



UDC 338.4

EFFECTIVE IT PROJECT MANAGEMENT: USEFUL TOOLS, INNOVATIVE METHODS, MODELS, AND TECHNIQUES FOR MAKING MANAGERIAL DECISIONS IN CHANGE CONTROL ENVIRONMENTS

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Summary. The article explores modern approaches to the effective management of IT projects in a dynamic digital environment. The importance of applying innovative tools and digital technologies to achieve strategic enterprise goals is substantiated. The classification and analysis of useful instruments in IT management are provided, including project management systems, team collaboration platforms, analytical tools, and decision support systems. The essence of flexible project management methodologies is revealed, in particular Agile, Scrum, Lean, and Kanban, which enhance flexibility and adaptability in the face of constant change. The article focuses on the practical use of managerial decision-making models (SWOT, DECIDE, Decision Tree, DSS) in combination with digital analytics. Considerable attention is devoted to change management in IT projects, specifically the use of the ADKAR, Kotter's, and Lewin's models. Emphasis is placed on the importance of internal communication, supporting digital culture, and building organizational learning capabilities. Digital tools and stages of effective IT project management are classified. Innovative IT project management methodologies are highlighted, and it is proven that they provide flexibility in responding to changes and increase team adaptability. A classification of change management models is provided, the main IT project management tools are described, and it is argued that change management is a key component of successful IT initiative implementation. The article concludes with the necessity of an integrated approach to IT project management that combines instrumental, methodological, and strategic dimensions. It is substantiated that effective management of IT projects is essential for enhancing the competitiveness of enterprises in the context of digital transformation. The key characteristics of IT project management tools are summarized, including functional, technological, and analytical components aimed at enhancing the efficiency of planning, monitoring, and performance control processes. The main features of such systems include integration flexibility, workflow automation, team collaboration support, real-time data analytics, and cybersecurity assurance. The identification of these parameters made it possible to develop a structural and logical model of IT project management focused on achieving the organization's strategic goals in the context of digital transformation.

Key words: IT projects, change management, digital management tools, flexible methodologies, management decision-making, digital transformation.

https://doi.org/10.33108/galicianvisnyk_tntu2025.05.134

Received 28.07.2025

УДК 338.4

ЕФЕКТИВНИЙ МЕНЕДЖМЕНТ ІТ-ПРОЄКТІВ: КОРИСНИЙ ІНСТРУМЕНТАРІЙ, ІННОВАЦІЙНІ МЕТОДИ, МОДЕЛІ ТА МЕТОДИКИ ПРИЙНЯТТЯ УПРАВЛІНСЬКИХ РІШЕНЬ В УМОВАХ УПРАВЛІННЯ ЗМІНАМИ

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Резюме. Досліджено сучасні підходи до ефективного управління ІТ-проектами в умовах динамічного цифрового середовища. Обґрунтовано важливість використання інноваційного інструментарію та цифрових технологій для досягнення стратегічних цілей підприємств. Здійснено класифікацію та аналіз корисних інструментів, які застосовуються в ІТ-менеджменті: систем управління проектами, платформ командної взаємодії, аналітичних засобів та систем підтримки прийняття рішень. Розкрито сутність гнучких методологій управління проектами, зокрема Agile, Scrum, Lean та Kanban, які сприяють підвищенню гнучкості та адаптивності в умовах постійних змін. Увагу зосереджено на практичному використанні моделей прийняття управлінських рішень (SWOT, DECIDE, Decision Tree, DSS) у поєднанні з цифровою аналітикою. Значну увагу приділено управлінню змінами в ІТ-проектах, зокрема застосуванню моделей ADKAR, Коттера та Левіна. Акцент зроблено на необхідності розвитку внутрішньої комунікації, підтриманні цифрової культури та формуванню здатності до самонавчання в організаціях. Класифіковано цифрові інструменти та етапи ефективного менеджменту ІТ-проектів. Виокремлено інноваційні методології управління ІТ-проектами та доведено, що саме вони забезпечують гнучкість у реагуванні на зміни та підвищують адаптивність команд. Наведено класифікацію моделей управління змінами, охарактеризовано основні інструменти управління ІТ-проектами, а також обґрунтовано, що управління змінами є ключовим компонентом успішної реалізації ІТ-ініціатив. Сформульовано висновки щодо необхідності комплексного підходу до менеджменту ІТ-проектів, який поєднує інструментальну, методологічну та стратегічну складові. Обґрунтовано, що ефективне управління ІТ-проектами є ключем до підвищення конкурентоспроможності підприємств в умовах цифрової трансформації. Узагальнено ключові характеристики інструментів управління ІТ-проектами, що включають функціональні, технологічні та аналітичні компоненти, спрямовані на підвищення ефективності процесів планування, моніторингу та контролю результатів діяльності. До основних характеристик таких систем належать інтеграційна гнучкість, автоматизація робочих процесів, підтримання командної співпраці, аналітика даних у реальному часі та забезпечення кібербезпеки. Визначення цих параметрів дало змогу сформулювати структурно-логічну модель управління ІТ-проектами, орієнтовану на досягнення стратегічних цілей організації в умовах цифрової трансформації.

