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INNOVATION MANAGEMENT IN THE MIRROR OF MODERN MANAGEMENT TECHNOLOGIES: NEW TOOLS OF LEADERSHIP AND DECISION-MAKING

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The article explores the problem of integrating innovation management and modern management technologies in the context of organizational digital transformation. The focus is placed on new tools of leadership and decision-making that ensure management flexibility, enhance innovation capacity, and reduce risks in both strategic and operational planning. The paper reveals the essence of innovation management as a conceptual approach to organizational development and characterizes modern management technologies, including digital tools, artificial intelligence, data analytics, agile methodologies, and design thinking. Particular attention is paid to the analysis of new forms of leadership: data-driven leadership, leadership based on collective intelligence and network management, as well as leadership through innovative decision-making methods using interactive dashboards, simulation models, and virtual environments. Based on corporate case studies, including those of Ukrainian companies, it is demonstrated how the integration of modern technologies and innovation management contributes to the creation of competitive advantages, enhances adaptability to the challenges of wartime conditions, and addresses global instability. Key barriers to technology implementation have been identified – organizational, technological, and ethical – which require additional attention from both managers and researchers. As a result, recommendations are formulated regarding the development of employees’ digital competencies, the implementation of transparent technology usage policies, and the strengthening of leaders’ strategic vision. The practical significance of the study lies in the possibility of applying the findings to improve management practices, optimize decision-making processes, and foster an innovation-oriented organizational culture.

Keywords: innovation management, modern management technologies, digitalization, data-driven leadership, collective intelligence, network management, decision-making, innovation culture.

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Introduction and problem statement

The current stage of economic development is characterized by a high dynamic of changes, digitalization, and globalization of business processes. Technological shifts driven by the development of artificial intelligence, big data, blockchain, and other innovative tools are fundamentally transforming management systems. Under these conditions, the role of innovation management is growing, as it combines an organization’s ability to generate,

implement, and commercialize innovations with the use of modern management technologies.

At the same time, new challenges – including market turbulence, geopolitical risks, growing competition, and social expectations – place new demands on leaders. Effective leadership today is impossible without the use of modern digital solutions that ensure speed, accuracy, and flexibility in the decision-making process [1].

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Innovation management in the mirror of modern management technologies: new tools of leadership and decision-making

The scientific problem lies in the insufficient development of the theoretical and methodological foundations for integrating innovation management and modern management technologies.

In particular, the scientific community has not yet provided comprehensive answers to key questions:

– which innovative leadership tools ensure the greatest effectiveness in the digital environment;

– what is the mechanism of influence of modern management technologies on different levels of the decision-making process;

– which organizational, technological, and cultural barriers hinder the formation of an innovation culture.

Thus, the essence of the scientific problem comes down to the search for conceptual and practical solutions that will make it possible to harmoniously combine the potential of innovation management with the capabilities of modern management technologies in order to enhance leadership effectiveness and improve decision-making processes.

The theoretical significance of the article lies in deepening the scientific understanding of innovation management as a modern managerial concept that integrates advanced technologies, leadership, and decision-making. It provides the foundation for further scholarly exploration and the development of digital management methodologies. The practical significance of the study lies in the potential application of its results to improve organizational management practices, implement innovative technologies in the decision-making process, enhance leadership effectiveness, and strengthen the competitiveness of enterprises in a dynamic environment.

The relevance of the topic is driven by the rapid development of digital technologies, which are radically transforming management approaches and creating a need for new managerial tools. Innovation management is becoming a key factor in shaping the competitiveness of enterprises in the context of the global economy. Modern management technologies open up new opportunities for effective leadership and data-driven strategic decision-making. At the same time, organizations face barriers to the implementation of innovative tools, requiring comprehensive scientific analysis. The integration of innovation management and modern management technologies provides a foundation for enhancing the flexibility and effectiveness of management systems.

