. They include amortization, taxes, insurance costs, and salaries of the personnel who serve the manufacturing process. Their size depends on the size of the planned capacity. When capacity is already determined, the absolute cost is virtually independent of how much power is actually used. When changing production volumes, it is difficult or impossible to change these costs in the short term.

The other administrative costs depend on the management of the enterprise. They are sometimes referred as management costs or programmed costs. These include the cost of research, consultancy, and training employees. These costs reflect the administration policies and are not related to current changes in production. A characteristic feature of programmed costs is that their size can be reduced at a critical moment without changing production and sales. In modern conditions, the use

of this classification feature of administrative costs becomes especially relevant, so the type of classification of administrative costs for regulated and unregulated is part of a rational classification of administrative costs.

Thus, a rational classification of administrative costs can be structured in the order shown in Table 13.4.

Table 13.4

Classification of administrative costs

Feature	Characteristic
1	2
Cost Complexity (Nomenclature Items)	Salaries of general staff; contributions to social events; costs of business trips of management personnel; total corporate costs; expenses for maintenance, depreciation and repair of fixed assets and intangible assets of administrative purpose; rewards for professional services; communication costs of settling disputes in the judiciary; payment for bank services; other expenses.
Responsibility centers	Administrative costs of the directorate, administrative and economic unit, mechanization department, labor protection department, supply department, personnel department, and accounting department.
Economic element	Material costs, labor costs, deductions for social measures, depreciation, other costs.
Production volume	Fixed, variable, mixed.
Period	Administrative costs of past, future and current periods.
Regulation	Regulated, unregulated.

Developing nomenclature of administrative costs will allow to show difference between costs components, to develop an appropriate mechanism for stimulating cost reductions, as a whole, and in the context of individual groups, which will facilitate the effective management of administrative costs at all stages of production development.

Administrative expenses are accounted for in the 92 Administrative Costs account. The debit of the account 92 Administrative Costs is the amount of recognized administrative costs, its credit is write-off to the account 79 Financial Results.

According to National accounting standard 16 Costs administrative costs include:

- general corporate costs (organizational expenses, annual meeting fees, representation expenses, etc.);
- expenses for business trips and management apparatus and other administrative staff;
- costs for 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, telegraph, telephone, telex, fax, etc.);
- litigation costs;
- taxes, levies and other statutory payments (except taxes, levies and

mandatory payments included in prime cost of products, works, services);

- payment for banks services;
- other administrative costs.

Administrative costs are grouped according to the established nomenclature of items. Their approximate list is as follows:

1. Costs for wages of administrative and management staff.

2. Deductions for social events.

3. Expenses for the maintenance of fixed assets, other tangible assets providing administrative needs.

4. Depreciation of fixed assets, other tangible fixed assets and intangible assets providing administrative needs.

5. Taxes, fees and other compulsory statutory payments.

6. Total corporate costs.

7. Other administrative costs.

Item 1 includes the costs for basic and additional salaries of the administrative and management staff and other staff.

Item 2 includes deductions for social measures, their basis are the actual costs of remuneration of the administrative and managerial staff of the enterprise in accordance with applicable law.

Item 3 includes costs for heating, lighting, water supply, sewage and other general-purpose utilities; cost of materials and facilities for the care of premises, buildings, territories, general-purpose equipment; the cost of electricity used for the work of computers and air conditioners installed in administrative premises or others; expenses for carrying out fire-fighting measures, payment for services of enterprises connected with the provision of fire and watch-keeping in accordance with the concluded contracts; expenses for current repair of fixed assets, other non-current tangible assets of general purpose; the cost of maintaining and operating telephone exchanges, switches, teletypes, communications, radio, and others.

Item 4 includes fixed assets amortization, other tangible fixed assets and intangible assets providing administrative needs.

Item 5 includes taxes, fees and other mandatory payments provided by Ukrainian law; their levying increases the administrative costs of the enterprise.

Item 6 includes the costs for publishing an annual report; organizational and representation expenses associated with the corporate business; annual meeting fees; other expenses related to the performance of corporate enterprise responsibilities.

The main business operations for accounting administrative costs are shown in Table 13.5.

Item 7 includes the costs associated with ensuring normal working conditions and compliance with the labor safety rules laid down in the collective agreement; expenses on business trips of administrative, management and other staff; payment for postal, telephone, telegraph, fax and other services; expenses for the purchase and production of forms of documents related to the financial and economic activities of the enterprise, the purchase of office supplies; the cost of subscription to specialized press, the purchase of catalogs, guidance and other official materials; organizational expenses, representation expenses, etc. (organization of receptions, conferences and

other official events) related to the operating activities of the enterprise; payment for services of commercial banks and other credit and financial institutions; expenses for transportation of enterprises employees to the place of work and back; rewards for professional services (legal, auditing, property valuation, etc.); costs of settling disputes in the judiciary; other general expenses.

Table 13.5

Recording of 92 account transactions

No.	Business transactions	Accounts correspondence	
		Debit	Credit
1.	Calculated fixed assets and intangible assets depreciation	92	13
2.	Charged to production inventories for general economic needs	92	20
3.	IBE put into operation	92	22
4.	Finished goods included in administrative costs	92	26, 28
5.	Cash paid general costs	92	301
6.	Accounts and other services provided by the bank	92	311
7.	Charged unsatisfied claim amount	92	374
8.	The business trips of management personnel costs	92	372
9.	Charged to part costs of future periods	92	39
10.	Legal property valuation services	92	631
11.	Accrued financial sanctions based on the results of tax authority's inspection	92	64
12.	Accrued salary with deductions	92	66,65
13.	Accrued rent, utilities, third-party repairs, communications, security, auditing, legal and consulting services	92	685
14.	Charges for item costs (for businesses in class 8 accounts)	92	80,81, 82, 83, 84
15.	Administrative costs charged to financial results	791	92

The administrative costs are accounted by defined items and correspondent accounts with the debit account 92 Administrative Costs in the **Report on Administrative Costs No. 5.8** (agriculture).

Synthetic accounting register in agricultural enterprises is Journal-order No. 5 (agriculture).

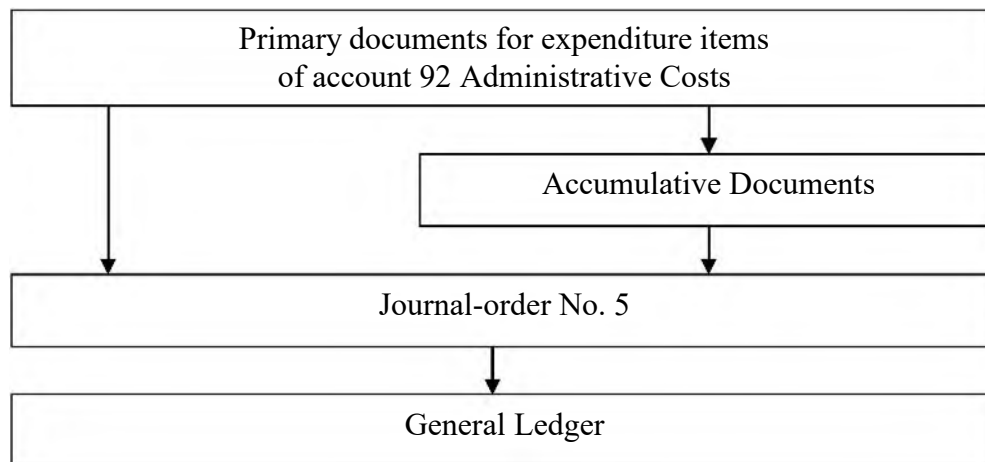


Fig 13.3. Sequence of entries in account 92 Administrative Costs

13.3. Future Costs Accounting

Costs of future periods are costs occurred during the current or previous reporting periods but relate to subsequent reporting periods. They include costs associated with the preparation of work in seasonal industries; the development of new industries and units; rental payments paid in advance; subscription to newspapers, magazines, periodicals and reference books and more.

In agriculture costs of future periods include the costs of constructing non-capital buildings and temporary adaptations for production purposes (summer camps and livestock units, silage, haying and other facilities), non-capital costs related to land improvement (gypsum plastering, liming, etc.) carried out at the expense of own funds and included in the cost of production over several years based on the definition of individual measures for their validity or application.

Costs for the preparation and development of new production include the costs associated with preparing for the new products release (the costs of licenses, used materials etc.). These amounts are charged to new products from the moment they are released during the planned release period.

Costs for future periods on subscription for scientific and technical and other literature, rent for the subsequent period are charged to expenses in uniform parts monthly during the term these or other expenses related.

Costs for the construction of summer camps for animals are distributed in equal parts according to the planned operation period and the costs between animal groups are proportional to the number of days and the number of animals kept in the camp.

Account 39 Future Costs is assigned to summarize information on costs incurred in the reporting period to be allocated to costs in future reporting periods. This account is active, balance sheet, and operational. The debit reflects the accumulation of costs for future periods, the credit is their write-off (distribution) and inclusion in the expenses of the reporting period.

Analytical accounting of future periods is carried out by types.

Let's consider the order in which transactions related to future expenses are

accounted for.

Example 1. The enterprise rents a warehouse for storage of finished goods, it belongs to another legal entity (VAT payer). On February 1, 2019, the lessor was paid the rent for 6 months at the rate of 300 UAH (VAT included) per month.

The mentioned operations are recorded in following entries (Table 13.6).

Table 13.6

Accounting for rental payments paid in advance

No.	Business transaction	Accounts correspondence		Amount of money, UAH
		Debit	Credit	
1	Transferred money for rental premises (300 UAH ÷ 6 months)	377	311	1,800
2	The amount of VAT tax credit	641	377	300
3	The rental costs for February	92	377	250
4	Future expenditure lease payments made in advance	39	377	1,250
5	March rental costs	92	39	250

Example 2. The farm has set up a temporary summer camp to house young cattle in April this year. The cost of construction of the camp was:

- cost of construction materials – 12,000 UAH;
- cost of transport services – 900 UAH;
- wages paid to the workers – 2,400 UAH;
- special instruments cost – 150 UAH;
- cost of other materials – 50 UAH.
- cost of truck crane services, including VAT – 600 UAH.

The service life of the summer camp is 4 years.

During this period, costs are evenly attributed to the production prime cost of rearing cattle. These transactions are recorded in the following way (Table 13.7).

Table 13.7

Costs for the construction of a summer animal camp

¹ ç/ĩ	Business transaction	Accounts correspondence		Amount of money, UAH
		Debit	Credit	
1	Charged to construction of a summer animal camp:			
	• cost of construction materials	39	205	12,000
	• cost of transport services	39	234	900
	• special instruments cost	39	22	150
	• cost of other materials	39	201	50
	• cost of truck crane services (without VAT)	39	631	500
2	The amount of VAT tax credit	641	631	100
3	Accrued wages for workers	39	661	2,400
4	Contributions to social events	39	65	528
5	Transferred money for truck crane services	631	311	600
6	Charged to production of cattle rearing in the first year of summer camp operation (16,528:4)	232	39	4,132

It is possible to calculate vacation pay on account 39. This transaction is recorded on the debit of Account 39 and the credit subaccount 661 Payroll. The debit account 39 will deduct social contributions. After the month the employee received vacation pay, their corresponding part of the credit account 39 will go into the debit of the accounts 23 Production, 91 General Costs, 92 Administrative Costs and others (depending on what kind of work the employee does).

Account 39 also includes the cost of repairing the leased property, plant and equipment, which, under the agreement, is performed by the lessee before the lease begins. Such costs are then written off directly to production costs or through rent during the lease term.

In addition to these operations, account 39 corresponds with other accounts (Table 13.8).

Table 13.8

Future Periods Costs Accounting

No.	Business transaction	Accounts correspondence	
		Debt	Credit
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
1	Depreciation of fixed assets used for construction of temporary structures, development of new productions	39	131
2	Charged to IBE, materials for development of new productions and units	39	22, 20
3	Cash paid from the cashier's office for the development of new plants and aggregates, rent paid in advance, periodical subscriptions	39	301
4	Rent from current bank account, periodical subscriptions paid in advance	39	311
5	Subscription value of periodicals processed through an accountable person	39	372
6	The reserve to pay leave to employees developing new industries and aggregates	39	471
7	Accrued taxes and payments for future expenses	39	64
8	Costs of services provided by other organizations for the development of new activities	39	63, 685
9	Charged to lessors for improvements, major maintenance of leased property, plant and equipment	15	39
10	Charged to the cost of new products at the production prime cost of the reporting period as they serially produced	23	39
11	Charged to future expenditure against other receivables (refund of excess rental charges paid)	377	39
12	Charged to future expenditure for general production costs at due date (farm, crew subscription)	91	39
13	Charged to future administrative expenses at due date (amount of subscription for head of business, accounting department)	92	39
14	Charged to sales costs: subscription of directories to prospective buyers	93	39
15	Charged to future periods costs for other operational costs	94	39

According to the journal-order form of accounting, data on expenses of future periods from primary and consolidated documents (invoices, statements of movement of tangible assets, statement of depreciation of fixed assets and other fixed assets, summary statement of accrual and distribution of remuneration and deductions from it by objects of account, etc.) are accumulated in the Journal-order No. 5 (agriculture).

Discussion and self-review questions

1. *What is the general production cost?*
2. *What are administrative costs?*
3. *What accounts do they account for the costs of production and management?*
4. *What is the main correspondence on the accounting of general production costs?*
5. *What is the main correspondence on accounting for administrative costs?*
6. *What are the primary documents for administrative costs writing off?*
7. *Which synthetic and analytical accounts do administrative and total production costs in agriculture be recorded?*
8. *What are the subaccounts that to account for general production costs in agriculture?*
9. *What is the procedure for allocating and writing off general production costs?*
10. *What is the procedure for closing an account 92?*

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THEME 14. COST ACCOUNTING AND CALCULATION OF CROP PRODUCTION

14.1. Tasks and Objects of Crop Production Accounting

Crop production is one of the main branches of agriculture. It provides the population with food, it is the basis for livestock development, it also provides raw materials for industry.

Crop production has some specific features affecting management accounting. It is characterized by **seasonal nature of production**, the gap between the periods of technological processes and production. Production costs in crop production are carried out for a long time and unevenly, the technological process depends on the natural conditions and can almost not be accelerated by intensification.

The production cycle lasts for many months in crop production; crop costs for two related years are spent. Therefore, you need to separately account for the current year crop costs and future years crop expenses.

In crop production, the cost accounting is organized according to such objects (Fig. 14.1).

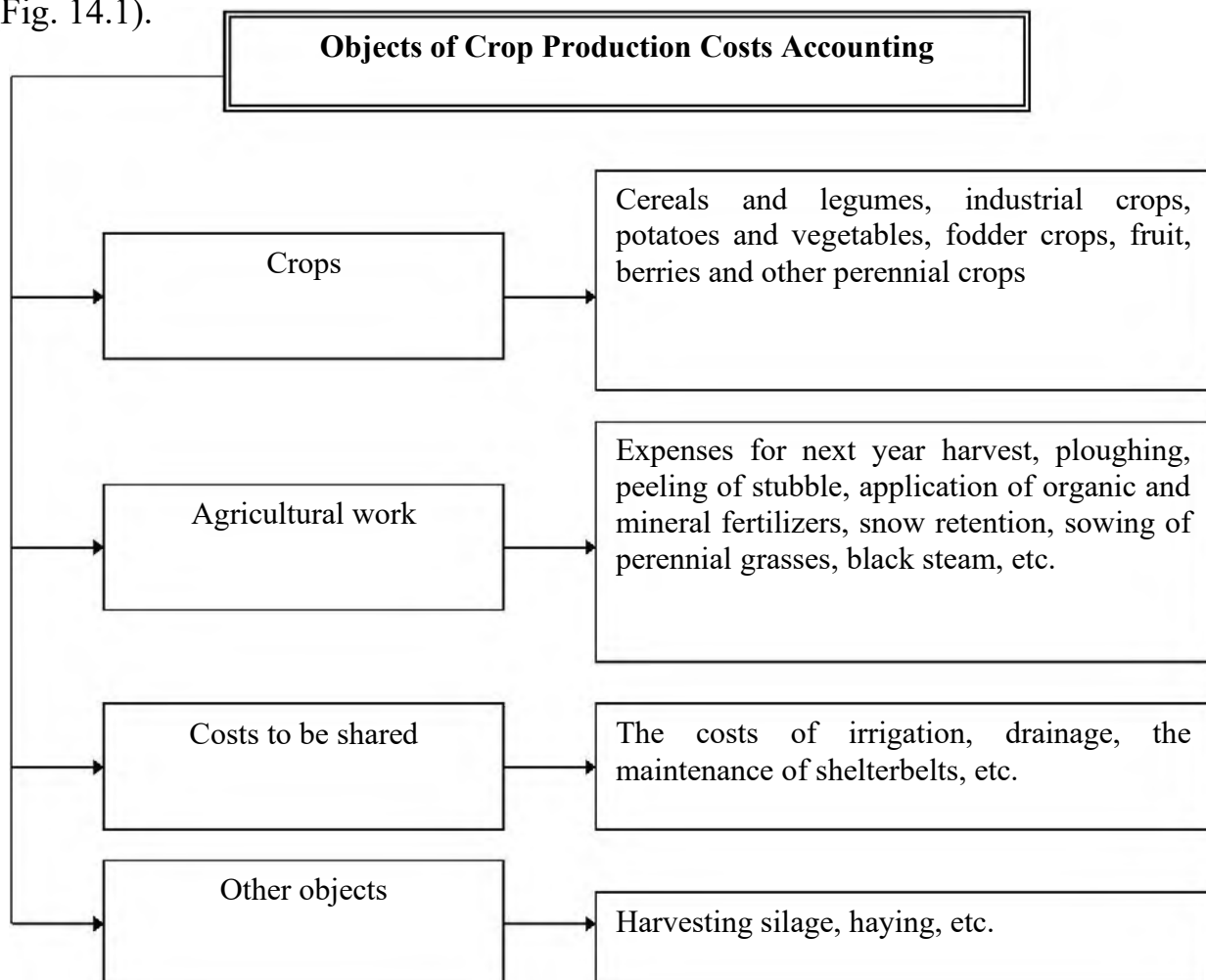


Fig. 14.1. Objects of Crop Production Costs Accounting

In crop production process consists of agricultural work performed at different

times of the year (spring, summer, autumn, and winter). It includes such works as soil preparation, sowing (planting), plants protection, and harvesting. They include many types of work.

Crop production is carried out by growing crops in different areas and in different structural units. Therefore, the cost accounting is carried out by crops and production units (teams, units, fields).

In crop production management accounting should ensure:

- correct and economically justifiable separation between crop costs (crop groups) and production periods (years);
- reliable accounting of the output by their types, taking into account the quality;
- obtaining the necessary information on the work of the company's units to monitor their activities and make sound management decisions.

². **Crops** are cereals and legumes, industrial crops, potatoes and vegetables, fodder crops, fruit, berries and other perennial crops.

²². **Agricultural work.** The objects of costs accounting for the harvest of the coming year are agricultural works or crops that will yield next year. Work in progress in crop production (expenditures for next year) includes sowing of winter cereals on grain, sowing of winter cereals on green fodder and silo, sowing of vegetable crops for winter, ploughing, peeling of stubble (without tillage), application of organic fertilizers, mineral fertilizers application, snow retention (in the fourth quarter), care of perennial grasses of previous years sowing, etc.

The accrued costs on the analytical accounts of this group remain unfinished at the end of the year. Next year they are allocated to the objects of the first group in proportion to the areas of crops actually occupied by specific agricultural crops.

²²². **Costs to be shared.** There are costs that cannot be attributed to the crop at the time they are made, as they are associated with the cultivation of several crops. The following costs are:

- depreciation charges on fixed assets used in crop production and are subject to distribution;
- costs of the repair of fixed assets to be distributed;
- irrigation and drainage costs;
- costs of maintaining forest shelter belts.

The peculiarity of these costs is that they are fully distributed in the reporting year and, accordingly, do not proceed to the next year as work in progress.

Depreciation charges on fixed assets used in crop production and are subject to distribution, they are recorded in a separate analytical account of the same name. During the year it includes the amount of depreciation on fixed assets that cannot be attributed to a particular crop. Accrual depreciation is accounted for in this analytical account separately for the types and groups of property, plant and equipment for which the depreciation is separately allocated.

At the end of the year, depreciation that is not directly attributable to a particular expense item is allocated to several cost items in proportion to the acreage, work performed, or other indicators that are the basis for the depreciation distribution.

For example,

- tractors, in proportion to the volume of work performed for crops (in conventional reference hectares);
- tillage machines, in proportion to the cultivated areas occupied by certain crops;
- seeders, in proportion to the area of sowing;
- fertilizer machines, in proportion to the physical mass of fertilizers applied;
- granaries, in proportion to the amount and duration of grain storage.

Costs of the repair of fixed assets to be distributed are also accounted for in a separate analytical account with the same name.

Repair costs are complex; they are deducted from the 2341 subaccount Repair Shop on this analytical account by a comprehensive item. The cost of repairs is allocated at the end of the year to the expense items in the same order as the depreciation amounts.

Irrigation costs to be shared are accounted in a separate analytical account. In irrigated farms, the cost accounting by objects is managed separately. However, all irrigation costs that can be directly attributed to the analytical accounts for cultivation of these crops are credited to these accounts. At the same time, much of the irrigation costs, including water costs, cannot be directly attributed to the crops concerned. These include the salaries of employees engaged in maintaining the irrigation system, oil products for the engines operation of the irrigation system, depreciation of fixed assets, etc.

At the end of the year, these costs are shared by crops in proportion to the area of the sown land.

The drainage costs to be shared are accounted for in the same manner as for irrigated land. At the end of the year, the costs are also allocated separately to the crops in proportion to area of the sown land.

The analytical account Maintenance of Shelterbelts take into account the operating costs of their maintenance: thinning, cleaning, pest control and other costs.

At the end of the year, the costs of maintaining forest shelter strips, excluding the cost of firewood, shrubbery, fruits (at the cost of their possible implementation or application) are attributed to perennial plantings and crops sown in proportion to the areas to which the forest strips belong.

IV. Other objects are the harvesting of silo, hay etc.

A large part of the products obtained from grown crops is used for forage purposes. According to the current accounting procedure the production of these products, its processing to a condition suitable for feeding to animals are taken into account at subaccount 231 Crop Production. Analytical accounts are opened for this purpose, i.e. silo harvesting, hay harvesting.

The **analytical account Silo Harvesting** takes into account the costs of silage of green mass and other crops including the following works:

- cleaning and preparation of pits and other silo structures for silo receiving;
- transportation and laying of silo,
- ramming,
- cover of pits, trenches, etc.

Accordingly, the same analytical account includes wages with deductions for social activities of workers engaged in silage, the cost of petroleum products, electricity, depreciation deductions for silage structures, the cost of repairing silos and equipment, services of auxiliary facilities.

The cost of green mass used for the silo and other components (straw, salt, etc.) is also written off.

The credit of this account reflects the posting of the silo in correspondence with account 27 Agricultural Products in the estimate at the planned cost during the year, bringing to the actual at the end of the year. Posting silage is carried out after the end of the period for fermentation, that is, not earlier than 20 days, but not later than 30 days after laying the silage in the storage. When laying in the silo farm from different crops, cost accounting and calculating its cost are kept separately for each crop.

The accounting of hay production cost and output is accounted as silage. The debit of the analytical account records the cost of hay production, including haymaking. The debit is the posting of the finished product, i.e. the haymaking at the planned cost, adjusted at the end of the year to the actual one. Posting haying is carried out after 7-10 days after laying the haymaking mass.

The total weight of harvested silo (hay) is determined by multiplying its volume by the mass of 1 m³. The dimensions of the repository are made before loading their silo (hay) mass.

14.2. Primary Accounting for Crop Production Inputs and Outputs

The accounting records of crop production inputs and outputs are made on the basis of relevant initial documents.

There are such groups of documents:

- accounting for labor costs;
- accounting for the objects of labor costs;
- accounting for means of labor costs;
- accounting for other costs;
- accounting for outputs.

Labor input documents record the labor costs of specific crop-related work and the wages charged. The main initial documents for recording time worked are the **time sheet**.

The **worksheets of the tractor driver** are used for mechanized work. Other copies of registers, **vouchers or vouchers for the export of products** from the field are added to **accounting worksheet of combiners**.

The most common initial documents for accounting for non-mechanized works in crop production are **accounting worksheets for labor and work performed**. The **foreman book on accounting of labor and work performed** may be also used.

Taking into account initial payroll documents, cumulative records, work logs and expenses, a **monthly summary statement of the calculation and distribution of wages and salaries by subject matter** is compiled.

Documents on accounting for the objects of labor costs include: **the act on the consumption of seeds and planting material; the act on the use of mineral, organic and bacterial fertilizers, pesticides and herbicides; the act of writing off production inventory, low-value and high-wear items, limit-picking card material, invoice (domestic) and others.**

The data of initial documents at the end of the month are systematized in the **tangible assets flow statement**, then the corresponding records on the costs of tangible assets in the respective accounting registers are made.

The calculation of depreciation on fixed assets is used to attribute to means of labor crop production costs.

To calculate the cost of fixed assets repair, use the **sheet of defects for the machine repair**.

The transport costs are recorded on the basis of the data of the **truck travel sheets**, grouped in a **cumulative data sheet of accounting of the operation of freight vehicles and travel sheets of the tractor**. The costs of freight transportation are charged to the objects of accounting of crop production on the basis of **freight invoices**.

The initial documents on accounting for the receipt (output) of crop products include:

1. dispatch register of grain and other field products;
2. field products export voucher;
3. driver's coupons;
4. combiner's coupons;
5. register of grain and other products;
6. grain reception register by the weigher;
7. grain and other products flow statement;
8. agricultural production diary;
9. act on sorting and drying of crop products;
10. diary of glass houses products receipt;
11. diary of the horticulture products receipt;
12. the act of taking rough and juicy feed;
13. the act of posting pasture fodder.

14.3. Synthetic and Analytical Accounting of Crop Production Costs and Output

Synthetic accounting of the crop production costs and output are on account 23 Production subaccount 231 Crop Production.

Account 23 Production belongs to the groups of accounts of household assets and processes, accounting of production costs; by purpose and structure it belongs to the group of operating, calculation accounts.

The debit of subaccount 231 Crop Production reflects the crop production costs, and its credit reflects the posting of agricultural products and writing off the lost crops.

The cost of crop production and the total amount of output by type are recorded on an accrual basis since the beginning of the year.

Analytical accounting for subaccount 231 Crop Production is conducted by types of production, by cost items and types or groups of produced products. At large productions analytical cost accounting can be conducted by enterprise units and cost and responsibility centers.

The crop production costs in planning and accounting are grouped according to the items determined independently by the economy and approved by the accounting policy order.

Methodical recommendations for planning, accounting and costing of agricultural products (works, services) No. 132 dated May 18, 2001 provide an approximate list of cost items in crop production:

1. Labor costs.
2. Seeds and planting material.
3. Fuel and lubricants.
4. Fertilizers.
5. Plant protection products.
6. Works and services.
7. Expenses for fixed assets repair.
8. Other expenses for the fixed assets maintenance.
9. Other expenses.
10. Non-productive costs (in accounting).
11. General production costs.

