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ASSESSING THE IMPACT OF DIGITAL COMMUNICATION MANAGEMENT TOOLS ON THE ECONOMIC EFFICIENCY OF DISTRIBUTED TEAMS

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Digital communication management tools play a crucial role in enabling effective collaboration among distributed team members. Their use streamlines information flows, reduces information duplication, shortens data exchange times, and improves workflow organization, thereby impacting the organization's performance and enhancing coordination between departments. This article examines the impact of digital communication management tools on the economic efficiency of distributed teams. To achieve this goal, a systematic approach, the dialectical method of cognition, and the structural-logical method were employed, allowing for the synthesis of existing approaches and the proposal of a novel evaluation framework. The paper proposes an integrated communication effectiveness index that combines indicators of communication accuracy, information duplication, response time, and time utilization efficiency. Additionally, the information load index is considered, enabling the assessment of the intensity of communication flows and their impact on the performance of distributed teams. The analysis was conducted for specific time periods reflecting different stages of the organization's development, including the impact of the COVID-19 pandemic and wartime conditions. The results indicate gradual improvement in communication metrics and increased operational efficiency. It was found that the most noticeable changes are observed in digital-analytical and management-coordination teams, while in courier and customer service teams, these processes occur more slowly. Practical testing of the proposed approach confirmed its suitability for evaluating communication processes and justifying management decisions. The proposed approach can be used to evaluate the organization of communications within distributed teams and inform decisions to improve them, thereby enabling a more efficient use of resources and improved performance in the context of digital transformation.

Keywords: communication management, digital tools, distributed teams, economic efficiency, labor productivity, employee adaptation, human resource potential, logistics companies, integrated index, digitalization of management.

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Introduction and formulation of the problem

The digitalization of business processes and the spread of remote work formats, driven by the development of information and communication technologies, the globalization of economic processes, the consequences of pandemic restrictions, and the challenges of martial law, are transforming approaches to employee management and team collaboration. Changes in the structure of employment, the growing mobility of the workforce, and the need to ensure the continuity of business processes are increasing the need for digital tools to coordinate employee activities. The effectiveness of modern organizations, particularly in the logistics sector, depends to a large extent on

the speed of information exchange, the coordination of employee actions, and the continuity of communication processes, which drives the active use of distributed teams as a form of work organization. Additionally, high levels of competition, the need for rapid responses to changes in demand, and the increasing complexity of supply chains are driving higher demands on the quality of management decisions and the effectiveness of communication among participants in business processes. In these conditions, communication management serves as a vital tool for coordinating employee activities and ensuring the organization's operational effectiveness, as well as boosting labor productivity and the efficient use of resources.

The relevance of this research is heightened by the growing role of digital communication management tools, particularly corporate messaging platforms, customer relationship management systems, task management systems, and analytical services. Their use facilitates the integration of information flows, increases process transparency, ensures the timeliness of management decisions, and reduces transaction costs. At the same time, the use of such tools is not always accompanied by adequate economic justification, and effectiveness assessments are often limited to qualitative characteristics or individual indicators, which does not allow for a comprehensive determination of their impact on the performance of distributed teams. The issues of communication management, digitalization of management, and team effectiveness are primarily studied in the context of organizational behavior and information technology. At the same time, the use of such tools is not always accompanied by adequate economic justification, and assessments of their effectiveness are often limited to qualitative characteristics or individual indicators, which prevents a comprehensive determination of their impact on the performance of distributed teams.

Issues related to communication management, the digitalization of management, and team effectiveness are primarily studied within the framework of organizational behavior and information technology.

At the same time, the link between communication indicators and economic performance —specifically labor productivity, management costs, and the effective utilization of human resources —remains insufficiently explored, limiting the possibility of their comprehensive assessment. This necessitates improving tools for assessing the impact of digital communication management tools, particularly through the development of integrated indicators and the application of quantitative analysis methods, thereby enhancing the soundness of management decisions and the effectiveness of distributed teams.

The significant attention of researchers to the issues of communication management, the digitalization of management, and the effectiveness of team functioning — driven by the transformation of organizational processes and the spread of distributed forms of employment — has contributed to extensive coverage of the role of communications in ensuring the coordination of employee activities, research into the impact of digital tools on the organization of information flows, as well as the study of the characteristics of distributed teams' functioning.

As noted by [1], communication management is a component of the human resources management system and plays an important role in ensuring the effective functioning of the organization. Communication processes ensure the integration of elements of the organizational system, the alignment of the actions of management subjects and objects, and the coordination of their interaction. Communication management ensures the implementation of key management functions, including planning, organizing, controlling, and motivating staff. Its level of development determines the quality of communication links, which influence the coordination of employees' actions, their engagement, and work performance. Furthermore, communication management ensures the formation of information flows necessary for informed decision-making, thereby contributing to the more effective utilization of the organization's human resources.

