MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
CHERNIHIV POLYTECHNIC NATIONAL UNIVERSITY
Educational and Scientific Institute of Management, Food Technology and Trade
Department of Public Administration and Management of Organizations

PROJECT MANAGEMENT IN PUBLIC ADMINISTRATION

(OK 7)

Guidelines for practical exercises and independent work
Level of higher education - the third (educational and scientific)

Educational and scientific program "Public Administration"

Specialty 281 "Public Administration"

Branch of knowledge 28 Public administration

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No. «»

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"Project Management in Public Administration" for applicants for the third (educational and scientific) level of higher education in the branch of knowledge 28 Public management and administration (specialty 281 "Public management and administration").

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INTRODUCTION

The purpose of the course is to form knowledge on project management, the acquisition of higher education practical skills in solving complex specialized and practical problems, characterized by complexity and uncertainty of conditions: possession of theoretical and methodological basis for research and application of problems in public management and administration (ІК), the ability to present research results at all levels in Ukrainian and foreign languages, communicate in a foreign scientific and professional environment and work in an international context (ЗК5); the ability to create new knowledge, produce original scientific research, scientific / scientific and methodological products and services, the quality of which corresponds to the needs of national and international markets (ФК5); the ability to initiate, organize and manage innovative and research projects, make proposals for the financing of scientific research, justify the economic efficiency of the implemented research results (ФК10).

Subject of the discipline: project management processes in public administration, which are implemented using specific methods and tools of project management.

Tasks are solved in studying the discipline:

- presentation of generalized model characteristics of project management as a system of interrelated goals, functions and tools that are defined, implemented and used in the course of public management and administration;
- acquisition of skills to perform the main functions of project management in public administration: organization, planning and control;
- mastering the methodology necessary for successful project management in the public sphere, as well as acquiring skills of adaptation and implementation of project solutions in practice.

The result of the discipline study is the formation of future professionals with appropriate competence for effective project management in public sphere.

During the study of the discipline, the applicant must achieve or improve the following program learning outcomes (PR), provided by the educational and scientific program:

ПРН 4. Be able to apply modern information and communication technologies, marketing and social research, search tools, analysis and processing of information, specialized software and information systems in scientific, educational and professional activities;

ПРН 5. Know the basic principles of scientific management, management of modern organizational structures, management of scientific projects, registration of intellectual property rights;

ПРН 11. Be able to prepare project requests for research funding, ensure the commercialization of results in compliance with intellectual property rights;

ПРН. 13. Be able to apply in professional scientific, scientific and pedagogical activities, leadership skills, time-management, work productively in a team, including in international and multicultural groups, possess professional communication skills

As a result, applicants:

would to know:

- theoretical foundations of project management;
- main project management functions;
- ways to organize project management and planning the content, time, cost of the project;
- sources of project resources,
- risks arising from project management,
- project implementation control systems.

be able to:

- plan the content of the project;
- build a network model and calculate the project schedule;
- draw up a project budget;
- monitor the progress of the project;
- build a project team;
- use application management packages for projects.

RECOMMENDATIONS AND OBJECTIVES FOR CONDUCTING SEMINARS

Topic 1. Introduction to project management in public administration

1.1. The content of the lecture

General characteristics of the course "Project management": purpose, tasks, problems. The value of the training course for specialists. The procedure for studying the course and monitoring the knowledge of students. Systematics of the course "Project Management" and their relationship with other disciplines.

The origins of project management. History of the development of project management. The concept and classification of projects. The essence of the project management system, its elements. Goals of project management. Principles and functions of project management.

Organization of the project management system. Designing the organizational structure of project management. Project management using the external organizational structure of the project, the advantages and disadvantages of the organizational structure.

1.2. Keywords

Project, process, operations, system, project management functions, project organization, project management, organizational structure of project management, project participants, project environment, project life cycle, project phases, milestone.

1.3. Questions

1. Define the concept of a project and the project management process.
2. Describe the history of project management methods.
3. What is the essence of innovative projects?
4. What are the stages of the project life cycle?
5. Give a classification of projects and describe the situation of the project.
6. Define the goals and results of the project.
7. Define the mission of the project.
8. Who are the project participants?
9. Who is the project manager?
10. What are the differences between a project and a functional manager?
11. Who can initiate a project?
12. Who is responsible for the success of the project?
13. Who is the project team?
14. What does the concept of "organization of the project management system" include?
15. What is the difference between a project management information system and a computer project management system?
16. What are the project management structures?
17. What are the advantages of a particular governance structure projects?
18. What factors justify the choice of the organizational structure of management?

1.4. Self-study questions

1. What contributed to the popularization and rapid spread of the project management methodology in the world?
2. Critical path method, PERT method: causes and incidents of occurrence.
3. Name the reasons for the emergence of international project management associations, analyze the goals and functions of their activities.
4. What is the Fundamentals of Knowledge in Project Management (PMBOK)?
5. Describe the influence of the worldwide computer network Internet on the development of the theoretical and applied components of project management.
6. What is the specificity of the current state of project management in Ukraine?
7. List and disclose the content of the main characteristics of the project that distinguish it from other manifestations of management activities.
8. Name the components of project management that create the criteria for its success, limitations, leverage.

1.6. Practical tasks

№1.

Classify the following projects according to different criteria:

- creation of a joint venture for the production of office furniture;
- scientific research of the chemical properties of fertilizers for the purpose of their production, production and use in agriculture;
- construction of a nuclear power plant;
- development of a gas field in the Poltava region and gas export;
- transition to the Bologna system of education in higher educational institutions of Ukraine;
– economic development of the regions of Ukraine.

№2.

A city greening project is under consideration. Based on your own limitations and possible predictions for this project, identify and describe:

- project goals;
- main features;
- project participants indicating their interests in the preparation and implementation of the project;
- functions of managing this project;
- stages of the project life cycle.

№3.

A project for the construction of a hotel complex on the banks of the city of Desna in Chernigov is being considered. Order the types of work by stages of the project life cycle:

- control over the execution of the project;
- identification of alternative ways to achieve the goal of the project and their evaluation;
- discussion of credit conditions;
- collection of information on state policy and programs of the administration for the socio-economic development of the capital;

- project completion report;
- conclusion of contracts for construction, installation and commissioning;
- determination of the existing demand for staying in hotels;
- announcements of tenders;
- assessment of the environmental acceptability of the project;
- putting the facility into operation;
- clarification of the time limits of the project;
- calendar planning of construction works;
- assessment of the institutional admissibility of the investment proposal;
- provision of hotel services;
- selection of a possible level of service;
- assessment of the feasibility of the project from a technical, commercial, economic, financial and organizational point of view;
- diagnostics of the invested object;
- definition of specific goals of the project;
- Obtaining permission to purchase or lease land;
- assessment of the feasibility of the project;
- determination of the scope of the project;
- preparation of construction documentation;
- recruitment and training of personnel;
- advertising of the hotel complex;
– assessment of potential opportunities for the development of the hotel complex.

Topic 2. Development of the concept of the project. Project performance characteristics. Calculation of project efficiency

2.1. The content of the lecture

Formation of project ideas, development of the concept of its implementation and its justification. Previous studies of the project idea are based on the analysis of three directions: the study of regions (discovering opportunities in a given region); industrial research (discovering opportunities in a given industry); research of natural resources, agricultural and industrial products.

The pre-project study must contain a rationale for the technical and economic feasibility of the project. Be sure to identify the source of the risk. In the final design studies, a feasibility study, a financial analysis and a general economic analysis are carried out.

When conducting a feasibility study, issues of technical capabilities, the issue of the sales and procurement market, the needs of materials, taking into account the equipment used, etc. are considered, while taking into account the need for additional information from potential partners and investors.

Financial analysis may consist of the following steps:

1. Joint presentation of project revenue and disbursement streams.
2. Presentation of sources of financing (own and borrowed capital).
3. Preparation of planned balance sheets for external presentation, liquidity planning.
4. Calculation of economic efficiency.
5. Evaluation of the project using standard criteria for investment calculations.