Ключові слова: ІТ-проекти, управління змінами, інструменти цифрового менеджменту, гнучкі методології, прийняття управлінських рішень, цифрова трансформація.

https://doi.org/10.33108/galicianvisnyk_tntu2025.05.134

Отримано 28.07.2025

Introduction. Nowadays, the evolution of economic systems at all levels and in all types of economic activity is taking place in the context of globalization, digitalization, and related modern economic and social transformations. This process is unpredictable, which complicates decision-making regarding effective management. In such an environment, it is important to use the advantages of project management (business process management) to accelerate the development of domestic economic entities, in particular those specializing in the production of IT services and products. Business process management is one of the most progressive management technologies today. It is aimed at implementing projects with the

maximum possible efficiency within the given constraints of time, funds, and resources, as well as the quality of the final project results.

Review of the latest research and literature. In recent years, there has been growing interest among scientists and practitioners in the problems of effective IT project management, especially in the context of dynamic changes caused by digital transformation. The study of management models, planning tools, risk management, and adaptation to changes in the IT environment covers a wide range of approaches.

In particular, Kerzner H. emphasizes the importance of a systematic approach to project management, defining the project life cycle as the basic methodological construct for management decisions [3, p. 137]. Currently, the scientific work of the PMI (Project Management Institute) «A Guide to the Project Management Body of Knowledge» [6] remains one of the most authoritative sources summarizing standards, tools, and practices in IT project management. The key aspects of agile project management methods (Agile, Scrum, Kanban) were studied by researcher Highsmith J. [2, pp. 123–128]. In the context of management decision-making in the IT environment, it is worth paying attention to the research of Davenport T. H. and Harris J. G. [1, p. 168], who analyze the role of analytics and data as the basis for modern decision-making models. Among Ukrainian researchers, it is worth highlighting Averkina M. and Matveev A. [9], who argued that for the successful implementation of organizational changes, it is advisable to use existing change management models or create your own model based on them, and also provided recommendations on the selection and adaptation of change management models, taking into account the specific needs of organizations. Thus, Luchko G. and Frankiv R. [16] study the implementation of digital solutions in IT project management and their impact on the effectiveness of strategic goal implementation. The scientific works [10; 15] analyze modern information technologies and tools in IT management in the context of the digitalization of business processes.

In view of the above, the problem of improving the efficiency of IT project management requires further research, taking into account the new challenges of the digital economy, globalization, and the need for rapid adaptation to change.

Main purpose of the article is to substantiate the theoretical and practical foundations of effective IT project management in the context of implementing innovative management methods, modern tools, models, and techniques for making management decisions in conditions of constant changes in the external and internal environment.

Task setting. To achieve this goal, the study sets out the following scientific objectives: to reveal the essence and key characteristics of effective IT project management in the context of digital transformation; to classify the tools, methods, and models used in IT project management at different stages of their life cycle; to investigate modern approaches to management decision-making in the IT sphere in conditions of uncertainty, risk, and change; to analyze the impact of innovative technologies such as artificial intelligence, machine learning, and blockchain on improving the effectiveness of management decisions; to offer practical recommendations for implementing adaptive change management models in IT project implementation processes to ensure their effectiveness and sustainability.

The following methods were used to solve the tasks: analysis, synthesis, generalization, induction, analogy, and a systematic approach.

Statements of main issues of the study. In the process of managing IT projects, organizational, technical, analytical, and communication problems arise, among which we can highlight the presence of ambiguous requirements, constant changes in the scope or priorities of the project, technical difficulties, insufficient or inefficient use of resources, security risks, insufficient or ineffective change management systems, and delays or shortcomings in the integration of different systems and technologies. These problems require careful planning, the selection of effective tools, and constant rational management and monitoring to be successfully resolved in the context of the trend toward digitalization of society and the dynamic growth in the number of innovative projects.

Thus, the digital tools of IT project managers are constantly expanding and improving. Modern systems allow you to automate routine tasks, integrate data from various sources, and make management decisions based on real indicators [9, p. 91]. Among the most popular tools are: 1) project management systems: Jira, ClickUp, Trello, Monday.com – provide management of tasks, deadlines, and resources; 2) version control and DevOps systems: GitHub, GitLab, Azure DevOps; 3) analytics and data visualization tools: Power BI, Tableau – allow you to create interactive reports to support decision-making; 4) productivity tracking systems: Clockify, Toggl, RescueTime; 5) risk and quality management systems: RiskyProject, Qualtrics, ISO Manager [4]. The advantage of such digital tools is the ability to quickly scale, cloud integration, and support for decentralized teams.