Communication management has received particular attention amid the spread of distributed forms of work organization, where employee interaction primarily occurs in a digital environment. This reinforces its role as a key element in ensuring coordinated actions, timely information exchange, and the effectiveness of joint activities, which directly impacts the efficiency of distributed teams [2].

Bardas et/ al. proposed a comprehensive roadmap for the transformation of enterprise business models driven by the breakthrough development of communication technologies, resulting from the widespread adoption of cloud services, the enhancement of fiber-optic communication channels, and the integration of computing equipment into global Internet networks. The authors emphasize that digitalization is accompanied by a growing share of employees engaged in teamwork — particularly within project-based teams — operating in remote or hybrid formats. This trend necessitates increased managerial attention to the identification and application of effective approaches to organizing and coordinating human capital within contemporary organizations [3].

Ivanova M. et al. analyzed the impact of digitalization on the implementation of innovations in high technology firms, using enterprises in the energy sector as an empirical example [4].

Bardas A. and Rudenko D. examined the challenges faced by project teams operating under agile management frameworks. The authors highlighted the pivotal role of distributed teams in high tech organizations during the digital transformation of business models and assessed the proportion of professionals in Ukrainian IT companies who possess the competencies required for the successful implementation of digitalization projects [5].

Goncharenko O. summarizes approaches to interpreting the concept of distributed teams, tracing their origins to the development of the IT sector, where remote work has become widespread. At the same time, the author notes that a distributed team is understood not only as a geographically dispersed group of employees but also as a collective that can function within a single space while interacting primarily through digital communication. This work organization format leads to changes in employee interaction, manifested in increased autonomy, the need for independent decision-making, and the coordination of actions in a digital environment. At the same time, the mediated nature of communication complicates the rapid exchange of information, can lead to its distortion, and reduces the level of coordination of actions, thereby affecting the effectiveness of teamwork [3].

Zamlynsky V. et al. justify the feasibility of implementing digital technologies to enhance organizational resilience, emphasizing their importance for staff adaptation, retention of human capital, and the continuity of management processes. The study emphasizes that digital tools improve the effectiveness of remote management, develop employee competencies, and enhance communication processes within the organization. In particular, tools such as Trello, Asana, and Monday enable task structuring, prioritization, coordination of employee activities, real-time monitoring of work progress, and integration with other digital services. In conclusion, the researchers note that implementing digital management tools improves the effectiveness of human resource management, strengthening communication and organizational adaptability in an unstable external environment [4].

Economic efficiency is viewed in scientific research as a general economic category that reflects the results of an enterprise's activities in relation to the costs incurred to achieve them, particularly personnel costs. The assessment of human resource management effectiveness is based on a system of general and specific indicators, including profitability, business volume growth, and labor productivity. Along with this, organizational characteristics are taken into account, such as the management structure, the ratio of managerial to production staff, and the level of costs associated with implementing management decisions. These approaches enable a general understanding of the enterprise's operational performance and the efficiency of labor resource utilization [5].

At the same time, an analysis of scientific works [6; 7; 8] indicates that the issue of quantitatively assessing the impact of communication processes on the economic performance of organizations – specifically labor productivity, management costs, and the effective utilization of human resources – remains insufficiently addressed. At the same time, existing studies are predominantly focused on the functioning of distributed teams in the field of information technology, where a high level of digitalization, employee autonomy, and the predominance of intellectual labor characterize the work. This necessitates further scientific research to assess the impact of communication management on economic efficiency, specifically within the context of logistics systems.

Purpose of the article

The purpose of the article is to improve the scientific and methodological tools for assessing the impact of digital communication management tools on the economic performance of distributed teams, using Nova Poshta LLC as an example.

Presentation of the main material

The information base for the study consisted of scientific publications on communication management, the digitalization of management, and the performance of distributed teams, as well as the author's own research results and data obtained from the company's official website. The methodological foundation is the dialectical method of cognition, which allowed establishing a correlation between the use of digital communication management tools and economic performance. A systematic approach was applied to comprehensively analyze the impact of communication processes on the effectiveness of distributed teams. Methods of analysis and synthesis were used to generalize scientific approaches. In contrast, economic and statistical methods were used to evaluate indicators of labor productivity, management costs, and the effective utilization of human resources. The integrated assessment method was applied to develop a comprehensive indicator of the impact of digital tools on the economic performance of distributed teams.

To assess the impact of digital communication management tools on the economic efficiency of distributed teams, it is necessary to use an indicator system that comprehensively captures communication processes and economic performance.

An analysis of existing approaches [9; 710] to assessing the effectiveness of communication activities allows us to identify indicators that can be adapted to the operating conditions of distributed teams in logistics companies. In particular, it is advisable to use functional indicators such as response speed, information flow accuracy, and communication duplication, which directly reflect the quality of communication processes. At the same time, the resulting indicators need to be supplemented with economic indicators, specifically labor productivity, management costs, and the efficiency of human resource utilization, which enables a comprehensive assessment of the impact of digital communication management tools.