The item **Labor Costs** includes the basic and additional remuneration of workers directly engaged in the technological production process (including tractor drivers).

The item **Seeds and Planting Material** includes the value of produced and purchased seeds and planting material used for sowing (planting) of appropriate crops and plantations, except for young perennial plantings; costs of seed preparation for sowing. Loading and transporting the seed to the sowing site is not included in its value, but relates to the production of a particular crop (crop group) at the relevant cost items.

The item **Fuels and Lubricants** includes the complex price of fuel, i.e. its cost for performing technological operations, the cost of oils etc.

Fertilizers include costs for organic (manure, peat, compost, etc.), mineral, bacterial, other fertilizers and micro fertilizers.

Costs of fertilizers preparation, their loading into vehicles and spreaders, removal into the field and application to the soil are charged to a specific crop (crop group) under the relevant cost items and are not included in this item.

The item **Plant Protection Products** includes the cost of pesticides, herbs, herbicides, defoliants and other chemical and biological agents used to control weeds, pests and diseases of crops.

The costs associated with the cultivation of crops by the said means (other than the cost of the materials used) are charged to the respective crops (crop groups) for certain cost items (fuel, wages, etc.).

The item **Works and Services** includes the costs of work and services of auxiliary industries that meet the production needs, and the cost of production services, including water supply for irrigation and other services provided by water management organizations (except works and services costs charged to other items).

This item includes the cost of own and involved transport, tractor and haulage services.

The cost of electricity, heat, water and gas supply services is determined by including the cost of received and produced electricity, heat, water, and gas.

The amount of water payment for irrigation is determined on the basis of tariffs approved in accordance with the established procedure, and the volume of water supply for irrigation of certain forage crops and lands, and other production needs.

The cost of agrochemical maintenance and fertilizer services provided by third parties and organizations does not include the cost of toxic chemicals and fertilizers.

The item **Expenses for Repair of Fixed Assets** include the amount of remuneration of employees engaged in repair operations, the cost of spare parts, repair and construction and other materials spent on the current repair of fixed assets, including the cost of fuel and lubricants used for repair and running of machines after repair; cost of services of other organizations and own workshops for maintenance and current repair of tractors, agricultural machines and equipment; the cost of repairing greenhouses, the cost of repairing and replacing caterpillars and rubber tires of tractors and agricultural machines (the cost of film used to repair greenhouses, rubber are included in the cost of ongoing repairs without the cost of worn film or rubber at the prices of their possible implementation (use)).

The item **Other Expenses for the Fixed Assets Maintenance** includes the amounts used for their maintenance directly in a particular production.

These costs include:

- wages of personnel servicing fixed assets (except for tractor-drivers and other workers engaged in the production of agricultural products), mechanics, keepers of storage facilities;

- the cost of fuel and lubricants for transferring tractors and self-propelled machines from one site to another;

- depreciation not applying to certain cost items (crops).

Other Costs are costs directly related to the production of certain products and are not included in any of the above-mentioned articles.

The item **Unproductive Costs** (in accounting) refers to a defect of production, which is considered work that does not meet the set standards or specifications, and the cost of repairing the defect.

The item **General Production Costs** are the crew and workshop costs.

Brigade and workshop costs are costs of management employees wages; rent;

depreciation and maintenance costs and current repairs of non-current assets of general purpose; costs of occupational safety and health measures; the cost of transporting workers to the place of direct work; for the maintenance of field conditions; other costs associated with production management and maintenance.

Brigade and workshop costs of plant and industrial production are apportioned between the planning and accounting entities in proportion to the total cost, excluding the cost of seeds and raw materials, they are only costed for the production of the brigade or workshop.

Table 14.1

Main correspondence on crop production cost accounting and output

No.	Business transaction	Correspondence accounts	
		Debit	Credit
1	2	3	4
1	Charged to sowing seeds	231	208
2	Charged to costs of mineral fertilizers and herbicides	231	208
3	Charged to costs of organic fertilizers	231	208
4	Charged to costs of petroleum products	231	203
5	Charged to cost of the IBE putting them into operation	231	22
6	Accountable persons paid for crop production costs	231	372
7	Charged to the crop production cost of the corresponding portion of deferred costs	231	39
8	Wages paid to employees engaged in corn growing for silage	231	661
9	Accrued reserve for vacation payment to crop workers	231	471
10	Accrual to social insurance bodies and pension fund	231	65
11	Charged to the cost of services provided by own trucks	231	234
12	Debt to other enterprises for the services they provide for the needs of crop production	231	685
13	Invoice accepted for payment of suppliers for services rendered to crop production	231	63
14	Charged to work-in-progress and current-year allotments to the appropriate accounting facilities	231	231
15	Cost of beekeeping related to crop pollination charged to crop production.	231	232
16	Charged to part of total crop production costs	231	911
17	Crop production of the current year yield (at the planned cost)	271	231
18	Charged to the cost of green forage fed to productive and working animals for grazing	232, 234	231
19	Estimated or reversed calculation differences at the end of the year after calculating the actual cost of crop production	271, 232, 901	231
20	Charged to natural disaster costs	991	231

Analytical accounting of crop production costs and output is maintained in the Statement of costs and output of products (works, services) of the main production No. 5.5 (agriculture); it has been compiled for a month and has been increasing since the beginning of the year in the context of the objects of analytical accounting according to the relevant cost items. The register of synthetic accounting of crop production costs is

Journal-order No. 5.

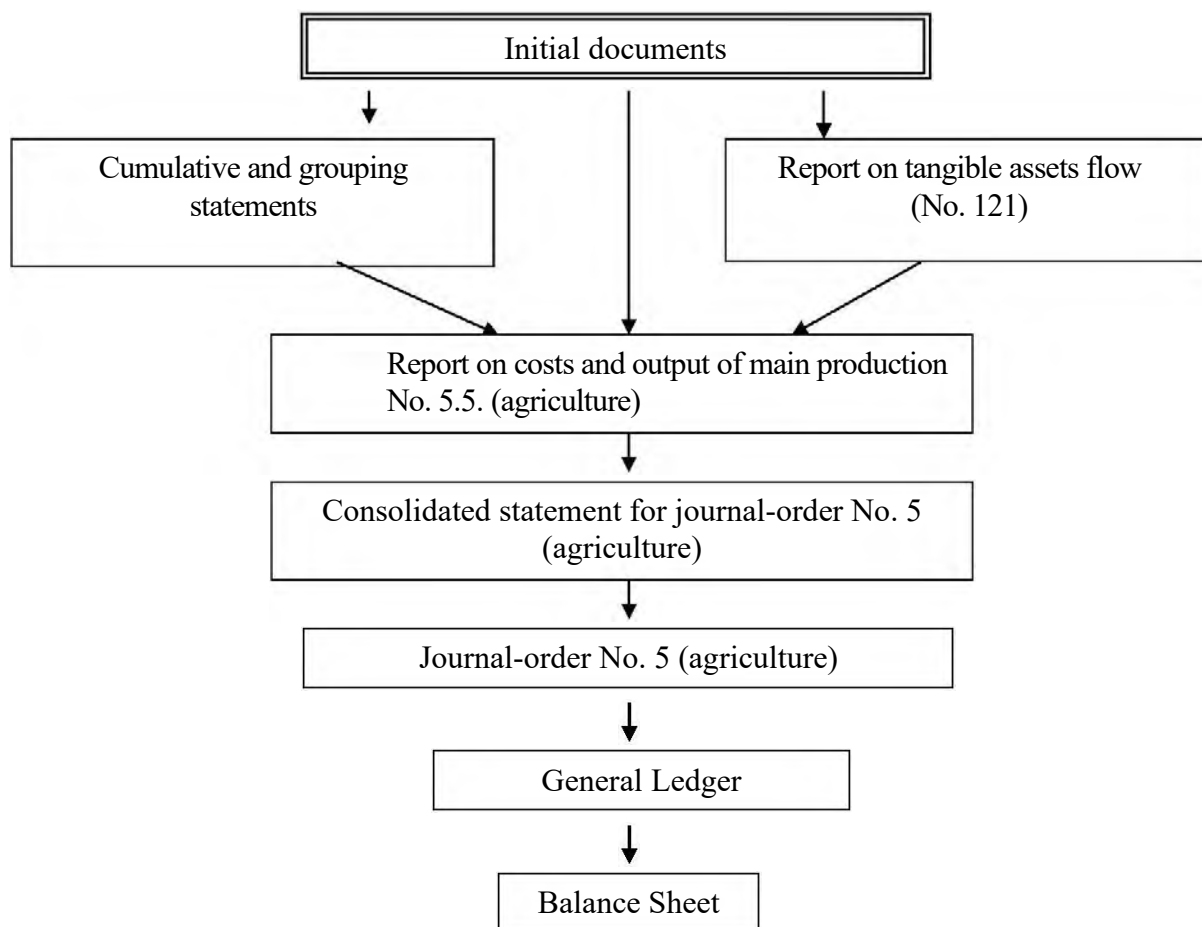


Fig. 14.2. Chart of records in crop input registers

14.4. Costing of Crop Production

Clear cost accounting system makes it possible to manage agricultural production rationally because cost accounting and costing of production is a way of controlling economic activity. Accurate and timely accounting of costs provides an appropriate mode of economy, reducing the cost of production, and accordingly increases the profitability of the enterprise. Accounting and costing of products contributes to expanded reproduction and increased productivity. Accounting and costing of products is the basis for reliable current and future planning. They influence the choice of technological processes, placement and specialization of the farm, they are one of the criteria for evaluating the efficiency of production of a product.

Accounting and calculation provide a complete, timely and accurate reflection of the actual costs associated with the production and sale of products; control over compliance with production cost standards; timely and complete posting of products; verification and accounting of the implementation of cost plans and the identification of cost reduction reserves; revealing the results of production activities of the

economy and its subdivisions.

Calculation is a way of determining a product's prime cost. It is one of the main indicators of the plan and cost report.

Calculation is preceded by a preparatory program. According to this program plan, it is necessary to check the distribution of costs included in the production cost of products received in the current year and those related to work in progress; check the reasonableness of the attribution of costs to production and cost items, and the gross output of products and the correct write-off of defects and dead wastes.

The calculation period is the interval of time between the intermediate cost calculations of products, works and services. It is equal to the calendar year at all agricultural enterprises (except auxiliary production). Thus, almost all information on production results is received at the end of January of the next reporting year. Nowadays the main unsolved problem of calculation work at agricultural enterprises is the reduction of the calculation period to the stage of production, quarter.

Many branches of crop production are seasonal, it is caused by the conditions of natural plant growth, which takes place in the spring-summer period. Thus, such features of crop production make it difficult to calculate it monthly.

Prime cost is used as one of the main tools of management and pricing at the enterprise. Increasing the role of costing products in production management is caused by the increase in the value of this indicator to assess the economic efficiency of using fixed and current assets of the enterprise, the choice of optimal management organization. Calculation helps strengthen control over compliance with material, labor and financial costs, identify unproductive costs that are economically inappropriate, and identify cost reductions.

Different methods are used to calculate the production prime cost. The most common is the simple method of calculation. It is used when accounting and costing objects are the same, when an enterprise produces one type of product or does one job. According to this method, the unit prime cost is calculated by dividing the total costs by its quantity. The second method of calculation is eliminating the cost of by-products. It is used when one or more by-products are produced during the same production process. The essence of this method is that the cost of by-products is excluded from the total cost of a particular crop growing. The difference between the total cost and the cost of the by-products is the cost of all the major products.

When several basic products are received as a result of production, then the costs between them are distributed in proportion to the chosen base of distribution. Nowadays cost sharing between several types of core or related products in proportion to the selling price is the most common.

The coefficient of calculation is widely used in agriculture, according to it the coefficients are used to allocate costs by type of product.

The combined method of calculation is a combination of several methods. The simple method of calculation is mainly used for the fodder crops calculation.

Calculating the cost of crop production, it is necessary to be guided by Methodical Recommendations No. 132.

The basic and related products are the objects of crop production calculation.

The preparatory work is carried out before calculating the actual cost of crop

production, its purpose is to calculate the amount of production costs for certain types of crop production.

The portion of the major costs are reflected in the analytical accounts of the cost of growing the crop during the year. The rest of them are accounted separately as separate accounting items. Thus, at the end of the year, when calculating the cost of production, work is performed in the following sequence (Fig. 14.3):

- a) to share the costs for the maintenance of fixed assets between separate entities;
- b) to determine the cost of auxiliary works and services and charge to the differences between the actual and the planned cost;
- c) to share the total costs of irrigation and drainage;
- d) the cost of beekeeping is charged to pollinated crops;
- e) the amount of extraordinary expenses is charged from the costs of basic production;
- f) to share crew, farm, workshop and general production costs;
- g) to determine the total amount of production costs by accounting objects;
- h) to determine the prime cost of crop production.

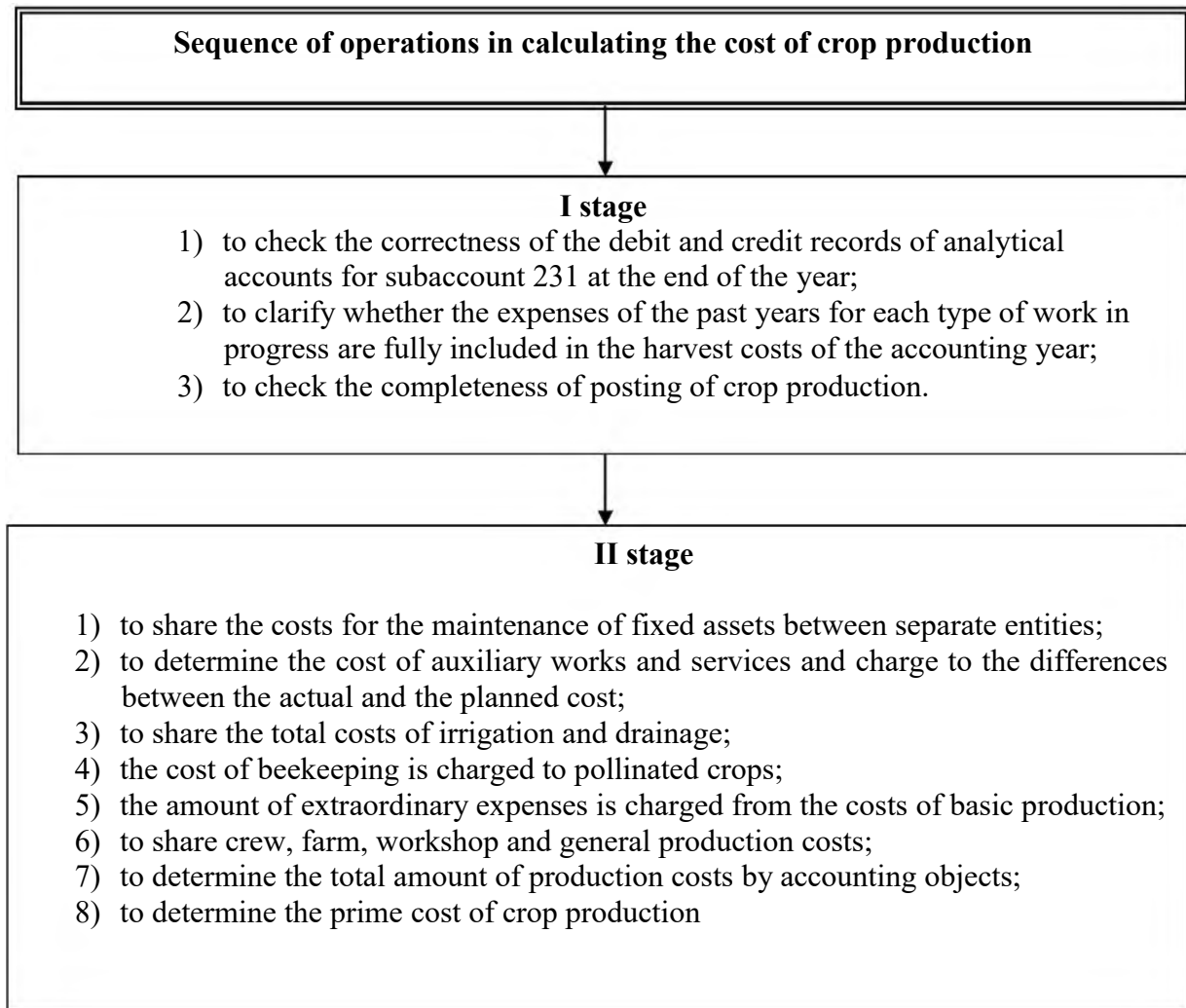


Fig. 14.3. Sequence of operations in calculating the cost of crop production

Before calculating the production prime cost, it is necessary to:

- check the correctness of the debit and credit records of analytical accounts;
- to clarify whether the costs of previous years for each type of work in progress are fully included in the harvested costs of the accounting year;
- to check the completeness of posting products.

When calculating the amount of costs to be included in the cost of a particular type of product, it is important that all enterprises equally perceive the moment of completion of the production process, the costs after which are not included in the production cost of production.

The production prime cost is determined by:

- a) grain, sunflower seeds – ex warehouse;
- b) straw, hay – ex warehouse;
- c) sugar beets, potatoes, melons, vegetables, royalties, root crops – ex field (ex warehouse);
- d) fruits, berries, grapes, tobacco leaves, products of medicinal and essential oil crops and floriculture, vegetables of closed soil – ex warehouse;
- e) straws and retting of flax, hemp – ex warehouse (at the enterprise);
- f) seeds of herbs, flax, hemp, vegetables and other crops – ex warehouse;
- g) green mass forage – ex consumption place;
- h) green mass for silage, grass flour, hay, pellets – ex silage, haying, flour and pellets production place.

All subsequent costs of performing operations are charged to sales costs. If these transactions are performed for a fee, they are treated as performing revenue-side operations.

The established sequence of calculating should be followed in crop production. It is due to the fact that certain types of products obtained from one production, can be used in other branches of the same industry.

By-products are not calculated. The cost of straw, stems of corn and sunflower, cabbage leaves and other by-products of crop production is determined on the basis of the regulatory costs of harvesting, transporting, pressing, shipment and other work related to the procurement of by-products.

Depending on the specific conditions of production, management structure, remuneration system, determination and distribution of self-supporting income, the accounting department of an agricultural enterprise may keep records on specific production units without detailing the individual objects (crops, species and groups of livestock and poultry, types of production). As a result, the analytical account debit will show the total production cost of the production unit by calculation items, and the credit will show the amount of received basic, related and by-products specific names in the estimate of the planned cost. The actual costs of the unit are apportioned between the individual crops, species and livestock groups, and the poultry in proportion to the planned costs, in the case of their absence to the regulatory costs in accordance with the technological maps or the enlarged standards.

The calculation for writing off the difference between the actual and planned cost of consumption for specific products is carried out after the preparation of the reporting costing of crop production.

The calculation deviation is written off to the relevant accounts in proportion to the mass of products used. To do this, calculate the amount of the calculation deviation and its value per 1 ñwt. of products. Multiplying the amount of deviation by 1 cwt. by the mass of the product by the directions of its use, determine the amount of the deviations written off to the respective accounts.

The additional posting is made for the actual production prime cost exceeding the planned one; when the actual cost is less than planned, the calculation difference is written off by the credit memo method.

Table 14.2

Methods of calculating the prime cost of basic crop products

Crops	Methods of calculating the prime cost of products
1	2
Cereals	The total amount of costs for growing, harvesting and processing grain within the calendar year (excluding the cost of straw) is apportioned between the grain and the grain waste, whereby the grain is taken as one, and the grain waste is equated to it by the ratio calculated by content they have full grain.
Maize	The cost of 1 cwt of maize is determined by dividing the cost of growing and harvesting (excluding the maize stem) by the weight of dry grain of full ripeness
Sugar beets (industrial)	The prime cost of 1 cwt of roots is determined by dividing the total amount of costs for their cultivation and harvesting (without the cost of tops estimated by the regulatory costs) by the physical weight of beets
Seed beet	The costs attributed to products are deducted from the cost of tops and discarded beets and added to the costs of beet refinement, coagulation in the reporting year. The prime cost of 1 cwt is calculated by dividing this sum by the number of quintals of laid beets.
Flax and cannabis	Growing costs are distributed between the seeds and straws in proportion to their cost at current selling prices.
Sunflower	The prime cost of 1 cwt of sunflower seeds is determined by dividing the total cost of growing and harvesting (excluding the cost of sunflower seeds and baskets in the regulatory valuation price) by the physical weight of the seed.
Potatoes	To calculate the cost of 1 ñwt. of potatoes, the total cost of cultivation and harvesting excludes the cost of the potatoes fed to the livestock, which is estimated by the cost of the feed beet, taking into account the nutritional value. The rest of the cost is divided by the number of products.
Vegetables (open ground and greenhouse)	The prime cost of 1 cwt of vegetables is determined by dividing the cost (excluding the cost of by-products) by the physical mass of the basic products. By-products and products that are not sold are fed to livestock; they are valued at the cost of fodder beet considering nutritional value as indirect. The costs are distributed in proportion to the cost of the products obtained at selling prices between crops grown in greenhouses.
Fruits, berries, grapes	The prime cost of 1 cwt of fruit, grape berries is determined by dividing the total cost of growing a particular crop (excluding the cost of by-products) by the number of obtained products.

Discussion and self-review questions

1. What are the tasks of crop production accounting?
2. What items are used to account crop production costs?

3. *What are the initial documents for keeping records of crop production costs and output?*
4. *What is the register of analytical accounting of crop production costs?*
5. *How is the prime cost of crop production calculated?*
6. *What is the order of the calculation deviations between the planned and actual cost? How is it reflected in the accounting?*

References

Metodychni rekomendatsiyi z planuvannya, obliku i kal'kulyuvannya sobivartosti produktsiyi (robit, posluh) sil's'kohospodars'kykh pidpryyemstv [Methodical recommendations on planning, accounting and calculation of the cost of products (works, services) of agricultural enterprises] ¹ 132 dated 18.05.2001. Retrieved from <https://zakon.rada.gov.ua/rada/show/v0132555-01/ed20051031/find?text=%C2%E8%F2%F0%E0%F2%E8+%ED%E0+%E7%E1%F3%F2>

THEME 15. COST ACCOUNTING AND CALCULATION OF LIVESTOCK PRODUCTION

15.1. Tasks and Objects of Livestock Production Accounting

Livestock is one of the most important sectors of agriculture. Livestock production includes meat and dairy cattle, pig breeding, horse breeding, sheep breeding, poultry farming, beekeeping, fur farming, rabbit breeding, fish farming, and sericulture.

Livestock production accounting involves prompt, reliable and complete receipt of information on incurred labor, material and monetary costs for its production, reliable and complete receipt of information on the quantity and value of the products obtained, the cost of its implementation by the enterprise as a whole and by individual structural units (brigades, farms, leasing groups, etc.) (Fig. 15.1).

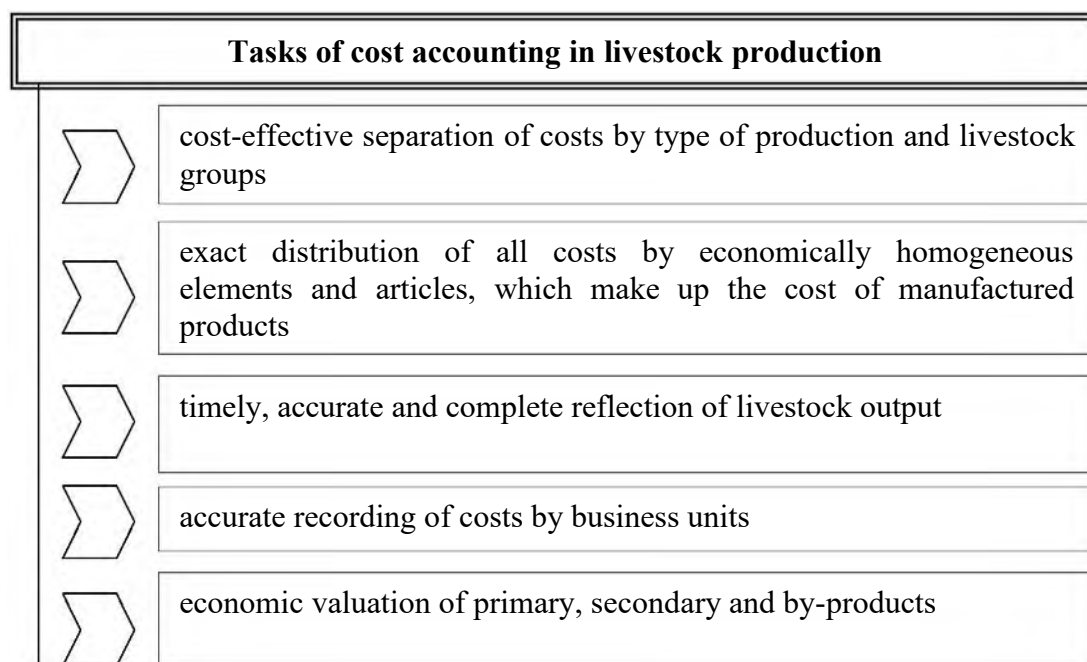


Fig. 15.1. Tasks of cost accounting in livestock production

Animal husbandry is characterized by an equal cost of production. Therefore, accounting should provide an analytical account of costs by major productions, groups of animals, major cost items, and internal economic units.

There are such objects of cost accounting in livestock:

- ✓ business units;
- ✓ animal species;
- ✓ groups of animals;
- ✓ responsible person.

Cost accounting and costing items for individual groups of animals are listed in Table 15.1.

Table 15.1

Objects of cost accounting and calculation of livestock products

Branches of animal husbandry	Objects of production costs accounting	Objects of calculation and unit of calculation
Dairy cattle herd	1. the main herd of cattle; 2. Fattening cattle (heifers and bulls of all ages, cows, breeding bulls, oxen, dairying cows)	1. Milk – 1 cwt, Offspring – 1 head 2. Live weight gain, live weight – 1 cwt
Beef cattle herd	1. Main herd (cows, heifers and bulls under the age of 8 months) 2. Fattening cattle (heifers and bulls older than 8 months, cows, breeding bulls and oxen)	1. Offspring – 1 head. Live weight gain – 1 cwt 2. Live weight – 1 cwt Live weight gain – 1 cwt
Swine breeding	Main herd of pigs (sows, boars and unweaned piglets), breeding pigs and fattening pigs	Weaned piglets – 1 head Live weight gain – 1 cwt
Sheep breeding	Main herd, breeding and fattening sheep	Weaned lambs – 1 head Wool – 1 cwt Milk – 1 cwt

Agricultural products are divided into primary, secondary and by-products by purpose, economic value, and economic benefits.

The primary products are agricultural products which application can bring the greatest economic benefits to the enterprise, and their receipt is to retain biological assets capable of yielding such agricultural products (they are milk in dairy cattle, live weight gain in growing and fattening animals, sheep, honey, commodity fish, etc. in animal husbandry).

The secondary products are agricultural products obtained from a biological asset or their group at the same time as the main product, meeting the standards or specifications and intended for further processing or sale (livestock gain of the main herd, milk from the main flock of sheep, beeswax, etc.).