The general economic analysis includes a description of the general economic situation, a joint presentation of the costs and benefits of the project affecting national economic entities, re-evaluation of costs and results according to national economic criteria, etc. It is also necessary to conduct an environmental and social assessment of the future project and draw general conclusions.

The effectiveness of the project is characterized by a system of characteristics that express the ratio of benefits and costs of the project from the point of view of its participants. The following characteristics of project efficiency are distinguished: characteristics of commercial efficiency, taking into account the monetary consequences of the project implementation for its direct participants; economic efficiency indicators that take into account the national economic benefits and costs of the project, including an assessment of environmental and social impacts, and allow monetary measurement; budget performance indicators reflecting the financial impact of the project on the state and local budgets. When analyzing the effectiveness of the project, the following indicators are used: the amount of investment, cash flow, net present value of the project, payback period of the project, internal rate of return, benefit / cost ratio, profitability index**.**

2.2. Keywords

Project idea, preliminary studies, additional studies, pre-project study, technical feasibility of the project, economic feasibility of the project, technical analysis, commercial analysis, financial analysis, environmental analysis, organizational

analysis, social analysis, economic analysis, structural analysis, budgetary efficiency analysis.

2.3.Questions

1. How do you understand the concept of "project idea"?
2. What is the concept of the project and what are the stages of its development?
3. What are the stages of justifying the effectiveness of the project, such as pre-project research, additional research and final research of the project?
4. What information does the rationale for the technical and economic feasibility of the project provide to analysts?
5. What are the main stages of the technical-economic, financial and general economic analysis?
6. What is the purpose of environmental and social expertise of the future project?
7. Describe the main characteristics of project performance evaluation.
8. What methods of assessing the effectiveness of investments do you know?
9. Describe the methodology for calculating the main financial indicators used to select effective projects?
10. Determine the advantages and disadvantages of various indicators for evaluating the effectiveness of projects.

2.4. Self-study questions

1. What is the essence of project analysis?
2. What types of analysis is the project subject to?
3. Give the existing methods for evaluating the project.
4. What is a business plan and why is it used in a project?
5. What sections does the feasibility study (feasibility study) consist of?

2.6. Practical Tasks

№1.

The company plans to implement an innovation and investment project worth 200,000 UAH, the practical implementation of which is aimed a new type of production. The following cash flows are expected: 1year - 40 thousand. UAH, 2 year - 40 thousand UAH., 3 year - 60 thousand UAH, 4 year - 50 thousand UAH It is necessary to determine the net income and the payback period of investments, provided that the discount rate is 10%.

№ 2.

You have 10 thousand USD and want to invest them in an effective project. They can be spent on the purchase of shares in the Export company (25% on invested capital), the purchase of 5 thousand tons of goods for sale at 2.4 USD per ton, purchase of an office of 30 m2 for rent for 80USD for 1 m2, or use as a deposit in a bank account (22% per anual). You chose the most risky option and bought an office. Calculate the opportunity cost of the project (USD).

№3

Variable costs for the implementation of the project amount to 16 UAH per unit of production. The price of the product that is planned to be released is 36 UAH per unit. Fixed expenses are 6,000 UAH. Calculate the break-even point (unit).

№ 4.

Determine the PI, based on the following data: the amount of investment in the innovative project is 1200 thousand UAH (1,000,000 UAH for the first year, 200,000 UAH for the second). Cash flows, starting from the second year of project implementation, will amount to 200,000 UAH, in subsequent years - 800, 1000, 1000, 1100 thousand UAH. The discount rate is 5%.

№ 5.

Calculate the NPV and analyze the project with the following characteristics by year (million UAH): – 300, 60, 100, 100, 75 in the following cases:

a) cost of capital 12%;

b) it is expected that the price of capital will change over the years as follows: 16%, 17%, 18%, 18%.

Topic 3. General approaches to project planning and control

3.1. The content of the lecture

The project planning process is a process that involves the definition of goals and parameters of interaction between the work and project participants, the allocation of resources and the selection and adoption of organizational, economic and technological decisions to achieve the goals of the project. The overall project planning process includes the following steps:

- definition of goals, objectives of the project, calculation of technical and economic indicators for project justification, determination of the need for resources, duration and specification of work performed, project stages;

– project structuring;

- adoption of organizational and technological solutions;

– development of grid models of work;

- assessment of the ability to implement the project, optimization in terms of the timing and criteria for the quality of the use of resources and other criteria; preparation of necessary documents in a package of plans; approval of plans and budget;

- bringing plan targets to performers;

– preparation and approval of reporting documentation for the control of plans.

The result of the planning process is the approval of the project plan. The project plan is the formal and approved document used to manage project execution; it is a document (or set of documents) that changes as more information becomes available, while a baseline is needed to control progress and only changes as a result of change requests being approved.

Control is a process in which the project manager determines whether the set goals are being achieved, identifies the causes that negatively affect the progress of work, and makes management decisions that correct the implementation of tasks to prevent disruption of the project.

One of the main processes of project management is the management of changes introduced during the implementation of the project. Change management refers to the registration of all changes in the project (technology, equipment, cost indicators, work schedule, etc.) in order to study in detail and assess the consequences of changes, organize the coordination of executors implementing changes in the project, as well as forecasting and planning future changes.

3.2. Keywords

Project planning, project planning process, project plan, principles of project planning, planning methodology, project control, types of control, integration of planning and control, change management.

3.3. Questions

1. How is the progress of the project monitored?
2. What is the essence of project planning?
3. What is the main goal of project planning?
4. What stages does the process of monitoring the progress of the project in the parent organization consist of?
5. What types of work must be performed to compare the progress of the project with the plan?
6. What are the differences between an assumption and a project risk?
7. What role does a milestone (control point) play in the course of project implementation?

3.4. Questions for independent processing

1. What is project planning?
2. What stages does the overall planning process include?
3. Name the main processes of project planning, describe them.
4. Describe the auxiliary processes of project planning.
5. What is a project plan?
6. What levels of project management do you know?
7. What does the system for monitoring compliance with project parameters include?
8. What types of control exist in the project management process?
9. What is project integration?
10. Conducting an analysis and making changes to the implementation of the project.

3.6. Practical tasks

№1

The project of holding a student scientific conference is designed for 3 days (plenary and sectional session) and provides for the invitation of students from other universities of Ukraine, the issuance of a collection of scientific papers, a cultural program and a buffet table.

1. Determine the list of work and resources for project planning (develop project resource and work tables).
2. Plan for milestones.
3. Calculate the project budget.

№2

The university administration does not sign the estimate of the project for holding a student scientific conference (see the preliminary task) and demands a 50% reduction in the cost of the project.

1. Choose alternative ways to reduce cost using specific strategies to make changes to the project plan.
2. Compare them and choose the best one.
3. Justify the choice of strategy.

№3

Develop a project plan for a television show called "Heroes or Thieves" that involves viewers meeting with political leaders. When writing a plan, use the following diagram:

1. Planning goals.
2. Identification of the main operations for project management.
3. Definition of interrelations of operations.
4. Determining the duration of the project.
5. Scheduling the project.
6. Organizational planning (identification, documentation and assignment of personnel, responsibilities and reporting relationships).
7. Planning and estimation of resources required for project implementation.
8. Development of the budget.

№4

You are the project manager whose goal is to create a business center on the basis of the university. During the implementation of the project, the administration refused to grant funding for your project. The project management decided to make changes, namely, to receive a gratuitous loan from the local budget to financially support the student initiative to create a private business. Consider how this change will affect:

- project cost;
- planned performance indicators;
- work schedule; project result

Topic 4. Project structuring. Network and calendar project planning

4.1. The content of the lecture

The project structure is a set of interrelated elements and processes of the project, presented with varying degrees of detail. In project management terms, the project structure is a "tree" of product-oriented components represented by the equipment, work, services, and information resulting from the project. It provides for the development of the working structure (Work Breakdown Structure - WBS), the organizational structure of the project (Organization Breakdown Structure - OBS) and the cost structure (Cost Breakdown Structure - CBS).