Taking these approaches into account, we will develop a system of indicators that combines communication and economic indicators and allows for their quantitative assessment (Table 1).

Table 1

System of indicators for assessing the impact of digital communication management tools on the economic efficiency of distributed teams

Group of indicators	Indicator	Economic significance
Functional (communication)	Average response time (TTR)	Characterizes the responsiveness of communications
	Communication accuracy level (CAI)	Reflects the quality of transmitted information
	Information duplication rate (DR)	Indicates the inefficiency of information flows
	Information load index (IL)	Assesses the intensity of communications
Economic	Labor Productivity (LP)	Volume of operations performed per employee
	Communication Costs (CC)	Communication costs per operation
	Time Utilization Efficiency (TE)	Proportion of productive time
Integrated indicator	Integrated Communication Efficiency Index (ICE)	Comprehensive assessment of communication management effectiveness

Source: authors' development

The developed system of indicators enables a comprehensive assessment of the impact of digital communication management tools on the economic efficiency of distributed teams by combining measures of communication process quality with key economic performance indicators. This makes it possible to establish cause-and-effect relationships between the level of communication digitization and indicators of labor productivity, costs, and the effective utilization of human resources.

Since the indicators used to calculate the integrated index have different dimensions, a normalization procedure is performed before their aggregation. This allows all indicators to be brought to a single common form and ensures the correct calculation of the integrated index. Normalization is performed by bringing the indicators into the interval [0;1].

To interpret the obtained values of the integrated index, it is advisable to use a grading scale that allows for assessing the level of communication management effectiveness:

– 0–0.25 – low level of effectiveness;
– 0.26–0.50 – moderate level of effectiveness;
– 0.51–0.75 – sufficient level of effectiveness;
– 0.76–1.00 – high level of effectiveness.

The proposed scale is based on uniformly dividing the normalized range of the integral index, which involves breaking the interval [0;1] into equal subintervals.

To form the integral index of communication management effectiveness, weighting coefficients for the indicators were used, reflecting their relative importance in the overall assessment. The weighting coefficients are determined by considering the impact of each indicator on the economic efficiency of distributed teams, using an expert method involving specialists in human resources management, logistics, and digital communications to assess the significance of each indicator.

At the same time, the system of indicators alone does not ensure a comprehensive assessment without defining a clear sequence of procedures that guarantee the objectivity, comprehensiveness, and reproducibility of the results obtained [9].

In this regard, the next stage of the research is to develop an algorithm for assessing the impact of digital communication management tools on the economic efficiency of distributed teams, integrating the established set of indicators into a coherent process of analysis, generalization, and interpretation of results.

The proposed algorithm consists of a sequence of interrelated stages aimed at assessing both the parameters of communication processes and their economic consequences, thereby ensuring greater soundness in management decisions regarding the use of digital tools and the effectiveness of distributed teams (Fig. 1).

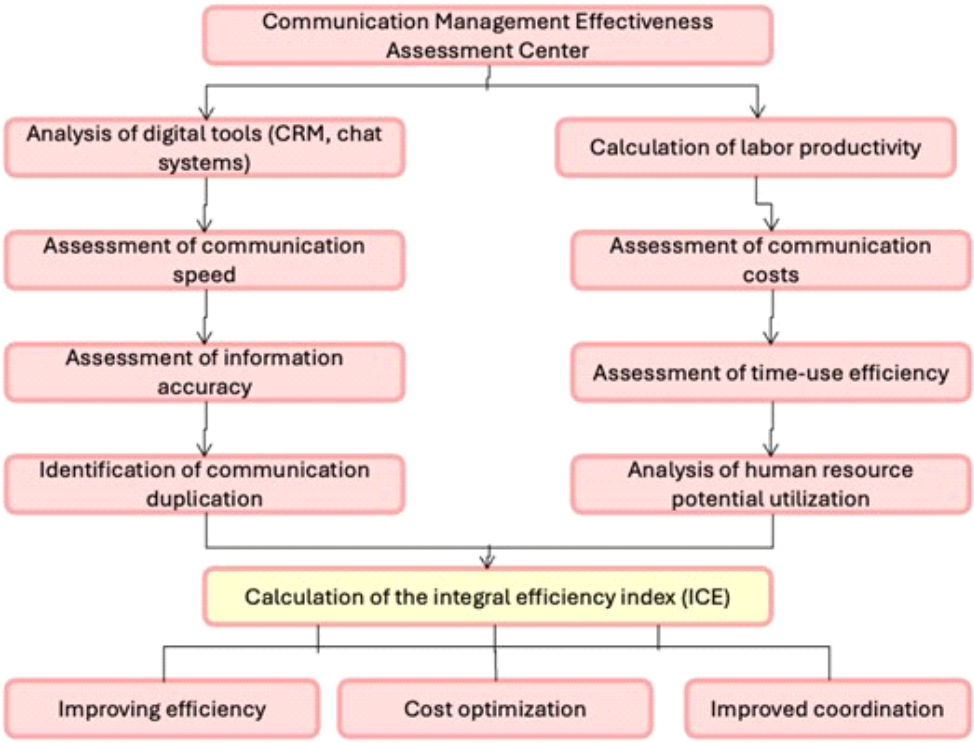

Fig. 1. Structural-logical diagram of the algorithm for assessing the impact of digital communication management tools on the economic efficiency of distributed teams