By-products are agricultural products that are derived from one biological asset or their group at the same time as the principal, but are of minor importance and the economic benefits of using it are insignificant (manure).

15.2. Primary Accounting for Livestock Production Inputs and Outputs

A considerable number of different initial documents are used to account for livestock production costs. They can be divided into four accounting groups: 1) initial documents on labor cost accounting; 2) objects of labor; 3) means of labor; 4) performed works and services; 5) documents on products posting (Fig. 15.2).

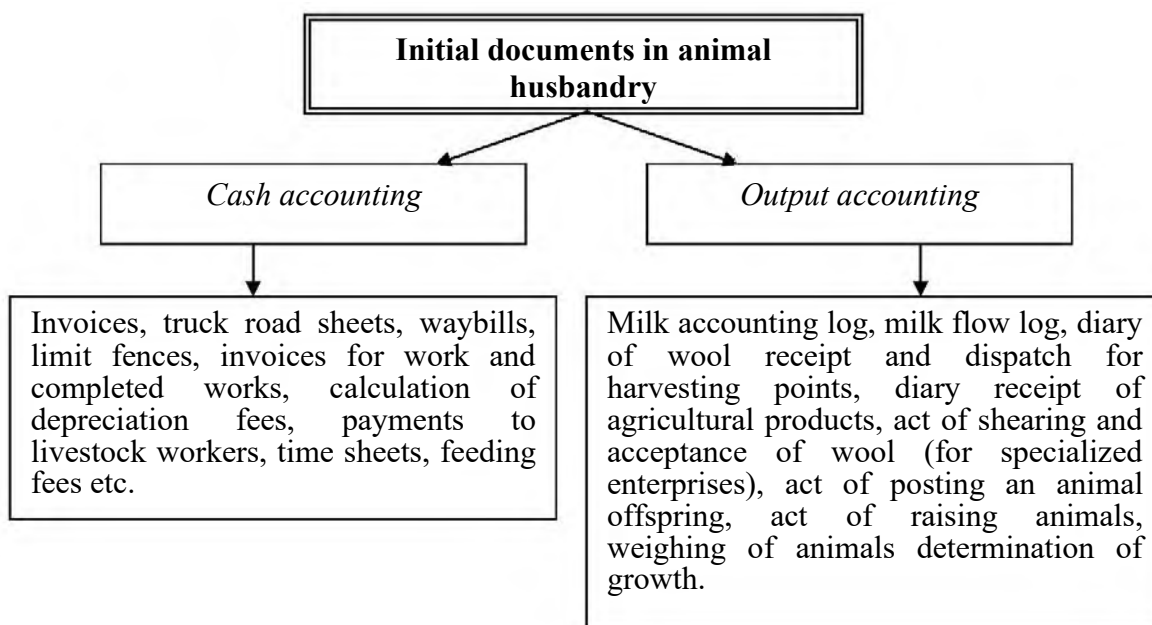


Fig. 15.2. Initial documents on cost and output accounting of livestock products

The main documents for calculating the wages of the livestock workers are the **time sheet** and the calculation of the **livestock workers' wages**. Monthly **summary statement of the accrual and distribution of salaries by cost object** are formed on the initial payroll documents. This information displays the number of worked days, man-hours, the amount of accrued wages and charges accrued by accounting entities, production units and the enterprise as a whole. This information is the basis for entries in the livestock production report.

The primary cost accounting of feed on farms is carried out on the basis of **feed costs statement**. It is a combined cumulative document; the feed is supplied to the farm and charged to animal feeding considering it. A summary of the feed costs at the farm is recorded in the **logbook of feed consumption**. There are separate pages for each feed and group of animals, the consumption of feed by type, feed units and protein content, and feed days are recorded.

Disinfectants, medicines, biologicals and other materials are released to the farm by the **limit-collection cards to obtain material values and invoices**. The data of initial documents on tangible goods write-off for production are the basis for **the report on the tangible goods flow** and production report on animal husbandry.

It is compulsory to check the correctness of cost standards, the conformity of the specified livestock animals to the actual availability at each date at the cost of inventory.

The services of freight vehicles for animal husbandry are written off on the basis of **the travel sheet of the truck**.

The costs of transport work of tractors are charged according to the **travel sheet of the tractor**. The costs of the work and services of such auxiliary production facilities are grouped in cumulative data and attributed to the livestock assets at the actual cost.

Table 15.2

Approaches to assessing the animals offspring by their species

Animals	Evaluation procedure
1	2
1. Active market and the ability to determine fair value	
Calves	Based on the fair value of 1 cwt of live weight or the fair value of one head of offspring
Piglets	Based on the fair value of 1 cwt of live weight or the fair value of one head of offspring
Lambs or goats	By the fair value of one head of offspring
Chicks, geese, ducklings and turkeys	By the fair value of the young animals per day
Puppies of mink, foxes, arctic foxes, nutria, sables and rabbits	50% of the fair value at the time of weaning
Foals of working and breeding horses	By the fair value of one head of offspring
2. Inability to determine fair value	
Calves	At the actual cost of 60 feed-days of keeping the cow for the past year or planned cost for the reporting period
Piglets	At the actual cost of 1 cwt of live weight of weaned piglets over the past year or planned cost for the reporting period
Lambs or goats	At the cost of the head of the offspring, which is calculated based on the fact that the offspring account for 12% of the cost of the main herd of the Roman breed, 15% of the doodle and 10% of the cost of all other breeds.
Chicks, geese, ducklings and turkeys	At a cost that is calculated based on the actual cost of daily young animals for the previous year or planned cost for the reporting period
Puppies of mink, foxes, arctic foxes, nutria, sables and rabbits	50% of the transfer price at the time of weaning calculated on the basis of actual cost over the past year or planned cost over the reporting period
Foals of working horses	At the actual cost of 60 feed-days of keeping the horse for the past year or planned cost for the reporting period
Foals of breeding horses	At the actual cost consisting of the cost of the main flock without the cost of by-products for the previous year or the planned cost for the reporting period

Water used in animal husbandry is written off at the cost of 1 m³ of water according to the report on water supply, and electricity is written off at the actual cost on the basis of the report on the use of electricity.

The basis for the accounting of horse-drawn transport services are the **registration sheets of labor and work performed**. If these services are provided by horse-drawn vehicles fixed directly in animal husbandry, then the number of horse-days is taken into account on the basis of the calculation of payroll for livestock workers.

Services for transportation and maintenance of the industry, performed by other companies are issued by **works certificates, freight invoices and invoices**.

In livestock depreciation of fixed assets is attributed to the cost of production on the basis of the corresponding calculations of depreciation.

General production costs are attributed to the cost of animal husbandry according to the distribution sheet.

For posting livestock products, documents are used that can be divided into two groups:

1. documents for posting finished products, their production process is completed and it is posted at 27 account (milk, honey, wool, etc.)

2. documents for posting the gain of live weight and the offspring of animals, it is posted to the account 21 Current Biological Assets and exists only in the form of live animals.

The first group includes:

- milk accounting log;
- act of trimming and receiving wool;
- diary of agricultural income (eggs honey, fish).

The second group of documents include:

- act of posting animal offspring;
- statement on animals weighing;
- cumulative act on posting the animal offspring;
- act of withdrawal and sorting of daily poultry young.

Information from the documents of the first group is included in the report on the tangible assets flow, and from the second group is included in the report on the movement of animals and birds on the farm.

Farm animals' offspring is recognized as a current biological asset and is carried at fair value.

If it is impossible to determine fair value, it is carried at 60 cattle feed days.

15.3. Synthetic and Analytical Accounting of Livestock Production Costs and Output

Account 23 Production and sub-account 232 Livestock Production is used for the synthetic accounting of costs and output. Its debit is reflected in production, and the credit is reflected in output. At the end of the reporting period, this subaccount may have an amount of work in progress.

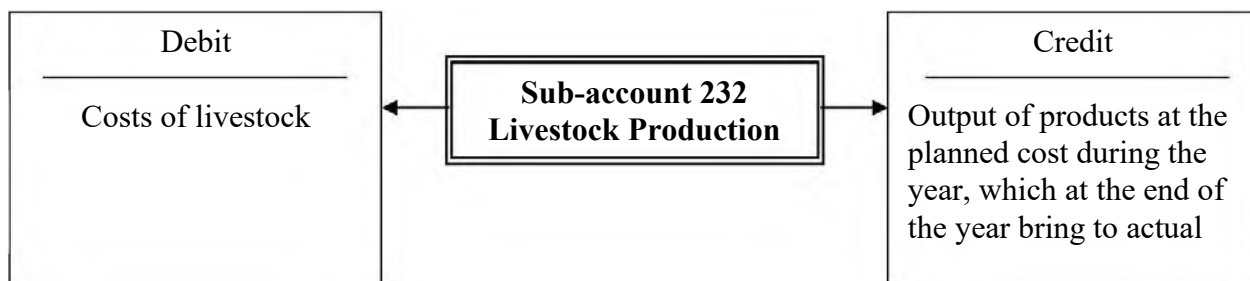


Fig. 15.3. Costs and output of livestock production in sub-account 232

Livestock Production

Analytical accounts for livestock cost are opened by species and sex-age groups of animals. Some of them take into account the cost of preparing feed at the feed kitchens and feed shops. These costs are charged to the appropriate animal groups in order of distribution in proportion to the amount of feed produced.

Costs in animal husbandry are taken into account according to the items, the list of which is determined independently. However, in order to comply with the requirements of comparability of information and reporting indicators, cost accounting in animal husbandry is recommended under the following items:

1. Labor costs.
2. Contributions to social events
3. Animal protection.
4. Feeds.
5. Work and services.
6. Cost of fixed assets repairs.
7. Depreciation of fixed assets
8. Other costs.
9. Unproductive costs (in accounting).
10. General production costs.

The **Labor Costs** item includes basic and additional wages for workers directly employed in the technological process of production (including tractor-drivers).

The **Deductions for Social Events** item takes into account the accrual of the single social contribution to the wages of workers directly employed in the production process.

The **Animal Protection** item includes the cost of biologicals and disinfectants used in animal husbandry.

The **Feeds** item reflects the cost of produced and purchased feeds, and the cost of their intra-farm movement from the field to a permanent storage location. It also includes the cost of preparing feed in the feed shops and fodder kitchens. These amounts are charged to the relevant species and groups of animals or distributed between them in proportion to the weight of the feeds. Part of the cost of maintaining feeders relates to the cost of feed that is transferred to storage.

Costs for feed transporting from permanent storage to feeders (fodder kitchens) or directly to the farm are attributed to the relevant cost items (fuel and lubricants, labor, etc.).

At auxiliary productions, the costs of feed used for feeding adult working cattle are charged to this item.

The **Works and Services** item reflects the costs of services of their own auxiliary industries that meet the production needs, and the cost of production services provided by other parties including services provided by water management organizations (except for works and services costs included in other items).

This item includes the cost of own and involved road, tractor and haulage services. The cost of electricity, heat, water and gas supply services is determined by including the cost of electricity, heat, water, gas received and produced at one's own enterprise respectively.

The **Cost of Fixed Assets Repairs** item includes:

a) the amount of wages of employees engaged in repair work, the cost of spare parts, repair and construction and other materials spent on the ongoing repair of fixed assets, including the cost of fuel and lubricants used for repair and running machines after repair;

b) cost of services of third-party organizations and own workshops for maintenance and routine repair of equipment;

c) the cost of repair and replacement of rubber tires of agricultural machines (the cost of rubber is included in the cost of ongoing repair without the cost of worn-out rubber at the cost of its possible sale (use)).

Analytical accounting of crop production costs and output is maintained in the Statement of costs and output of products (works, services) of the main production No. 5.5 (agriculture); it has been compiled for a month and has been increasing since the beginning of the year in the context of the objects of analytical accounting according to the relevant cost items. The register of synthetic accounting of crop production costs is Journal-order No. 5 (Fig. 15.4).

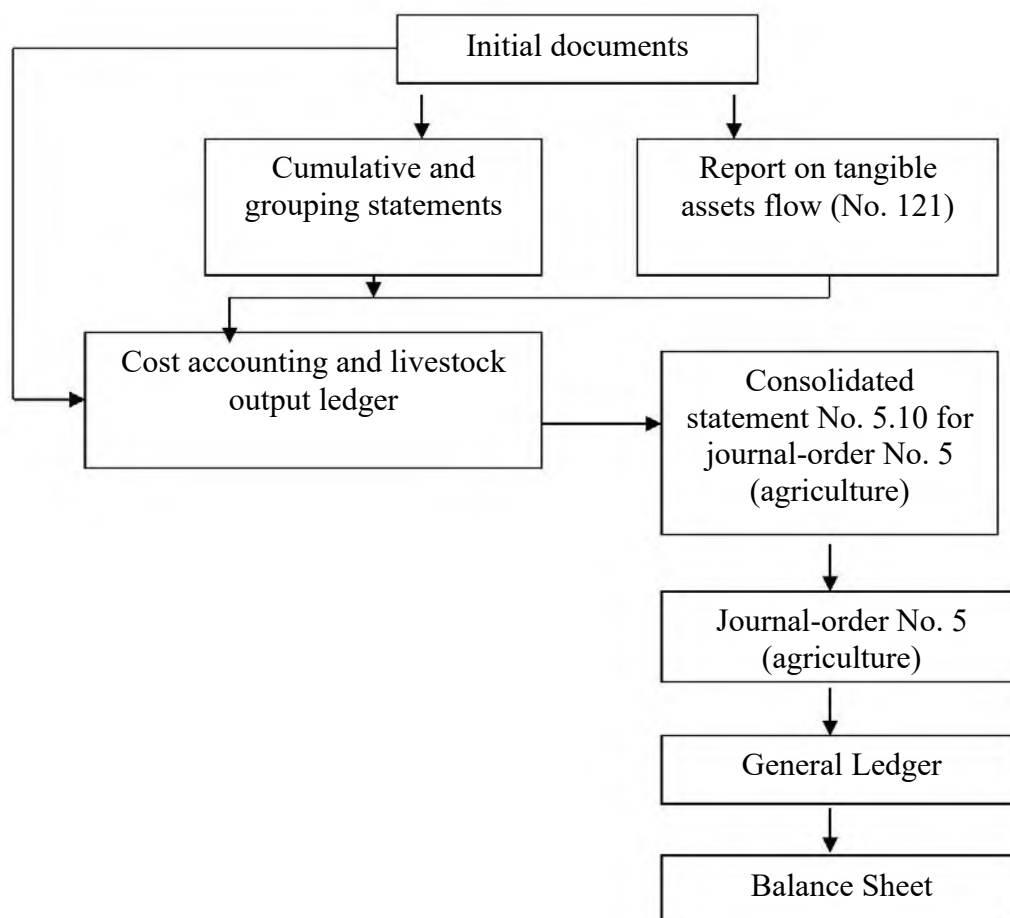


Fig. 15.4. Accounting scheme for biological transformation costs of the livestock industry

The **Depreciation of Fixed Assets** item calculates depreciation on buildings, structures, and other objects of fixed assets, calculated in accordance with the accepted order.

Table 15.3

Main correspondence on livestock production cost accounting and output

No.	Business transaction	Correspondence accounts	
		Debit	Credit
1	2	3	4
1	Wages of workers directly employed in animal husbandry	232	661
2	Contributions made to the compensation fund for these workers	232	65
3	Costs charged to livestock production:		
	– purchased feed	232	208
	– produced feed	232	27
	– forage fed by grazing	232	231
	– biologicals, medicines, and other animal protection products	232	208
	– IBE	232	22
	– works and services of auxiliary industries	232	234
	– outsourcing of work and production services	232	631
	– amortization of fixed assets	232	131
	– general production costs	232	912
4	Livestock products obtained from production	27	232
5	Obtained offspring	21	232

The **Other Costs** item reflects costs that are directly related to the production of certain products and are not included in any of the above-mentioned items, namely:

a) cost of uniform and work footwear to be given to workers taking care of livestock, poultry, etc. (except for the cost of uniform issued to veterinarians and guards), as well as other items of low value and wear;

b) cost of animal litter (straw, peat, and sawdust);

c) costs of artificial insemination (keeping, the cost of semen, remuneration for artificial insemination);

d) the cost of constructing and maintaining summer camps, detachments, sheds and other non-capital animal buildings. These costs are accounted as expenses for future periods, and are attributed to the prime cost in equal parts during the application term of these structures, which is set by the commission of the respective object in operation;

e) payments for insurance of property, animals, and certain categories of workers directly engaged in work with high risk to life and health in cases stipulated by law;

f) other costs included in the cost of products (works, services) and not related to this and other cost items. These costs are generally directly attributable to the species.

Unproductive costs (in accounting) include losses from mortality of young

and adult cattle, poultry, animals, rabbits and bee families, excepting losses arising from natural disasters and the cost of raw materials (skins, technical meat, etc.) at the cost of a possible sale.

The **General Production Costs** item reflects the brigade, farm, workshop and overhead costs attributable to a particular accounting entity in the order in which they are allocated.

15.4.Costing of Livestock Production

The prime cost of certain types of agricultural products derived from the breeding of relevant species (groups) of animals is determined considering the costs attributed to that species (group) of animals. The actual prime cost is calculated at the end of the year.

The objects of costing are specific types of products, works and services.

Some preparatory works should be carried out before reporting costing:

- ✓ check the completeness and accuracy of costs recording of growing and maintaining the relevant groups of animals and poultry. Particular attention should be paid to the completeness and correctness of the recording of the calculation by auxiliary productions consumed by produced feed, and the validity of the distribution of general production costs;

- ✓ check the completeness and correctness of manufactured products posting in the context of analytical accounts;

- ✓ to carry out an inventory of animals and livestock farms, to check the accuracy of the results of such inventory recording;

- ✓ to check the reasonableness of future costs (in particular, the cost of maintaining summer camps) for the relevant industries and groups of animals;

- ✓ to check the correct write-off of the value of the died livestock. In particular, the cost of animals that died as a result of a natural disaster or an epizootic is charged to other costs of ordinary activities (subaccount 977). The cost of animals died for other reasons (without the amounts allocated to financially responsible persons) is reflected in a separate article as part of the cost of maintaining the respective species and groups of animals.

The prime cost is calculated in the following sequence (Fig. 15.5):

1. share costs of fixed assets maintenance between separate objects of planning and accounting;

2. determine the cost of works and services of separate industries;

3. share the total crew and production costs;

4. calculate the total amount of production costs of the planning and accounting objects;

5. share the cost of maintaining fodder shops;

6. determine the cost of livestock production.

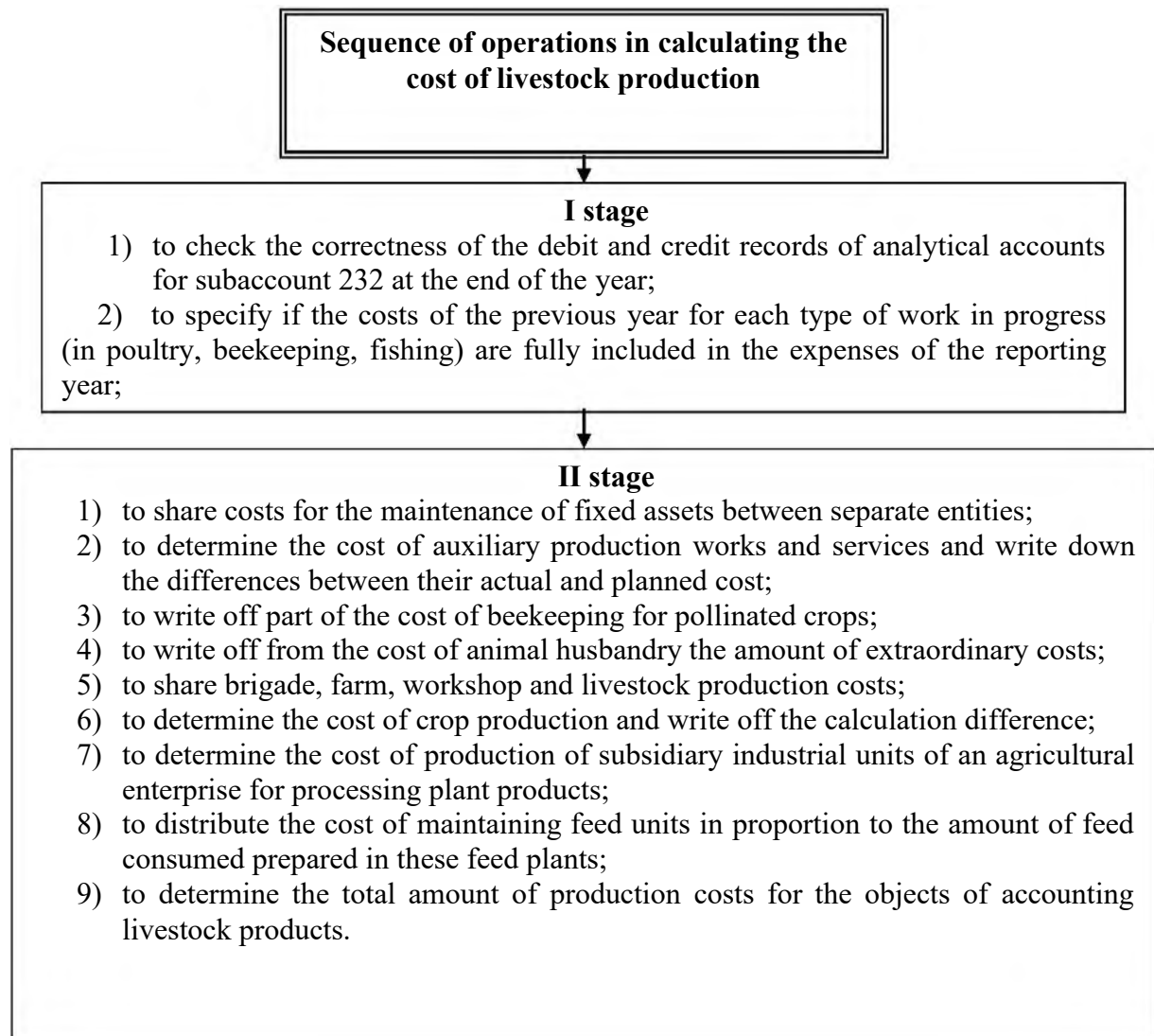


Fig. 15.5. Sequence of operations in calculating the cost of livestock production

Proper and rational organization of accounting in agricultural enterprises should ensure control over the implementation of quantitative plans (number of heads of animals put on fattening and the number of weight gain centers) and qualitative indicators of fattening, facilitate the identification and use of reserves for improving the efficiency of fattening operations.

The main **tasks** of accounting for the main herd, young animals, poultry and animals for fattening in agricultural enterprises are:

- ✓ timely and correct documentation of operations and ensuring the accuracy of data on the receipt and disposal of animals and receipt of finished products;
- ✓ control of animal health at the places where they are kept and at all stages of their flow;
- ✓ ensuring daily logging of livestock movements to determine feed needs on a daily basis;

- ✓ the proper calculation of the actual value of animals;
- ✓ taking measures to prevent shortages, thefts and deaths of animals.

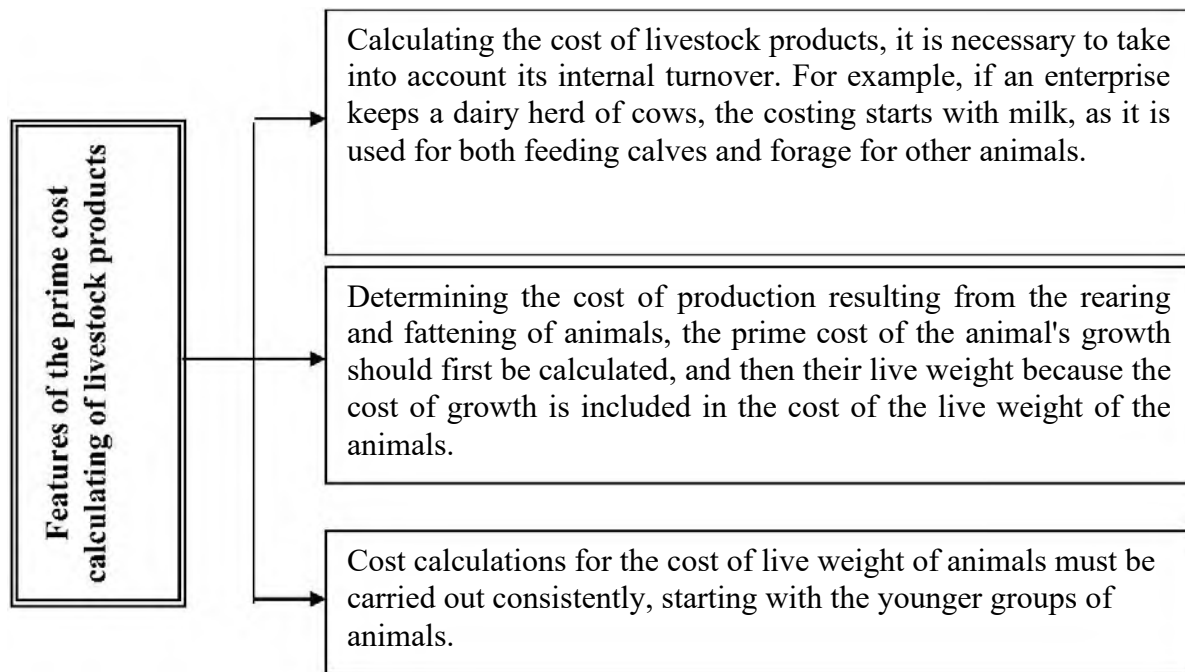


Fig. 15.6. Features of the prime cost calculating of livestock products

The prime cost of livestock production includes the cost of livestock, poultry, rabbits, and fur animals keeping. Calculating it, the cost of manure and other by-products is deducted from the total costs. The costs of manure and bird droppings include the litter cost, regulatory costs for shredding of litter, cleaning, loading, transportation and storage of manure. The costs also include depreciation, repair costs and other costs of maintaining sludge, manure conveyors. The cost of other by-products (such as down, feather, mirage eggs, meat of roosters of eggs slaughtered at day-old age, meat of slaughtered animals, hides of slaughtered animals) is determined by the prices of possible sale and other application. Its cost is attributable to the cost of maintaining the relevant species and groups of livestock (poultry).

The cost of 1 cwt of milk and one head of offspring is calculated in dairy cattle. The cost of one head is equal to the cost of 60 forage days for keeping a cow. The cost of one feed day is calculated by dividing the total cost of maintaining the main herd of cows by the number of feed days. To determine the cost of 1 cwt of milk, it is necessary to divide the total amount of costs for keeping cows (excluding the cost of litter and by-products) by the number of quintals of milk obtained (Fig. 15.7).

The production of livestock and poultry (cattle, pigs, sheep, rabbits, and poultry) is the increase in live weight gained during the year. This increase is defined as the difference between the live weight of the livestock at the end of the year and the one that dropped out during the year (including the dead) and the offspring live weight and the weight of animals and poultry that entered the group during the year and were at the beginning of the year.