Analysis and research of publications

In the scientific tradition, the earliest attempts to explain the phenomenon of leadership were predominantly descriptive and can be traced back to the works of ancient thinkers. Philosophers and historians such as Plato, Aristotle, Plutarch, Suetonius,

and Livy considered leaders as “heroes” whose success was determined solely by their personal qualities, regardless of external circumstances. In the 19th century, these ideas were further developed in the works of T. Carlyle, who, within the framework of the “hero cult” concept, argued that the unique traits and abilities of individual personalities determine their capacity to influence society and historical processes. Beginning in the 1930s, leadership studies became more systematic and emerged as a distinct area within management, focusing on personal characteristics, abilities, and the role of leaders in achieving organizational effectiveness [2].

The issue of innovative methods of enterprise management has been addressed by both international and Ukrainian scholars, among whom notable figures include Jack Welch, V. K. Tarasov, Ichak Adizes, Peter Drucker, V. Pastukhov, V. Bazilevich, L. V. Balabonov, V. Protsenko, R. Fathutdinov, L. Fedulova, V. Chobitok, N. Chukhrai, and others. Their works have made a significant contribution to understanding organizational development processes, change management, and the implementation of innovative strategies in enterprise activities. At the same time, analysis of the scientific literature indicates that aspects of forming an integrated system of strategic innovation management—combining modern management technologies, digital tools, and advanced leadership approaches—remain insufficiently explored. These areas thus represent a promising field for further research in the domain of innovation management [3].

Purpose of the article

The objective of the article is to investigate the interrelationship between innovation management and modern management technologies in the context of digital transformation. The article aims to identify new tools of leadership and decision-making that contribute to enhancing the effectiveness of managerial processes. Additionally, it seeks to determine the barriers and prospects for implementing these tools in the practice of contemporary organizations.

Presentation of the main material

The development of modern management is accompanied by the active integration of innovative approaches and digital technologies into organizational management systems. In this context, innovation management emerges not only as a distinct managerial concept but also as a key element in shaping development strategies, ensuring that enterprises can adapt to the challenges of the digital economy and global competition.

Researchers pay particular attention to the integration of innovation management with modern management technologies, including digital tools, data

analytics, artificial intelligence, as well as agile and design thinking methodologies. Such integration enables organizations not only to enhance the efficiency of management processes but also to cultivate an innovation-oriented culture, which is critically important for sustainable development in a dynamic environment [4].

In this context, the role of leadership as a factor in the successful implementation of innovations is increasingly emphasized. A modern leader must combine strategic vision with the ability to leverage digital tools for decision-making, motivate personnel, and create conditions for the development of collective intelligence. The combination of innovation management and modern management technologies thus forms a new leadership paradigm focused on flexibility, openness, and rapid response to external challenges.

Innovation management is viewed as a set of principles, methods, and management technologies aimed at the creation, development, and commercialization of innovations. Its essence lies in an organization’s ability to generate new products, services, or business models that provide competitive advantages. In a dynamic environment, innovation management becomes a key tool for adapting to changes, which is especially relevant during wartime challenges and economic instability [5].

Modern management technologies encompass digital tools, artificial intelligence, data analytics, cloud services, blockchain, as well as agile and design thinking methodologies. Their use ensures the efficiency of management processes and provides a foundation for integrating innovations into development strategies, as presented in Table 1.

Table 1

Characteristics of modern management technologies

Management technology	Key characteristics	Managerial effect
Digital Tools	Process automation, transparency, rapid execution of operations	Reduced decision-making time, decreased routine tasks
Artificial Intelligence	Data analytics, forecasting, resource optimization	Improved forecast accuracy, strategy personalization
Data Analytics	Processing large volumes of information, pattern identification	Evidence-based decisions, effective risk management.
Cloud Services	Data storage and sharing, information accessibility	Flexibility and mobility in management
Blockchain	Decentralized data storage, transaction security	Increased trust and information protection
Agile and Design Thinking	Flexibility, customer orientation, adaptability	Rapid response to changes, fostering innovation

Source: compiled by the author

The analysis of modern management technologies shows that their use is aimed at increasing transparency, flexibility, and efficiency in management processes. Digital tools and artificial intelligence accelerate decision-making and provide an evidence-based foundation for strategic planning, while data analytics, cloud services, and blockchain strengthen organizational information security and mobility. Agile and design thinking methodologies foster the development of an innovation culture and the ability to quickly adapt to environmental changes. Collectively, these technologies create the prerequisites for integrating innovation management into enterprise development strategies and enhancing their competitiveness [6].