Innovative IT project management methodologies provide flexibility in responding to change and increase team adaptability. The traditional «waterfall» approach is now giving way to Agile frameworks, which are better suited to the dynamics of the IT environment [12, p. 179]. Among such innovative methods, the following are worth highlighting: 1) Agile – involves flexible planning, rapid feedback, and continuous improvement; 2) Scrum – ideal for short iterations (sprints), active customer participation, and clearly defined roles; 3) Kanban – process visualization, workload control, minimization of blockages; 4) SAFe (Scaled Agile Framework) – suitable for large organizations with multiple Agile teams; 5) Lean – focused on minimizing waste and maximizing value [15].

These innovative methods allow the formation of autonomous teams that are capable of making decisions independently, which speeds up project implementation and increases their efficiency. In turn, tools such as JIRA, Asana, Microsoft Project, Smartsheet, and Wrike (Fig. 1) provide functionalities for task management, time tracking, collaboration, and reporting, which improve communication and streamline project management processes.

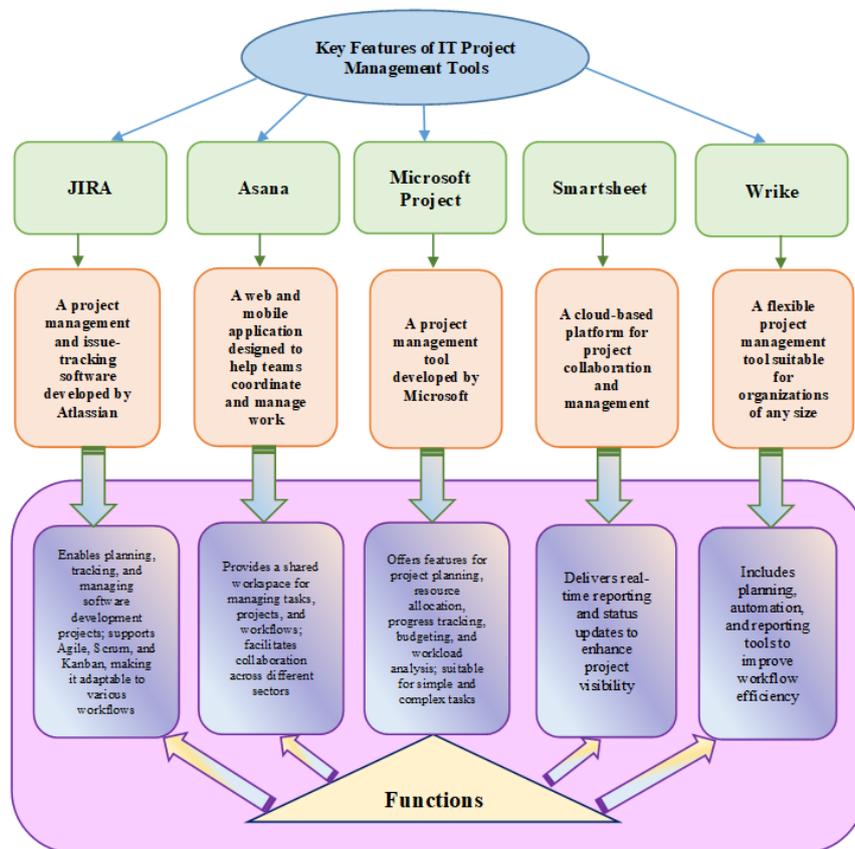


Figure 1. Key Features of IT Project Management Tools

*Source: compiled by the author based on [11, p. 145].

Effective IT project management is impossible without clear decision-making models that take into account the complexity of the project environment. In the realities of IT, decisions often have to be made under conditions of uncertainty and limited time and resources [5].

The most common decision-making models in IT project management include:

- 1) SWOT analysis – allows you to assess the project environment in terms of strengths/weaknesses, opportunities, and threats;
- 2) PESTEL analysis – focuses on the study of external macro factors: political, economic, social, technological, environmental, and legal;
- 3) DECIDE – a decision-making model that includes problem identification, information gathering, evaluation of alternatives, and selection of the optimal solution;
- 4) Decision Tree – hierarchical representation of possible options, taking into account risks;
- 5) Cost-Benefit Analysis – analysis of costs and benefits as a basis for choosing the most appropriate solution [10, p. 47].