Source: authors' development

At the same time, the application of the proposed algorithm for assessing the impact of digital communication management tools is subject to certain limitations that should be taken into account when interpreting the results. In particular, these limitations include the variability in employees' digital competencies, which affects the effectiveness of communication tools, as well as the complexity of formalizing and quantitatively measuring individual characteristics of communication processes [2].

From an economic perspective, the limitations stem from the multifactorial nature of distributed team performance outcomes, which makes it difficult to isolate the net impact of communication management on indicators of labor productivity, costs, and the effective utilization of human capital. Additionally, the assessment results may be influenced by external factors, including changes in the market environment, operational conditions, and demand dynamics [11].

Furthermore, the application of an integrated index involves aggregating various indicators, and determining weighting coefficients may involve elements of subjectivity. At the same time, taking these limitations into account enhances the validity of the proposed approach. It ensures the accuracy of managerial conclusions about the impact of digital communication management tools on the economic efficiency of distributed teams.

The subject of the practical testing of the proposed scientific and methodological toolkit is Nova Poshta LLC – a leading logistics company in Ukraine whose activities focus on express delivery and logistics services [12]. The company has a complex organizational structure comprising a wide network of branches, sorting centers, and logistics hubs across various regions of the country, which makes its operations a distributed system, as shown in Fig. 2.

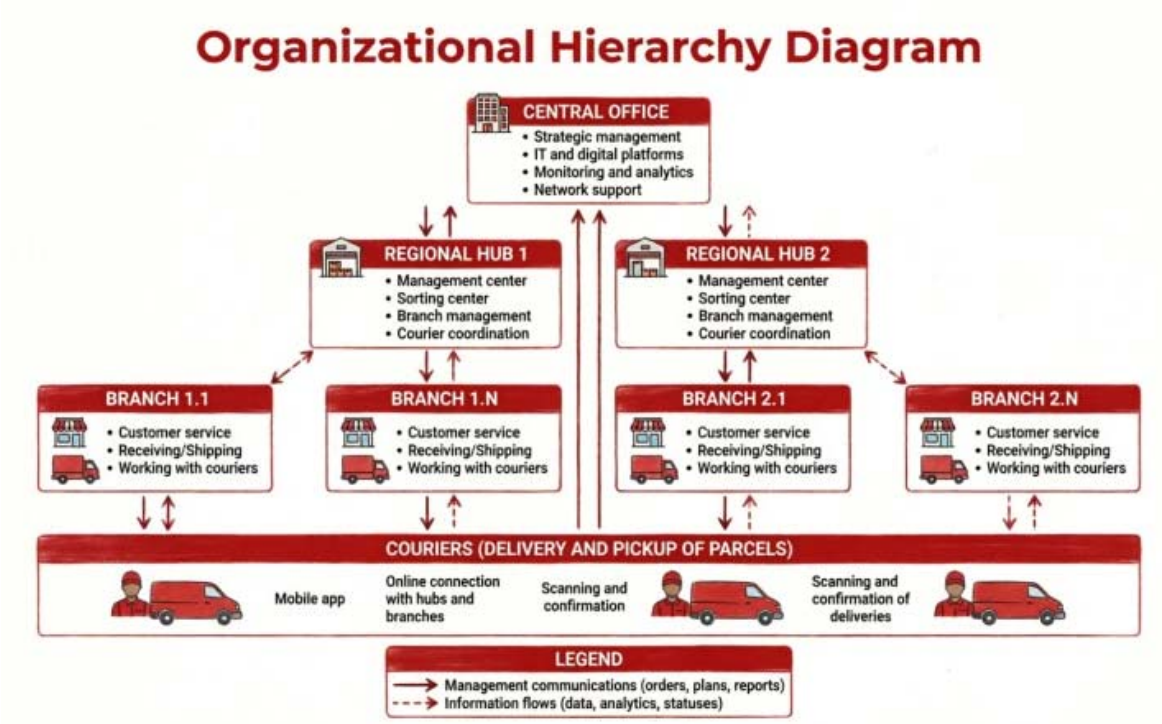

Fig. 2. Structural and communication model for managing distributed teams in the logistics system of Nova Poshta LLC
Source: authors' development

The large number of employees and the geographical dispersion of departments create specific conditions for management, particularly a heightened reliance on effective communication processes and on digital tools to coordinate staff activities. To systematize key communication interactions and corresponding digital tools in Nova Poshta's distributed logistics system, we summarize their content by management levels, as shown in Table 2.