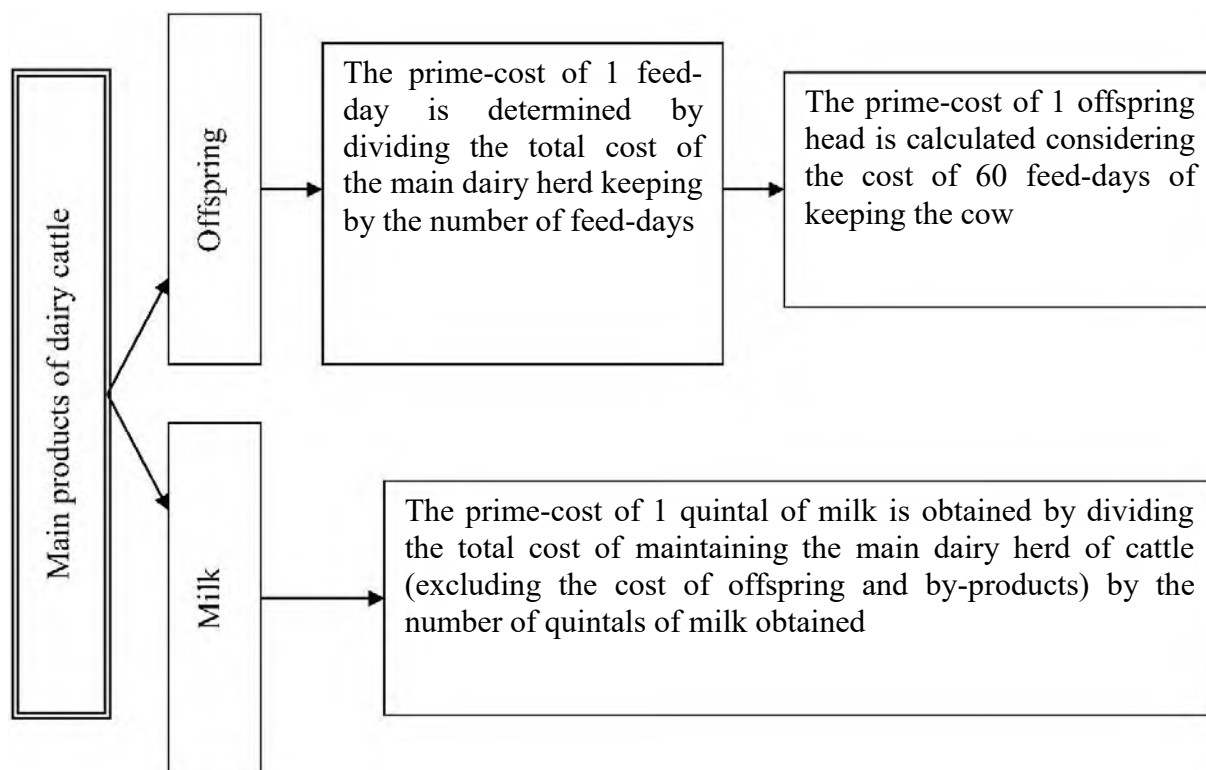


Fig. 15.7. Costing of dairy cattle products

The prime cost of 1 kg of live weight gain is determined by dividing the total cost of maintaining the relevant livestock or poultry group (excluding the cost of by-products) by the number of live weight gain quintals (Fig. 15.8).

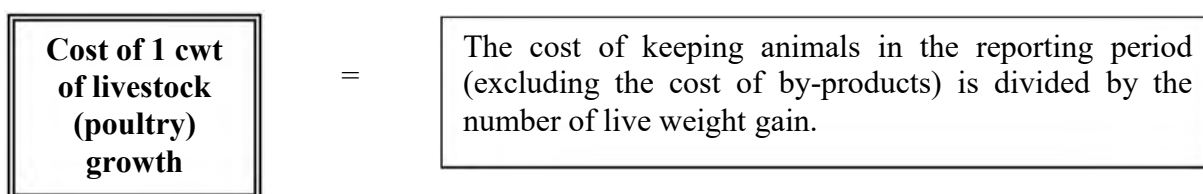


Fig. 15.8. Calculation of the prime cost of 1 cwt gain

The prime cost of live weight of young animals and animals for fattening and poultry of all age groups is determined on the basis of the cost of rearing and fattening them in the current year (excluding the cost of by-products), the cost of livestock and poultry that were in the group at the beginning of the year and came from the main herd or from other groups, farms and businesses and the offspring cost (excluding the cost of dead animals) (Fig. 15.9)

Live weight is the number of animals that are sold, slaughtered, transferred to other groups and left at the end of the year.

The prime cost of 1 cwt live weight of livestock and poultry is determined by dividing their cost by the number of quintals of live weight (excluding the mass of dead animals).

The prime cost of sold, transferred to the main herd, slaughtered for meat cattle is calculated on the basis of the estimated cost of 1 cwt live weight [78].

Prime cost of 1 cwt live weight of breeding and fattening animal (birds of all ages)	=	Costs of keeping animals in the reporting year (excluding costs of by-products) + costs of livestock (poultry) that were in the group at the beginning of the year and came from the main herd or other groups, farms, enterprises + the offspring cost (excluding the cost of dead animals) divide by the number of live weight that includes the live mass of animals (poultry) that are sold, slaughtered, transferred to other groups and left at the end of the year
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Fig. 15.9. Calculation of the cost of 1 cwt of live weight

In pig production, the cost of keeping pigs (sows with piglets before weaning and boars) will be the offspring cost and live weight gain.

The cost of 1 kg live weight of the piglets weaned from sows is determined by dividing the cost of the unweaned piglets at the beginning of the year and the cost of the main herd for the current year by the live weight (without maturity) of the piglets to be weaned and kept at the end of the year.

The cost of 1 cwt weight gain and live weight of pigs of other groups (rearing and fattening) is determined as for rearing and fattening cattle.

In poultry breeding the prime cost of eggs is determined for adult livestock, the increase in live weight is determined for young poultry, daily chicks are determined for incubation. In this case, the cost of litter and other by-products is excluded from the total cost of adult poultry, and this difference will be equal to the cost of eggs.

The cost of the planned egg production from the young hens to the transfer to the main flock, estimated at prices of possible sale, is excluded for the young birds.

The prime cost of day-old chicks is the cost of incubated eggs and the incubating costs excluding waste, unfertilized eggs and day-old slaughtered cocks at the cost of possible sale or application [78].

Thus, the unit cost of agricultural products is determined by certain methods. Their choice depends on the technology and production peculiarities, the nature of the products being manufactured.

There are the following basic methods of determining the unit cost:

- direct attribution of costs to the relevant products. It is used in industries where only one type of homogeneous product is obtained. The cost of a unit of production is determined by dividing the amount of costs incurred by the object of planning and accounting by the total volume of its production (works, services);

- exceptions of by-products expressed in monetary terms from the total cost. In crop production, by-products (straw, hog, corn stalks, sunflower baskets, etc.) are estimated at the regulatory cost calculated for each enterprise. In animal husbandry, manure is also valued at regulatory cost, and by-products such as down, feathers,

horns, unfertilized eggs are valued at the prices of possible implementation (application). Cost surplus, equal to the difference between the total cost and the cost estimate of the by-products, is attributed to the volume of the main production;

- direct attribution of costs between types of products in proportion to the quantitative value of one of the main features common to all types of obtained products. Such a feature could be, for example, the content of complete grain in these types of products, the content of nutrients, etc.;

- coefficient method. It is used when more than one type of product is obtained in the course of activity with further determination of its cost. The costs between these types of products are apportioned in proportion to their share in the total volume of products. It is calculated by translating with the accepted coefficients all products into the main. This method determines, for example, the cost of sheep production;

- proportional method. It is based on the distribution of costs between the different types of products in proportion to the cost of the products, estimated at selling prices. It is used to determine the cost of vegetables, flax, hemp, etc.;

- combined method. It includes two or more of the mentioned-above methods. For example, when determining the cost of seed grain in specialized seed farms, the method of excluding the cost of by-products (straw) in combination with the proportional one is used, when the rest of the costs are allocated to different classes of grain in proportion to its value.

Discussion and self-review questions

1. *What is the livestock production cost accounting? What are its objectives?*
2. *What are the objects of livestock cost accounting?*
3. *What are the costs of livestock production?*
4. *How are the costs and output of livestock products are analytically accounted?*
5. *How is the primary livestock cost accounting organized?*
6. *What is the procedure for calculating the production prime cost of dairy and beef cattle, young animals for breeding and fattening, pig breeding and poultry farming?*
7. *How is the calculation of differences in accounting calculated and reflect*

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THEME 16. COST ACCOUNTING AND CALCULATION OF PRODUCTION PRIME COST OF INDUSTRIAL ACTIVITIES

16.1. Industrial Activities in Agriculture and their Importance

Auxiliary industrial production plays an important role in the development of agricultural enterprises, and strengthening their economy. Today, almost all agricultural enterprises have subsidiary industries specializing mainly in processing agricultural products, as well as the production and construction materials, the pottery manufacture etc. This makes it possible to use labor resources and manufactured products more rationally, and to prevent losses, it allows to increase production efficiency.

The industrial productions for processing agricultural products include (Fig. 16.1):

1. production of compound feeds (feed mixtures, additives, granules, herbal flour, etc.);
2. production of flour, cereals, small grains and other products of grain processing;
3. primary processing of flax and bast crops (retting);
4. processing of vegetables, fruits and potatoes (production of canned food, juices, frozen products, salted and pickled vegetables, dried fruits and other food products);
5. processing of oilseeds (production of oil);
6. wineries;
7. slaughterhouse production (production of meat, semi-finished products, sausage products);
8. production of dairy products (production of butter, cheese, whole milk production);
9. other productions.

The industrial production is relatively small in terms of production at the agricultural enterprises, they are kept under the simplified scheme compared to industrial enterprises.

The object of accounting for industrial production costs is an individual production.

The account 23 Production and subaccount 233 Industrial Production is used to account for the costs and output of industrial production. This account is active at the beginning of the year, active-passive during the year, operating, and calculating. Costs related to industrial production are debited on the subaccount during the year, the output is credited. The cost of production for each order, redistribution or whole production reflects the cost items that the company sets itself.

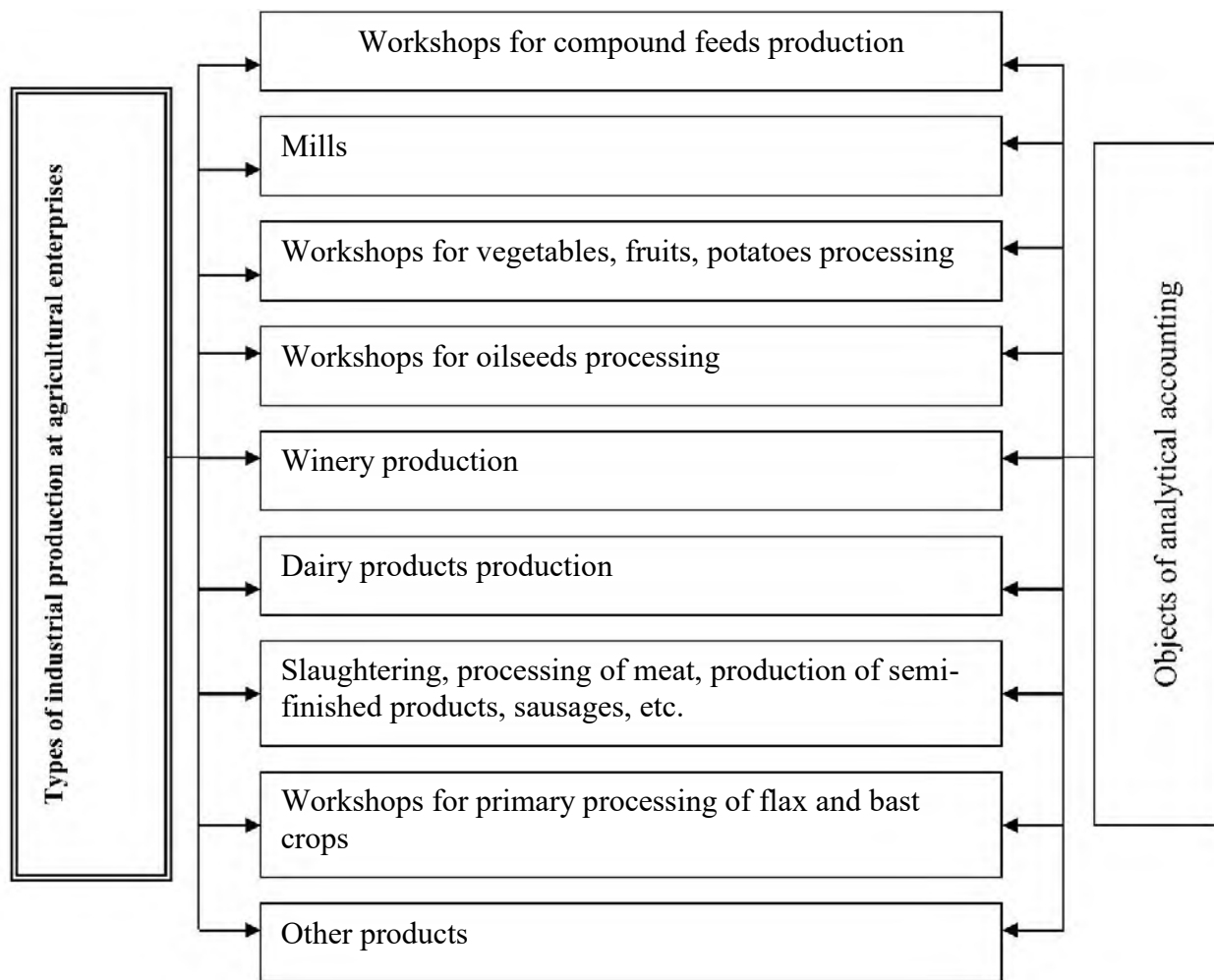


Fig. 16.1. Types of industrial production at agricultural enterprises

16.2. Cost Accounting and Output of Industrial Production

The approximate list of cost items in subsidiary (industrial) industries is as follows:

1. Labor costs.
2. Contributions to social events
3. Fuel and lubricants.
4. Raw materials.
5. Work and services.
6. Cost of fixed assets repairs.
7. Other costs of property, plant and equipment
8. Other costs.
9. Unproductive costs (in accounting).
10. General production costs.

The direct and additional wages of workers employed in the technological process are accounted by **Labor Costs** item.

Charges for the Single Social Contribution are accounted by **Contributions to Social Events** item.

Fuels and Lubricants item reflects the complex price of fuel, which includes its cost for technological operations, as well as the cost of oils etc.

Raw materials item includes the cost of raw materials as necessary components or form the basis of the manufactured products:

- workshops for compound feeds production – the cost of grain, grain mixes, grass meal, pulp, fodder yeast, dry distillation, meat and bone meal, fish meal, mineral raw materials, micro-additives and other components;
- mill – the cost of grain;
- workshops for primary processing of flax and bast crops — the value of straw and retting;
- workshops for vegetables, fruits and potatoes processing — the cost of vegetables, fruits and potatoes, legumes, spices, preservatives and other products;
- wineries – the cost of grapes, fruits and berries, wine and juice materials, rectified alcohol, sugar, vacuum wort, cognac alcohol, citric acid, etc.;
- slaughtering shops – the costs of cattle, poultry, fur animals, rabbits, lambs;
- milk processing units – the costs of milk, dairy products, sugar, vanillin and other products.

Agricultural production of last years refers to the cost of industrial production at its actual cost, and the production of its own production this year - at the planned cost, adjusting it at the end of the year to the actual level. When writing off the production of purchased tangible assets, the company chooses one of the methods of valuation of inventories at their disposal.

Works and Services item takes into account the costs of work and services of its own auxiliary industries meeting the production needs and the cost of production services provided by other companies. This item also covers the costs of refrigeration units and cameras for freezing, cooling and storing products. Costs associated with storing meat, vegetables, fruits and other products intended for processing are charged to the cost of the raw materials used in the production.

Cost of Fixed Assets Repairs item includes:

- the wages of the employees engaged in repair work, the cost of spare parts, repair and construction and other materials spent on the ongoing repair of fixed assets;
- the cost of outsourcing and in-house repair and maintenance services.

Other Costs of Property, Plant and Equipment item includes sums used for their maintenance directly in a particular production. They include:

- the remuneration of staff servicing fixed assets;
- depreciation not directly related to certain cost items.

Costs for the maintenance of auxiliary (industrial) productions are attributed to the productions directly or distributed among individual objects of cost accounting in proportion to the occupied area, the amount of work performed or the amount of labor costs of employees engaged in the execution of production operations.

Other Costs item reflects costs related to the production of certain products not included in any of the above-mentioned articles, in particular:

- the cost of work wear and footwear issued to employees (except for the cost of

- workwear issued to guards), and other low value and fast wearing items;
- payments for property insurance, certain categories of workers directly engaged in work with increased risk to life and health in cases provided by law.

Unproductive Costs item refers to a production defect considered to be products, semi-finished products and works that do not meet the established standards or specifications and cannot be used for their intended purpose or can only be used after rectification. The defect cost refers to the cost of production during which it is admitted.

General Production Costs item shows the amount of general production costs. Such costs are formed on the account 91 General Production Costs; they are shared to the objects of planning and accounting in proportion to the total amount of costs, except for the cost of raw materials, materials and semi-finished products in industrial production.

The cost and output of industrial production is accounted considering the initial documents. The wages of workers employed in the technological process of industrial production are recorded in **work orders** (individual and team work), **accounting sheets**, and **time sheets**. Data on labor costs are summarized in the journal of accounting for work and expenses and in the summary information of the calculation and distribution of wages and deductions from it by the objects of accounting (form No. 5.1 accounting).

The basis for writing off raw materials for industrial production costs are **invoices** (domestic purposes), **limit-collection cards**, **cattle and poultry disposal acts** and others. Receiving of grain for processing at mills is made out by a **grinding receipt** written out in two copies: one is given to the sender of grain, and the other one remains at the mill; it is the basis for recording in the journal of accounting of works and expenses. The report on industrial production is made on the basis of consolidated documents (summary statement of calculation and distribution of remuneration, journal of accounting of works and expenses, the report on the movement of tangible assets).

The **calculation of amortization** is attributed the costs of industrial production costs of fixed assets.

Costs of own auxiliary industries are attributed to the objects of accounting in the industry on the basis of the **travel sheets of the truck, the worksheets, and the travel sheets of the tractor**, etc., the data of which is grouped in cumulative data and relates to objects by the actual cost. The services of other organizations are issued by works certificates, freight invoices, and **invoices**.

Insurance payments are attributed to the objects of accounting of industrial production on the basis of **payment cards**.

Production costs are included in production costs on the basis of a special calculation for their distribution. Other costs can be written off with accounting notes, information, etc.

Industrial production is published on the basis of such initial documents as **production processing report; information on processing of milk and dairy products; production report on poultry processing and output; act on posting**

products; invoice, etc.

The register of analytical accounting of products costs and output of industrial productions is the **Report on costs and output of products (works, services) of other productions** (form No. 5.6 agriculture) made on the basis of consolidated and other documents. Credit report turnovers are transferred to the consolidated statement No. 5.10, its results are recorded in the Journal-order, and the credit turnovers from Journal-order are recorded in the General Ledger.

Industrial production is posted at the planned cost during the year.

The primary cost records for each industrial production are grouped in the **Work and Cost Accounting Journal**. Consolidated documents are also used to account and control the consumption of raw materials and the output. Thus, **statement on processing milk and dairy products** are completed at the separation points. It daily reflects the milk inflow for processing in physical units and in conversion in fat. In the second section, the information shows the same product turnover figures.

The poultry processing workshop makes a **Poultry Processing and Output Report**, it shows daily livestock and live weight of the poultry slaughtered on the basis of the slaughtering acts; it also contains information on meat output from the slaughter (number of heads, their weight) by category, output of other products, and losses. These records ensure constant control over the output and completeness of its production.

Other industrial units write a **Production Processing Report**. It has two sections; the first shows the amount of raw materials, materials and containers actually used, as well as their costs according to the norms for the actual output of the finished product; the second shows the actual output of the finished product in physical and conventional units.

Report No. 5.6 (agriculture) for each industrial production is made to summarize the costs and output of products on the basis of consolidated and other documents at the end of the month. Both costs and output are in the context of correspondent accounts. The summary data of the report is recorded in the Journal-order No. 5. Accumulated data on costs and output for the year by industrial production is the basis for determining the actual cost of each type.

16.3. Costing of Industrial Production

It is important to correctly conduct an **inventory and assessment of work in progress** before calculating the production prime cost of auxiliary industries.

Work in progress at industrial enterprises includes unfinished and incomplete products, as well as assemblies and parts. The cost of materials (juice, wort) endured for aging is included in to the unfinished production the juices production, the cost of clay, sand and the cost of raw bricks, which were not used for burning the brick in the current year is included in to the production of bricks.

At agricultural enterprises incomplete industrial production is estimated at actual costs, including some overheads allocated to that production.

The inventory of work in progress at industrial enterprises is carried out after all finished products or manufactured products, as well as raw materials, semi-finished products not currently needed for the production process, are handed over to the warehouse. The actual residuals of raw materials, incomplete products, etc. are determined by recalculation, weighing or determining by means of passports indicating the volume of tanks, the specific gravity of juices, and other raw materials. It is necessary to carry out laboratory analysis on the content of sugars, solids, etc. If the raw material is a mixture, then the inventory lists indicate both the total mass of the mixture and the mass of its constituent parts determined by calculation.

The results of the inventory are recorded in a special act.

The simple, preliminary, and off-line cost accounting methods may be used depending on the technology, organization, nature, and volume of specific industrial production.

The application of a particular method of cost accounting for a particular production depends on the technology and organization of production, its volume and purpose. For example, the production of bricks is seasonal in nature at many agricultural enterprises, the manufactured products are used mainly for their own needs. However, raw bricks are not used as a separate finished product. Thus, at such enterprises the cost accounting is not for individual redistribution but for whole production.

At auxiliary (industrial) productions the production prime cost is determined on an ex-warehouse basis.

The production prime cost of auxiliary industries processing agricultural products, for example, sunflower seed processing companies, is calculated by dividing the processing costs and the processed products cost at the contractual price (without by-products) by the number of basic products.

The production costing is carried out in two stages in the case of processing of own and donor raw materials. First, the cost of processing a unit of raw material is calculated, for which all costs for processing (excluding the cost of by-products) are divided by the amount of processed (own and raw goods) raw materials (processing of tolling raw materials is considered as performing works on the side), and then the cost of own finished products is determined, for which the cost of raw materials and the amount of costs associated with its processing (excluding the cost of waste and by-products for the realizable price) divided by the number of its own finished products.

Costing of fruit and canning production. Accounting at the fruit-processing enterprises are characterized by the processing of different types of raw materials and the production of different types of products from one type of raw materials. Cost accounting is organized according to the standard method at such productions. Considering the standards, they determine and allocate costs by product type. Production costs also include the cost of glassware, canning lids, etc. Manufactured products are sold in thousands of conventional cans (tubes). A conditional jar of such products as juices, jam, canned sauces, mashed potatoes, paste take a capacity of 400 g.

A capacity of 353 cm³ is accepted as a conventional jar for other types of

canned goods.

The prime cost of each type of products is calculated in the fruit and canning industry. That's why, the cost of processed vegetables and fruits (excluding the cost of waste at the cost of their possible use) and other components (vinegar, spices, salts), remuneration, deductions for social activities of employees directly refer to the appropriate types of canning. Costs that cannot be directly attributed to a particular type of production (indirect costs) are apportioned among its various types in proportion to the number of conventional cans produced.

The production prime cost of a salting point is calculated similarly but the cost of the components (salts, spices, etc.) is apportioned according to the technological norms stipulated by the recipe between the types of products; indirect costs are proportional to the quantity of produced products.

Indirect costs in drying production are apportioned between types of production in proportion to the cwt-days.

The production prime cost of winemaking is determined by the allocation of the cost of production, including raw materials and auxiliary materials used in production (excluding the cost of waste at selling prices) by the number of finished products. Indirect costs for the wine production are distributed among the types of products in proportion to the quantity, and the length of storage is also taken into account if necessary.

At the enterprises and units for processing and preparation of feed the prime cost of each type of product is calculated (vitamin-grass flour, compound feed, granulated feed, feed mix, etc.). That's why, the cost of the processed mass and additives relates directly to the specific type of production, and the indirect costs of processing are distributed in proportion to the weight of the processed raw materials.

The prime cost of mills products includes the cost of the processed raw material and the costs associated with its processing.

To determine the prime cost of each type of products the cost of processed grain and other direct costs are directly attributable to a specific type of products, and indirect costs are directly attributable to processed raw materials. The performance index of the mill is used for a particular type of product. For example, if the mill's grain processing capacity is 30 percent higher than that of flour milling, then milled grain is converted into conditional products using a factor of 10 for flour, and 0.7 for millet.

Such coefficients are used processing products with different output purpose.

Example. During the reporting period, the mill processed 3,000 cwt of barley for barn (20 UAH per 1 cwt), and 5,000 cwt of wheat for flour (30 UAH per 1 cwt); milled 4,000 cwt of donor raw materials. The cost accounted for in the Mill's analytical account amount to 247,740 UAH for the year including the cost of recycled own raw materials of 210,000 UAH $[(3000 * 20) + (5000 * 30)]$; processing costs 37,740 UAH. The complexity of grinding grain to flour is taken as 1, and barley processing for barn is taken as 0.7. The actual cost of processing 1 cwt of conventional raw materials and the actual cost of the obtained products for processing their own raw materials (Table 16.1) is determined with the help of these coefficients.

Table 16.1

Costing of mill products
1. Costing of grain processing

Raw material	Quantity of processed raw materials, cwt			Conversion rate	Quantity of raw materials in conditional terms	Processing costs, UAH	Processing prime cost of 1cwt of conventional raw materials, UAH	Processing costs, UAH	
	own	donor	total					own products	donor products
Wheat grain	5,000	4,000	9,000	1.0	9,000			17,000	13,600
Barley grain	3,000		3,000	0.7	2,100			7,140	
Total	8,000	4,000	12,000	δ	11,100	37,740	3.40	24,140	13,600

2. Costing of own raw materials production

Products	Cost of raw materials, UAH	Processing costs, UAH	Total costs, UAH	Output, cwt	Actual cost of 1 cwt, UAH
Flour	150,000	17,000	167,000	4,938	33.82
Bran	60,000	7,140	67,140	2,962	22.67
Total	290,000	24,140	234,140		

If the mill processes only one type of product, then the actual cost per 1 cwt of processing and output is determined without using coefficients.

Example. Extract from Mill analytical account.

Actual cost of 1 cwt processing: 24,200 UAH : 11,000 = 2.20

Cost of services: 2.20 * 5,000 = 11,000 UAH.

The cost of by-products after own grain processing estimated at the prices of possible sale is 2,500 UAH.

Calculation of the actual cost of 1 cwt of flour: cost of own processed grain (180,000 UAH) plus processing costs (2.20 UAH * 6,000 = 13,200 UAH) minus the cost of by-products (2,500 UAH) divided by the flour output 5,965 cwt (35 cwt is bran and waste). The actual cost of 1 cwt of flour is 31.96 UAH.