DSS (Decision Support Systems) are also increasingly being used to automate decision-making processes based on big data analytics and artificial intelligence.

IT projects are rarely implemented without changes – changes in requirements, technologies, budget, and priorities are typical. That is why change management is a key component of successful IT initiative implementation.

Table 1 identifies the characteristics inherent in change management in the IT sector in the context of the war in Ukraine.

Table 1. Features characteristic of change management in the IT sector under martial law in Ukraine

<i>No</i>	<i>Features</i>	<i>Essence</i>
1	Business continuity planning	IT companies operating in regions affected by the war must develop reliable business continuity plans to ensure uninterrupted service delivery to customers. This may include the creation of backup infrastructure, data backup and recovery procedures, and contingency plans for transferring operations if necessary
2	Supply chain disruptions	War conditions disrupt supply chains, affecting the availability of hardware components, software licenses, and other IT resources. In such conditions, IT companies should diversify their supply chains, find alternative suppliers, and build up stocks of critical resources to mitigate the impact of disruptions
3	Remote work and distributed teams	Crisis situations disrupt the normal operation of IT businesses, making remote work and distributed teams extremely important. IT companies need to be able to quickly adapt to remote work, implement tools for collaboration, and ensure the productivity and well-being of their remote employees
4	Increased security concerns	Given the heightened geopolitical tensions and potential cybersecurity threats during crises and wars, ensuring the security of IT infrastructure, data, and operations is of paramount importance. In these conditions, IT companies have to invest more resources in cybersecurity measures to protect against cyberattacks and hacks
5	Retaining and attracting talent	The crisis has led to talent retention challenges, as skilled IT professionals are increasingly seeking opportunities abroad or are unwilling to relocate to areas affected by conflict. IT companies have to implement staff retention strategies, offer competitive salaries and benefits, and provide a safe and supportive working environment to retain their workforce. In addition, there are problems with attracting new talent

*Source: compiled by the author based on [2, p. 118].

Change management models can be classified as follows:

- 1) ADKAR (Awareness, Desire, Knowledge, Ability, Reinforcement) – focused on supporting staff at every stage of change;
- 2) Kotter’s 8-step model – includes forming a coalition, creating a vision, communicating change, removing barriers, and consolidating achievements;
- 3) Lewin’s model (Unfreeze – Change – Refreeze) – preparing for change, implementing change, consolidating new approaches [7].

In the context of IT projects, internal communication, explaining changes to the team, actively involving all stakeholders, and creating a flexible culture capable of self-learning are of particular importance. Digital transformation is changing the very nature of organizational management: from centralized control to networked interaction, from stability to flexibility. IT projects are becoming the core of changes that affect the company's strategy, culture, and values. It is also worth noting that identifying, assessing, and mitigating risks using tools such as risk registers and SWOT analysis can help with proactive risk management, ensuring the stability and success of an IT project. The key performance indicators for IT projects that should be analyzed and monitored by team members are: achievement of set goals; project completion within budget; timely project completion; consideration of experience; and the rate of failed project task implementations.

Many project management tools are specifically designed to work with distributed teams, facilitating information sharing and collaboration on tasks. You can even replace email communication with project management software to keep everyone up to date.

Conclusions. Successful IT project management involves streamlining a set of knowledge, skills, and abilities and requires constant strategic planning, effective and open communicative leadership, risk management and impact mitigation skills, adaptability to change, regular assessment, and analytical reporting. Top managers of IT projects should have not only strong technical skills and an understanding of business processes, but also communication and leadership skills. Effective IT project management in the context of digital transformation requires a holistic approach: from the selection of relevant tools to flexible change management. The use of modern digital platforms, innovative methods (Agile, Scrum, Lean), decision-making models (SWOT, DSS, DECIDE), and change management strategies (ADKAR, Kotter's) contributes to improving project performance, minimizing risks, and forming competitive advantages. For Ukrainian IT companies integrating into the global environment, it is extremely important to build institutional capacity for change, develop a digital culture, and invest in management competencies that meet the requirements of the 21st century.

Prospects for further research can focus on: developing adaptive IT project management models that combine AI/ML with behavioral factors of team members; in-depth analysis of Ukrainian experience in the digitalization of management processes in IT companies and IT startups; the integration of ESG principles and sustainable development into digital project management; the improvement of digital change management tools, including the development of domestic software for project management; the study of the impact of cognitive and emotional technologies (emotion AI) on the effectiveness of teamwork and communication in IT projects; testing hybrid models with elements of predictive analytics and decision intelligence in the educational environment and small businesses. It is also advisable to initiate interdisciplinary research combining management, IT, social sciences, and cyberpsychology for a deeper understanding of the human factor in managing projects of the future.

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