Table 2

Communication processes and digital tools for coordinating staff activities in the distributed logistics system of Nova Poshta LLC

Level of interaction	Communication process	Digital tools	Content of communication	Expected result
Headquarters→ regional hubs	Management communications	ERP system, corporate platforms, BI analytics	Plans, KPIs, reports, analytical data	Alignment of strategic and operational decisions
Regional hubs→ branches	Management communications	CRM, internal information systems, messengers	Task allocation, performance monitoring, instructions	Improved manageability and operational efficiency
Branches → regional hubs	Downward management communications	ERP, CRM, reporting modules	Reports, performance metrics, problem situations	Monitoring and adjustment of management decisions
Regional hubs ↔ regional hubs	Operational communications	Logistics IT systems, tracking platforms	Exchange of information on routes, cargo flows	Optimization of logistics processes
Branch ↔ branch	Information flows	CRM, tracking systems, internal services	Parcel redirection, data verification	Reducing delays and errors
Branches → couriers	Management communications	Mobile apps, routing systems	Task assignment, delivery routes	Improving courier productivity
Couriers → branches	Information flows	Mobile apps, scanners, GPS tracking	Delivery status, confirmation of completion	Real-time information updates
Couriers ↔ customers	Communications at the delivery completion stage	Mobile app, SMS, chatbots	Delivery notifications, confirmation of receipt	Improved service quality
All levels (integrated)	Digital communication support	Cloud services, APIs, digital platforms	Real-time data exchange	Transparency and process synchronization

Source: authors' development

Assessing the impact of digital communication management tools on the economic efficiency of distributed teams

The practical implementation of communication management in the context of the digitalization of logistics companies' operations aligns with the principles of sustainable development declared by Nova Poshta LLC. The use of digital communication management tools contributes to increased transparency of information flows, optimization of logistics processes, and reductions in time and resource costs, which directly impact the economic efficiency of distributed teams. In particular, improving communication processes contributes to increased labor productivity, more efficient use of human resources, and reduced operating costs, which collectively ensure the achievement of sustainable development goals related to the implementation of innovations, the development of effective infrastructure, and the rational use of resources. A summary of these interrelationships, categorized by the impact of digital communication management tools, is presented in Table 3.

Table 3

Interrelationship between digital communication management tools, economic efficiency, and the sustainable development goals of Nova Poshta LLC

Sustainable Development Goal	Digital communication management tools	Economic impact	Impact on the performance of distributed teams
SDG 8. Decent work and economic growth	CRM systems, mobile apps, internal communication platforms	Increased labor productivity, reduced time spent on coordination	Improved staff performance and task completion speed
SDG 9. Industry, Innovation, and Infrastructure	ERP systems, logistics IT platforms, automated management systems	Optimization of business processes, improved efficiency of logistics operations	Improved coordination between departments and reduced operational delays
SDG 12. Responsible Consumption and Production	Tracking systems, business intelligence (BI) dashboards, digital monitoring services	Reducing resource consumption, minimizing waste, and eliminating data duplication	Streamlining communication processes and reducing information overload
SDG 17. Partnerships for the Goals	Cloud platforms, API integrations, corporate networks	Improving coordination of actions, reducing transaction costs	Strengthening interaction between departments and ensuring uninterrupted communication

Source: authors' development

These tools form an integrated communication management system that ensures the continuity of information flows between management levels and promotes coordination among staff. Their use reduces the time spent on information transfer, minimizes communication gaps, and speeds up decision-making in management.

The use of digital communication management tools not only ensures the continuity of information flows and improves staff coordination but also fosters new approaches to organizing the work of distributed teams. In particular, integrating digital solutions into communication processes transforms traditional organizational structures into more flexible, networked forms of interaction that combine centralized management with decentralized execution of operations.

Within the scope of this study on the organization of distributed teams at Nova Poshta LLC, it is appropriate to distinguish the following types: management and coordination teams, which ensure strategic management, planning, and control of activities within a centralized-distributed structure; operational and logistics teams, whose activities are related to the execution of key stages of logistics processes, in particular sorting, processing, and transporting shipments; digital and analytical teams, which ensure the functioning of information systems, data processing, and coordination of staff activities based on digital tools; courier teams, which carry out parcel delivery and pickup processes and ensure the final stage of the logistics chain; as well as customer service teams, whose activities are focused on serving customers at branches and maintaining communication at all stages of service provision.

The distribution of staff numbers according to the organizational models of distributed teams was carried out using an expert-analytical approach, which involves structuring the workforce based on the functional characteristics of the activities. A summary of the results obtained and their visual representation is shown in Fig. 3.