The project structure must meet the following requirements:

- each level of the hierarchy should have a complete view or cover the entire sum of the parts of the project presented at this level of detail;
- the sum of the characteristics of the project elements at each level of the structure hierarchy should be equal;
- the lower level of the project decomposition should contain elements (modules), on the basis of which all the data necessary and sufficient for project management (functional characteristics, scope of work, cost, necessary resources, performers, links with other elements, etc.) can be clearly defined . etc.).

The main tasks of project structuring are:

1. Breaking down the project into blocks that can be managed.
2. Distribution of responsibility for various elements of the project and linking work with the structure of the organization.
3. Creation of a single base for planning, budgeting and cost control.
4. An accurate assessment of the necessary costs - funds, time and material resources.
5. Transition from general goals to well-defined tasks performed by company departments.
6. Definition of work packages.

When combining and coding a project, a bidirectional and a tridirectional project structure is distinguished. Bidirectional project structuring consists in combining the working and organizational structure of the project.

A three-way project structure is created by adding a third Cost Breakdown Structure (CBS) to the bi-directional structure. She suggests:

– project working structure (WBS),
– organizational structure of the project (OBS);
– cost accounting;
– description of work packages; coding system;
– WBS usage dictionary (Costs-time-resources catalogue).

A necessary component of a project management information system is a coding system. It helps to structure the project, find the elements of cost accounting, WBS and OBS and establish their relationship. In coding, multi-digit numbers or combinations of numbers and letters are used, each of which has its own content, its own meaning.

Network planning is one of the forms of graphical display of the content of work and the duration of the implementation of plans and long-term complexes of design, planning, organizational and other types of enterprise activities, which provides further optimization of the developed schedule based on economic and mathematical methods and computer technology.

Applying network planning helps answer the following questions:

1. How long does it take to complete the entire project?
2. How long should individual jobs start and finish?
3. What works are "critical" and must be carried out exactly on schedule so as not to disrupt the timing of the project as a whole?
4. How long can non-critical work be delayed without impacting project timelines?

Network planning consists primarily in building a network graph and calculating its parameters.

A network model is a set of interconnected elements to describe the technological dependence of individual works and stages of future projects. The main planning document of the network planning system is the network schedule, which is an information-dynamic model that reflects all the logical relationships and results of the work necessary to achieve the ultimate goal of planning. Calendar planning is the process of drawing up and adjusting the schedule, in which the work performed by different organizations is interconnected in time and with the possibilities of providing them with different types of material, technical and labor resources.

Calculations of the main parameters of network diagrams should be used in the analysis and optimization of network strategic plans. Optimization of network diagrams consists in improving the processes of planning, organizing and managing a set of works in order to reduce the cost of economic resources and increase financial results under given constraints.

4.2. Keywords

Project structuring, project work structure, cost structuring, structuring methodology, one-way project structure, two-way project structure, three-way project structure, project coding, network planning, network model, arrow charts, transfer schedules, scheduling, Gantt chart, network network charts, critical path, duration of work.

4.3. Questions

1. What is the project structure?
2. What are the main requirements for the project structure?
3. What are the structural models of the project?
4. What is network planning?
5. What are the methods of network planning?
6. What is a critical path?
7. What is project scheduling and calendar plan?
8. How is grid planning and grid schedule implemented in the project?
9. What is the purpose of the Gantt chart?
10. What are the types of dependencies between project activities?

4.4. Self-study questions

1. Describe the structuring of the project.
2. What are the main tasks of project structuring?
3. What models of project structuring do you know?
4. Name the main ways of structuring the project.
5. Bidirectional structuring and coding of the project.
6. Tridirectional structure of the project.
7. Why is structuring necessary in project management?
8. Describe the principles of the project coding system.
9. What forms of graphic display of project work do you know?
10. Give examples of the application of network planning.
11. Describe the elements of building a network graph.
12. What are the basic principles for constructing lancet and previous charts?
13. Essence, tasks and types of calendar plans.
14. What are the main stages in the development of calendar plans.
15. What is the importance of network planning in project management?
16. What is a critical path?
17. What is network optimization?
18. Describe the main directions of optimizing plans.

4.6. Practical Tasks

№ 1.

Build a workflow diagram based on the life cycle and the results of the project “Creating a Conceptual Youth Café”.

№ 2.

To develop the working and organizational structure of the project team for the repair by a construction company of the company store of PrJSC "Z". Build a bidirectional project structure.

№ 3.

Develop a three-level working structure for the Internet Club computer center project if the following departments are to be opened:

- selection and training of personnel;
– supply and installation of equipment;
- software;
- project management.

4.7. Example

№1.

Using the data in Table. 4.1, calculate the values of t (expected time to complete the job) and v (deviation in the time to complete the job) based on the three time estimates. Build a network diagram, analyze the critical path.

Table 4.1

Project works

work	*a*, optimistic estimate of the time of completion of the work (weeks)	*m*, the most probable estimate of the execution time work (weeks)	*b*, pessimistic time estimation implementation work (weeks)
1 – 2	3	4	5
1 – 3	1	3	5
2 – 4	5	6	7
3 – 4	6	7	8

Solution

PERT, PERT/COST and SRM can help answer the question about a project consisting of thousands of work:

1. When will the project be completed as a whole?

2. What works or tasks are critical in the project (i.e., the delay in the implementation of which leads to a delay in the implementation of the project as a whole)?

3. What work is not critical (can be performed more slowly, without delay in the completion of the project as a whole).

4. What is the probability that the project will be completed by a specific date?

5. Is it possible to get an answer on any date: is the project is carried out in accordance with the schedule, lags behind or ahead of the schedule?

6. On any date you can get an answer to the following: whether money is spent on the project, respectively, the estimate; whether less than provided for; Do the costs provided for by the system exceed?

7. Is there enough resources to finish the project on time?

8. If the project should be completed in a shorter period, then what path ensures its completion with the least cost?

The first step in PERT is to divide the whole project into events and work. The event means the beginning or completion of a certain task or work.

If the grid has two works with the same initial and final event, then fictitious work and events can be introduced into the grid to solve this problem. Fictitious work and events can guarantee that the project grid, accordingly, displays all the solutions laid down in the draft. Fictive work has time for execution equal to zero.

A significant difference between PERT and SRM is the use of three temporary assessments for each work in the PERT method and only one temporary assessment for each work in CRM.

For each work in PERT, you need to determine the optimistic, most likely and pessimistic time of its implementation.

Then we use three temporary assessments for calculating the expected time to carry out work and the amount of deviation from the expected duration of each work:

$$t = (a + 4m + b)/6; \quad (4.1)$$

$$v = ((b - a)/6)^2, \quad (4.2)$$

where a - optimistic assessment of the work time;
b - pessimistic assessment of the time of work;
m - the most likely time of work;
t - the expected work time;
v - a deviation of the work time.
A typical analysis of the project considers: a critical path, T is the total time of the project, V is the deviation of the critical path.
During the analysis of the critical path, the following characteristics for each work are determined:
ES is the early start of work. All previous works should be completed before the start of work. The time of their complete completion and the early start of work;
LS - later the start time. All subsequent (for this work) work should be completed without changing the deadlines for the completion of the project. This is later the time of starting work without delay in the implementation of the project as a whole;
EF - early end time;
LF - later the end time;
S is the reserve of work time.
For at least what kind of work we can calculate ES and LS and find the remaining three values in one way:

$$EF = ES + t;$$

$$LF = LS + t;$$

$$S = LS - ES = LF - EF,$$

assuming that ES = 0 for the first job.

Critical path analysis normally begins with the determination of ES and EF. We find ES by moving from the initial works of the project to the final ones. For initial work ES is null, or a valid start date, say August 1st. We use one of the basic rules. Before work can begin, all previous work must be completed. In other words, we are looking for the longest path leading to the work for which the ES is defined.

The next step is to calculate the LS, the late start time for each job. Let's start with the latest works in the project and move back to the first works. The procedure of moving backward from the finishing works allows to determine the late possible start time (LS) of their work without increasing the early finish time (EF) of the work.

Once we have calculated ES, EF, LS, LF and S, we can analyze the project as a whole. The analysis includes determining the critical path, project completion time, and variance.

The critical path consists of those actions (works) whose time reserve is zero.