The costing of the mill products is calculated on a monthly basis and there is no work in progress on this analytical account.

Costing of feed mill products. Feed plants produce compound feed for different species and groups of animals. The technological process of compound feeds production influences the use of primary and consolidated documentation on accounting of receipt in grain processing, organization of accounting of costs for production of compound feed and their realization, and their accounting organization.

The grain obtained for the production of compound feeds is registered in a

special ledger of quantitative and qualitative accounting of grain. It opens analytical accounts for each type of grain giving its actual amount of grain. Book entries are made simultaneously with grain receipt.

The ledger information is used to determine the norms of natural grain loss when cleaning warehouses. The plant sometimes receives high humidity grain requiring drying on special machines. Grain sorting and drying act is issued for drying and refining the grain, it sets out the task of drying and refining each batch of grain.

The posting of grain obtained from producers is carried out on the basis of the invoice registers, they are made daily. The register records each truck of the accepted grain with its qualitative indicators.

The invoice for raw materials is written in three copies (one copy remains in the laboratory, the second copy remains in the warehouse, and the third copy is passed to the chief of production). It indicates the warehouse number, raw material, grain weight, humidity (%), impurities (%), price and amount.

The inventory is organized according to the operational balance method with daily compilation of the report on products and materials flow.

The invoice for each donor enterprise determines the weight on the basis of the accepted physical and register data are recorded in the accumulation information on the receipt of grain by type and each supplier separately. Records are made daily during the month; at the end of the month they determine the totals that are used to compile summarized information on the received grain by type of raw material from all suppliers for posting it on the 201 Raw Materials subaccount.

Analytical accounting is organized for subaccount 201, i.e. 2011 Raw Materials, 2012 Materials, 2013 Deviations from Accounting Prices, and 2014 Refrations on Crops. The quantity of grain from suppliers by type is recorded in quantitative and sum terms in 2011 analytical account. The 2012 analytical account records material values received from suppliers by types, names and varieties of values at uniform prices. Deviations are accounted at 2013 analytical account; it is written off on a monthly basis for the production of compound feeds in proportion to the cost of materials consumed. The value of agricultural products is deviated from the established conditions in terms of value at 2014 analytical account. Refraction amounts are credited to the account 2014 and they are a source of costs for bringing the quality of products to the basic condition.

Production act-report on raw materials application and production of finished products is the main feed mill document. It shows the current reporting of the feed mill to another enterprise. The act-report is made on the basis of the ledger of quantitative and summative accounting of materials.

Analytical cost accounting of 234subaccount is maintained in specific for such enterprises the register, i.e. Industrial Report for Industrial Enterprises; it is approved nomenclature for compound feed factories. The register stores information for the month and the summary from the beginning of the year. The actual cost of producing compound feeds is determined on a monthly basis.

Each type (recipe) of compound feeds is an independent object of calculation. That's why, separate feed accounts are opened at feed mills to reflect the costs of each type (recipe) of produced compound feeds. The cost of spent raw materials, i.e.

grain feed, mineral supplements, protein and vitamin components, premixes are directly attributed at such accounts during the month. The rest of the production cost of compound feeds (wages, fuel and electricity for technological purposes, water supply, depreciation, repair, etc.) is calculated by the enterprise on the analytical account Production of Compound Feeds. The item and workshop costs are apportioned between certain types of compound feed produced in proportion to their conditional amount (ton rates). That's why, the number of compound feeds produced for each species is multiplied by its coefficient. Then they determine each article cost per ton-rate, on its basis they are divided between the different types of compound feeds. Thus, each type of compound feed (by all analytical accounts) will reflect the costs associated with their production.

There is usually no work in progress at feed mills at the end of the reporting period. Thus, determining the cost of compound feed of a particular type is reduced by dividing the cost of their production by the number of products sold. Since the cost of raw materials in the cost of compound feed is more than 80% of all costs, and they are directly attributed to each type of production, only processing costs (excluding the cost of raw materials) are subject to distribution.

Daily reports on compound feed production and raw materials application indicate their composition by feed of a particular recipe, cost standards, balance at the end of the cycle, received and actually consumed in quantitative terms. The document is signed by the engineer-technologist, head of the laboratory, and master.

Compound feed is a finished product at the plant, it is accounted for account 26 Finished Products. Analytical accounting for this account is conducted by types of compound feeds, i.e. for cattle, for pigs, for poultry.

The feed is issued by a freight bill. The plant laboratory issues a Certificate of Quality for each batch of compound feed. It indicates its composition, introduced additives, and quality indicators.

The feed mill is obliged to indicate the selling price for compound feeds in accordance with the approved recipes in the consignment note. Compound feed produced from cereals and other raw materials of participating companies cannot be transferred to other organizations.

Recipe Calculation is used to determine the selling price. It is made for the period of manufacture of this compound feed.

Monthly costing of compound feeds at actual costs reduces the amount of accounting work on adjusting the planned cost to the actual and improves the organization of payments with legal entities and individuals for the implemented compound feeds.

If the feed mill operates as a joint-stock company, then the profit of the plant in the form of dividends on shares of participants is distributed among the suppliers by the suppliers in proportion to the amount of imported grain in the offset weight.

Analyzed accounting organization meets the requirements of control over the production cost of compound feeds and reflects its technological features.

The prime cost of certain types of milk processing products (cream, sour cream, butter, cheese, etc.) is determined by dividing the cost of producing a particular type of product by its weight. At the same time from the total amount of

costs you are keying the cost of used shutters and other by-products at selling prices. Indirect costs are apportioned between different types of products in proportion to their selling prices.

Costing of cattle and poultry slaughtering products. The prime cost of slaughtering products of animals and poultry is calculated by the actual prime cost. The actual prime cost of the meat of the livestock species is also calculated. The cost of slaughtering is added to the cost of the animals and the cost of by-products (skins, by-products of the first and second categories, etc.) is excluded at the set prices or possible sales prices. The result is divided by the amount of meat obtained.

Poultry slaughtering shops calculate the prime cost of 1 cwt of chilled meat. By-products (down, feathers, flaps, non-standard carcasses, by-products, blood, and guts) are estimated at the prices of possible sale.

If several species of poultry are processed, the indirect costs of the slaughterhouse are distributed taking into account the productivity of the conveyor line for processing the individual poultry species by calculating the number of conditional heads using the following coefficients: 1.0 for chickens and chicks, 2.0 for ducks, 4.0. for turkeys and geese. The value of slaughtered poultry and the materials used are directly attributed to a particular type of products.

If one species is slaughtered at a poultry farm, their carcasses are distributed according to age (for example, adult chickens and chicks), then the total costs are distributed in proportion to the number of heads.

In poultry processing several types of slaughterhouse costs are distributed proportionally to conditional heads using the above-mentioned factors.

Calculation of animal's fur. Animals are killed as the fur matures; its quality is evaluated by a commission of experts. The object of calculation is only varietal ones.

The prime cost of fur is calculated separately by types. Costs for slaughter are distributed among them in proportion to the number of slaughtered heads. Skins that do not meet current standards by their size or quality are considered non-standard. Costs between standard and non-standard skins are apportioned at the cost of a possible sale. The cost of the skins consists of the cost of the slaughtered animals, the cost of slaughter, the initial processing and the skins storage in the refrigerator (excluding the cost of by-products). The prime cost of skins storing in the refrigerator is distributed between their species in proportion to the area and duration of storage.

Costing of primary processing of flax and hemp straws. At agricultural enterprises, primary retting of flax and hemp and its processing fiber is quite widespread.

The prime cost of 1 ton of retting is the cost of the processed straw and the costs associated with its processing. In the case of its processing into fiber, the cost of the fiber consists of the cost of the retting and the costs associated with its processing (excluding the cost of by-products).

If the prime cost of 1 ton of retting is calculated, then only one redistribution is used; all costs of processing straws per retting divide the number of products (retting).

Example. The actual prime cost of 1 cwt of flax is 27 UAH. 1,500 cwt was processed. Costs for processing (spreading straw, turning, lifting, forming bundles)

are 15,000 UAH. 1,125 cwt of retting was obtained, the cost of by-products was 2,800 UAH. The actual prime cost of 1 cwt of retting is 46 UAH and 84 cop. $[(40,500 + 1500 - 2,800) : 1,125]$. The received retting can be accounted by variety numbers. The costs (175,650 UAH) are attributed among the variety numbers, taking into account its estimation at selling prices (Table 16.2).

Table 16.2

Retting costing

Variety number	Weight, cwt	Conditional weight in unit terms, cwt	Unit cost, UAH	Cost at selling prices, UAH	Share in realization price estimate	Retting costs, UAH	Cost of production by variety numbers, UAH	Prime cost of 1 cwt of retting by variety-numbers, UAH
Mixture	36	-	17	612	0.02		34	0.94
0.50	500	250	40	20,000	7		12,296	24.59
0.75	694	520.5	72	49,968	13		22,835	32.90
1.00	510	510	92	46,920	12		21,078	41.33
1.25	1,260	1,575	120	151,200	38.98		68,468	54.34
1.50	150	1,125	150	112,500	29		50,939	67.92
Total	3,750	3,980.5		381,200	100	175,650	175,650	

Enterprises can process the retting into fiber. Its prime cost consists of the cost of the recycled retting (excluding by-products) and the costs associated with its processing.

Example. The enterprise received 1,125 cwt of retting, 700 cwt were donated to the flax plant and 425 cwt were processed into fiber at the enterprise. The enterprise received 130 cwt of fiber. 19,100 UAH was spent on processing of the retting. The cost of by-products at the prices of its possible sale is 750 UAH.

The cost of the processed retting is $425 \text{ cwt} \times 46.84 = 199,070$. The total cost of the second redistribution is 218,170 UAH ($199,070 + 19,100$). The amount of expenses attributed to the main product (fiber) is 21,7420 UAH ($21,8170 - 2,500$). The prime cost of 1 cwt of fiber is 167 UAH and 25 kopecks ($217,420 : 130$).

At the enterprises where all the retting is processed into fiber, its cost cannot be calculated, and all costs charged under the first redistribution are written off completely to the second. The cost of the final product, fiber, is then determined.

Costing of sawmill production. Sawmill is the most common industrial production at agricultural enterprises. They perform sawing of their own timber farms, provide appropriate services to employees of farms, other enterprises, organizations and individuals. The differentiation of raw materials and finished own and donor timber is one of the accounting features at this production. Own timber is accounted for 205 Building Materials. Donor timber accepted for processing and not paid by the farm is recorded in 023 Stored Material Values. Accepted material is posted on the basis of invoices of domestic use at prices stipulated in the contract or approved in the farm. The records are kept by the customers providing timber cutting

services. Services pay the farm for their volume and set prices per cubic meter of timber processing for the corresponding assortment of lumber. They make a corresponding entry in the warehouse accounting book or card, where they record these materials directly in the sawmill industry. At the end of the month, the production manager submits a report to the accounting department, indicating the volume of services provided for the farm and other customers.

Lumber (edged and unedged boards, bars, etc.) and waste (trimming, sawdust) are posted, they are used as fuel or litter. Posting of lumber (in cubic meters) is carried out on the basis of the invoice for domestic purposes (No. 87).

Processing of donor raw materials is considered as work done on the side. It is necessary to allocate the cost of maintaining the sawmill between work performed for its own purposes and attributed to the cost of the lumber received, and work to the side.

The actual prime cost of sawing 1 m^3 of wood is determined by dividing all the costs of sawmill (excluding the cost of the sawn raw material) by the total number of cubic meters, including the raw material.

The costs are distributed among the consumers of services on the basis of the cost of 1 m^3 sawing wood and the amount of work performed for the enterprise and other organizations. The cost of own sawn timber is added to the cost of sawing and determining the prime cost of timber.

The prime cost of 1 m^3 of business wood is calculated in the case of timber harvesting from their own forest. The costs including the fee for timber sold on the stump (excluding the cost of by-products such as firewood at the cost of possible use), are divided by the number of obtained products.

Costs for the production of lumber, the actual cost of which is the cost of sawn timber (logs), self-procured and purchased, as well as the cost of sawing them, reduced by the cost of the by-products obtained (sawdust, scraps, trimming) are calculated separately.

Costing of brick production. Brick factories hold a large share of industrial production, most of them are open year-round. The products they produce are not only used for their own needs, but also sold to other organizations and individuals. In these factories, the costs of producing bricks are taken into account in terms of the following: clay and sand, molding and drying of raw bricks, burning of bricks. The prime production cost is determined for each of them because the clay and sand are often spent on other needs. In addition, raw materials are widely used at agricultural enterprises as finished and sold products.

Costs for each redistribution are calculated in the context of cost items. A simple method of calculation is used calculating the production prime cost of the first two redistribution, and the third method is a method of calculating the cost of by-products.

Calculation unit for the first redistribution is the cubic meter of clay and sand. Costs calculated on the first redistribution are divided by the amount of raw material to determine it. Calculation unit for the second redistribution is 1,000 pcs. of raw bricks. Its prime cost consists of the cost of the used clay and sand, the cost of preparing the molding mass, molding and drying the brick.

Spacers are not allocated with a small amount of brick production. In this case, the cost of the burned brick is calculated on the basis of the cost of raw material procurement, production of raw materials and burning of the brick (excluding the cost of by-products).

Costing of peat products. The costs of agricultural enterprises for the peat extraction are planned and accounted regardless of the peat purpose. Finished product is peat dried to established conditions.

If it is necessary the calculation of the peat prime cost is carried out with its moisture considering. Peat for fertilizers has 55% of moisture, for litter has 40% of moisture, lump for fuel has 33% of moisture, milling for fuel has 40% of moisture. It allows to determine the cost of products in terms of peat moisture.

It is necessary to divide the cost of peat by the amount of peat of conditional moisture and multiply by the amount of peat of conditional humidity of a certain purpose to determine the cost of 1 ton of peat harvested for a specific purpose. The obtained result is divided by its weight. The production of peat briquettes should be considered as a separate redistribution of peat. The cost of manufactured briquettes consists of the cost of used peat and other components and the cost of preparing the mass, forming, and drying it.

Discussion and self-review questions

- 1. What are the main types of industrial production at agricultural enterprises?*
- 2. What methods are used to account for industrial production costs?*
- 3. Name the objects of cost accounting and output of industrial production.*
- 4. How are costs and output of industrial production primary calculated?*
- 5. How is the cost accounting and output of industrial production reflected?*
- 6. Specify the procedure for calculating the calculation deviation.*
- 7. What items of production costs are recorded in industrial production?*
- 8. Give a definition of the production prime cost of major industrial industries.*

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THEME 17. COST ACCOUNTING IN SERVICE INDUSTRIES

17.1. Types of Service Industries and their Value

Service industries and farms of agricultural enterprises satisfy household, communal and cultural needs of the population. They are:

- ✓ department of housing and utilities;
- ✓ canteen and buffets;
- ✓ preschool institutions;
- ✓ laundry;
- ✓ hairdressing salon;
- ✓ repair and sewing workshops;
- ✓ school camps;
- ✓ rest houses, sanatoriums, boarding houses, nursing homes;
- ✓ sports and other cultural and recreational facilities.

The development of service industries and farms enables agricultural enterprises to stimulate productivity in the main sectors of agricultural production; to stabilize employment in the countryside; increase leisure time of employees; to ensure convergence of cultural and living conditions in the city and in the countryside.

The activities of service industries and farms is heterogeneous, i.e. some produce products (bakeries, canteens); others provide services (baths, laundry, hairdressers); the third perform specialized functions of social and domestic services (preschools, housing and communal services, rest homes, and sanatoriums). The procedure for covering the costs in these industries is different, i.e. they are covered by the proceeds from the sale of manufactured products; from the receipt for services and other sources.

Costs of these industries and farms are recorded on a separate subaccount in the account 23; the costs of the respective industries and farms are debited, output of products, services, revenue or write-off of costs at the expense of the relevant sources and revenues are credited.

Analytical accounting is carried out for each type of service industries and farms in the **Report on costs and output of products (works, services) of other industries No. 5.6 (agriculture)**, it is made considering initial documents grouped in sheets or the Journal of accounting of works and costs for cost items and correspondent bills.

Analytical accounts for accounting service industries and farms are opened by type.

Accounting of service industries and farms should ensure:

- ✓ timely and complete reflection of the costs of service industries and farms;
- ✓ obtaining the necessary information on the movement of food, low value items,

- fuel and finished products;
- ✓ control over storage of tangible assets and assets; control over compliance with cost and income estimates by each farm;
- ✓ adherence to the economy mode in a specific unit of the service sector.

17.2. Cost and Output Accounting of Catering Enterprises

Catering enterprises as a type of trade and production activities serve agricultural producers. They can function independently and be located on the territory of the village council.

The activities of catering companies consist of three interrelated processes, i.e. procurement of raw materials for production of finished goods, production of finished products, and sale of finished products.

Each catering subdivision creates teams of financially responsible persons, so the object of accounting is the cost of raw materials, products and goods, they are recorded separately for each financially responsible person in natural and monetary measures.

When goods and products are received in the warehouses, catering unit carry out their assessment; their accounting is similar to goods at warehouses of retail trade enterprises.

The weight, volume and quantity of products and goods received from the supplier are determined by weighing and conversion. The weight of the container is also determined.

It is advisable for the catering companies to keep a record of the transport and procurement costs on a separate account, with the subsequent distribution between the sold goods and their balance in the warehouse.

At catering enterprises, the trade mark-up consists of the mark-up and VAT.

Teaching accounting at catering enterprises is necessary to form knowledge and skills on the following issues:

1. Accounting and documentation of stocks (products) at the warehouse of the catering company: procurement of products on the market through a reporting person; purchase of the product from suppliers for cash; purchase of products from suppliers for non-cash payment; receipt of raw materials from the holiday customer.
2. Movement of stocks (products) at the warehouse.
3. Dishes costing.
4. The order of calculation cards filling.
5. The order of filling in technological documentation for development and approval of specialties, culinary and confectionery products.

6. Determination of financial results of activity at catering enterprises.

It is important to study the order of preparation and use of primary accounting documents at catering enterprises including the following documents:

- procurement act;
- invoice;
- control calculation of the consumption of products according to the recipe standards;
- calculation card;
- logbook of branded dishes and products;
- act of selling kitchen products;
- report on products and containers flow at the kitchen, it is compiled by a responsible person;
- products flow report.

At agricultural enterprises public catering is carried out through **stationary canteens located on the central estates and in other settlements; temporary (seasonal) canteens in the field; rooms for eating on farms**. Costs are organized according to their type. Cost accounting is maintained on account 23, separate analytical accounts are opened for each dining room.

Analytical cost accounting is carried out by the following items: **labor costs; contributions to social events; raw materials (products); maintenance of fixed assets costs; depreciation of low value inventory; other costs**.

The first item **Labor costs** include basic and additional remuneration of employees of canteens accrued on the basis of time sheets and work orders for part-time work.

The second item includes deductions for social events.

The **Raw Materials (Products)** item reflects the value of products for the dining room. Foods are taken from the warehouse on the basis of **invoices and limit-picking cards to obtain material values**. In accounting these operations are shown as the sale of products for catering. Dining costs include products at discount prices.

The selling prices for own products (meat, bacon, by-products, vegetables, fruits, etc.) are set at the level of planned and actual cost at the beginning of the year after the preparation and approval of the business plan. Purchased food (cereals, pasta, sugar, salt, etc.) are accounted by the purchase price.

The accounting department of the company records the canteen products in the account 28 **Goods**. The products of last year's production are reflected at their actual prime cost, the current year's production is reflected at their planned prime cost, at the end of the year it is brought to the actual one, and purchased goods are reflected at the actual cost of purchase.

The products from the warehouse to the kitchen is given by **invoices according**

to the daily menu. The storekeeper or kitchen supervisor submits **a report on products and goods flow** with supporting documents to the accounting department.

Maintenance of fixed assets costs item includes depreciation and repair costs of fixed assets of canteen, except for its construction: the cost of cleaning the premises, etc.

Agricultural enterprises can provide dining services free of charge; their costs are included to the general costs, i.e. heating, lighting, repairs, cold and hot water, and the cooking fuel.

Depreciation of low value inventory item refers to the amount of accrued depreciation of items of low value and wearables (uniform, footwear, cutlery, etc.). Agricultural public catering enterprises charge 100% depreciation. These items are written off from the balance sheet as they are completely worn out and are not suitable for further application.

Other costs include expenses not listed above, i.e. laundry and table linen; the cost of detergents and disinfectants; other costs.

The peculiarity of accounting in public catering is the prime cost production for the reporting period, since the cost of specific products is not determined.

Catering pricing is calculating sales prices for own products. The object of costing is not the cost per unit of output, but its selling price.

The prime cost of dishes and their selling price is determined in the **calculation cards**, they have a registration number corresponding to the dish number according to the recipe collection. They indicate the name of the products that are ingredients of the dish, their cost standards, the selling prices at which the products are included in the calculation and the cost of the products at these prices.

Costing consists of calculating the cost of raw materials (products) per **100 dishes** to more accurately determine the selling price of one dish.

Every day the chef draws up an **Act on the sale of kitchen products** indicating the number of dishes sold and their selling value on the basis of checks, cash registers, invoices and other documents for the sale of kitchen products.

The selling cost of the sold dishes is deducted monthly from credit of the account 23 into the debit of account 901 Prime Cost of Finished Products Sales. Debit of account 30 reflects the amount of proceeds from the sale of dishes, which is the income of the canteen and is reflected by the credit of account 701 Revenue of Finished Products Sales. Taxes are displayed simultaneously.

17.3. Cost and Output Accounting of Department of Housing and Utilities

Housing in agricultural enterprises includes public housing (residential buildings

and non-residential buildings adapted for housing) and dormitories.

The maintenance of housing in agricultural enterprises is estimated, the costs and income are planned separately for housing, hostels, target costs and fees.

In order to ensure control over the implementation of the budget, the expenses and incomes of the housing and communal services are counted by three analytical accounts:

1. Housing cost and income.
2. Dormitory costs and income.
3. Target costs and fees.

If dormitory maintenance costs are in a small amount, they can be counted together with housing costs. They are used at agricultural enterprises on the basis of a contract for the lease of a living space, which defines the relationship between the landlord and the tenant (tenant).

In order to ensure the fulfillment of the terms of the contract for housing and the effective control over the observance of the budget, the cost of the housing stock is accounted for by items and revenues by income sources.

Costs for housing maintenance are calculated according to the following items:

1. Labor costs.
2. Deductions for social events.
3. Housekeeping costs.
4. Maintenance costs of fixed assets.
5. Other costs.

The first item **Labor costs** refers to accrued basic and additional wages for janitors, guards, cleaners, accounting and other support staff. The salaries of these employees are paid on an hourly basis on the basis of time sheets.

The item **Deductions for Social Events** reflect the deductions for social insurance.

The item **Housekeeping Costs** includes all the costs of sanitary cleaning and home improvement, i.e. cleaning the territory and roofs of houses from snow; garbage collection; watering streets, sidewalks, squares, flower beds; sand costs in winter; electricity costs for lighting yards, public places, etc.; disinfection of territories; charging of fire extinguishers; costs for occupational safety and health; other costs.

According to this item, the costs are calculated on the basis of time sheets, work orders, road papers of the truck, road letters of the tractor, overhead, limit-picking cards, etc.

The item **Maintenance Costs of Fixed Assets** include the cost of ongoing repairs, depreciation (wear) on fences, patios, landscaping and ornamental plantings.

The item **Other Costs** includes costs for technical inventory of property;

playground maintenance costs; wear and tear of overalls and other items of low value and wear; rent for rented housing and other costs at other enterprises.

Enterprises with significant housing stock and management staff have a separate item Maintenance Costs of Administrative and Managerial Staff.

The sources of coverage of the operating costs of the housing stock are payments (income) that come from tenants and non-residential tenants. These revenues are kept in the analytical account **Costs and Income of Housing Stock** by items:

1. Housing fee.
2. Rent for non-residential premises.
3. Charges from tenants to cover household operating costs.
4. Other costs.

The item **Flat Fee** calculates the amount of flat fee, it is deducted from tenants for living in residential premises. The fee depends on the price per 1 m² of living space, its number and the availability of privileges for some residents.

Prices for 1 m² of living space are approved by local state administrations.

The amount of monthly accrued rent is reflected in report for payments accounting, i.e. **Statement of analytical accounting of settlements with residents of apartments and hostels** (subaccount 377 Settlements with other debtors (tenants)).

The item **Rent for Non-Residential Premises** refers to the amount of rent that is deducted from organizations when renting non-residential premises for commercial, industrial, warehouse and other needs. Rental rates are set by the company independently depending on the category of settlement, the type of buildings and the purpose of non-residential buildings and structures.

According to the item **Tenants' Fees to Cover Household Operating Expenses**, they calculate additional fees for tenants for the total expenses for management, operation and repair for the entire household, their amount is set in a certain order.

Other income is income from the rental of property and equipment in the amount of the average annual cost of depreciation, rental of residential buildings etc.

Dormitories are for the residence of their employees and only during their period of work at the enterprise. They are also used to accommodate seasonal workers and those involved in agricultural work, university students, and vocational colleges during industrial practice.

Costs and revenues may be reflected in the following correspondence (Table 17.1) at housing organizations.

Table 17.1

Cost and income accounting at housing organizations

No.	Business transaction	Account correspondence	
		Debit	Credit
1	Accrued wages and deductions to social insurance bodies	92, 23	66,65
2	Submitted to production materials, IBE	23	20,22
3	Depreciation of fixed assets	23	131
4	Sanitary cleaning of cities, service of elevators	23	63,685
5	Flat fee	377	703
6	Budget debt from subsidies, reimbursement of benefits	48	703
7	Rent and operating expenses for tenants	378	713
8	Rent payment	311	378
9	Paid flat fee	66,301	377

Dormitory maintenance expenses are recorded in a separate analytical account, i.e. **Costs and income of Dormitories** by the following items:

1. Labor costs.
2. Deductions for social events.
3. Dormitory maintenance costs.
4. Costs for the operation of equipment and inventory.
5. Other costs.

The unit of cost for services provided by the dormitory is the prime cost of the bed. The costs are covered by the payment for a bed, its amount depends on the arrangement of the hostels, and the type of services provided. The amount of bed pay is now set by each company separately.

Target costs and fees (income) are accounted by separate analytical account Target Costs and Fees of subaccount 235 Service industries and facilities. They include central heating; lighting; water supply; sewerage; hot water supply; gas supply; use of broadcasting points; use of collective antennas etc.

Targeted costs are calculated through businesses regardless the service they provide, i.e. its subdivision or other enterprise. The credit of the analytical account Target Costs and Fees the amount of due payments (target fees) from tenants is deducted by types of fees.

It is proposed to use sub-account 949 Other Operating Costs to account the costs of operating social infrastructure objects, their operations are reflected as follows (Table 17.2).