For the analysis, the years 2018, 2020, 2022, and 2025 were selected as representative time periods reflecting key stages of Nova Poshta LLC's transformation: the period prior to active digitalization (2018), the stage of its intensive implementation amid the COVID -19 pandemic, which led to a sharp increase in the role of remote communications (2020), the period of adapting operations to the conditions of full-scale war and high external uncertainty (2022), as well as the current stage of stabilization and further development based on digital solutions (2025).

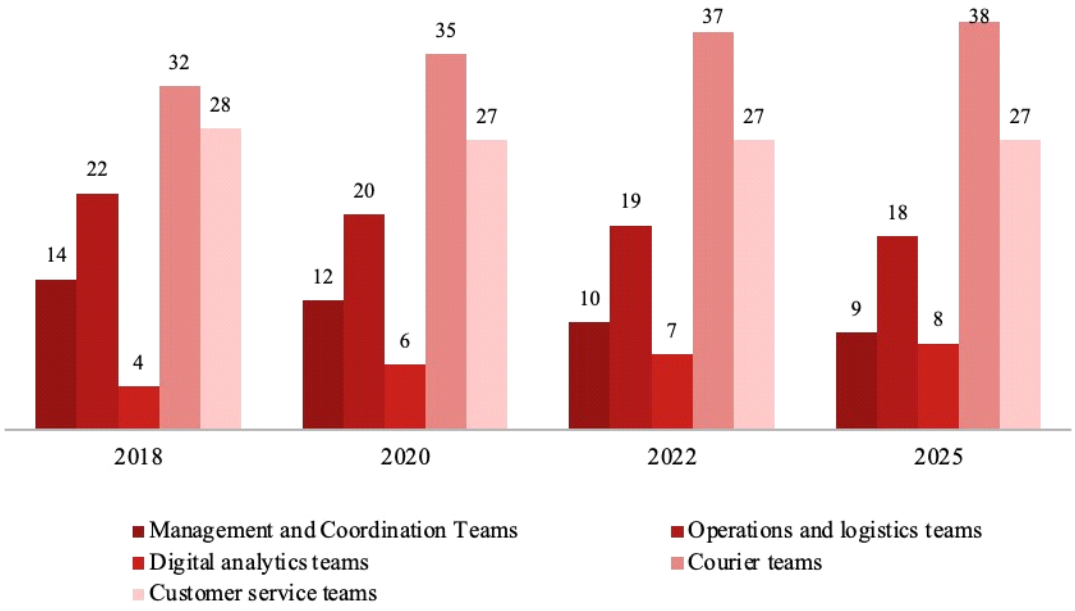

Fig. 3. Distribution of staff numbers by type of distributed teams at Nova Poshta LLC by year, %
Source: authors' development

The distribution of staff numbers by team type over the specified years indicates structural changes driven by digitalization and the growth in the volume of logistics operations. In particular, there is a gradual increase in the share of courier teams (from 32% to 38%), reflecting the expansion of delivery as a key business process. At the same time, the share of management and coordination teams (from 14% to 9%) and operational and logistics teams (from 22% to 18%) is decreasing, reflecting process optimization and the implementation of digital tools. The share of digital-analytical teams is growing (from 4% to 8%), confirming the increasing role of digital technologies in coordinating operations. Customer service teams remain relatively stable (27–28%), ensuring the continuity of customer service.

Fig. 4 shows the calculation of communication indicators for Nova Poshta LLC's distributed teams for the years 2018, 2020, 2022, and 2025.