Leadership is a decisive factor in the process of implementing innovations, as leaders set the direction for development, shape an innovation culture, and motivate personnel toward change. In

modern conditions, the emphasis is shifting from an authoritarian style to transformational leadership, which is based on trust, teamwork, and the ability to leverage digital tools for effective communication. As noted by [5], in conditions of martial law, it is precisely leaders who can turn a crisis into a resource for organizational renewal and development.

The digital transformation of organizations highlights the need to rethink traditional approaches to leadership. Whereas managerial decisions were previously largely based on leaders’ experience and intuition, today increasing importance is placed on tools grounded in data, networked interactions, and interactive forecasting models.

In the current digital economy, data becomes a strategic resource, and a leader’s ability to use it effectively becomes a key competitive advantage. Data-driven leadership is based on making managerial decisions not

only intuitively or experientially but also through systematic processing of information from various sources. This approach reduces the subjectivity of decisions, increases their accuracy, and enhances adaptability to rapidly changing external conditions [7].

The use of business intelligence tools, interactive dashboards, and artificial intelligence technologies creates a new managerial paradigm in which the leader functions not only as an inspirer and strategist but also as an analytical manager capable of forecasting the consequences of managerial actions.

This approach contributes to:

- management transparency through access to up-to-date indicators in real time;
- operational efficiency through rapid

visualization of key metrics and risk signals;

- innovativeness by integrating analytics into strategic planning processes;

- business resilience through forecasting market trends and crisis scenarios [8].

The increasing role of data in modern management drives the emergence of a new type of leadership – data-driven leadership. This approach involves the use of comprehensive analytics, predictive models, and interactive visualizations to support strategic and operational decision-making. Unlike traditional methods, it minimizes subjective influence and enhances the substantiation of managerial actions. To systematize the key characteristics of this approach, a summarized structure is presented in Table 2.

Table 2

Characteristics of data-driven leadership

Key aspect	Content	Tool examples	Expected outcomes
Data sources	Collection of information from internal and external systems	CRM systems, ERP, social networks, IoT sensors	Completeness and multidimensionality of data
Analytical technologies	Processing large datasets and building models	Business Intelligence, Big Data Analytics, AI	Trend forecasting, scenario modeling
Visualization	Presentation of information in a clear and interactive format	Dashboards, heatmaps, KPI panels	Transparency and speed of decision-making
Leader's Role	Using data for managerial decisions and strategic vision	Analytical approach, combining intuition and facts	Reduced subjectivity, increased efficiency
Organizational outcomes	Optimization of business processes, increased competitiveness	Automated forecasting, scenario planning	Sustainable development and strategic flexibility

Source: Compiled by the author

Thus, data-driven leadership becomes a crucial tool for the digital transformation of organizations. It enables leaders to move beyond traditional management methods and combine strategic vision with the powerful capabilities of analytical technologies, establishing a new standard of management in the context of digitalization.

In the context of digitalization, management processes increasingly rely on collective intelligence, which emerges from the integration of knowledge, skills, and experience of various organizational participants. Modern digital platforms, cloud services, corporate social networks, and collaborative tools (such as Slack, MS Teams, Trello, etc.) enable the creation of dynamic workgroups, real-time idea exchange, and the development of joint solutions based on principles of openness and transparency.

Network management involves the distribution of leadership functions among team members, allowing for more effective use of participants' competencies

and reducing the risk of excessive concentration of managerial power. This approach fosters trust, enhances synergy, and creates conditions for the innovative development of the organization.

By combining collective intelligence with network management, a new type of governance emerges, where the key factor is not only the individual vision of the leader but also the ability to integrate the creative potential of the entire organization.

The effectiveness of modern management increasingly depends on organizations' capacity to leverage collective intelligence and network management principles. These approaches not only enable the accumulation of knowledge and competencies from various participants but also create conditions for rapid information exchange, collaborative problem-solving, and generation of innovative ideas. Digital platforms play a crucial role in this process, ensuring communication transparency and organizational flexibility. To systematize the key characteristics, a summary is presented in Table 3.