If the expected completion time of the project T and its deviation V are calculated, we can determine the probability of completing the project by a specific

date. If we assume that the completion date of the project obeys a normal distribution, then we can calculate the probability of completion:

$$\sigma - \text{standard deviation} = \text{sqrt } V; \quad (4.3)$$

$$Z = (C - T) / \sigma, \quad (4.4)$$

where C - the date of the desired completion of the project;

Z is the normalized deviation from the mean.

We use three time estimates (Table 4.1) to calculate the expected time for the implementation of work and the magnitude of the deviation from the expected time for the duration of each work. Calculations are reduced to table. 4.2.

Table 4.2

Calculations of t and v values for each project activity

Work	*a*	*m*	*b*	$a + 4m + b$	*t*	$(b - a)/6$	*v*
1 – 2	3	4	5	24	4	1/3	1/9
1 – 3	1	3	5	18	3	2/3	1/9
2 – 4	5	6	7	36	6	1/3	0
3 – 4	6	7	8	42	7	1/3	0

According to the table 4.5 we will build a network graph (Fig. 4.1).

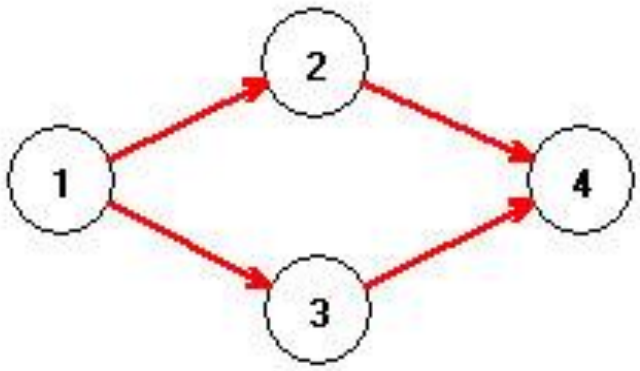

Fig. 4.1. Project network diagram

Having received these estimates for each job, we can analyze the entire project. A typical project analysis considers the critical path. This is a group of project activities for which the slack time is zero. This path is critical because the delay in the execution of any work on it leads to the same delay in the project as a whole. We summarize the calculations in Table. 4.3.

Table 4.3

Calculating Values for Critical Path Analysis

Робота	*t*	*ES*	*EF*	*LS*	*LF*	*S*
1 – 2	4	0	4	0	4	0

1 – 3	3	0	3	0	3	0
2 – 4	6	4	10	4	10	0
3 – 4	7	3	10	3	10	0

According to the table 4.6 we will build a network graph (Figs. 4.2 and 4.3).

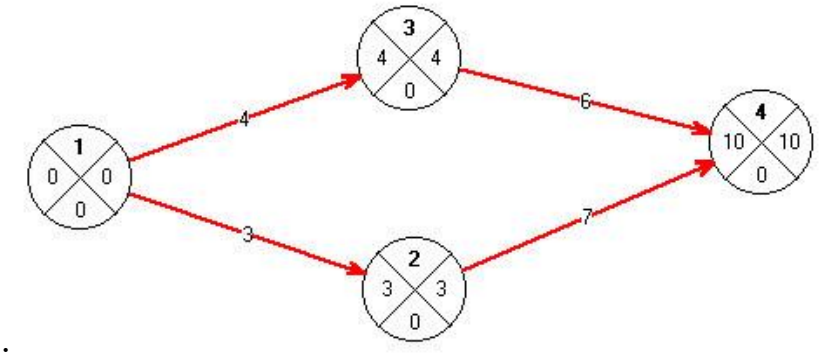

Fig. 4.2. Activity-on-Arrow project network graph (AOA).

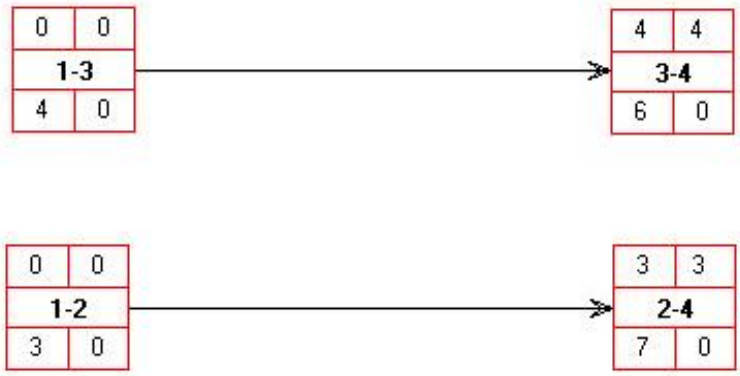

Fig. 4.3. Project network graph (AON) Activity-on-Node

An event means the beginning or completion of a certain task or work. Work, on the other hand, is a task or part (a local project) within a whole project; it is between two events (Fig. 4.2). Two approaches are used to construct network graphs. The first of them is most commonly used to display network graphs with activity in the form of directed arcs (arrows) Activity-on-Arrow (AOA). A second approach in representing work-node network graphs is Activity-on-Node (AON). In AON, nodes are used to denote works (Fig. 4.3).

Any project that can be described using activities and events can be analyzed using PERT network charts.

The values of the time parameters on the network graph of the project (AOA) are recorded as shown in fig. 4.4

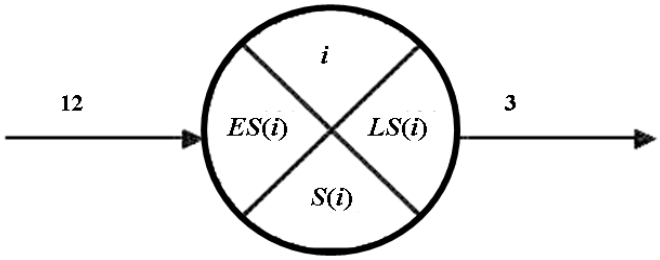

Fig. 4.4. The value of time parameters on the event graph

An event is indicated by a circle, tasks by arrows, and the numbers above the arrows indicate the duration of these tasks.

Event timings include:

ES(i) is the early date of the event i (the time required to complete all the tasks preceding the event);

LS(i) is the late time of occurrence of event i (this is the time of occurrence of event i, exceeding which will entail a similar delay in the occurrence of the final grid event);

S(i) is the time reserve for the occurrence of event i (this is the period of time for which the occurrence of this event can be delayed without violating the deadlines)

project as a whole).

Part of the parameters is written on the AON network diagram inside the square, which indicates the task; arrows indicate links between tasks (Fig. 4.5).

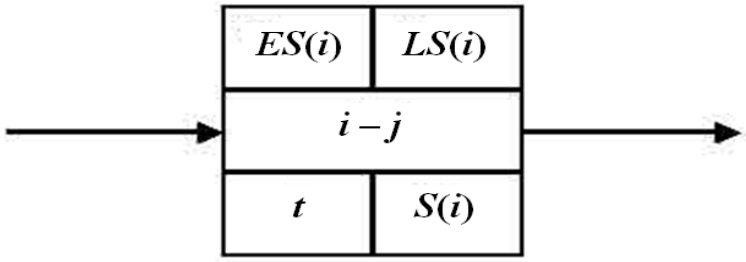

Fig. 4.5. The value of time parameters on the task chart

After analyzing the data in Table. 4.3 and graphs in fig. 4.2 and 4.3, we see that all project activities are on the critical path.

№2.

Using table. 4.4, determine the cost of reducing the time to complete the project by one week.

Table 4.4

Project work

Work	*t*, (weeks)	*M*, (weeks)	*C*, UAH
1 – 2	2	1	300
1 – 3	7	4	2000
2 – 3	4	2	2000

2 – 4	3	2	4000
3 – 4	2	1	2000

Until now, we assumed that there was no way to reduce the working hours. However, this is not quite true. It may be that additional resources will help reduce the time of certain work of the project. Such resources can be additional labor, equipment, etc. Although this can increase the cost of doing work, but has a certain meaning. If the company threatens a great fine for being late in the execution of the project period, it may be economically more justified to introduce additional resources to complete the project on time. Daily permanent additional costs are possible to maintain the normal implementation of the project. It is also clear that it is beneficial to use additional resources to reduce the time of the project, save some daily fixed costs. But which of the works should be reduced? How much will this decrease cost? Will a decrease in the time of work to the expected reduction in the completion of the project? Ideally, they should have found the least expensive way to reduce the time of the entire project. This is the goal of Pert/Cost.