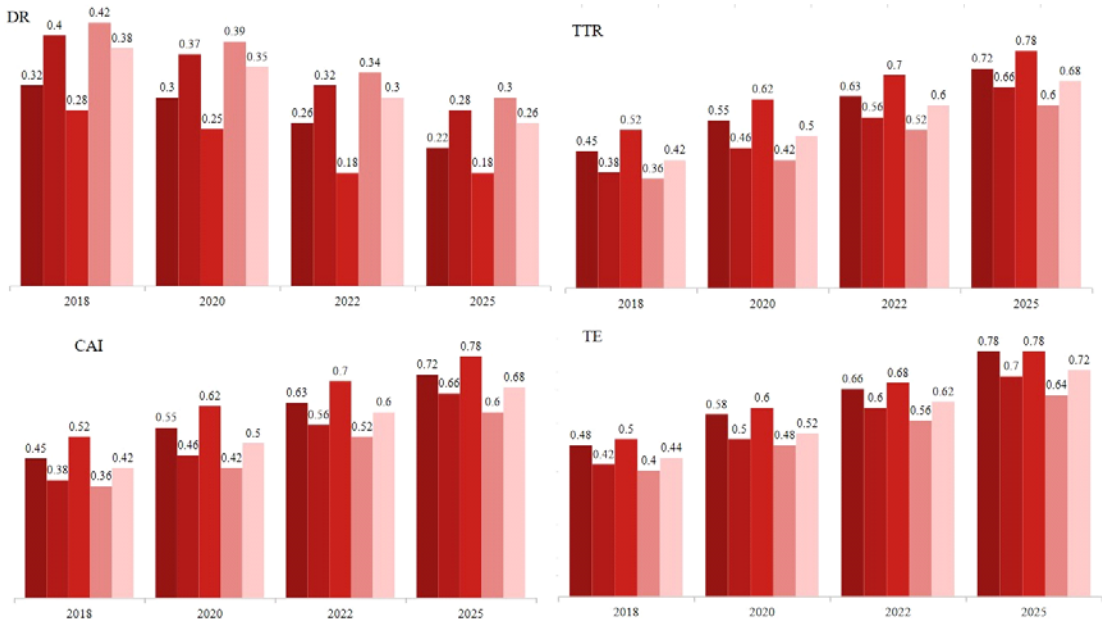

Fig. 4. Dynamics of communication indicators by type of distributed team at Nova Poshta LLC
Source: authors' development

An analysis of communication metrics by distributed team type at Nova Poshta LLC indicates a general trend toward improved communication management efficiency over the specified period. In particular, there is a gradual decrease in information duplication (DR), indicating improved information flow and reduced redundant communication. At the same time, there is an increase in communication accuracy (CAI), indicating an improvement in the quality of information transfer and in the coordination of actions between departments.

Positive changes are also evident in the dynamics of the communication speed indicator (TTR), whose values are optimized by the implementation of digital tools that enable a more efficient exchange of information. At the same time, the increase in time efficiency (TE) confirms the improved productivity of communication processes and the rationalization of employees' time usage.

The most pronounced positive trends are characteristic of digital-analytical and management-coordination teams, which is due to the high level of integration of digital solutions into their activities. At the same time, for courier and customer service teams, the changes are less pronounced, which is explained by the specifics of their operations and the limitations of digital interaction in non-office work environments.

An overview of the impact of digital tools demonstrates a steady increase in the values of the integrated index throughout the study period, confirming an improvement in the level of coordination, responsiveness, and effectiveness of communication processes (Fig. 5). The highest values of the integrated index are characteristic of digital-analytical teams, reflecting the effective use of digital tools in information processing and decision-making. In contrast, for courier and customer service teams, the index values remain lower but also show a positive trend. This indicates the gradual spread of digital communication practices even in those segments of activity where the specifics of operational processes limit their application.

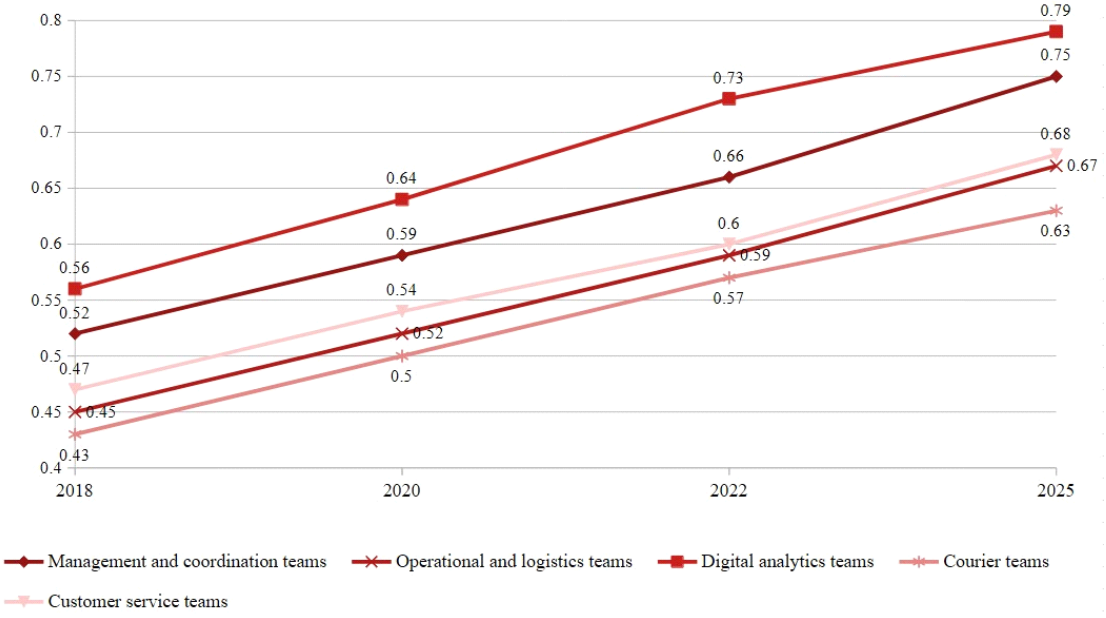

Fig. 5. Dynamics of the integrated index of the effectiveness of digital tools' impact on the functioning of distributed teams at Nova Poshta LLC

Source: authors' development

The results confirm that implementing digital communication management tools improves the quality, speed, and effectiveness of communication processes, as evidenced by the increase in the economic efficiency of distributed teams (Table 4).

