

CONTROLLING AS A COMPONENT OF PROJECT MANAGEMENT IN AGRO-INDUSTRIAL PRODUCTION

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Abstract. The *subject of the research* is the study of controlling as an integral part of project management in agricultural production. *Methodology.* The study used general scientific methods, in particular: theoretical generalisation; methods of analysis and synthesis; statistical analysis; graphical method (for visual display of the study results). The article presents results of substantiation of expediency of application of controlling in management of agricultural production projects. *Conclusion.* Project management controlling is an essential tool for achieving success and sustainability in the implementation of projects, carrying out systematic planning, control and analysis of economic activities at the level of the entire organisation. The cooperation between controlling and project management is crucial for the effectiveness and efficiency of projects, and the implementation of controlling is a strategic step to achieve common strategic goals and increase the sustainability of the activity. Project management in agriculture requires specific approaches, and controlling is vital to achieving successful results. The key aspects of controlling are financial monitoring, adaptation to seasonality and project cycles, quality and standards monitoring, risk management and consideration of environmental approaches. Five key elements of project management controlling in the agricultural sector determine the effectiveness of project implementation. The schedule allows for accurate resource planning and control over project execution. Effective resource management helps to stay within the budget, risk analysis helps to avoid negative impacts, change control prevents unexpected expansion of the project scope, and measuring performance against critical indicators allows to evaluate project performance. The system of controlling is manifested in the union of all subsystems and blocks of controlling, where their interaction is aimed at the strategic goals of the company. This approach takes into account the importance of system integration and alignment with strategic goals for successful business management.

Key words: controlling, project management, risks, threats, agro-industrial production.

JEL Classification: O22, H43, Q16

1. Introduction

The success of a modern agribusiness depends on customer satisfaction. Therefore, the organisational structure and management methods should be aimed at identifying ever-changing needs and meeting them through advanced approaches, including project management. The need to implement project development in agro-industrial enterprises places new demands on the content, organisation, forms and methods of their management activities. The systemic analysis of the nature and current trends in the development of project management is carried out, taking into account the specifics of the agro-

industrial enterprises. Project managers deployed in agro-industrial enterprises must solve problems related to attracting investment, improving product quality, introducing new production and sales technologies, expanding production capacity, improving the enterprise management system, and other aspects.

For a farm to survive in the face of rapid change, management must be in control of the situation and be able to get quick answers to questions about costs or farm management. This enables management decisions to be made quickly. In this context, the use of the controlling system is relevant for agricultural enterprises as an integral part of their practical work.

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Controlling is a philosophy and a way of thinking for managers aimed at the efficient use of resources and the long-term development of the enterprise. It is an integrated system of information, analytical and methodological support for managers in planning, control, analysis and decision-making in all functional areas of the enterprise.

Thus, in a dynamic external environment, the management of projects, of which controlling is a component, is becoming one of the critical components of the management system of agro-industrial companies, and issues related to improving the efficiency of their activities with the help of project management are becoming more and more relevant. This determines the choice of a research topic, emphasising its relevance and practical importance.

2. Correlation of the Concepts of "Project Management" and "Controlling"

Lately, the term "controlling" has become more and more common among specialists and practitioners in the field of economics and management. Traditionally, controlling has been understood as the organisation of an effective management system aimed at ensuring the sustainable operation of the business. On the one hand, controlling acts as a cross-functional management tool to support management in its decision-making. On the other hand, it is a management concept of the decision-making process. Controlling coordinates the systems for planning, control and information provision for management (Cambalikova, & Misun, 2017; Malyarets, et al., 2017; Poltina, 2011).

For this reason, it is necessary to have a clear understanding of the conceptual apparatus and the interrelationship between the concepts of "project management" and "controlling", by identifying and comparing indicators such as definition, object, tasks, periodicity, consistency and interaction (Table 1).