Table 3

Characteristics of collective intelligence and network management		
Component	Key features	Managerial effect
Collective intelligence	Utilization of knowledge and competencies of all participants; interactive information exchange	More informed decision-making, increased creativity and innovation
Network leadership	Distribution of managerial functions, decentralization of power, open communications	Enhanced trust, strengthened team interaction, development of accountability
Digital platforms	Cloud services, corporate social networks, collaboration tools	Rapid idea exchange, flexible formation of workgroups, adaptability to changes
Team synergy	Integration of individual ideas into collective solutions	Improved organizational efficiency and competitiveness

Source: compiled by the author

Thus, the use of collective intelligence and network management in the context of digitalization creates a new managerial paradigm based on openness, decentralization, and the active involvement of all participants in the decision-making process. This approach enhances the effectiveness of team interaction, increases the organization’s innovation potential, and strengthens its competitive position in the market. As a result, leadership ceases to be solely an individual attribute of the manager and transforms into the ability to integrate the collective intelligence of the team to achieve strategic goals.

In modern management, innovative methods of decision-making are becoming increasingly relevant, combining the use of digital technologies, analytical tools, and interactive environments. Traditional methods, based on managerial intuition or limited information analysis, are gradually yielding to approaches that ensure the substantiation and predictability of outcomes [9].

The use of simulation models allows the creation of virtual scenarios and the assessment of the consequences of different management strategies before their implementation. This reduces risks, enables consideration of both external and internal factors, and ensures more accurate strategic planning.

Virtual and augmented reality systems provide a safe environment for experimenting with managerial decisions, where leaders and teams can test various organizational behavior models, practice crisis situations, and explore new business models. Interactive dashboards based on business intelligence principles make the decision-making process more transparent and dynamic. They allow managers to view key performance indicators in real time, track changes, and promptly adjust management actions. Innovative decision-making methods contribute to the development of an evidence-based management culture. This not only enhances leadership effectiveness but

also expands opportunities for creating flexible, adaptive, and innovative organizations.

Thus, new leadership tools in the context of digitalization not only transform management practices but also shape a new model of interaction between leaders and the organization. This model is based on the integration of data, collective competence, and innovative solutions, enabling organizations to achieve flexibility, resilience, and strategic orientation in a digital environment.

The integration of modern management technologies and innovation management creates a powerful synergistic effect, providing organizations with a new level of competitiveness. While innovation management defines the strategic directions for development, modern management technologies—such as digital platforms, data analytics, artificial intelligence, agile methodologies, and design thinking—serve as practical tools for their implementation. The synergy of these approaches not only accelerates decision-making processes but also makes them more flexible, evidence-based, and adaptable to changes in the market environment.

Modern management technologies act as catalysts for innovative activities. They provide:

- operational efficiency in data collection and analysis, enabling faster identification of new opportunities;
- flexibility of organizational structures through agile methodologies and network management;
- risk reduction through simulation models and predictive analytics;
- development of an innovation culture by actively involving personnel in co-creative processes.

Thus, the synergy between modern management technologies and innovation management transforms organizations into open, adaptive, and technology-oriented systems capable of functioning effectively in highly turbulent environments.

The practices of leading global and Ukrainian companies demonstrate that the synergy of modern management technologies and innovation management has a practical nature and delivers tangible business results. This synergy is manifested through the use of digital tools, artificial intelligence, data analytics, as well as the implementation of agile methodologies, design thinking, and collective intelligence. These tools

enable organizations not only to optimize internal processes but also to develop new models of interaction with customers and partners.

To illustrate, Table 4 summarizes examples of international and Ukrainian companies that successfully apply integrative approaches in their operations.