Table 17.2

Cost accounting for social infrastructure operation

No.	Business transaction	Account correspondence	
		Debit	Credit
1	Pool depreciation	949	131
2	Swimming pool disinfectants	949	201
3	Wages accrued to the pool employees	949	66,65
4	Capitalized funds paid by employees for visiting the pool	301	719
5	Accrued VAT	719	641
6	Revenue attributed to financial results	719	791
7	Charged to pool maintaining costs	791	949

Discussion and self-review questions

- 1. Name the types of industrial production.*
- 2. What are the primary documents for accounting at catering establishments?*
- 3. What are the costing items at the public catering establishments?*
- 4. What is the methodology for cost and income accounting for housing and communal services?*

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APPENDICES

Report on the volume of work performed by managers

Employee	Count of orders	Days	Rate Report card	Accrued Report card	Order retail				
					Amount order c.u., retail	Order Amount retail, UAH at the rate	Percent Order Retail	Accrual Order Retail	Bid order
	76								
Bartosh T.V.	221	21,00	200,000	4 200	11 431,89	305 231,46	0,300	915,69	
Bogdanyuk V.M.		8,00	200,000	1 600					
Bortnik A.R.	128	16,00	200,000	3 200	1 553,40	41 475,78	0,300	124,43	
Dmitryuk V.P.	85	21,00	200,000	4 200	12 107,80	323 278,26	0,300	969,83	
Ivanyuk R.S.	394	22,00	200,000	4 400	24 567,00	655 938,90	0,300	1 967,82	
Rusnak L. Kh.	71	22,00	200,000	4 400	2 337,95	62 423,27	0,300	187,27	

Employee	Order				Sales				
	Order Amount, c.u.	Order Amounts	Percent Order	Accrual order	Euro Invoice amount	Sum of overhead UAH at the rate	Overhead percentage	Accrual Invoice	Bid overhead
	88 632,39	2 366 484,81							
Bartosh T.V.	79 203,63	2 114 736,92	0,040	845,89	13 758,69	367 357,02	0,040	146,94	
Bogdanyuk V.M.									
Bortnik A.R.	28 185,46	752 551,78	0,040	301,02	170 021,45	4 539 572,72	0,040	1 815,83	
Dmitryuk V.P.	27 142,97	724 717,30	0,040	289,89	1 165,35	31 114,85	0,040	12,45	
Ivanyuk R.S.	241 764,82	6 455 120,69	0,040	2 582,05	69 721,49	1 861 563,78			
Rusnak L. Kh.	22 253,55	594 169,79	0,040	237,67	3 947,24	105 391,31	0,040	42,16	

Employee	Income			Accruals	
	Percentage of Income	Income rate, UAH	Accrued Income, UAH	Accrued	Accrued total
Bartosh T.V.				1 908,53	6 108,53
Bogdanyuk V.M.	0,020		2 350,9698	2 350,97	3 950,97
Bortnik A.R.				2 241,28	5 441,28
Dmitryuk V.P.				1 272,17	5 472,17
Ivanyuk R.S.				4 549,86	8 949,86
Rusnak L. Kh.				467,09	4 867,09

Loading of cars №1590 from 03.03.2020

Organization

The driver Slobod AV

№	Application number	Address	Counterparty	Comment	Weight	Unit of measurement
1	00000002010	Chernivtsi	PE Promin		323,76	80,96
2	00000002011	Chernivtsi	PE Promin		120,74	38,7
3	00000002012	Chernivtsi	PE Promin		105,29	31,05
4	00000002013	Chernivtsi	PE Promin		10,1	3,24
5	00000002014	Chernivtsi	PE Promin		32,75	10,08
6	00000002015	Chernivtsi	PE Promin		648,99	161,52
7	00000002016	Chernivtsi	PE Promin		923,77	231
8	00000002017	Chernivtsi	PE Promin		661,08	194,94
9	00000002018	Chernivtsi	PE Promin		864,03	215,04
10	00000002019	Chernivtsi	PE Promin		46,8	15
11	00000002020	Chernivtsi	PE Promin		165,59	43,2
12	00000002021	Chernivtsi	PE Promin		962,94	238,81
13	00000002022	Chernivtsi	PE Promin		68,62	16,53
14	00000002064	Chernivtsi	PE Promin		131,59	39
15	00000002066	Chernivtsi	PE Promin		17,4	4,6
16	00000002082	Chernivtsi	PE Promin		16,56	4,32
17	00000002092	Chernivtsi	PE Promin		554,68	154,08
18	00000002103	Chernivtsi	PE Promin		641,86	154,63
19	00000002109	Chernivtsi	PE Promin		29,89	7,44
20	00000002110	Chernivtsi	PE Promin		383,08	95,34
21	00000002112	Chernivtsi	PE Promin		335,4	107,5
22	00000002114	Chernivtsi	PE Promin		12,88	3,36
23	00000002042		PE Promin		84,59	85,34
24	00000002093		PE Promin		245,84	85,14
25	00000002041		PE Promin		67,5	
26	00000002100		PE Promin		166,4	
27	00000002040		PE Promin		390,36	118,8
28	00000002043		PE Promin		175	50

Distance: 104,00 8 187,49 2 189,62

List of returnable packaging

Period: February 2020

Indicators: Quantity of the received container (in storage unit), Quantity of the transferred container (in storage unit)

Grouping: Counterparty, Contract of the counterparty (Currency of mutual settlements), Nomenclature (Unit of storage of balances), Document

	Limits at the beginning		The balance at the beginning	Earnings	Expense	The balance at the end	Limits at the end	
	supplier	buyer					supplier	buyer
LLC "Plus"			1,000			1,000		
LLC "Alpha"			32,000		3,000	35,000		
LLC "Liberty"			1,000			1,000		
TOTAL:			288,000	7,000	37,000	318,000		

Selection:

Organization	The initial balance	Accrued	Received	The final balance
Article of settlements with the social insurance fund				
Employee				
NOTA		58 333,01	53 655,84	4 677,17
Pregnancy and childbirth assistance		53 655,84	53 655,84	
Valka Olenina Mykhailivna		35 088,48	35 088,48	
Nusnak Nina Oleksandrivna		18 567,36	18 567,36	
Payment of sick leave		4 677,17		4 677,17
Vinat Lina Georgievna		2 437,47		2 437,47
Mizhova Viola Olegivna,		2 239,7		2 239,7
Total		58 333,01	53 655,84	4 677,17

Buyer's order Items	Quantity(inbaseunits)				Quantity				Theamountofmutualsettlements				Theamountofmanagementaccounting				Pieces						
	Theinitial balance	Earnings	Expense	Thefinal balance	Theinitial balance	Earnings	Expense	Thefinal balance	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover
	173,718			173,718	173,718			173,718	1950,46			1950,46		180,76			180,76						
Buyer's order 00000000190 from 16.01.2020 15:56:58 Decking T-8, m2								-0,51				-0,51		-0,51			-0,51						
Buyer's order 00000000195 from 17.01.2020 8:14:21 Thesmoothwithfilm sheet 0,45, m2	5,000			5,000	5,000			5,000	19,80			19,80		19,80			19,80						
	5,000			5,000	5,000			5,000	19,80			19,80		19,80			19,80						
Buyer's order 00000000196 from 17.01.2020 8:38:13 Hook	341,000			341,000	341,000			341,000	238,70			238,70		238,70			238,70						
	341,000			341,000	341,000			341,000	238,70			238,70		238,70			238,70						
Buyer's order 00000000202 from 17.01.2020 9:14:01 Decking T-8, m2								1773,25				1773,25		66,67			66,67						
								1773,25				1773,25		66,67			66,67						
Buyer's order 00000000203 from 17.01.2020 9:54:15 Thesmoothmatte sheet, m2	206,562			206,562	206,562			206,562	934,36			934,36		934,36			934,36						
	193,562			193,562	193,562			193,562	921,36			921,36		921,36			921,36						
Leaf-departure from a metal tile, m2	13,000			13,000	13,000			13,000	13,00			13,00		13,00			13,00						
Buyer's order 00000000208 from 17.01.2020 10:22:13 Skatesemicircular KP-165, pcs	120,000			120,000	120,000			120,000	484,00			484,00		484,00			484,00						
	120,000			120,000	120,000			120,000	484,00			484,00		484,00			484,00						
Buyer's order 00000000209 from 17.01.2020 10:23:33 Pipedamp, pcs Hook to the gutter, pcs Plug to the gutter, pcs Knee, pcs Watering can, pcs														0,21			0,21						
														0,02			0,02						
														0,05			0,05						
														0,01			0,01						
														0,03			0,03						
														0,01			0,01						

Buyer's order	Quantity(in base units)				Quantity				The amount of mutual settlements					The amount of management accounting					Pieces				
Items	The initial balance	Earnings	Expense	The final balance	The initial balance	Earnings	Expense	The final balance	The initial balance	Earnings	Expense	The final balance	Turnover	The initial balance	Earnings	Expense	The final balance	Turnover	The initial balance	Earnings	Expense	The final balance	Turnover
Gutter 2m, pcs														0,06			0,06						
Pipe 100, 1,25m., pcs														0,01			0,01						
Pipe 100, 2m., pcs														0,02			0,02						
Buyer's order 000000000211 from 17.01.2020 10:47:04														0,62			0,62						
Decking T-8H, m2														0,29			0,29						
Level of wind PV under plastic, pcs														0,11			0,11						
Level submersible PR, pcs														0,22			0,22						
Buyer's order 000000000217 from 17.01.2020 11:30:14														0,23			0,23						
Decking T-140, 45, m2														0,23			0,23						
Buyer's order 000000000218 from 17.01.2020 11:36:24														0,40			0,40						
Decking T-14, m2														0,18			0,18						
Decking T-8, m2														0,22			0,22						
Buyer's order 000000000216 from 17.01.2020 11:48:52														1,59			1,59						
PC fence hood-10, pcs														0,23			0,23						
Decking T-80, 45, m2														1,36			1,36						
Buyer's order 000000000225 from 17.01.2020 12:19:06	375,000			375,000	375,000			375,000	1785,00			1785,00	1785,00	1785,00			1785,00						
Thesmothmatte sheet, m2	375,000			375,000	375,000			375,000	1785,00			1785,00	1785,00	1785,00			1785,00						
Buyer's order 000000000226 from 17.01.2020 12:20:19	75,000			75,000	75,000			75,000	393,00			393,00	393,00	393,00			393,00						
Thesmothmatte sheet, m2	75,000			75,000	75,000			75,000	393,00			393,00	393,00	393,00			393,00						
Buyer's order 000000000215 from 17.01.2020 12:51:40														-1,03			-1,03						
Hook Rinvey														-0,22			-0,22						

Buyer's order	Quantity (in base units)				Quantity				The amount of mutual settlements				The amount of management accounting					Pieces					
Items	The initial balance	Earnings	Expense	The final balance	The initial balance	Earnings	Expense	The final balance	The initial balance	Earnings	Expense	The final balance	Turnover	The initial balance	Earnings	Expense	The final balance	Turnover	The initial balance	Earnings	Expense	The final balance	Turnover
"STRONG", pcs																							
Dowel KP-D 12, pcs															-0.02			-0.02					
Gutter connector															-0.04			-0.04					
"STRONG", pcs																							
Cap to the gutter															-0.03			-0.03					
"STRONG", pcs																							
Knee "STRONG", pcs															-0.10			-0.10					
Trough watering can															-0.04			-0.04					
"STRONG", pcs																							
Gutter support 11x11															-0.35			-0.35					
"STRONG" 4m, pcs																							
Pipe "STRONG" 3 m, pcs															-0.17			-0.17					
Pipe "STRONG" 1 m, pcs															-0.02			-0.02					
Pipe dampener Dowel "STRONG", pcs															-0.04			-0.04					
Buyer's order 00000000247 from 17.01.2020 12:55:09	0,574			0,574	0,574			0,574	0,06			0,06		0,06			0,06		1,00			1,00	
Metatile MODERN, m2	0,574			0,574	0,574			0,574	0,06			0,06		0,06			0,06		1,00			1,00	
Buyer's order 00000000233 from 17.01.2020 13:42:21															-0.18			-0.18					
Reflux, pcs															-0.17			-0.17					
Buyer's order 00000000751 from 30.01.2020 11:53:12	125,000			125,000	125,000			125,000	485,00			485,00		485,00			485,00						
Leaf smooth golden oak, m2	125,000			125,000	125,000			125,000	485,00			485,00		485,00			485,00						
Buyer's order 00000000752 from 30.01.2020 11:56:27	350,000			350,000	350,000			350,000	1640,64			1640,64		1640,64			1640,64						
Thes smooth matte sheet, m2	343,250			343,250	343,250			343,250	1633,88			1633,88		1633,88			1633,88						
Leaf departure from a metatile, m2	6,750			6,750	6,750			6,750	6,76			6,76		6,76			6,76						
Buyer's order 00000000754 from 30.01.2020 12:31:46	193,000			193,000	193,000			193,000	763,90			763,90		763,90			763,90						
Skate semicircular KP-165, pcs	28,000			28,000	28,000			28,000	120,40			120,40		120,40			120,40						

Buyer's order	Quantity(inbaseunits)				Quantity				Theamountofmutualsettlements				Theamountofmanagementaccounting				Pieces						
Items	Theinitial balance	Earnings	Expense	Thefinal balance	Theinitial balance	Earnings	Expense	Thefinal balance	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover
Skatesemicircular KP-165.pcs	165,000			165,000	165,000			165,000	643.50			643.50		643.50			643.50						
Buyer's order00000000755 from30.01.2020 12:39:12	68,750			68,750	68,750			68,750	298.59			298.59		298.59			298.59						
Thesmoothmatte sheet,m2	61,125			61,125	61,125			61,125	290.96			290.96		290.96			290.96						
Leaf-departurefrom ametaltile,m2	7,625			7,625	7,625			7,625	7.63			7.63		7.63			7.63						
Buyer's order00000000764 from30.01.2020 13:31:50														0,16			0,16						
DeckingT-80,45,m2														0,16			0,16						
Buyer's order00000000768 from30.01.2020 14:00:32	209,475			209,475	209,475			209,475	972.20			972.20		972.20			972.20						
Thesmoothmatte sheet,m2	202,850			202,850	202,850			202,850	965.57			965.57		965.57			965.57						
Leaf-departurefrom ametaltile,m2	6,625			6,625	6,625			6,625	6.63			6.63		6.63			6.63						
Buyer's order00000000759 from30.01.2020 14:06:02	5,000			5,000	5,000			5,000	112.50			112.50		112.50			112.50						
Pelicle STROTEX AL90,pyn	5,000			5,000	5,000			5,000	112.50			112.50		112.50			112.50						
Thesmoothmatte sheet,m2	7,750			7,750	7,750			7,750	36.89			36.89		36.89			36.89						
Buyer's order00000000773 from30.01.2020 14:42:10	3,625			3,625	3,625			3,625	17.26			17.26		17.26			17.26						
Thesmoothmatte sheet,m2	3,625			3,625	3,625			3,625	17.26			17.26		17.26			17.26						
Buyer's order00000000775 from30.01.2020 14:48:56	2300,000			2300,000	2300,000			2300,000	388.50			388.50		388.50			388.50						
Snowretainer decorativeSZD.pcs	250,000			250,000	250,000			250,000	42.50			42.50		42.50			42.50						
Snowretainer decorativeSZD.pcs	2000,000			2000,000	2000,000			2000,000	339.00			339.00		339.00			339.00						
Snowretainer decorativeSZD.pcs	50,000			50,000	50,000			50,000	7.00			7.00		7.00			7.00						
Buyer's order00000000776	1,500			1,500	1,500			1,500	1.50			1.50		1.50			1.50						

Buyer's order	Quantity(inbaseunits)				Quantity				Theamountofmutualsettlements				Theamountofmanagementaccounting				Pieces						
Items	Theinitial balance	Earnings	Expense	Thefinal balance	Theinitial balance	Earnings	Expense	Thefinal balance	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover
from30.01.2020 14:54:48 Leaf-departurefrom ametaltile,m2	1,500			1,500	1,500			1,500	1,50			1,50		1,50			1,50						
Buyer's order00000000779 from30.01.2020 15:36:48 Blockhouse,m2	649,425			649,425	649,425			649,425	649,43			649,43		649,43			649,43						
Buyer's order00000000780 from30.01.2020 15:39:54 Gutter sqgpcr+aa "STRONG"2m,pcs Gutter sqgpcr+aa "STRONG"4m,pcs	125,000			125,000	125,000			125,000	810,75			810,75		810,75			810,75						
	15,000			15,000	15,000			15,000	51,75			51,75		51,75			51,75						
	110,000			110,000	110,000			110,000	759,00			759,00		759,00			759,00						
Buyer's order00000000881 from30.01.2020 19:35:30 LeafsmoothChina, m2	175,000			175,000	175,000			175,000	532,00			532,00		532,00			532,00						
	175,000			175,000	175,000			175,000	532,00			532,00		532,00			532,00						
Buyer's order00000000876 from04.02.2020 8:03:32 Gutter"STRONG"2 m,pcs Pipe "STRONG" 3 m,pcs Blockhouse,m2 fenceofafence, norm	2601,385			2601,385	2601,385			2601,385	7368,44			7368,44		7368,44			7368,44						
	21,000			21,000	21,000			21,000	72,45			72,45		72,45			72,45						
	31,000			31,000	31,000			31,000	223,20			223,20		223,20			223,20						
	740,025			740,025	740,025			740,025	740,03			740,03		740,03			740,03						
	1809,360			1809,360	1809,360			1809,360	6332,76			6332,76		6332,76			6332,76						
Buyer's order00000000880 from04.02.2020 8:21:07 DeckingT-14,m2	86,250			86,250	86,250			86,250	349,31			349,31		349,31			349,31		50,00			50,00	
	86,250			86,250	86,250			86,250	349,31			349,31		349,31			349,31		50,00			50,00	
Buyer's order00000000887 from04.02.2020 9:15:34 Thesmoothmatte sheet,m2 Leaf-departurefrom ametaltile,m2	276,375			276,375	276,375			276,375	1276,54			1276,54		1276,54			1276,54						
	266,000			266,000	266,000			266,000	1266,16			1266,16		1266,16			1266,16						
	10,375			10,375	10,375			10,375	10,38			10,38		10,38			10,38						
Buyer's order00000000895														-24,30			-24,30						

Buyer's order	Quantity (in base units)			Quantity			The amount of mutual settlements				The amount of management accounting					Pieces							
Items	The initial balance	Earnings	Expense	The final balance	The initial balance	Earnings	Expense	The final balance	The initial balance	Earnings	Expense	The final balance	Turnover	The initial balance	Earnings	Expense	The final balance	Turnover	The initial balance	Earnings	Expense	The final balance	Turnover
from 04.02.2020 9:42:20																							
Pipedamp under Dowel.pcs														-7,57			-7,57						
Hook.pcs														-4,29			-4,29						
Dowel KPД*12.pcs														-2,22			-2,22						
Plugsto the gutter, pcs														-0,60			-0,60						
Kneer.pcs														-3,78			-3,78						
Watering can.pcs														-0,51			-0,51						
Gutter 2w.pcs														-5,33			-5,33						
Buyer's order00000000904 from04.02.2020 10:23:18	2,500			2,500	2,500			2,500	12,05				12,05	12,05			12,05						
Thesmoothwithfilm sheet,m2	2,500			2,500	2,500			2,500	12,05				12,05	12,05			12,05						
Buyer's order00000000905 from04.02.2020 10:28:10														-1,21			-1,21						
DeckingT-140,45, m2														-1,21			-1,21						
Buyer's order00000000915 from04.02.2020 10:46:27	125,000			125,000	125,000			125,000	370,00				370,00	370,00			370,00						
Thesmooth galvanizedsheet,m2	125,000			125,000	125,000			125,000	370,00				370,00	370,00			370,00						
Thesmooth galvanizedsheet Self-lappingscrews 4,2*16,														-0,12			-0,12						
Buyer's order00000000930 from04.02.2020 12:25:38	109,250			109,250	109,250			109,250	332,12				332,12	332,12			332,12						
LeafsmoothChina, m2	109,250			109,250	109,250			109,250	332,12				332,12	332,12			332,12						
Buyer's order00000000933 from04.02.2020 12:52:00	510,000			510,000	510,000			510,000	2187,60				2187,60	2187,60			2187,60						
Leafsmooth (aluzinc),m2	125,000			125,000	125,000			125,000	505,00				505,00	505,00			505,00						
Thesmoothwithfilm sheet,m2	75,000			75,000	75,000			75,000	336,00				336,00	336,00			336,00						
LeafsmoothChina,	75,000			75,000	75,000			75,000	228,00				228,00	228,00			228,00						

Buyer's order	Quantity(inbaseunits)				Quantity				Theamountofmutualsettlements					Theamountofmanagementaccounting					Pieces				
Items	Theinitial balance	Earnings	Expense	Thefinal balance	Theinitial balance	Earnings	Expense	Thefinal balance	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover	Theinitial balance	Earnings	Expense	Thefinal balance	Turnover
m2 Thesmoothmatte sheet,m2	235,000			235,000	235,000			235,000	1118,60			1118,60		1118,60			1118,60						
Buyer's order00000000934 from04.02.2020 13:04:31	1953,000			1953,000	1953,000			1953,000	1367,10			1367,10		1367,10			1367,10						
HookРивни "STRONG",pcs	1953,000			1953,000	1953,000			1953,000	1367,10			1367,10		1367,10			1367,10						
Buyer's order00000000928 from04.02.2020 13:20:41									12,88			12,88		12,88			12,88						
DeckingT-14,m2									12,88			12,88		12,88			12,88						
Buyer's order00000000891 from04.02.2020 13:20:44	7,200			7,200	7,200			7,200	33,84			33,84		33,84			33,84		4,00				4,00
DeckingT-8,m2	7,200			7,200	7,200			7,200	33,84			33,84		33,84			33,84		4,00				4,00
Buyer's order00000000937 from04.02.2020 14:32:41	10,080			10,080	10,080			10,080	957,60			957,60		31,43			31,43						
DeckingT-8,m2														-3,57			-3,57						
DeckingT-8,m2	10,080			10,080	10,080			10,080	957,60			957,60		35,00			35,00						

Report on sick leaves

Period: December 2019

Selection: The organization is equal to LLC "NOTA CLINIC"

Indicators: Series, Number, Days of illness, Amount, Days due to the enterprise, Amount due to the enterprise, Days due to social insurance, Amount due to social insurance

Results by: Subdivision Elements, Percentage payment Elements, Cause Illness Elements, Employee Elements, Registrar Elements

Register	Series	Number	Days of illness	Sum	Days at the expense of the enterprise	Amount at the expense of the enterprise	Days at the expense of social insurance	The amount is due to social insurance
Diagnostic center			22,00	8 657,92	10,00	3 980,75	12,00	4 677,17
100			22,00	8 657,92	10,00	3 980,75	12,00	4 677,17
General disease			22,00	8 657,92	10,00	3 980,75	12,00	4 677,17
#1			12,00	4 178,52	5,00	1 741,05	7,00	2 437,47
Accrual according to the hospital letter KC000000006 dated 13.12.2019 15:23:33	АГЦ	559458	12,00	4 178,52	5,00	1 741,05	7,00	2 437,47
#2			10,00	4 479,40	5,00	2 239,70	5,00	2 239,70
Accrual according to the hospital letter KC000000009 dated 22.12.2019 20:13:03	АГЦ	520484	10,00	4 479,40	5,00	2 239,70	5,00	2 239,70
TOTAL:			22,00	8 657,92	10,00	3 980,75	12,00	4 677,17

Report on contributions to funds

NOTA

December 2020

Employee/Period	Accrued	Single social contribution					
		Accrual of SSC by employers (36.76-49.7%)(22%)			Accrual of SSC by employer to the disabled (8.41%)(8.41%)		
Vadritsky Olga Valerievna	15912,21	15912,21	15912,21	3500,690000			
01.01.2020	2056,00	2056,00	2056,00	452,320000			
01.12.2019	13856,21	13856,21	13856,21	3048,370000			
Nasba Vfsil Volodymyrovych	19875,00	19875,00	19875,00	4372,500000			
01.12.2019	19875,00	19875,00	19875,00	4372,500000			
Verta Tetiana Mykhailivna							
01.12.2019							
Bolz Alexander Vasilovich	11801,09	11801,09	11801,09	2596,240000			
01.12.2019	11801,09	11801,09	11801,09	2596,240000			
Kozak Olena Vasyilivna	8075,00	8075,00	8075,00	1776,500000			
01.12.2019	8075,00	8075,00	8075,00	1776,500000			
Menov Olena Georgievna	15890,81	15890,81	15890,81	3495,970000			
01.12.2019	15890,81	15890,81	15890,81	3495,970000			
Kuhulenko Alina Vladimirovna	11539,21	11539,21	11539,21	2538,630000			
01.01.2020	489,96	489,96	489,96	107,790000			
01.12.2019	11049,25	11049,25	11049,25	2430,840000			
Zubko Lina Vasyilivna	11180,00	11180,00	11180,00	2459,600000			
01.12.2019	11180,00	11180,00	11180,00	2459,600000			
Ravlyuk Neli Vasyilivna	10435,32	10435,32	10435,32	2295,770000			
01.12.2019	10435,32	10435,32	10435,32	2295,770000			
Yarinich Mikhail Fedorovich	1099,60	1099,60	1099,60	241,910000			
01.12.2019	1099,60	1099,60	1099,60	241,910000			
Dzub Oleg Vasilyevich	13664,00	13664,00	13664,00	3006,080000			
01.12.2019	13664,00	13664,00	13664,00	3006,080000			
Nanaruk Sergiy Olegovich	19875,00	19875,00	19875,00	4372,500000			
01.12.2019	19875,00	19875,00	19875,00	4372,500000			
Borh Lyudmila Mykolayivna	5963,00	5963,00	5963,00	1311,860000			
01.12.2019	5963,00	5963,00	5963,00	1311,860000			
Horna Alina Ruslanovna	9192,13	9192,13	9192,13	2022,270000			
01.01.2020	456,14	456,14	456,14	100,350000			
01.12.2019	8735,99	8735,99	8735,99	1921,920000			
Saksymosh Rima Vasyilivna	6584,00	6584,00	6584,00	1448,480000			
01.12.2019	6584,00	6584,00	6584,00	1448,480000			
Leva Marija Alexandrovna	6584,00	6584,00	6584,00	1448,480000			
01.12.2019	6584,00	6584,00	6584,00	1448,480000			
Petruk Marta Oleksandrivna							
01.12.2019							
Catan Ruma Mykolayivna	11180,00				11180,00	11180,00	940,240000
01.12.2019	11180,00				11180,00	11180,00	940,240000