The purpose of Pert/Cost is to reduce the completion of the project as a whole by a certain value by means of cost management.

To achieve your goals, you need to introduce a larger number of variables. For each work, a reduction in the time for execution and costs corresponding to such a reduction will be indicated.

Let mi - the maximum reduction in the time of work I;

CI - additional costs associated with a reduction in work time I;

Ki - costs for reducing the time of work and per unit.

Then

$$K_i = C_i/M_i. \qquad (4.5)$$

Using such information, you can determine the costs associated with a decrease in the date of the project.

Solution

We construct a network graph (Fig. 4.6), the calculations are reduced to table. 4.5.

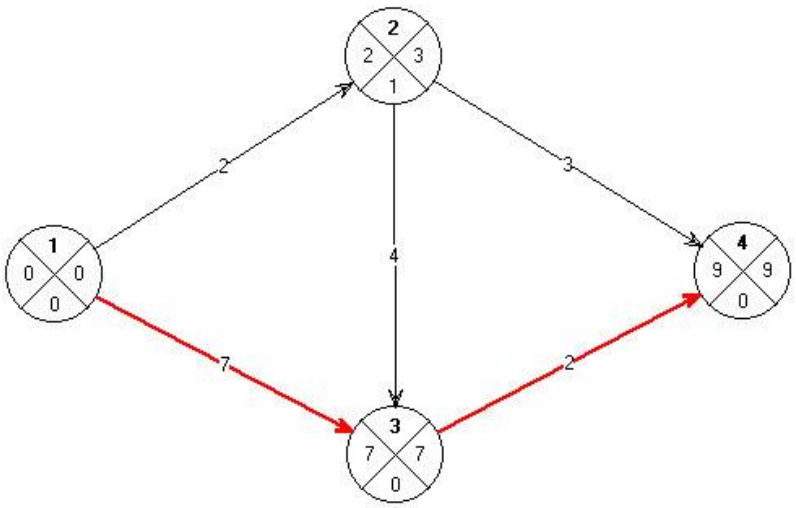

Fig. 4.6. Network graph of the project

Table 4.5

Determining the costs of reducing the project completion time for one week

Work	*t*	*ES*	*EF*	*LS*	*LF*	*S*	*K*, UAH	Critical path
1 – 2	2	0	2	1	3	1	300	No
1 – 3	7	0	7	0	7	0	500	Yes
2 – 3	4	2	6	3	7	1	1000	No
2 – 4	3	2	5	6	9	4	2000	No
3 – 4	2	7	9	7	9	0	2000	Yes

Next, you need to highlight work on a critical path with the smallest value of K. The critical path consists of works 1 - 3 and 3 - 4. Since work 1 - 3 has the lowest value of KI, we can shorten the completion of the project by one week, ie, as a whole, the completion time It will be equal to 8 weeks, and it will be necessary to spend 500 UAH.

Topic 5. Planning costs, budget, time and schedule of the project

5.1. The content of the lecture

Project resources include labor, equipment, materials, and cash. Resource planning should mean determining what resources and how much will be used in the work of the project.

Resource planning involves the following steps:

1. General assessment of the need for resources and their distribution over time.
2. Compilation of a table of resource requirements for project activities.
3. Building a resource histogram.
4. Drawing up a table of available resources.
5. Comparison of need and availability of resources, determination of their shortage or surplus.
6. Identification of resource providers for the project.
7. Optimization of summary graphs of resource requirements.
8. Consideration of factors affecting the provision of the project with resources.
9. Formation of resource supply schedules.
10. If necessary, the use of planning techniques in conditions of limited resources.
11. Re-planning of the calendar plan.
12. Control and construction of new resource plans and histograms.

Contract planning is the process of determining which project needs can be best met by acquiring resources or services from external organizations.

The project cost estimate is a set of calculations to determine the amount of project costs. This is a document that determines the cost of the project and is a tool for monitoring and analyzing the cost of funds for the project.

The project budget is a plan that is expressed in quantitative terms and reflects the costs necessary to achieve the set goals and cover their funding sources.

5.2. Key words

Resources for the project, resource planning, financial project budget, project budget, resource histograms, investment plan, balance of penny income and surplus, balance of income, surplus planning.

5.3. Questions

1. Cost planning and project cost estimation.
2. Analysis of the feasibility of the project and optimization of the project plan.
3. How is cost planning and project cost estimation carried out?
4. What is the essence of project budgeting?
5. How is the duration of project work estimated?
6. What is the purpose of developing the project schedule?

5.4. Self-study questions

1. What are project resources?
2. What does the resource planning process involve?
3. What are the sources of funding for the project?
4. What steps are included in the resource planning process?

5. What is contract management? What types of contracts do you know?

6. What is the main purpose of cost planning?

7. What is the project cost estimate? Why is it being compiled?

8. What is meant by resource smoothing?

9. What is the project budget? What is the procedure for compiling it?

10. What is the purpose of the planned balance of cash receipts and expenditures?

5.6. Practical Tasks

№ 1.

The terms of the project provide for the production of pencils in the reporting year in the amount of 5000 pieces, the consumption of wood per unit is 0.05 kg, for the next year it is planned to increase the volume of pencils by 10%, and save material by 3%. It is necessary to plan the need for material for the next year.

№ 2.

Determine the rate of consumption of materials for 1 product, if the average weight of the product is 3 kg, the material utilization rate is 0.8.

№ 3.

Determine the need for bolts for the planning period if, as a result of the project, the volume of production will increase by 10%, and material savings by 3%. The actual costs for the past period amounted to 5 tons.

№4.

Plan for the project's gross expenditures for all social activities, if the accident deduction is 20% and the labor costs are UAH 325,000.

№ 5.

Plan the selling price of the tape recorder, if you know that the production cost is UAH 231, commercial expenses - UAH 69, profitability of manufactured products - 1.5%, VAT - 20%.

№ 6.

The number of industrial and production personnel in the base period amounted to 1000 people. During the implementation of the project to install a new production line, it is expected to increase production by 5%. Determine the planned initial number of personnel (persons).

№7.

Plan the average number of pieceworkers, if, according to the terms of the project, the planned labor intensity of the production program is 1850 thousand standard hours, the planned working time fund is 1760 hours, the planned coefficient of fulfillment of the norms is 1.05.

Topic 6. Project control

6.1. The content of the lecture

Control is the process in which the project manager determines whether goals are being achieved, identifies the causes that destabilize the progress of work, and justifies management decisions that correct project performance before project losses are incurred.

The role of control as a management function is that it is a means of implementing feedback in the management system. Its main meaning is to create guarantees for the implementation of planned decisions.

Control processes include:

- determination of the results of activities based on a comparison of the results of the implementation of decisions with the planned ones,
- comparison of indicators of expected and actual implementation of plans;
– analysis of probable deviations from the planned indicators,
– verification of assumptions;
– verification of the methodological and substantive consistency of the planning process.

There are three main types of control.

1 - preliminary;
2 - current;
3 - final.

Reporting in the control system can be formed in various forms from direct personal contacts and telephone conversations, operational reporting and presentation of cost indicators in the form of tables, graphs, in the form of histograms - to scheduling the movement of expenses, presentations in the system for monitoring the implementation of supply contracts, statistical control quality, etc. But regardless of the form of presentation of reporting data, the report should include five main points:

- estimated cost;
– actual results characterizing the process of project work execution;
- predictive results characterizing the expected state of the project for the future;
- deviations showing how the forecast and actual results differ from the planned or calculated ones;
- the reasons explaining the existing deviations from the planned ones.

There are two methods for analyzing project performance: the method of comparison with planned indicators and the determination of deviations and the adjusted budget method.

In project management, Earned Value Management (Earned Value Technique, Earned Value) is a very popular technique for tracking project progress. In the domestic literature, it is found under the name "earned value method", "earned value method", "present value method", "performed value method" and is abbreviated as EV.