To sum up, controlling is a broader management system at the enterprise level, while project management is a specific process aimed at achieving the objectives of a particular project. Controlling and project management work together to ensure the effective functioning of the organisation and the successful completion of projects. However, this study considers controlling as an integral part of the project management process, as it is believed that controlling should be considered at two levels – as a continuous management system that includes planning, controlling and analysing the organisation's activities to achieve strategic goals, and as one of the elements of the project management process. In agricultural production, there is general controlling as a separate system. Since there are projects and the process of managing them, consider local controlling, which is specific to a particular project.

Controlling is a set of processes used to understand the time, money and other resources spent on a project. Each control element focuses on a specific project component, such as the plan, resources and potential risks. The main purpose of using control elements in project management is to keep the project within the specified limits, minimise project budget costs and adhere to the project plan (Figure 1).

Although project controlling and management functions may overlap, both processes aim to achieve project success according to plan and scope. However, it is important to note that controlling covers only a narrow range of tasks, such as project management. Project management focuses on supporting the whole project, including coordinating people, managing processes and achieving results. Controlling focuses specifically on quality control to effectively save time and money (Project Controls: Key Elements, Benefits and Challenges, 2023).

Controlling tools provide information that enables project managers to make informed and timely

Table 1

Correlation of the concepts of "project management" and "controlling"

	Project Management	Controlling
Definition	It is the process of planning, executing and controlling a project to achieve its goals and objectives	It is a management system that includes planning, control and analysis of the financial and economic activities of an enterprise to achieve strategic goals
Object	Focused on achieving specific goals and objectives related to the implementation of a particular project	It focuses on the efficiency of using financial resources and the strategic goals of the enterprise as a whole
Tasks	Developing project plans, allocating resources, managing risks and ensuring timely completion of tasks	Assessment of financial efficiency, budget planning, analysis of results and management decision-making
Periodicity	It is a temporary phenomenon, as it is aimed at a specific project with a specific deadline	It is permanent, sustainable and focused on the long term
Consistency	Focuses on a specific project and its unique aspects	It is of a general organisational nature and covers the entire structure of the enterprise
Interaction	Subject to control to assess financial performance and compliance with strategic goals	Supports project management, ensuring efficient use of financial resources

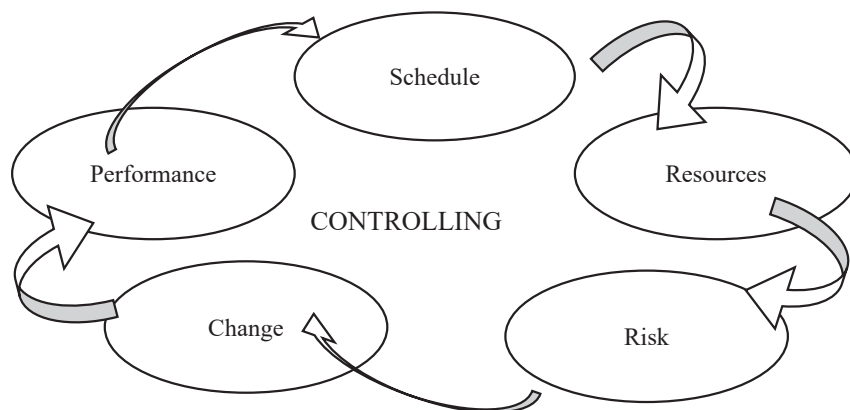


Figure 1. The main components of the controlling process as a component of project management in agricultural production

Source: (5 project controls and where to implement them, 2023)

decisions to prevent project risks from initiation to completion. A project manager's job is to ensure that everything happens according to plan. With a project control process in place, it is easier to answer critical questions about the project that can affect or complicate its success (Risk Management Quiz: Correct Answers and Explanations, 2023; George, 2020). Below are some of the reasons why projects can be made sustainable by using control tools (Figure 2).