Table 4

Examples of Corporate Cases Integrating Modern Management Technologies and Innovation Management

Company	Key technologies and approaches	Integration results
Siemens (Germany)	Digital twins, big data analytics, production automation	Forecasting technical failures, cost reduction, increased efficiency of production processes
Google (USA)	Design thinking, agile, team collective intelligence	Accelerated development of innovative products, promotion of an experimental culture
Tesla (USA)	Artificial intelligence, data integration in production	Flexible response to demand changes, advancement of e-mobility
SoftServe (Ukraine)	Big Data, AI business solutions, collaborative corporate culture	Creation of innovative products for global clients, strengthening Ukraine's position in the IT market
Rozetka (Ukraine)	Data analytics, logistics automation, digital management platforms	Optimization of supply chains, personalized customer service
Nova Poshta (Ukraine)	Automated sorting centers, integrated IT systems, digital services	Increased speed of shipment processing, development of an innovative logistics ecosystem

Source: Compiled by the author

The analysis of the presented corporate cases indicates that the successful integration of modern management technologies and innovation management is based on a combination of several key factors: process digitalization, flexibility of organizational structures, customer orientation, and the development of an internal innovation culture. Companies that invest in artificial intelligence, big data analytics, Agile and Lean methodologies demonstrate faster adaptation to market changes and enhance their competitiveness. An essential condition is also active support from leadership, which fosters an environment of creativity and initiative among employees. Thus, the integration of management technologies and innovations becomes not merely a tool for improving efficiency, but a strategic foundation for the sustainable development of business.

Despite the significant advantages of integrating modern management technologies and innovation management, organizations in practice face a range of challenges and limitations that can slow the transformation process. These can be conditionally divided into organizational barriers, technological risks, and ethical aspects.

Organizational barriers:

– resistance to change among personnel. Many employees traditionally perceive new management technologies as a threat to their jobs or as an additional

workload. This can cause covert or overt opposition, slowing down the implementation of innovations;

– insufficient staff competencies. The use of big data, AI, or VR/AR technologies requires new knowledge and skills. If a company does not invest in developing employees' digital competencies, the implementation of innovative solutions becomes formal and ineffective;

– bureaucratic constraints. In large organizations, traditional hierarchical structures often hinder rapid decision-making. A lack of flexibility in internal processes creates barriers to agile adaptation to change;

– financial constraints. Innovative technologies require significant initial investments, and the return on investment is not always immediate, which can be problematic for small and medium-sized enterprises.

Technological risks:

– dependence on digital solutions. Excessive process automation can make a company vulnerable to technical failures or cyberattacks. This is particularly critical in digital transformation, where the continuity of business processes depends directly on IT systems;

– rapid obsolescence of technologies. The management technology market develops so dynamically that tools considered innovative today may become outdated in a few years. Companies must constantly update infrastructure, requiring additional expenses;

– integration limitations. Not all systems are compatible with each other, creating challenges in implementing comprehensive digital management platforms;

– risk of losing control. The use of AI algorithms in decision-making can lead to situations where managers do not fully understand the system’s logic, reducing process transparency.

Ethical aspects:

– protection of personal data. Using big data analytics in HR management or marketing often involves processing confidential information. Violations in storing or using these data may result in legal sanctions and loss of customer trust;

– algorithmic bias. AI systems can reproduce biases embedded in input data, leading to unfair management decisions, for example, in personnel selection or performance evaluation;

– displacement of human labor. Widespread automation raises societal debates about the future of jobs. Organizational leaders must consider not only economic efficiency but also the social consequences of such decisions;

– ethical responsibility of leaders. Implementing modern management technologies requires leadership to adhere to principles of transparency, honesty, and accountability, as new tools directly affect employees and society [10].

Thus, modern management technologies and innovation management, despite their clear advantages, face a range of challenges, among which organizational barriers, technological risks, and ethical dilemmas are the most critical. The analysis shows that the key to overcoming these limitations is a systematic approach: investing in the development of employees’ digital competencies, building flexible organizational structures, and establishing transparent technology-use policies. Only by combining innovation with responsible management can organizations enhance their efficiency and competitiveness in the long term.

Conclusions

The article demonstrates that innovation management, combined with modern management technologies, forms a new paradigm of leadership and decision-making. Data-driven leadership, the use of collective intelligence, network management, and interactive modeling tools provide broad opportunities to enhance the efficiency of management processes, reduce risks, and foster an innovative culture within organizations. At the same time, challenges remain – organizational barriers, technological risks, and ethical aspects – which require systematic solutions.