6.2. Keywords

Control, monitoring, preliminary control, current control, final control, control methods, budget control, qualitative progress, quantitative progress, reporting in the

control system, comparison method with planned indicators, adjusted budget method, cost ratio, projected project completion date, analysis project milestones, Earned Value Management (earned value method).

6.3. Questions

1. What is project progress?
2. What is monitoring?
3. What is the main purpose of project progress monitoring?
4. What data does the Earned Value method rely on?
5. What is control?
6. How is the progress of the project monitored?
7. What happens during project monitoring?
8. What is Earned Value Management?
9. What is the essence of the basic concepts of Earned Value?

6.4. Self-study questions

1. What is project control? For what purpose is it produced?
2. What is the subject and objects of control?
3. What stages does the control process include?
4. What are the main types of control you know? When are they produced?
5. What are the main tasks of budgetary control?
6. What indicators are used to monitor budget execution?
7. How is the control over the implementation of calendar plans?
8. How and why are reports prepared in the project control system?
9. What are the reporting requirements and sources of information?
10. What methods and indicators are used to analyze the implementation and performance of the project?

6.6. Practical Tasks

№1.

The work was recorded in the base plan with a duration of 10 hours, but was completed in 13 hours and was assessed as fully completed after another 3 hours. The work must be completed immediately. Hourly rate 300 UAH per hour. Using this information, calculate:

1. Estimated cost of planned work.
2. The actual cost of the work performed.
3. Percentage of actual work completion.
4. The estimated cost of the work performed.
5. The general planned budget of the project.
6. Estimation of cost upon completion of the project.
7. The difference between the total expected cost of the project and the current cost.
8. Planned percentage of execution.
9. The actual percentage of execution.
10. Deviations from the budget execution schedule.
11. Index of effectiveness of the budget execution schedule.
12. Cost deviations.
13. Cost efficiency index.

Make conclusions.

6.7. Exmple

№1.

The project manager uses the reporting method for the developed volume for project management. The project lasts 8 weeks. Table 6.1 shows the data collected at the moment. According to the plan, the project should end in eight weeks. The report of the mastered volume shows the data collected for the first four weeks of the project. The numbers in the table are growing.

Table 6.1

Report by 4 first weeks

Week	PV	AC	EV
1	1000	1000	1000
2	3000	2000	2500
3	5000	5000	6000
4	7000	9000	7000
5	13000		
6	17000		
7	19000		
8	20000		

1. What is the cost execution index for week 4?

$$CPI=EV/AC=0.7/0.9=0.777.$$

2. What is the deadline completion index for the 3rd week?

$$SPI=EV/PV=6000/5000=1200.$$

3. What is the BAC for the project during week 4?

The amount of expenditure planned for the project so far.

4. During the 5th week, it was found that part of the work, which was presented in the report performed within the 2nd week, was not accepted by the client. 500 pounds will be required to eliminate the problem and provide adoption. This work is scheduled for the 6th week. During the 5th week there are no reports about any other works. Why EV for the 5th week?

$$EV = 7000 - 500 = 6500.$$

5. Why is the deviation of the cost of the 4th week?

$$CV = EV - AC = 7000 - 9000 = –2000.$$

6. Why is the deviation from the point of view of the 2nd week?

$$SV = EV - PV = 2500 - 3000 = –500.$$

7. Why is the forecast after the end (EAC) is made for the 4th week?

$$EAC = BAC/CPI = 20000/0,7777 = 25717.$$

Topic 7. Risk management in projects

7.1. The content of the lecture course

The uncertainty associated with the possibility of adverse conditions, situations and consequences during the implementation of the project is called risk. Risk management is the process of responding to events and changes in risks as the project progresses. It is important to monitor risks. Risk monitoring involves controlling risks throughout the life cycle of a project. Good risk monitoring provides information management to help make effective decisions before a risk occurs.

Risks are classified according to their sources of occurrence into:

- political;
- economic;
- force majeure.

Depending on the causes of occurrence, risks are classified into the following groups: external risks, internal and other risks.

Risk analysis is divided into two types: quantitative and qualitative. Quantitative risk analysis should allow you to determine the number and size of individual risks and the risk of the project as a whole. Qualitative analysis determines the factors, limits and types of risks. For risk analysis, the analogy method, the method of expert assessments, the calculation and analytical method and the statistical method are used.

There are the following methods for determining project risk: response sensitivity analysis, scenario analysis, market risk (or beta risk), break-even point determination, decision tree, Monte Carlo method.

The most common risk reduction methods are:

– distribution of risk between project participants;
– insurance;
– reservation of funds to cover unforeseen expenses;
– neutralization of partial risks;
– reducing the risk in terms of financing.

7.2. Keywords

Risk, project risk, production risk, financial risk, investment risk, dynamic risk, statistical risk, internal risks, external risks, risk analysis, risk insurance, partial risks, risk probability, risk threat, project risk management, risk monitoring and control, probabilistic analysis, expert analysis, analogue method, analysis of project development scenarios, decision tree construction method, analysis of marginal indicators, project sensitivity analysis, simulation methods, risk prioritization, risk matrix

7.3. Questions

1. What is risk?
2. What is a project risk?
3. What is the indicator of importance of risk?
4. What does the “probability of risk” indicator show?
5. What processes does project risk management include?

6. What is a risk matrix?
7. What is the uncertainty in the project?
8. What are the main attributes of risk?
9. What processes does project risk management include?
10. What is a "decision tree" and what does it consist of?

7.4. Self-study questions

1. What is meant by project uncertainty and risk?
2. Essence of risk management.
3. What are the most common types of risks you know?
4. How are hazards classified by source?
5. What are the causes of project risks?
6. What is the classification of risks depending on the causes of occurrence?
7. What is the sequence of work on risk analysis?
8. What is quantitative and qualitative risk analysis?
9. What methods and techniques of risk analysis do you know?
10. What are the ways to reduce project risks?

7.6. Prctical Tasks

№1.

Determine the coefficient of variation from the data:

Table 7.1

Data

Probability of earning income	Expected income level, UAH
0,2	2000
0,5	8000
0,3	10000

№2.

Determine the most risky project, given the standard deviation:

Table 7.2

Data

Project A		Project B	
NPV	Probability of earning income	*NPV*	Probability of earning income
100	0,2	-7200	0,2
500	0,4	1000	0,3
700	0,3	3000	0,3
1500	0,1	5000	0,2

7.7. Example

№1.

Scenario analysis. The risk analysis methodology considers the sensitivity of the reaction of the pure real value (CT) to changes in key variables and a possible interval for the values of these variables. At the same time, the economist selects a “bad” set of circumstances (low sales price, low sales, high variable costs per unit,

etc.), basic and “good”. Then they are calculated under poor and favorable circumstances and are compared with the expected PTV or CT in the basic case.

Table 7.3

An example of calculation

Scenario	P_i	Sales Revenue, pcs.	Price, UAH	*NPV*, thousand UAH
The worst case	0,25	15000	1500	-5768
Basic case	0,50	20000	2000	6989
The best case	0,25	25000	2500	23390

$$NPV = \sum_{t=0}^{n} Pi\left(NPVi\right) = 0,25\left(-5768\right) + 0,5 \times 6989 + 0,25 \times 23390 =$$

$$= 7990 \text{ тис. грн.}$$

The standard deviation from NPV is UAH 10,439,000.

Deviation

$$NPV = \sqrt{\sum_{t=1}^{n} Pi\left(NPVi - E_{NPV}\right)^2},$$

де E_{NPV} - expected net present value.

Finally, the coefficient of variation of the NPV (CV) is equal to 1.3:

$$CV_{NPV} = \frac{Відхилення NPV}{E_{NPV}}.$$

The coefficient of variation of the NPV project can be compared with the coefficient of "average project" to obtain an idea of the relative risk of the project. The existing corporation projects on average have a coefficient of variation of approximately 10. Thus, based on this measurement of the risk of the project, the managers of the organization will conclude that this project is more risky than the "average" project of the organization.

№2.