The use of controlling makes it possible to detect deviations from the plan in time and quickly adjust the direction to ensure the successful completion of the project (Irfan, et al., 2021; Rolstadås, 2014; Hyväri, 2006).

Controlling, as a component of project management, is an essential tool for achieving success and sustainability in project implementation. Its role is to systematically plan, control and analyse financial and economic activities that contribute to the achievement of the organisation's strategic objectives. One of the

critical characteristics of controlling is the permanence and constancy of its operation, which distinguishes it from the temporary orientation of project management. Controlling operates at the level of the entire organisation, ensuring the support of strategic objectives and the optimisation of the use of resources (Turner, 2010).

The interaction between controlling and project management becomes a critical factor in ensuring the success and efficiency of the implementation of specific projects. Given the complexity of project management tasks and the need for constant monitoring of financial aspects, *controlling* is a necessary element that contributes to the balanced and stable implementation of project tasks. Thus, the integration of controlling as a component of project management is an important strategic step for the organisation. It allows to ensure the successful implementation of specific projects, the achievement of overall strategic goals, and increased efficiency and sustainability in the organisation's activities.

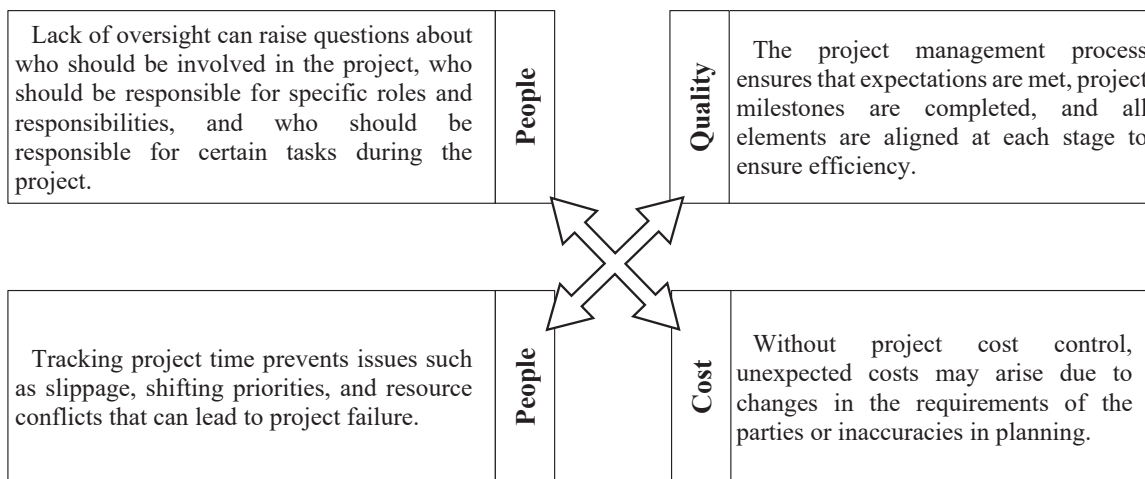


Figure 2. Causes of the necessity to use controlling as a component of project management in agricultural production

3. Controlling Application Features as a Component of Project Management in Agricultural Production

In modern economic conditions, controlling becomes necessary for effective project management, especially in agro-industrial production. The characteristics of this industry determine the use of controlling in the agricultural sector and require the adaptation of management strategies to the specific conditions of agricultural production. In recent years, the term "controlling" has become more and more relevant among specialists in the agricultural sector, as it is not only a cross-functional management tool, but also a management concept for the decision-making process. In agricultural production, controlling is directed to coordination of systems of planning, control and information support of management, thus ensuring optimal management of resources and project tasks (Odrekhivskiy, & Phsyk-Kovalska, 2022; Kniazevych, et al., 2021; Tiurina, Shkabara, 2021; Pylypenko, et al., 2023).

A critical feature of managing agro-industrial production is the need to consider many factors that influence the effectiveness of projects in this area. All of these aspects require careful monitoring and analysis, from weather conditions to market conditions, from seasonal patterns to technological solutions.