Employee/Period	Accrued	Single social contribution					
		Accrual of SSC by employers (36.76-49.7%)(22%)			Accrual of SSC by employer to the disabled (8.41%)(8.41%)		
Zalka Nastja Viktorivna 01.12.2019	6832,00 6832,00	6832,00 6832,00	6832,00 6832,00	1503,040000 1503,040000			
Skoryk Oleg Anatoliyovich 01.12.2019	5590,00 5590,00	5590,00 5590,00	5590,00 5590,00	1229,800000 1229,800000			
Kimova Olena Stepanovna 01.12.2019	8322,00 8322,00	8322,00 8322,00	8322,00 8322,00	1830,840000 1830,840000			
Vaceluk Lina Anatoliyivna 01.12.2019	671,42 671,42	671,42 671,42	671,42 671,42	147,710000 147,710000			
Sova Olga Viktorivna 01.12.2019	671,42 671,42	671,42 671,42	671,42 671,42	147,710000 147,710000			
Veluka Alina Viktorivna 01.12.2019	5590,00 5590,00	5590,00 5590,00	5590,00 5590,00	1229,800000 1229,800000			
Vilka Andriy Olegovich 01.12.2019	16770,00 16770,00	16770,00 16770,00	16770,00 16770,00	3689,400000 3689,400000			
Cova Olesja Borysivna 01.12.2019 01.11.2019	6063,06 1583,66 4479,40	6063,06 1583,66 4479,40	8652,40 4173,00 4479,40	1903,530000 918,060000 985,470000			
Karpovich Marina Mykolayivna 01.12.2019	8322,00 8322,00				8322,00 8322,00	8322,00 8322,00	699,880000 699,880000
Makarchuk Alla Petrovna 01.12.2019	8074,00 8074,00	8074,00 8074,00	8074,00 8074,00	1776,280000 1776,280000			
Milashuk Valentyna Mikhailovna 01.12.2019	8075,00 8075,00	8075,00 8075,00	8075,00 8075,00	1776,500000 1776,500000			
Ivanchuk Vita Troianivna 01.12.2019	5962,00 5962,00	5962,00 5962,00	5962,00 5962,00	1311,640000 1311,640000			
Myrohnuk Karyna Vasulivna 01.12.2019	4968,00 4968,00	4968,00 4968,00	4968,00 4968,00	1092,960000 1092,960000			
Total:	264761,27	245259,27	247848,61	54526,690000	19502,00	19502,00	1640,120000

Order			Ordered	Shipped	Difference
Items	Item Description	Item Series			
Customer order 00000001611	from 24.02.2020 11:48:55		139,150	71,830	67,320
Customer order 00000001653	from 24.02.2020 15:49:33		40,000		40,000
Customer order 00000001638	from 24.02.2020 16:04:59		221,265	218,865	2,400
Customer order 00000001643	from 24.02.2020 16:11:35		14,400	11,280	3,120
Customer order 00000001641	from 24.02.2020 16:11:46		50,313		50,313
Customer order 00000001619	from 24.02.2020 16:12:41		64,740		64,740
Customer order 00000001608	from 24.02.2020 16:12:43		137,425	77,625	59,800
Customer order 00000001604	from 24.02.2020 16:12:45		208,398	154,578	53,820
Customer order 00000001646	from 24.02.2020 16:35:29		374,380		374,380
Customer order 00000001654	from 24.02.2020 16:37:10		10,640		10,640
Customer order 00000001655	from 24.02.2020 17:54:13		1,000		1,000
Customer order 00000001656	from 24.02.2020 18:31:18		483,620	474,620	9,000
Customer order 00000001816	from 25.02.2020 0:00:00		103,176		103,176
Customer order 00000001658	from 25.02.2020 8:07:11		68,000		68,000
Customer order 00000001659	from 25.02.2020 8:08:35		80,000		80,000
Customer order 00000001663	from 25.02.2020 8:48:15		4 639,510		4 639,510
Customer order 00000001669	from 25.02.2020 9:20:08		7,854		7,854
Customer order 00000001677	from 25.02.2020 9:58:40		3 200,000		3 200,000
Customer order 00000001679	from 25.02.2020 10:01:25		1,000		1,000
Customer order 00000001681	from 25.02.2020 10:13:37		69,680		69,680
Customer order 00000001682	from 25.02.2020 10:19:12		160,312		160,312
Customer order 00000001683	from 25.02.2020 10:22:54		148,375		148,375
Customer order 00000001684	from 25.02.2020 10:38:16		12,000		12,000
Customer order 00000001686	from 25.02.2020 10:43:02		36,720		36,720
Customer order 00000001687	from 25.02.2020 10:48:30		13,800		13,800
Customer order 00000001678	from 25.02.2020 10:53:22		21,620		21,620
Customer order 00000001695	from 25.02.2020 11:28:12		300,000		300,000
Customer order 00000001697	from 25.02.2020 11:32:44		337,924		337,924
Customer order 00000001702	from 25.02.2020 12:22:25		31,278	12,606	18,672
Customer order 00000001707	from 25.02.2020 13:41:04		125,000		125,000
Customer order 00000001710	from 25.02.2020 14:37:09		10,800		10,800
Customer order 00000001714	from 25.02.2020 15:12:59		9,264	6,264	3,000
Customer order 00000001720	from 25.02.2020 15:26:05		243,375		243,375
Customer order 00000001721	from 25.02.2020 15:33:29		144,805		144,805
Customer order 00000001722	from 25.02.2020 15:46:38		125,000		125,000
Customer order 00000001723	from 25.02.2020 15:49:05		27,562		27,562
Customer order 00000001727	from 25.02.2020 16:15:06		102,500		102,500
Customer order 00000001728	from 25.02.2020 16:25:49		251,250		251,250
Customer order 00000001729	from 25.02.2020 16:30:54		58,000		58,000
Customer order 00000001731	from 25.02.2020 17:39:37		7,560		7,560
Customer order 00000001734	from 26.02.2020 7:35:17		22,425		22,425
Customer order 00000001735	from 26.02.2020 7:43:35		5,175		5,175
Customer order 00000001742	from 26.02.2020 9:21:15		214,348		214,348
Customer order 00000001749	from 26.02.2020 9:58:56		52,800		52,800
Customer order 00000001760	from 26.02.2020 10:36:08		6,900		6,900
Customer order 00000001757	from 26.02.2020 10:42:25		7,200		7,200
Customer order 00000001751	from 26.02.2020 10:44:38		266,646	256,646	10,000
Customer order 00000001769	from 26.02.2020 11:50:52		8,280		8,280
Customer order 00000001741	from 26.02.2020 12:06:13		449,072	448,072	1,000
Customer order 00000001774	from 26.02.2020 12:53:19		71,200	39,000	32,200
Customer order 00000001779	from 26.02.2020 13:45:31		42,120		42,120
Customer order 00000001785	from 26.02.2020 14:21:52		53,300		53,300
Customer order 00000001792	from 26.02.2020 16:42:21		20,700		20,700
Customer order 00000001794	from 27.02.2020 8:24:43		210,000		210,000
Customer order 00000001799	from 27.02.2020 8:58:04		186,012		186,012

Order			Ordered	Shipped	Difference
Items	Item Description	Item Series			
Customer order 00000001805	from 27.02.2020 9:18:49		2 200,000		2 200,000
Customer order 00000001824	from 27.02.2020 10:27:32		22,650		22,650
Customer order 00000001801	from 27.02.2020 10:35:16		10,000		10,000
Customer order 00000001826	from 27.02.2020 10:39:01		217,500		217,500
Customer order 00000001819	from 27.02.2020 10:46:37		102,178		102,178
Customer order 00000001828	from 27.02.2020 10:49:42		7,500		7,500
Customer order 00000001830	from 27.02.2020 10:52:15		8,062		8,062
Customer order 00000001831	from 27.02.2020 10:53:53		307,680		307,680
Customer order 00000001832	from 27.02.2020 10:55:26		25,980		25,980
Customer order 00000001834	from 27.02.2020 10:58:15		15,180		15,180
Customer order 00000001835	from 27.02.2020 10:59:43		10,687		10,687
Customer order 00000001838	from 27.02.2020 11:20:19		1,296		1,296
Customer order 00000001842	from 27.02.2020 11:25:36		37,030		37,030
Customer order 00000001822	from 27.02.2020 11:50:51		1,000		1,000
Customer order 00000001850	from 27.02.2020 12:02:31		185,812		185,812
Customer order 00000001861	from 27.02.2020 13:38:06		273,573	271,573	2,000
Customer order 00000001854	from 27.02.2020 13:41:10		15,660	0,540	15,120
Customer order 00000001866	from 27.02.2020 14:01:27		221,983		221,983
Customer order 00000001867	from 27.02.2020 14:04:32		104,678		104,678
Customer order 00000001869	from 27.02.2020 14:16:46		18,375		18,375
Customer order 00000001870	from 27.02.2020 14:27:01		7,750		7,750
Customer order 00000001825	from 27.02.2020 14:34:52		48,000		48,000
Customer order 00000001837	from 27.02.2020 14:35:28		128,147		128,147
Customer order 00000001875	from 27.02.2020 14:40:42		587,500		587,500
Customer order 00000001879	from 27.02.2020 14:54:03		1 531,170		1 531,170
Customer order 00000001873	from 27.02.2020 14:57:50		238,375		238,375
Customer order 00000001876	from 27.02.2020 14:58:00		79,545		79,545
Customer order 00000001839	from 27.02.2020 14:59:30		41,000	37,000	4,000
Customer order 00000001880	from 27.02.2020 15:05:26		250,000		250,000
Customer order 00000001881	from 27.02.2020 15:18:16		40,000		40,000
Customer order 00000001871	from 27.02.2020 15:24:14		10,000		10,000
Customer order 00000001882	from 27.02.2020 15:34:23		2 000,000		2 000,000
Customer order 00000001884	from 27.02.2020 15:36:02		314,000		314,000
Customer order 00000001886	from 27.02.2020 15:41:22		64,250		64,250
Customer order 00000001887	from 27.02.2020 15:50:40		2,812		2,812
Customer order 00000001888	from 27.02.2020 15:58:17		448,250		448,250
Customer order 00000001889	from 27.02.2020 16:07:09		181,125		181,125
Customer order 00000001895	from 27.02.2020 16:24:13		26,000		26,000
Customer order 00000001898	from 27.02.2020 16:26:23		131,080		131,080
Customer order 00000001901	from 27.02.2020 16:33:12		3,750		3,750
Customer order 00000001907	from 28.02.2020 9:26:23		21,475		21,475
Customer order 00000001910	from 28.02.2020 9:32:51		126,720		126,720
Customer order 00000001917	from 28.02.2020 10:29:44		62,280		62,280
Customer order 00000001929	from 28.02.2020 11:20:12		100,000	98,000	2,000
Customer order 00000001930	from 28.02.2020 11:25:13		3,000		3,000
Customer order 00000001934	from 28.02.2020 11:47:35		10,000		10,000
Customer order 00000001918	from 28.02.2020 11:57:24		328,440		328,440
Customer order 00000001920	from 28.02.2020 11:58:24		135,660		135,660
Customer order 00000001931	from 28.02.2020 11:58:38		259,176		259,176
Customer order 00000001932	from 28.02.2020 11:58:59		31,260		31,260
Customer order 00000001935	from 28.02.2020 12:00:53		45,340	42,840	2,500
Customer order 00000001946	from 28.02.2020 14:21:17		211,015	25,000	186,015
Customer order 00000001913	from 28.02.2020 14:22:43		78,971		78,971
Customer order 00000001951	from 28.02.2020 15:32:18		18,720		18,720
Customer order 00000001943	from 28.02.2020 15:51:36		55,560		55,560
Customer order 00000001963	from 29.02.2020 10:37:47		166,720		166,720
Customer order 00000001964	from 29.02.2020 10:45:34		28,376		28,376

Order			Ordered	Shipped	Difference
Items	Item Description	Item Series			
Customer order 00000001969	from 29.02.2020 12:25:53		7,416		7,416
Customer order 00000001971	from 29.02.2020 13:30:06		22,780	20,280	2,500
Customer order 00000001974	from 29.02.2020 14:13:05		33,048		33,048
Customer order 00000001975	from 29.02.2020 14:13:13		243,048		243,048
Customer order 00000001965	from 29.02.2020 14:13:25		252,987		252,987
Customer order 00000001978	from 02.03.2020 7:52:18		7,670		7,670
Customer order 00000001979	from 02.03.2020 8:00:27		40,600		40,600
Customer order 00000001980	from 02.03.2020 8:03:53		55,200		55,200
Customer order 00000001981	from 02.03.2020 8:07:35		18,640		18,640
Customer order 00000001982	from 02.03.2020 8:11:44		47,063		47,063
Customer order 00000001984	from 02.03.2020 8:36:24		1 750,000		1 750,000
Customer order 00000001985	from 02.03.2020 8:38:24		10,063		10,063
Customer order 00000001986	from 02.03.2020 8:43:17		1 350,000		1 350,000
Customer order 00000001987	from 02.03.2020 8:53:51		8,108		8,108
Customer order 00000001988	from 02.03.2020 9:22:08		58,345		58,345
Customer order 00000001989	from 02.03.2020 9:24:10		62,500		62,500
Customer order 00000001992	from 02.03.2020 9:31:08		69,360		69,360
Customer order 00000001995	from 02.03.2020 9:48:01		276,525		276,525
Customer order 00000001996	from 02.03.2020 9:49:20		79,830	75,000	4,830
Customer order 00000001994	from 02.03.2020 9:53:24		33,600		33,600
Customer order 00000001998	from 02.03.2020 9:57:45		78,925		78,925
Customer order 00000002003	from 02.03.2020 10:10:33		302,000		302,000
Customer order 00000002004	from 02.03.2020 10:13:46		147,955		147,955
Customer order 00000002002	from 02.03.2020 10:15:52		91,198	87,198	4,000
Customer order 00000002005	from 02.03.2020 10:16:15		71,800		71,800
Customer order 00000002007	from 02.03.2020 10:21:03		229,082	221,082	8,000
Customer order 00000002010	from 02.03.2020 10:24:09		60,000		60,000
Customer order 00000002017	from 02.03.2020 10:43:26		28,536		28,536
Customer order 00000002018	from 02.03.2020 10:44:49		28,800		28,800
Customer order 00000002019	from 02.03.2020 10:46:05		55,440		55,440
Customer order 00000002020	from 02.03.2020 10:51:57		49,340		49,340
Customer order 00000002021	from 02.03.2020 10:54:27		545,393		545,393
Customer order 00000002026	from 02.03.2020 11:15:03		125,000		125,000
Customer order 00000002027	from 02.03.2020 11:17:28		287,025		287,025
Customer order 00000002037	from 02.03.2020 11:43:16		14,835		14,835
Customer order 00000002040	from 02.03.2020 12:02:22		14,932		14,932
Customer order 00000002041	from 02.03.2020 12:10:41		250,000		250,000
Customer order 00000002042	from 02.03.2020 12:14:08		243,360		243,360
Customer order 00000002033	from 02.03.2020 12:16:26		8,292		8,292
Customer order 00000002044	from 02.03.2020 12:29:13		6,440		6,440
Customer order 00000002048	from 02.03.2020 12:59:24		84,000		84,000
Customer order 00000002050	from 02.03.2020 13:14:07		130,000		130,000
Customer order 00000001843	from 02.03.2020 13:17:05		6,751		6,751
Customer order 00000001691	from 02.03.2020 13:17:12		21,600		21,600
Customer order 00000002046	from 02.03.2020 13:17:50		228,862	142,402	86,460
Customer order 00000002031	from 02.03.2020 13:17:59		304,705	249,900	54,805
Customer order 00000001991	from 02.03.2020 13:18:02		237,620	202,200	35,420
Customer order 00000002054	from 02.03.2020 13:24:50		25,155	16,530	8,625
Customer order 00000002055	from 02.03.2020 13:25:29		7,440		7,440
Customer order 00000002051	from 02.03.2020 13:29:30		1 266,936		1 266,936
Customer order 00000002052	from 02.03.2020 13:29:38		196,477		196,477
Customer order 00000002059	from 02.03.2020 14:05:58		23,553		23,553
Customer order 00000002061	from 02.03.2020 14:19:27		585,296		585,296
Customer order 00000002068	from 02.03.2020 14:41:14		16,591		16,591
Customer order 00000002070	from 02.03.2020 14:47:28		250,000		250,000
Customer order 00000002071	from 02.03.2020 14:56:52		29,360		29,360
Customer order 00000002063	from 02.03.2020 15:17:22		7,935		7,935

Order			Ordered	Shipped	Difference
Items	Item Description	Item Series			
Customer order 00000002064	from 02.03.2020 15:17:26		11,544		11,544
Customer order 00000002074	from 02.03.2020 15:18:01		243,575		243,575
Customer order 00000002078	from 02.03.2020 15:35:00		30,600		30,600
Customer order 00000002075	from 02.03.2020 15:37:04		7,920		7,920
Customer order 00000002079	from 02.03.2020 15:38:13		250,000		250,000
Customer order 00000002080	from 02.03.2020 15:40:47		81,862		81,862
Customer order 00000002083	from 02.03.2020 16:21:44		2 500,000		2 500,000
Customer order 00000002086	from 02.03.2020 16:38:09		352,000		352,000
Customer order 00000002088	from 02.03.2020 16:54:40		665,000		665,000
Customer order 00000002085	from 02.03.2020 17:13:14		80,368		80,368
Customer order 00000002091	from 02.03.2020 17:13:52		140,000		140,000
Customer order 00000002092	from 02.03.2020 17:14:19		27,025		27,025
Customer order 00000002093	from 03.03.2020 7:47:16		1 922,770		1 922,770
Customer order 00000002095	from 03.03.2020 7:54:18		40,000		40,000
Customer order 00000002096	from 03.03.2020 8:14:03		159,660		159,660
Customer order 00000002098	from 03.03.2020 8:37:23		15,365		15,365
Customer order 00000002100	from 03.03.2020 8:45:54		125,000		125,000
Customer order 00000002099	from 03.03.2020 8:46:07		212,976		212,976
Customer order 00000002101	from 03.03.2020 8:49:23		159,375	156,375	3,000
Customer order 00000002106	from 03.03.2020 9:31:40		251,232		251,232
Customer order 00000002107	from 03.03.2020 9:32:17		29,400		29,400
Customer order 00000002108	from 03.03.2020 9:33:21		143,056	3,360	139,696
Customer order 00000002110	from 03.03.2020 9:38:22		15,580	14,580	1,000
Customer order 00000002112	from 03.03.2020 9:39:33		70,000		70,000
Customer order 00000002113	from 03.03.2020 9:39:58		51,480		51,480
Customer order 00000002115	from 03.03.2020 9:48:13		65,000		65,000
Customer order 00000002117	from 03.03.2020 9:50:53		29,384		29,384
Customer order 00000002119	from 03.03.2020 10:14:48		21,700		21,700
Customer order 00000002120	from 03.03.2020 10:26:13		48,625		48,625
Customer order 00000002121	from 03.03.2020 10:51:19		107,625		107,625
Customer order 00000002123	from 03.03.2020 11:04:50		1 440,540		1 440,540
Customer order 00000002122	from 03.03.2020 11:13:53		63,608		63,608
Customer order 00000002124	from 03.03.2020 11:54:19		78,750		78,750
Customer order 00000002130	from 03.03.2020 12:02:49		102,720		102,720
Customer order 00000002132	from 03.03.2020 12:10:19		216,000		216,000
Customer order 00000002133	from 03.03.2020 12:18:52		4 700,000		4 700,000
Customer order 00000002134	from 03.03.2020 12:20:58		230,318		230,318
Customer order 00000002136	from 03.03.2020 12:32:26		203,220		203,220
Customer order 00000002138	from 03.03.2020 12:38:45		281,850		281,850
Customer order 00000002139	from 03.03.2020 12:45:02		97,125		97,125
Customer order 00000002140	from 03.03.2020 12:49:08		79,519		79,519
Customer order 00000002141	from 03.03.2020 13:12:18		37,688		37,688
Customer order 00000002145	from 03.03.2020 13:23:38		99,312		99,312
Customer order 00000002147	from 03.03.2020 13:32:58		416,820		416,820
Customer order 00000002148	from 03.03.2020 13:34:51		47,480		47,480
Customer order 00000002142	from 03.03.2020 13:46:47		150,584		150,584
Customer order 00000002143	from 03.03.2020 13:50:00		218,284	216,604	1,680
Customer order 00000002151	from 03.03.2020 13:54:04		187,658		187,658
Customer order 00000002146	from 03.03.2020 13:57:33		42,480		42,480
Customer order 00000002155	from 03.03.2020 14:08:49		500,000		500,000
Customer order 00000002158	from 03.03.2020 14:15:39		174,000		174,000
Customer order 00000002160	from 03.03.2020 14:37:52		375,000		375,000
Customer order 00000002163	from 03.03.2020 14:44:47		4,584		4,584
Customer order 00000002149	from 03.03.2020 14:44:55		195,580		195,580
Customer order 00000002164	from 03.03.2020 14:44:57		115,437		115,437
Customer order 00000002156	from 03.03.2020 14:44:58		12,500		12,500
Customer order 00000002150	from 03.03.2020 14:45:01		65,535		65,535

Order			Ordered	Shipped	Difference
Items	Item Description	Item Series			
Customer order 00000002165	from 03.03.2020 14:47:16		55,100		55,100
Customer order 00000002157	from 03.03.2020 14:47:44		9,240		9,240
Customer order 00000002166	from 03.03.2020 14:53:23		301,160		301,160
Customer order 00000002168	from 03.03.2020 14:56:29		5,875		5,875
Customer order 00000002103	from 03.03.2020 14:57:21		173,439		173,439
Customer order 00000002169	from 03.03.2020 14:59:56		58,580		58,580
Customer order 00000002104	from 03.03.2020 15:24:16		52,500		52,500
Customer order 00000002170	from 03.03.2020 15:24:24		100,000		100,000
Customer order 00000002171	from 03.03.2020 15:44:49		700,000		700,000
Customer order 00000002111	from 03.03.2020 15:57:23		277,749		277,749
Customer order 00000001990	from 03.03.2020 15:57:29		84,238		84,238
Customer order 00000001954	from 03.03.2020 15:57:37		28,440		28,440
Customer order 00000001921	from 03.03.2020 15:57:44		19,800		19,800
Customer order 00000002172	from 03.03.2020 16:00:55		205,584		205,584
Customer order 00000002173	from 03.03.2020 16:01:03		5,380		5,380
Customer order 00000002174	from 03.03.2020 16:01:35		8,280		8,280
Customer order 00000002175	from 03.03.2020 16:03:12		11,960		11,960
Customer order 00000002176	from 03.03.2020 16:03:25		400,000		400,000
Customer order 00000002177	from 03.03.2020 16:06:39		56,000		56,000
Customer order 00000002178	from 03.03.2020 16:07:35		2 871,000		2 871,000
Customer order 00000002179	from 03.03.2020 16:08:12		4,236		4,236
Customer order 00000002161	from 03.03.2020 16:12:51		200,521		200,521
Customer order 00000002162	from 03.03.2020 16:12:57		46,584		46,584
Customer order 00000002167	from 03.03.2020 16:13:02		63,650		63,650
Customer order 00000002181	from 03.03.2020 16:29:37		265,671		265,671
Customer order 00000002184	from 03.03.2020 17:08:50		15,000		15,000
Customer order 00000002186	from 03.03.2020 17:19:35		247,920		247,920
Customer order 00000002185	from 03.03.2020 17:24:01		67,920		67,920
Customer order 00000002182	from 03.03.2020 17:24:25		64,000		64,000
Total			60 182,123	3 651,850	56 530,273

Selection Product Type "Block House"

Employee					Made	Tariff	Total
Brigade							
Date							
Product type	Order	Outfit	Item	Item Description			
Brodovy Roman					87,17	0,03597	3,12
Бригада №8					87,17	0,03597	3,12
21.02.2020;					76,61	0,03597	2,74
lock house	B21.02.2020 Order №1514	Outfit in production 000000800 from 21.02.2020 16:35:37	Block house	golden oak W 28-02 (3D)	76,61	0,03597	2,74
25.02.2020;					10,56	0,03597	0,38
lock house	B19.02.2020 Order №1430	Outfit in production 000000816 from 25.02.2020 10:37:31	Block house	W 32-02 3D (pine)	1,55	0,03597	0,06
lock house	B21.02.2020 Order №1514	Outfit in production 000000886 from 25.02.2020 16:22:31	Block house	W 04-08 3D (wenge)	9,01	0,03597	0,32
Pylyp "yuk Jura					51,06	0,03597	1,82
Brigade №8					51,06	0,03597	1,82
21.02.2020;					51,06	0,03597	1,82
lock house	B21.02.2020 Order №1514	Outfit in production 000000800 from 21.02.2020 16:35:37	Block house	golden oak W 28-02 (3D)	51,06	0,03597	1,82
Strozen 'Jura					7,04	0,03597	0,26
Brigade №8					7,04	0,03597	0,26
25.02.2020;					7,04	0,03597	0,26
lock house	B19.02.2020 Order №1430	Outfit in production 000000816 from 25.02.2020 10:37:31	Block house	W 32-02 3D (pine)	1,03	0,03597	0,04
lock house	B21.02.2020 Order №1514	Outfit in production 000000886 from 25.02.2020 16:22:31	Block house	W 04-08 3D (wenge)	6,01	0,03597	0,22
Total					145,27	0,03597	5,20

Execution of the schedule of holidays of the organizations

Period: June 2020 - December 2020

Execution of the schedule of holidays of the organizations

Period: June 2020 - December 2020

Selection: The organization is equal to "NOTA"

Grouping by: Organization Elements, Subdivision Elements, Employee Elements

Analysis of turnover of goods

Data for the period: 01.03.2020 - 31.03.2020

Selection: Nomenclature Equally Decking T-14

Indicators: Average balance for the period, Cost for the period, Turnover ratio, Average shelf life in days

Results for: Status of goods Elements, Nomenclature Hierarchy

Items	Average balance for the period	Expenses for the period	Turnover ratio	Average shelf life in days
Goods in warehouses				
1. Products	186,692	551,794	2,95565	10,49
ARSELOR	186,692	551,794	2,95565	10,49
ARCELOR	186,692	551,794	2,95565	10,49
Decking T-14	186,692	551,794	2,95565	10,49

Warehouse	Balance to the beginning		Parish for the period		Expense for the period		Balance at the end		Cost price
Items	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Item Description									
Manufacturer									
Batch									
The composition of the defective plate	125,948	613,20	51,010	226,00	14,600	66,01	162,358	773,19	
ARCELOR 0,5 mm	26,600	137,83	9,700	46,36	7,700	36,96	28,600	147,23	5,15
3005	5,150	27,96	1,700	8,52	1,700	8,52	5,150	27,96	5,43
Belgium			1,700	8,52	1,700	8,52			
164652019			1,700	8,52	1,700	8,52			
Poland	5,150	27,96					5,150	27,96	5,43
1184П2019	5,150	27,96					5,150	27,96	5,43
5010	3,500	18,38	2,000	9,40			5,500	27,78	5,05
Poland	3,500	18,38	2,000	9,40			5,500	27,78	5,05
161952019	3,250	17,13					3,250	17,13	5,27
162052019	3,700	19,09					3,700	19,09	5,16
Germany			8,400	48,13			8,400	48,13	5,73
1664H2019			8,400	48,13			8,400	48,13	5,73
BTX8019	4,250	22,97					4,250	22,97	5,40
Belgium	4,250	22,97					4,250	22,97	5,40
115052019	2,770	15,29					2,770	15,29	5,52
163252019	1,480	7,68					1,480	7,68	5,19
ARCELOR Aluminum zinc	43,860	187,40	12,800	54,39	6,900	29,05	49,760	212,74	4,28
Aluminum zinc 0,5	39,110	166,55	12,800	54,39	6,900	29,05	45,010	191,89	4,26
Belgium	39,110	166,55	12,800	54,39	6,900	29,05	45,010	191,89	4,26
105 2020			4,500	19,12			4,500	19,12	4,25
106 2020			8,300	35,27			8,300	35,27	4,25
11992019	3,300	14,26					3,300	14,26	4,32
13462019	2,000	8,86					2,000	8,86	4,43
13972019	2,500	10,63					2,500	10,63	4,25
14592019	3,150	13,61					3,150	13,61	4,32
15062019	6,900	29,05			6,900	29,05			
17142019	9,700	42,00					9,700	42,00	4,33
17152019	2,500	10,58					2,500	10,58	4,23
17912019	2,960	12,43					2,960	12,43	4,20
18202019	6,100	25,13					6,100	25,13	4,12
Aluminum zinc 0,5 (AZ185)	4,750	20,85					4,750	20,85	4,39
Belgium	4,750	20,85					4,750	20,85	4,39
5682019	4,750	20,85					4,750	20,85	4,39
MARCEGALIA	3,140	15,32					3,140	15,32	4,88
Marcegaglia 8003	3,140	15,32					3,140	15,32	4,88
Marcegaglia	3,140	15,32					3,140	15,32	4,88
154712019	3,140	15,32					3,140	15,32	4,88
Golden oak	1,200	4,26	3,200	11,36			4,400	15,62	3,55
W 32-02 3D (сочка)	1,200	4,26	3,200	11,36			4,400	15,62	3,55
China	1,200	4,26	3,200	11,36			4,400	15,62	3,55
859 K2019			3,200	11,36			3,200	11,36	3,55
865 K2019	1,200	4,26					1,200	4,26	3,55
China	2,050	6,27	3,650	11,51			5,700	17,78	3,12