According to experts estimates, the total costs for the technical re -equipment of the enterprise in the pessimistic scenario of events will be UAH 212 thousand, with optimistic - UAH 177 thousand, with normal - UAH 182 thousand. The likelihood of developments in normal scenario is 0.6; by optimistic - 0,15; According to pessimistic - 0.25. Discounted cash flows are given in Table. 7.4.

Assess the degree of risk associated with two alternative investment projects.

Solution:

Normal scenario: NPV1 = 242 - 182 = 60,000 UAH.

NPV 2 = 243.3 - 182 = 61.3 thousand UAH.

Optimistic scenario: NPV 1 = 281.1 - 177 = 104.1 thousand UAH

NPV 2 - 285.7 - 177 = 108.7 thousand UAH.

Pessimistic scenario: ChTV1 = 195.2 - 212 = -16.8 thousand UAH.

NPV 2 = 210.8 - 218 = -1.2 thousand UAH.

The range of NPV variation between optimistic and pessimistic scenarios:

project No. 1: 104.1 - (-16.8) = 120.9 thousand UAH;

project No. 2: 108.7 - (-1.2) = 109.9 thousand UAH.

Table 7.4

Discounted cash flow under different development scenarios of the project, thousand UAH

Year	Normal Scenario		Optimistic Scenario		Pessimistic Scenario	
	Project 1	Project 2	Project 1	Project 2	Project 1	Project 2
1	50,1	56,3	57,9	63,4	38,2	44
2	47,8	50,3	53,8	59,7	41,8	48,6
3	48,8	44,5	56,7	53	40,5	38,3
4	45,9	44,5	55	53,3	36,1	38,6
5	49,4	47,7	57,7	56,3	38,6	41,3
Total	242	243,3	281,1	285,7	195,2	210,8

The scope of options is more risky 1. Integrated net present value:
Project 1 60 • 0.6 + (-16,8) 0.25 +104.1 • 0,15 = 47.4 thousand UAH (> 0);
Project 2 61.3 • 0.6 + (-1.2) 0.25 + 108.7 • 0,15 = 52.8 thousand UAH (> 0);
By the size of net present value more profitable
And less risky is Project 2.

Topic 8. Project quality management. procurement management. Organization and conduct of tenders for projects

8.1. The content of the lecture

Project quality management is the actions aimed at establishing, ensuring and maintaining the required level of project quality in the process of its development, justification and implementation.

An effective means of quality management is standardization, which includes a set of norms, rules and requirements for product quality. The standard is the main regulatory and technical document in which quality indicators are set based on the latest achievements in science, technology and consumer demand.

Product certification involves assessing the conformity of products to certain requirements and issuing a certificate document. A certificate is a document certifying a high level of product quality and its compliance with international standards. According to the requirements of the current domestic legislation, certification of products in Ukraine is carried out within the framework of the state certification system - UkrSEPRO.

State supervision over product quality is carried out by Gosstandart (State Committee of Ukraine for Standardization, Metrology and Certification of Ukraine), which is the national body that standardizes and certifies products. Information for comparing the streaming quality level with the planned one is provided by accounting and analysis of the costs associated with ensuring the quality of the project. These expenses are classified as follows:

1. Preventive (costs for ensuring the quality of the project, staff training).
2. Informational (costs for inspections, laboratory and operational control).
3. Internal (costs for rejection, repair).
4. External (costs of returning products, resolving customer complaints, necessary responses).

To control the quality of the project, methods and tools are used such as: technical inspection, control charts, or control schedules (used to track initial variables, to monitor cost and planned deviations, errors in project documentation or other project processes), statistical methods (statistical sampling , analysis of time series, creation of statistical models in order to check and reduce the cost and time for quality control) and flow graphs as an aid in the analysis of emerging problems Pareto chart (a diagram illustrating the occurrence of various causes of nonconformity) visibility, ordered by the rank of occurrence of causes) and trend analysis (involves the use of mathematical methods to predict future results and track technical performance indicators, etc.).

Bidding (tenders) - the method of ordering, according to which the bidder is determined as the winner, is carried out in accordance with the Procedure for conducting bidding. Competitive bidding (tenders) is a method of purchasing resources.

Procurement can be made through the following procedures:

- open auctions;
- closed trades;

- bidding with limited participation of performers;

- two-stage trading;

request for price proposals (quotations); purchases from one supplier.

Tender Committee:

collects applications for participation in the auction, for pre-qualification;

- conducts preliminary qualification of applicants;

- organizes the development and distribution of tender documentation and resolves issues of changing this documentation and procedures, organizes familiarization of applicants with tender documentation and provides the necessary explanations;

- ensures the collection, storage and evaluation of submitted offers; carries out the bidding procedure and its registration;

- determines the winner or makes another decision based on the results of the auction and submits them for approval;

– publishes a report on the results of the auction in the media. The Tender Committee independently develops and approves the regulations for its work and approves the regulations for the work of its divisions.

The tender documentation must contain:

1. invitation to participate in the auction in the appropriate form;

2. requirements for the preparation of tender proposals;

3. a list of criteria put forward by the tender committee to assess the compliance of the bidder with the established qualification requirements;

4. information on the need for documentary confirmation of the bidder's compliance with the established qualification requirements;

5. information about the nature and necessary technical and quality characteristics of the subject of procurement, including;

- relevant technical specification, plans, drawings, drawings;

- quantity of goods;

- the place where the work is to be performed or the service to be provided;

- additional services to be provided;

6. terms of delivery of goods, performance of work, provision of services;

7. list of criteria and methodology for their evaluation to determine the best tender offer;

8. an indication of the main conditions that will necessarily be included in the procurement contract or the draft procurement contract;

9. description of the individual part or parts of the subject matter of the procurement for which bids may be submitted, in the event that bidders are allowed

10. method of evaluation and comparison of alternative tender proposals;

11. the methodology for calculating the price of the tender proposal, indicating whether it should include other elements, except for the cost of the goods, works or services themselves, for example, the costs of transportation, insurance, payment of customs tariffs, taxes, etc.;

12. information on the currency (currencies) in which (in which) the price of the tender proposal should be calculated and indicated;

13. an indication of the language(s) in which tender proposals are to be drawn up;

14. requirements of the customer for the provision of tender security;

15. indication of the method, place and deadline for submitting tender proposals;

16. a statement of the procedure for providing clarifications on the tender documentation, as well as a notice of the customer's intention to hold a meeting of bidders;

17. an indication of the period during which tender proposals are considered valid;

18. indication of the place, date and time of disclosure of tender proposals;

19. an indication of the name, position and address of one or more officials or other employees of the customer authorized to communicate with bidders;

20. information on additional conditions required for the acceptance of the tender offer.

8.2. Keywords

Project quality, quality management, product certification, quality standards, total quality management, project quality control methods, bidding, tendering, procurement, open bidding, closed bidding, two-stage bidding, tender offer, tender documentation, tender committee, tender procedures, results bidding, bidding with limited participation of performers, two-stage bidding, requests for quotations.

8.3. Questions

1. What is the main parameter in quality planning?
2. What are mind maps?
3. What is the quality of the project?
4. What is the basis of project quality?
5. What is the Quality Chain method?
6. What is the essence of the document "Quality Management Plan"?
7. What are control charts?
8. What is a Pareto chart?
9. What types of procurement exist?
10. Who is a contractor?
11. What is the purpose of the screening system?
12. What is an offer?
13. What should tender documents contain?
14. What are the criteria for selecting the best tender offer?
15. What is benchmarking?
16. What is the essence of the purchase of consultations?
17. What is the purpose of the contract agreement?
18. What are the direct costs?
19. What costs are included in indirect costs?
20. What is a request for proposals?

8.4. Self-study questions

1. Explain the concept of a property. What, in your opinion, is its importance in ensuring the competitiveness of the project's products?

2. What quality control tools do you know? Describe them.

3. What is the significance of voluntary and mandatory certification of project products?

4. What are the eight principles of quality management in accordance with the State Standard of Ukraine ISO 9000?

5. What work is being done to ensure the quality of the project?

6. What are the main provisions of the project quality assurance program?

7. What are the stages of ISO-9000 certification of an enterprise?

8. Describe the main provisions of system quality management.

9. Give a classification of costs for accounting and analysis of costs associated with ensuring the quality of the project.