Controlling in the agricultural sector also involves the identification of centres of responsibility that ensure the achievement of the planned end result in harmonious activities. The variety of these responsibility centres, such as the production system, the financial system, the marketing system, the management system and others, is determined by the specifics of each agricultural project and its tasks.

It is also important to consider the systematic approach to controlling agro-industrial production, where the interaction of different subsystems and control blocks is a critical element of effective management. For example, product margin analysis should be linked to financial controlling, and logistics strategies should be aligned with the financial cycle.

Taking into account the above-mentioned aspects, it is possible to define a controlling system in agro-industrial production, which will include various subsystems, jointly aimed at achieving the strategic goals of the enterprise. Of particular importance is the practical implementation of the controlling mechanism based on specific tools and methodological approaches, taking into account the conditions and characteristics of the agricultural sector (Shubina, et al., 2023; Pazushchan, & Cherkas, 2020; Boiko, & Diachenko, 2022).

Hence, controlling in the context of project management in agro-industrial production is determined by the need to manage many factors and aspects that affect the success of projects in this area. Properly configured controlling allows to effectively take into account all the features of agricultural production and ensures optimal achievement of tasks.

The use of controlling as a component of project management in agricultural production has its own peculiarities, which are determined by the specifics of the industry. Below are some key aspects and features of using controlling in the context of project management in the agricultural sector:

1. Financial monitoring and budgeting. Effective financial planning and budgeting are vital elements in agricultural production, where many projects involve growing plants or animals. Controlling is aimed at thoroughly analysing costs, managing financial resources and preventing possible risks of losses in agriculture.

2. Seasonality and cyclicity of projects. In agricultural production, many projects are linked to natural cycles and seasonality. Controlling takes these features into account by adapting monitoring and financial management strategies to changes in natural conditions and agricultural production cycles.

3. Quality and standards monitoring. Agricultural projects are often associated with high standards of product quality and safety. Controlling includes monitoring systems to ensure that production processes meet standards and market requirements.

4. Risk management in the agricultural sector. Agricultural projects are affected by external factors such as weather, pests, market conditions, etc. Controlling in agricultural production takes these risks into account by implementing strategies for adaptation and protection against negative impacts.

5. Consideration of environmental and sustainable approaches. Given the growing interest in sustainability, the supervision of the agricultural sector can incorporate environmental performance and sustainable production into project plans and strategies.

Overall, controlling agricultural production is becoming an important tool for ensuring the efficiency, stability and sustainable development of projects. Adaptation of its methodologies to the specifics of the industry allows for effective management of financial, quality and risk aspects of projects in the agricultural sector.

According to the study, five elements have been identified for the successful implementation of controlling in the context of project management in agricultural production:

1. A schedule is an element that includes planning of resources and project timelines. The better the

project implementation plan is, the more successful it is. After all, it is necessary to have transparent, understandable schedules to track the progress of the project. To achieve this goal, as a control tool, all project activities should be tracked against consistent metrics that correspond to the planned timeframe and resources. This allows for quick tracking of tasks, deadlines, and relationships between project elements. In addition, project milestones can be set as benchmarks to measure progress.

For this purpose, it is also important to use project status reports to ensure information transparency. These can be regular, weekly, monthly or any other reports that assess the project's progress against the plan. In the event of deviations, one can quickly identify the cause and take corrective action (5 project controls and where to implement them, 2023; Smith, & Merritt, 2020).

2. Resources – an element that allows planning the resources required for project implementation, is established at the time of project initiation, thereby allowing the calculation of the projected cost of project development, which is especially important in agriculture. Effective resource management is crucial for successful project management, as it allows for efficient use of time and money. Estimating costs and planning resources at the project initiation stage helps to ensure that the budget is adhered to.