Recommendations for managers:

– implement digital management tools and analytical systems as a foundation for strategic planning;

– develop leadership competencies focused on data-driven decision-making and management under uncertainty [11];

– foster a culture of open interaction and collective knowledge sharing;

– pay attention to ethical standards in the use of advanced technologies.

Recommendations for researchers:

– deepen the study of integrating modern management technologies into the innovation management system;

– analyze industry-specific features of implementing data-driven leadership and network management;

– investigate mechanisms for building a sustainable innovation culture in conditions of wartime and post-war transformations.

Thus, the further development of innovation management, in the context of modern management technologies, should aim not only to increase business efficiency but also to create a flexible, responsible, and innovation-capable organization of the future.

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ІННОВАЦІЙНИЙ МЕНЕДЖМЕНТ У ДЗЕРКАЛІ СУЧАСНИХ УПРАВЛІНСЬКИХ ТЕХНОЛОГІЙ: НОВІ ІНСТРУМЕНТИ ЛІДЕРСТВА ТА ПРИЙНЯТТЯ РІШЕНЬ

Крайнік О. М.

У статті досліджується проблема інтеграції інноваційного менеджменту та сучасних управлінських технологій в умовах цифрової трансформації організацій. Акцент зроблено на нових інструментах лідерства та прийняття рішень, які забезпечують гнучкість управління, підвищення інноваційної спроможності та зниження ризиків у стратегічному та оперативному плануванні. У роботі розкрито сутність інноваційного менеджменту як концептуального підходу до розвитку організацій, а також охарактеризовано сучасні управлінські технології, зокрема цифрові інструменти, штучний інтелект, аналітику даних, методології agile та дизайн-мислення. Особливу увагу приділено аналізу нових форм лідерства: орієнтованого на дані, заснованого на колективному інтелекті та мережевому управлінні, а також лідерства через інноваційні методи прийняття рішень із застосуванням інтерактивних панелей, симуляційних моделей та віртуальних середовищ. На основі прикладів корпоративних кейсів, зокрема українських компаній, показано, як поєднання сучасних технологій та інноваційного менеджменту сприяє формуванню конкурентних переваг, підвищенню адаптивності до викликів воєнного часу та глобальної нестабільності. Виявлено ключові бар'єри впровадження технологій – організаційні, технологічні та етичні, що потребують додаткової уваги з боку управлінців та науковців. У результаті сформульовано рекомендації щодо розвитку цифрових компетенцій персоналу, впровадження прозорих політик використання технологій та посилення стратегічного бачення керівників. Практична значущість дослідження полягає у можливості використання отриманих висновків для вдосконалення управлінських практик, оптимізації процесів прийняття рішень і формування інноваційної культури в організаціях.

Ключові слова. Інноваційний менеджмент, сучасні управлінські технології, цифровізація, лідерство на основі даних, колективний інтелект, мережевий менеджмент, прийняття рішень, інноваційна культура.

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The article explores the problem of integrating innovation management and modern management technologies in the context of organizational digital transformation. The focus is placed on new tools of leadership and decision-making that ensure management flexibility, enhance innovation capacity, and reduce risks in both strategic and operational planning. The paper reveals the essence of innovation management as a conceptual approach to organizational development and characterizes modern management technologies, including digital tools, artificial intelligence, data analytics, agile methodologies, and design thinking.

Particular attention is paid to the analysis of new forms of leadership: data-driven leadership, leadership based on collective intelligence and network management, as well as leadership through innovative decision-making methods using interactive dashboards, simulation models, and virtual environments. Based on corporate case studies, including those of Ukrainian companies, it is demonstrated how the integration of modern technologies and innovation management contributes to the creation of competitive advantages, enhances adaptability to the challenges of wartime conditions, and addresses global instability. Key barriers to technology implementation have been identified – organizational, technological, and ethical – which require additional attention from both managers and researchers. As a result, recommendations are formulated regarding the development of employees’ digital competencies, the implementation of transparent technology usage policies, and the strengthening of leaders’ strategic vision. The practical significance of the study lies in the possibility of applying the findings to improve management practices, optimize decision-making processes, and foster an innovation-oriented organizational culture.

Keywords: innovation management, modern management technologies, digitalization, data-driven leadership, collective intelligence, network management, decision-making, innovation culture.

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