Warehouse	Balance to the beginning		Parish for the period		Expense for the period		Balance at the end		Cost price
Items	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Item Description									
Manufacturer									
Batch									
3005K	2,050	6,27	1,900	5,81			3,950	12,08	3,06
China	2,050	6,27	1,900	5,81			3,950	12,08	3,06
1287K2019	2,050	6,27	1,900	5,81			3,950	12,08	3,06
BTX 8019 K			1,750	5,70			1,750	5,70	3,26
China			1,750	5,70			1,750	5,70	3,26
1289K2019			1,750	5,70			1,750	5,70	3,26
Galvanizing0,4	3,700	12,14	7,700	24,10			11,400	36,24	3,18
Galvanized	3,700	12,14	7,700	24,10			11,400	36,24	3,18
Ukraine	3,700	12,14	7,700	24,10			11,400	36,24	3,18
1059Y2019	3,700	12,14					3,700	12,14	3,28
1684Y2019			7,700	24,10			7,700	24,10	3,13
WarehouseCM Prilipche	193364,749	936270,29	112825,602	537967,24	99624,165	468229,82	206566,186	1006007,71	
ALPINE	1414,371	8 335,69					1414,371	8 335,69	5,89
ALPINE3009	98,113	636,75					98,113	636,75	6,49
Austria	98,113	636,75					98,113	636,75	6,49
598A2018	98,113	636,75					98,113	636,75	6,49
ALPINE6020	707,261	4 172,84					707,261	4 172,84	5,90
Austria	707,261	4 172,84					707,261	4 172,84	5,90
1419A2019	707,261	4 172,84					707,261	4 172,84	5,90
ALPINE8017	608,997	3 526,10					608,997	3 526,10	5,79
Austria	608,997	3 526,10					608,997	3 526,10	5,79
1550A2019	608,997	3 526,10					608,997	3 526,10	5,79
ARCELOR0,45 mm	3040,653	13283,81	1158,000	5 048,88	1237,685	5 402,11	2960,968	12930,58	4,37
1015	795,854	3 469,93			413,527	1 803,00	382,327	1 666,93	4,36
Arvedi	795,854	3 469,93			413,527	1 803,00	382,327	1 666,93	4,36
1384I2019	795,854	3 469,93			413,527	1 803,00	382,327	1 666,93	4,36
3005	495,940	2 187,09			186,929	824,36	309,011	1 362,73	4,41
Arvedi	495,940	2 187,09			186,929	824,36	309,011	1 362,73	4,41
1604I2019	495,940	2 187,09			186,929	824,36	309,011	1 362,73	4,41
3005 bilateral			1158,000	5 048,88			1158,000	5 048,88	4,36
Arvedi			1158,000	5 048,88			1158,000	5 048,88	4,36
58 I2020			1158,000	5 048,88			1158,000	5 048,88	4,36
8017	786,459	3 421,10			497,129	2 162,51	289,330	1 258,59	4,35
Arvedi	786,459	3 421,10			497,129	2 162,51	289,330	1 258,59	4,35
1691I2019	786,459	3 421,10			497,129	2 162,51	289,330	1 258,59	4,35
8017 bilateral	962,400	4 205,69			140,100	612,24	822,300	3 593,45	4,37
Arvedi	962,400	4 205,69			140,100	612,24	822,300	3 593,45	4,37
1689I2019	962,400	4 205,69			140,100	612,24	822,300	3 593,45	4,37
ARCELOR0,45 mm BTX	16513,952	71641,53	7995,309	33778,81	6706,585	30001,66	17802,676	75418,68	4,24
BTX3005	1592,104	6 757,88	16,677	72,71	973,474	4 207,65	635,307	2 622,94	4,13
Arvedi	1592,104	6 757,88	16,677	72,71	973,474	4 207,65	635,307	2 622,94	4,13
1573I2019	569,281	2 550,37			537,305	2 407,12	31,976	143,25	4,48
1716I2019	14,823	64,63	16,677	72,71	31,500	137,34			
7 I2020	1008,000	4 142,88			404,669	1 663,19	603,331	2 479,69	4,11
BTX3005bilateral			1048,000	4 485,44			1048,000	4 485,44	4,28

Warehouse	Balance to the beginning		Parish for the period		Expense for the period		Balance at the end		Cost price
Items	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Item Description									
Manufacturer									
Batch									
Арведi			1048,000	4 485,44			1048,000	4 485,44	4,28
56I2020			1048,000	4 485,44			1048,000	4 485,44	4,28
BTX6020	1970,598	8 105,78			308,512	1 267,98	1662,086	6 837,80	4,11
Arvedi	1970,598	8 105,78			308,512	1 267,98	1662,086	6 837,80	4,11
11 I2020	990,000	4 068,90					990,000	4 068,90	4,11
284 I2019	27,598	120,05					27,598	120,05	4,35
9 I2020	953,000	3 916,83			308,512	1 267,98	644,488	2 648,85	4,11
BTX7024	1682,182	7 436,84			1314,425	5 804,30	367,757	1 632,54	4,44
Arvedi	1682,182	7 436,84			1314,425	5 804,30	367,757	1 632,54	4,44
1692I2019	696,212	3 084,23			384,425	1 703,00	311,787	1 381,23	4,43
1719I2019	930,000	4 101,30			930,000	4 101,30			
976 I2019	55,970	251,31					55,970	251,31	4,49
BTX7024 bilateral	739,894	3 188,94			323,537	1 394,45	416,357	1 794,49	4,31
Arvedi	739,894	3 188,94			323,537	1 394,45	416,357	1 794,49	4,31
1693I2019	739,894	3 188,94			323,537	1 394,45	416,357	1 794,49	4,31
BTX8004	477,060	2 118,14			299,635	1 330,38	177,425	787,76	4,44
Arvedi	477,060	2 118,14			299,635	1 330,38	177,425	787,76	4,44
931I2019	477,060	2 118,14			299,635	1 330,38	177,425	787,76	4,44
BTX8017	3427,053	14785,34	5639,000	23874,65	795,312	3 731,23	8270,741	34928,76	4,22
Арведi	3427,053	14785,34	5639,000	23874,65	795,312	3 731,23	8270,741	34928,76	4,22
1688I2019	551,053	2 573,44			551,053	2 573,44			
17 I2020	970,000	3 627,80					970,000	3 627,80	3,74
1825I2019	979,000	4 190,12					979,000	4 190,12	4,28
1828I2019	927,000	4 393,98			244,259	1 157,79	682,741	3 236,19	4,74
94 I2020			928,000	3 971,84			928,000	3 971,84	4,28
95 I2020			998,000	4 001,98			998,000	4 001,98	4,01
96 I2020			936,000	4 006,08			936,000	4 006,08	4,28
97 I2020			929,000	3 966,83			929,000	3 966,83	4,27
98 I2020			868,000	3 723,72			868,000	3 723,72	4,29
99 I2020			980,000	4 204,20			980,000	4 204,20	4,29
BTX8017 bilateral	1059,985	4 613,38			337,898	1 472,30	722,087	3 141,08	4,35
Арведi	1059,985	4 613,38			337,898	1 472,30	722,087	3 141,08	4,35
1574I2019	34,985	154,63			34,985	154,63			
1717I2019	1025,000	4 458,75			302,913	1 317,67	722,087	3 141,08	4,35
BTX8019	3936,000	17235,08			946,116	4 354,46	2989,884	12880,62	4,31
Arvedi	3936,000	17235,08			946,116	4 354,46	2989,884	12880,62	4,31
10 I2020	1278,000	5 252,58			218,116	896,46	1059,884	4 356,12	4,11
1823I2019	940,000	4 455,60					940,000	4 455,60	4,74
1826I2019	728,000	3 458,00			728,000	3 458,00			
8 I2020	990,000	4 068,90					990,000	4 068,90	4,11
BTX8019 bilateral	790,813	3 432,13			358,177	1 554,50	432,636	1 877,63	4,34
Arvedi	790,813	3 432,13			358,177	1 554,50	432,636	1 877,63	4,34
1775I2019	790,813	3 432,13			358,177	1 554,50	432,636	1 877,63	4,34
BTX9005	838,263	3 968,02	1291,632	5 346,01	1049,499	4 884,41	1080,396	4 429,62	4,10
Arvedi	838,263	3 968,02	1291,632	5 346,01	1049,499	4 884,41	1080,396	4 429,62	4,10
1824I2019	303,262	1 437,47	78,242	370,87	381,504	1 808,34			
1827I2019	535,001	2 530,55	0,390	1,84	535,391	2 532,39			

Warehouse	Balance to the beginning		Parish for the period		Expense for the period		Balance at the end		Cost price
Items	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Item Description									
Manufacturer									
Batch									
5712020			1213,000	4 973,30	132,604	543,68	1080,396	4 429,62	4,10

ABC/XYZ-sales analysis

Period: 10/03/2019 - 10/15/2019

Analyzed object: Counterparty, parameter: The amount of revenue in the currency of management accounting (EUR)

Grouping of lines: Counterparty

Sort: Counterparty Ascending

Grouping	Fraction	Coefficient of variation	The average value of the analysis parameter	The amount of revenue in foreign currency (UAH) management	The amount of gross profit in foreign currency (UAH) management accounting
A - class				188 933,49	18 735,31
Z - class				188 933,49	18 735,31
PE"Libert Dakh"	18,72	142,450	23 014,29	115 071,47	12 044,05
Vashenyuk Yaroslav Mykolayovych	12,01	132,120	14 772,40	73 862,02	6 691,26
B - class				62 034,72	4 341,58
Z - class				62 034,72	4 341,58
PE "Petrakovic"	10,09	134,000	12 406,94	62 034,72	4 341,58
C - class				363 788,63	33 584,74
Z - class				363 788,63	33 584,74
Euromodule LLC	8,20	158,900	10 086,27	50 431,33	562,92
LLC "DAHBud"	5,68	131,180	6 986,59	34 932,93	3 215,33
LLC "Alliance"	4,60	113,510	5 649,74	28 248,69	2 966,33
LLC "Mriya"	4,49	133,800	5 525,57	27 627,86	3 313,13
LLC "Alpha"	4,19	148,050	5 145,72	25 728,61	2 821,17

Gross profit

Period: February 2020

Items	Amount	Sale price (UAH)	Cost (UAH)	Gross profit (UAH)	Profitability
	Basic units	with value added tax	with value added tax	with value added tax	%
	125 258,914	436 074,78	392 197,39	43 877,39	10,06
Pipe 100, 1,25 м.	34,000	93,82	68,70	25,12	26,77
Reflux	14,000	54,63	25,15	29,48	53,96
The semicircular skate КП - 165	4 099,000	14 668,63	10 841,29	3 827,34	26,09
Коньок трапеція КТ - 31	78,000	325,87	235,79	90,08	27,64
The triangular skate КТК - 106	9,000	47,97	26,18	21,79	45,42
The internal corner	103,000	142,24	93,07	49,17	34,57
The external corner	35,000	60,55	31,16	29,39	48,54
Watering pot	10,000	22,99	5,50	17,49	76,08
RETRO metal tile	595,731	2 886,35	2 667,03	219,32	7,60
Metal tile Retro Plus	392,964	1 866,59	1 724,84	141,75	7,59
Metal tile HESTIA	445,320	2 072,31	1 949,91	122,40	5,91
Fence hood ПК - 10	59,000	109,73	56,22	53,51	48,77
Fence hood ПК - 20*20*20	7,000	11,25	5,70	5,55	49,33
The wind bar PV	123,000	416,80	278,25	138,55	33,24
The wind bar PV under plastic	12,000	36,60	27,85	8,75	23,91
Plank Endov PE-198	24,000	79,25	57,47	21,78	27,48
Plank Endov PE-300	7,000	53,76	41,37	12,39	23,05
Level of connection of software	18,000	57,94	43,74	14,20	24,51
Level submersible PR	142,000	246,68	190,06	56,62	22,95
The starting bar of the PS	6,000	5,10	3,90	1,20	23,53
Decking T-14	999,191	4 762,02	4 408,95	353,07	7,41
Decking T-8	576,960	2 763,12	2 447,10	316,02	11,44
Gutter 2 м	50,000	212,85	94,86	117,99	55,43
Pipe 100, 1,25 м.	26,000	71,31	50,55	20,76	29,11
Docking bar	8,000	6,80	5,72	1,08	15,88
Plate docking block house	4,000	16,28	8,31	7,97	48,96
Pipe 120, 1,25 м.	8,000	27,60	16,48	11,12	40,29
Pipe collar under the STRONG expansion bolt shield	336,000	327,18	52,28	274,90	84,02
Dowel KPD*12	461,000	207,31	105,69	101,62	49,02
Decking T-35	270,122	1 188,54	1 075,73	112,81	9,49
Decking T-35	211,646	1 185,22	1 054,50	130,72	11,03
The semicircular skate КП - 165	137,000	510,78	337,90	172,88	33,85
Trapeze skate КТ - 31	9,000	48,60	25,42	23,18	47,70
The triangular skate КТК - 106	4,000	21,97	10,14	11,83	53,85
The internal corner	12,000	18,87	12,05	6,82	36,14
The external corner	114,000	159,14	101,83	57,31	36,01
Watering pot	25,000	50,50	15,41	35,09	69,49
Decking T-18 PLUS	41,697	249,11	195,87	53,24	21,37
Decking T-8	1 045,704	5 060,14	4 488,20	571,94	11,30
Metal tile Retro Plus	1 344,720	6 625,57	6 055,28	570,29	8,61
Metal tile HESTIA	633,096	3 008,62	2 869,17	139,45	4,64
Fence hood ПК - 20*20*20	20,000	30,47	18,18	12,29	40,33
Fence hood ПК - 10	120,000	246,18	141,54	104,64	42,51
Fence hood ПК - 14	36,000	68,36	52,95	15,41	22,54
The wind bar ПВ	300,000	1 118,66	771,79	346,87	31,01
The wind bar ПВ під пластик	40,000	191,95	118,38	73,57	38,33

Items	Amount	Sale price (UAH)	Cost (UAH)	Gross profit (UAH)	Profitability
	Basic units	with value added tax	with value added tax	with value added tax	%
Plank Endov ПЕ-198	2,000	15,53	8,04	7,49	48,23
Plank Endov ПЕ-240	8,000	40,00	32,32	7,68	19,20
Plank Endov ПЕ-300	49,000	394,39	299,84	94,55	23,97
Level of connection of software PP	122,000	437,24	313,29	123,95	28,35
Level submersible PR	522,000	1 316,07	889,63	426,44	32,40
The starting bar of the PS	108,000	107,12	86,02	21,10	19,70
Gutter 2 м	129,000	477,98	287,18	190,80	39,92
Water barrier film STROTEX 110/140 PP	36,000	682,33	601,20	81,13	11,89
Sealant to the skate (100 mm)	642,000	110,94	64,40	46,54	41,95
ARCELOR 0,5 mm BTX	3 506,000	19 070,89	19 155,64	-84,75	-0,44
The internal corner	2,000	2,38	1,25	1,13	47,48
The external corner	5,000	7,94	3,91	4,03	50,76
The sheet is smooth with film 0,45	445,000	1 785,61	1 608,23	177,38	9,93
Metal tile Retro Plus 0,45	43,200	176,70	164,71	11,99	6,79
Metal tile HESTIA 0,45	44,400	182,04	171,61	10,43	5,73
Decking T-14 0,45	215,006	887,40	829,24	58,16	6,55
Decking T-18 PLUS 0,45	145,774	517,49	566,09	-48,60	-9,39
Decking T-8 0,45	418,788	1 655,04	1 533,03	122,01	7,37
The sheet is smooth (non-standard) BTX 0,45	17,250	74,54	61,71	12,83	17,21
The matte smooth sheet 0,45	627,500	2 473,70	2 287,28	186,42	7,54
Metal tile HESTIA 0,45	36,816	154,63	150,66	3,97	2,57
Decking T-14 0,45	2 838,690	11 837,15	10 871,55	965,60	8,16
Decking T-18 PLUS 0,45	112,492	507,82	453,09	54,73	10,78
Decking T-8 0,45	2 508,348	10 447,97	9 589,10	858,87	8,22
Metal tile Retro Plus 0,45	603,828	2 537,65	2 377,95	159,70	6,29
The wind bar ПВ	2,000	9,52	4,26	5,26	55,25
Level of connection of software PP	2,000	11,11	4,90	6,21	55,90
Decking T-14	14,490	71,73	61,64	10,09	14,07
Decking T-8	2,400	13,66	10,06	3,60	26,35
The internal corner	38,000	47,70	22,57	25,13	52,68
The external corner	65,000	96,42	47,34	49,08	50,90
The sheet is smooth (non-standard) золотий дуб	40,125	180,08	115,58	64,50	35,82
Leaf smooth golden oak	695,000	2 631,90	2 006,79	625,11	23,75
Self-tapping screws 4,2*16	6,000	29,42	21,00	8,42	28,62
Tape under the skate (Geo Vent 0,23 AL-5%)	1 000,000	2 600,00	2 599,95	0,05	0,00
Pipe clamp under Dowel	252,000	341,60	44,09	297,51	87,09
Hook	236,000	230,09	19,97	210,12	91,32
Metal tile MODERN	162,162	786,49	737,60	48,89	6,22
Metal tile MODERN	1 223,050	6 469,77	5 913,34	556,43	8,60
Metal tile MODERN H	4 150,089	21 877,74	20 465,88	1 411,86	6,45
Metal tile MODERN Plus H	1 205,439	6 449,09	6 047,05	402,04	6,23
Metal tile MODERN 0,45	137,546	598,32	584,47	13,85	2,31
Snowretainer decorative SZD	1 100,000	77,00	89,15	-12,15	-15,78
Fence	3 847,380	3 350,72	2 072,87	1 277,85	38,14
Dowel	36,000	12,20	0,68	11,52	94,43
Hatch VLT 1000 45*73	1,000	94,16	81,17	12,99	13,80
RETRO metal tile	320,299	1 563,41	1 459,19	104,22	6,67
Reflux	181,000	405,18	270,06	135,12	33,35
Decking T-14	2 166,055	10 436,97	9 772,19	664,78	6,37
ARCELOR 0,5 mm	3,000	9,01	14,22	-5,21	-57,82
Pipe 100, 2 м.	5,000	28,09	15,06	13,03	46,39

Items	Amount	Sale price (UAH)	Cost (UAH)	Gross profit (UAH)	Profitability
	Basic units	with value added tax	with value added tax	with value added tax	%
Docking bar	1,000	0,86	0,56	0,30	34,88
Pipe 100, 2 м.	53,000	250,68	171,09	79,59	31,75
GUNEBO Self-tapping screws WFB 4,8*19	2,000	9,40	7,98	1,42	15,11
The sheet smooth with film	587,500	2 708,27	2 432,37	275,90	10,19
The sheet is smooth (non-standard) з плівкою	60,976	316,54	243,48	73,06	23,08
Knee	131,000	250,36	64,77	185,59	74,13
Knee	60,000	104,46	32,39	72,07	68,99
The sheet is smooth (non-standard)	97,800	501,74	410,89	90,85	18,11
The matte smooth sheet	8 550,000	40 609,48	37 972,86	2 636,62	6,49
The semicircular skate КП - 165	9,000	31,50	18,63	12,87	40,86
Trapeze skate KT - 31	24,000	74,16	55,74	18,42	24,84
The triangular skate плоский КТП - 146	15,000	46,35	34,30	12,05	26,00
The internal corner	23,000	53,15	33,46	19,69	37,05
The external corner	43,000	65,27	38,83	26,44	40,51
The sheet is smooth (non-standard)	14,275	67,24	47,23	20,01	29,76
Leaf smooth (aluzinc)	317,500	1 275,53	1 051,87	223,66	17,53
Watering pot	5,000	8,59	2,63	5,96	69,38
Fence hood ПК - 10	2,000	4,11	1,60	2,51	61,07
The wind bar ПВ	32,000	91,80	67,88	23,92	26,06
The wind bar ПВ під пластик	7,000	20,79	14,47	6,32	30,40
Plank Endov ПЕ-300	4,000	24,52	17,47	7,05	28,75
Level submersible PR	30,000	80,94	55,23	25,71	31,76
Level of connection of software PP	5,000	12,35	9,27	3,08	24,94
The starting bar of the PS	3,000	3,45	2,10	1,35	39,13
Gutter 2 м	25,000	73,99	43,75	30,24	40,87
Snowretainer decorative SZD	436,000	61,84	46,81	15,03	24,30
Pipe 100, 1,25 м.	17,000	41,58	27,83	13,75	33,07
Pipe 100, 2 м.	2,000	9,85	5,02	4,83	49,04
MEMBRANE film STROTEX	980,000	20 954,30	19 980,80	973,50	4,65
Транспортні послуги	3 961,370	1 201,42		1 201,42	100,00
Sheet 1,2 м T14	32,000	225,71	207,04	18,67	8,27
sheet 1 м T14	18,000	109,80	93,96	15,84	14,43
sheet 1,5м T14	3,000	27,30	23,49	3,81	13,96
sheet 1 м T14	1,000	5,20	4,33	0,87	16,73
sheet 1,2 м T14	1,000	6,20	5,21	0,99	15,97
Decking T-8	2 512,896	9 688,63	7 258,38	2 430,25	25,08
The starting bar of the PS	68,000	61,36	32,86	28,50	46,45
Docking bar	12,000	10,32	7,64	2,68	25,97
Level submersible PR	21,000	33,26	18,28	14,98	45,04
Reflux	23,000	65,02	23,91	41,11	63,23
The sheet is smooth (non-standard)	14,813	54,67	36,82	17,85	32,65
Sheet	337,500	999,00	828,09	170,91	17,11
Decking T-14	695,349	2 141,02	1 878,87	262,15	12,24
Decking T-8	121,140	369,49	300,82	68,67	18,59
Hook to the gutter	282,000	232,45	164,30	68,15	29,32
Collar to the pipe	87,000	84,64	61,54	23,10	27,29
Plugs to the gutter	67,000	112,78	50,71	62,07	55,04
Corner gutter	4,000	14,00	10,60	3,40	24,29
Snowretainer decorative SZD	2 069,000	334,35	248,17	86,18	25,78
Металочерепиця РЕТРО Н	5 673,236	29 537,06	28 127,64	1 409,42	4,77
Metal tile Retro Plus H	5 543,520	28 272,15	26 868,83	1 403,32	4,96
Metal tile HESTIA H	2 778,768	14 049,37	13 369,78	679,59	4,84

Items	Amount	Sale price (UAH)	Cost (UAH)	Gross profit (UAH)	Profitability
	Basic units	with value added tax	with value added tax	with value added tax	%
Decking T-14 H	2 771,807	14 059,76	13 259,94	799,82	5,69
Decking T-18 PLUS H	1 261,198	6 432,11	6 055,76	376,35	5,85
Decking T-8 H	1 257,912	6 361,36	5 746,57	614,79	9,66
Snowretainer decorative SZD	20 001,000	3 133,72	2 610,70	523,02	16,69
ARCELOR Алюцинк	3 507,000	14 150,05	13 739,76	410,29	2,90
Metal tile HESTIA	142,020	603,59	529,07	74,52	12,35
Decking T-14	3 572,239	14 267,57	12 599,27	1 668,30	11,69
Decking T-18 PLUS	6,780	33,20	25,48	7,72	23,25
Decking T-8	299,400	1 215,43	981,28	234,15	19,26
Crank	13,000	21,69	5,98	15,71	72,43
Словакія 0,65 mm	893,000	6 479,10	6 590,34	-111,24	-1,72
Pipe 120, 2 м.	23,000	126,96	71,54	55,42	43,65
Window GZR3050B SR08 114*140	7,000	1 628,52	1 563,94	64,58	3,97
Collar EZR 0000 SR08	7,000	525,33	504,70	20,63	3,93
Crank "STRONG"	320,000	710,14	239,13	471,01	66,33
Trough watering can "STRONG"	131,000	314,16	199,72	114,44	36,43
Gutter водостічна "STRONG" 2 м.	58,000	244,34	172,41	71,93	29,44
Pipe "STRONG" 1 м.	112,000	287,94	200,62	87,32	30,33
Хомут труби "STRONG"	18,000	16,00	2,76	13,24	82,75
Gutter connector "STRONG"	181,000	218,66	59,79	158,87	72,66
Cap to the gutter "STRONG"	186,000	198,56	19,65	178,91	90,10
The external angle 90 degrees "STRONG"	20,000	129,77	79,23	50,54	38,95
The internal angle 90 degree "STRONG"	4,000	22,60	15,20	7,40	32,74
Gutter "STRONG" 4 м.	288,000	2 306,65	1 709,36	597,29	25,89
Pipe зливна "STRONG" 3 м.	129,000	982,31	692,51	289,80	29,50
Hook "STRONG"	1 583,000	1 274,56	297,15	977,41	76,69
Злив "STRONG"	46,000	99,51	31,99	67,52	67,85
ETANCO Self-tapping screws 4,8*19	70,000	333,98	288,32	45,66	13,67
ETANCO Self-tapping screws 4,8*35	1 315,000	5 834,94	5 302,02	532,92	9,13
Paint LUGGER	20,000	40,00	40,00		
Block house	1 575,117	7 201,57	5 447,73	1 753,84	24,35
	23,000	832,17	743,10	89,07	10,70
Pellicle STROTEX-SUPREME					
Level of connection of software PP	8,000	112,96	34,27	78,69	69,66
Crank 120	6,000	18,90	3,16	15,74	83,28
Watering pot 150/120	2,000	7,10	1,37	5,73	80,70
Gutter 150 2 м	10,000	42,50	21,23	21,27	50,05
Total	125 708,967	437 799,81	393 535,30	44 264,51	10,11