It is important not only to have a clear picture of the available resources at the beginning of the project, but also to have the means to track costs and resources throughout the project. In the event of budget overruns, operational controlling allows to quickly identify alternative courses of action (Project Controls: Key Elements, Benefits and Challenges, 2023; Mokhnenko, et al., 2021).

3. Risk is an element that analyses possible risks in order to prevent threats to the project. Effective project risk management is an important aspect of project controlling aimed at proactively identifying and avoiding possible threats that may affect the successful completion of the project. A convenient and effective tool for this purpose is the use of a risk register, in which potential risks are ranked by priority, and strategies for managing them are assessed and developed. This element of controlling is one of the most important in project management in agricultural production, which is characterised by the presence of numerous risks (5 project controls and where to implement them, 2023; Lin, & Cheung, 2020).

4. Change is an element that takes into account possible deviations. Change management is one of the most effective methods of preventing unexpected expansion of the project scope, which can lead to schedule delays, budget increases and unwanted

defects. Change management helps to assess whether proposed changes are significant and, if so, determine how best to implement them without disrupting the project schedule or impacting resources. This process will ensure that the team works effectively with change, as everyone is informed, involved and vetted (Project Controls: Key Elements, Benefits and Challenges, 2023; Zwikael, et al., 2022).

5. Efficiency is an element that evaluates the implementation of the project against the established Key Performance Indicators (KPIs). Performance control is a comprehensive process for monitoring the success of a project. A simple way to approach this task is to establish Key Performance Indicators (KPIs) that allow the project's performance to be assessed. These can include costs against baselines, on-time completion, billable hours, return on investment, etc. A good KPI should track a measurable value that can be influenced in a timely manner. It should also contribute to strategic goals and give team members a clear picture of how projects contribute to the company's overall goals (5 project controls and where to implement them, 2023; Komal, 2020).

An effective management system will increase competitiveness at both the micro and macro levels (Irtysheva, 2022; Popadynets, 2021; Kramarenko, 2022).

Using these controlling elements in project management, it is possible to exercise control over all aspects of the project. This helps to use time and resources efficiently to achieve successful project results. A specific company usually determines the nature, tasks and functions of controlling according to its specifics, scope and field of activity. However, controlling as a system includes various subsystems determined by the direction of the company's activity. Typical centres of responsibility include the production system, the financial system, the marketing system, the foreign economic activity, the personnel system, the corporate culture and the management system. In addition, it is necessary to consider the system of investment and innovation as separate subsystems or blocks of controlling aimed at achieving a strategic goal. The implementation of the practical controlling mechanism should be based on specific tools and methodological approaches (Drobot, Yatsiuk, 2017).

In the enterprises of the agro-industrial complex it is possible to present the controlling system in the form of various subsystems that interact to achieve the objectives. Each subsystem has its own set of indicators, which together lead to the planned financial result. The coherence of controlling is manifested in the unification of all subsystems and controlling units, where their interaction is aimed

at the strategic goals of the company. This approach takes into account the importance of the combination of systems and focuses on strategic goals for successful management of the company.

4. Conclusions

Therefore, project management controlling is an essential tool to ensure the success and sustainability of project implementation, to carry out systematic planning, and to control and analyse financial and economic activities at the level of the entire organisation. The interaction between controlling and project management is crucial for the success and efficiency of projects, and the integration of controlling is a strategic step to achieve overall strategic goals and increase the sustainability of activities. Project management in agro-industrial

production requires specific approaches and controlling is essential to achieve successful results. The main aspects of control include financial monitoring, adaptation to the seasonality and cyclicity of projects, monitoring of quality and standards, risk management and consideration of environmental approaches. Five key elements of project management control in the agro-industrial sector determine the effectiveness of project implementation. A calendar plan helps ensure accurate resource planning and control over project execution. Effective resource management helps to stay within the budget, risk analysis helps to avoid negative consequences, change control helps to prevent unexpected expansion of the project scope, and performance measurement against critical indicators helps to assess the project's effectiveness.

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