10. What project quality control methods do you know? Describe them.

11. What is an auction, for what purpose are they held?

12. In what areas is the procurement carried out?

13. What procurement methods and procedures exist?

14. What are the requirements for tender documentation?

15. What is a tender committee, what functions does it perform?

16. Give a brief description of the open auction procedure.

17. What auctions are called closed?

18. What is two-stage bidding?

19. What is the procedure for requesting quotations?

20. When is an auction declared invalid?

8.6. Practical Tasks

№ 1.

You are an economist in a project team engaged in the economic evaluation of the production activities of enterprises, taking into account the quality of manufactured products, in order to enter the market with a new similar product (tires). The indicators characterizing the annual economic activity of three tire enterprises identical in terms of production capacity and production program are shown in Table 8.1.

Table 8.1

Indicators characterizing the annual economic activity of three tire enterprises with the same production capacity and production program

Indicator	Tire company		
	A-1	B-2	C-3
Planned release of tires, thousand pcs.	2400	2400	2400
Plan implementation level, %	106	100	98
Durability of tires, km	35000	40000	45000
Selling price per unit. tires, UAH	120	130	145
Actual product profitability, %	24	18	16

Make an analytical assessment of the production activities of enterprises, taking into account the quality of products. To this end, define:

- the total mileage of tires produced by each enterprise per year; additional mileage of tires of enterprises B-2, C-3 in comparison with products of enterprise A-1;

- the actual amount of profit received per year by each tire company. Analyze the received data.

№ 2.

You are an analyst and evaluate the feasibility of project “A”. Using the baseline, the level of competitiveness of the three corporations should be calculated and compared.

Three domestic corporations - "A", "B" and "C" have been successfully operating on the national and world market since the beginning of their creation. Separate indicators of competitiveness in the market are given in table 8.2.

Table 8.2

Selected indicators of market competitiveness

Indicator competitiveness	Coefficient importance	Rating of the assessment of individual indicators of corporations according to the ten-point system		
		“A”	“B”	“C”
1. Quality and consumer preferences of goods	0,15	5	5	5
2. Assortment	0,10	9	6	8
3. Degree of effectiveness of sales channels	0,15	7	4	9
4. Effectiveness of advertising and sales promotion	0,15	9	5	4
5. Financial resources	0,20	7	8	7
6. Reputation of consumers	0,15	7	9	6
7. Possibilities in pricing policy	0,10	4	4	4
TOTAL	1,00	48	41	43

Methodical support

Guidelines for practical exercises and independent work "Project Management" for students for the second (educational and scientific) level of higher education, branch of knowledge 07 Management and Administration (specialty 073 "Management").

Recommended literature

1. Закон України «Про державні цільові програми» від 18.03.2004 № 1621-IY. 2. доступу: https://zakon.rada.gov.ua/laws/show/1621-15#Text

2. Основи управління проектами: пер. с англ./ Дж. Хігні. – 5-е вид. - К.:Фабула, 2020. – 272с.

3. Проектний менеджмент у публічному управлінні: підручник. – К.: НАДУ, 2017. – 344 с.

4. Розроблення та управління проектами у публічній сфері: європейський вимір для України. Практичний посібник / [Чемерис А.]; Швейцарсько-український проект «Підтримка децентралізації в Україні – DESPRO». – К. : ТОВ «Софія-А». – 2012. – 80 с.

5. Старченко Г. В. Управління проєктами: теорія та практика : навч. посіб. Чернігів: Видавець Брагинець О. В., 2018. 306 с.

6. Управління проєктами : Навчальний посібник для студ. вищих навч. закладів/ Г.М. Тарасюк. -2-ге вид.. -К.: Каравела, 2006.- 320 с.

7. Управління проєктами [Текст] : навч. посібник / Г. М. Тарасюк. - 3-тє вид. - К. : Каравела, 2009. - 320 с.

8. Управління проектами: навч. посіб. / уклад.: Л. Є. Довгань [та ін.]. Київ: КПІ ім. Ігоря Сікорського, 2017. 420 с.

9. A Project Management Body Of Knowledge (PMBOK® Guide) 6th Edition (PMBOK Guides). – Project Management Institute, 2017. – 589 p.

Supporting literature

1. Боковикова Ю. В. Проектний менеджмент в діяльності органів місцевого самоврядування. Державне будівництво. 2015. № 1. URL: http:// irbis-nbuv.gov.ua › cgi-bin › irbis_nbuv › cgiirbis_64.

2. Закон України «Про Порядок обміну інформацією між виконавцями державних цільових програм та координації цієї роботи» від 04.12.2009 № 1367. – Режим доступу: https://zakon.rada.gov.ua/laws/show/z1251-09#Text

3. Іванова Т. В. Методологія проєктного підходу в реалізації стратегічних пріорітетів сервісно-орієнтованої держави. Інвестиції: практика та досвід. 2019. № 11. С. 82 – 85.

4. Луценко С. М. Використання проектних технологій для удосконалення інформаційного забезпечення органів публічної влади [Електронний ресурс] / С.М. Луценко // Публічне управління: теорія та практика: збірник наукових праць Асоціації докторів наук з державного управління. – Х. : Вид-во "ДокНаукДержУпр", 2011. – № 2(6). – С. 89-95. – Режим доступу: http://www.nbuv.gov.ua/old_jrn/Soc_Gum/Pubupr/2011_2/doc/2 /08.pdf

5. Минаєва Г. М. Управління проектною діяльністю органів місцевого самоврядування для зміцнення інфраструктури території / Г. М. Минаєва // Теорія та практика державного управління : Наук. фах. видання. – Вип. 3 (34). – 2011. – С. 1–7.

6. Молоканова В. М. Публічне управління регіональними програмами розвитку на засадах проектного менеджменту / В. М. Молоканова // Результат-орієнтовані підходи, інструменти та технології в публічному управлінні: матеріали наук.-практ. конф. за міжн. участю, 26 жовтня 2012 р., Дніпропетровськ. – Д. : ДРІДУ НАДУ, 2012. – 135 с. – С. 99-101.

7. Олійник Р. Ю. Проєктний менеджмент: особливості ключових концептів та застосування у публічному секторі. Право та державне управління. 2019. № 2(35), т. 2. С. 147 – 151.

8. Повна С. В. Методологія проектного менеджменту в управлінні державними інвестиційними проектами. Публічне адміністрування: наукові дослідження та розвиток. 2017. № 1(3). С. 101 – 107.

9. Подольська О. В., Краля В. Г. Використання проєктного підходу в публічній сфері. Вісн. Харків. нац. техн. ун-ту сільського господарства ім. Петра Василенка. 2019. Вип. 200. С. 256 – 264.

10. Рудніцька Р. М. Перспективи використання управління за результатами для підвищення ефективності державного управління / Р. М. Рудніцька // Ефективність державного управління : зб. наук. пр.; за заг. ред. А. О. Чемериса. – Вип. 8. – Львів : ЛРІДУ НАДУ, 2005. – С. 307–315.

11. Glossary of Project Management Terms. – http://www.uc.edu/sashtml/orpm/chapa/index.htm.

12. http://www.apm.org.uk/ — Association for project management.

13. International Journal of Project Management. – www.elsevier.com/locate/ijproman.

Information resources

1. Система дистанційного навчання НУ «Чернігівська політехніка». Курс: Управління проєктами – [Електронний ресурс]. – Режим доступу : https://eln.stu.cn.ua/course/view.php?id=1261

2.Національна бібліотека України ім. В.І.Вернадського // http://www.nbuv.gov.ua.

3.Офіційна Інтернет-сторінка Верховної Ради України http://www.portal.rada.gov.ua.

4.Офіційна Інтернет-сторінка Міністерства економіки України // http://www.me.gov.ua.

5.Офіційна Інтернет-сторінка Міністерства фінансів України // http://www.minfin.gov.ua.

6.Офіційна Інтернет-сторінка Державного комітету статистики України http://www.ukrstat.gov.ua.