The economic performance indicators of Nova Poshta LLC's distributed teams demonstrate a sustained positive trend, reflecting increased staff productivity amid the digitalization of communication management.

In particular, a systematic increase in labor productivity is observed across all team types. The highest values (500–600) of this indicator are characteristic of courier and operational logistics teams, due to the scale of operational activities and process standardization. At the same time, digital-analytical teams demonstrate the highest rates of productivity growth, indicating the effective use of digital tools in data processing and managerial decision-making.

Table 4

Economic performance indicators of distributed teams at Nova Poshta LLC

Year	Teams	Labor Productivity, parcels/employee (LP)	Communication Costs, thousand UAH (CC)	Time Efficiency, effective/total time ratio (TE)
2018	Management and Coordination Teams	180	6.5	0.48
	Operations and logistics teams	420	5.8	0.42
	Digital analytics teams	150	4.2	0.50
	Courier teams	520	3.5	0.40
	Customer service teams	300	4.8	0.44
2020	Management and Coordination Teams	200	6.0	0.58
	Operations and logistics teams	450	5.2	0.50
	Digital analytics teams	180	3.8	0.60
	Courier teams	560	3.2	0.48
	Customer service teams	340	4.3	0.52
2022	Management and Coordination Teams	230	5.4	0.66
	Operations and logistics teams	500	4.6	0.60
	Digital analytics teams	220	3.3	0.68
	Courier teams	600	2.9	0.56
	Customer service teams	380	3.9	0.62
2025	Management and Coordination Teams	260	4.8	0.78
	Operations and logistics teams	550	4.0	0.70
	Digital analytics teams	270	2.8	0.78
	Courier teams	650	2.6	0.64
	Customer service teams	420	3.4	0.72

Source: authors' development

The communication cost indicator shows a clear downward trend across all team groups, confirming the economic benefits of implementing digital tools. The most significant cost reductions are observed in the digital-analytical and operational-logistics teams (by 1.4 and 1.8, respectively), where the automation of communication processes minimizes time and resource expenditures for information transfer.

The efficiency of working time utilization also shows steady growth, indicating a reduction in unproductive time spent and an increase in the organization of communication processes. The highest values of this indicator in 2025 are achieved in management and coordination and digital-analytical teams (0.78 each), which is associated with a high level of integration of digital platforms into their activities.

The results confirm that the use of digital communication management tools not only improves communication performance but also enhances the economic efficiency of distributed teams by increasing labor productivity, reducing costs, and rationalizing working time.

The results of the study on the impact of digital communication management tools on the effectiveness of distributed teams generally confirm modern scientific approaches to the digitalization of management processes, the development of remote interaction, and the increasing role of information technologies in ensuring organizational performance. At the same time, the empirical data obtained allowed us to identify specific features of how different types of teams function, which refine existing theoretical propositions.

In line with modern concepts of digital transformation, implementing digital solutions ensures the integration of information flows, increased transparency in management, and the optimization of communication processes. The analysis confirms this position, as digital communication management tools are integrated into key processes of employee interaction, thereby increasing the accuracy of information transmission, reducing duplication, and improving the use of working time. At the same time, unlike generalized models, it has been established that the impact of digital tools varies across teams' functional purposes.

In particular, within digital analytics and management/coordination teams, digital tools play a foundational role, supporting information processing, management decision-making, and operational coordination. In contrast, in courier and customer service teams, their impact is more limited due to the predominance of operational functions and the specific nature of performing tasks outside a unified information environment.

The application of the integrated index enabled generalizing the impact of key communication indicators and confirming the existence of a systematic link between the qualitative characteristics of communication and economic performance. At the same time, the additional use of the information load index will help deepen the interpretation of the results, as it reflects the intensity of communication flows and their impact on work efficiency. Since both excessive and insufficient information load can negatively affect performance, this indicates the need to ensure an optimal level of communication interaction.

The obtained results are consistent with modern scientific approaches to the digitalization of management; at the same time, expanding them by accounting for the economic aspects of distributed teams' operations has practical significance for improving the efficiency of human resource utilization and optimizing communication processes. However, it requires further development with consideration of industry-specific characteristics and refinement of evaluation parameters.

Conclusions

Summarizing the research results, the use of digital communication management tools is a significant factor in improving the effectiveness of distributed teams, as it ensures coordination of staff actions, optimizes information flows, and improves the timeliness of management decisions. The proposed evaluation approach, based on a combination of communication and economic indicators, enables a comprehensive assessment of the impact of digital communication on an organization's performance and provides a basis for identifying areas for improvement.

The proposed integrated communications effectiveness index enables the synthesis of diverse indicators. It allows for the assessment of the level of development of communications management over time and across different types of distributed teams. Practical testing using the example of Nova Poshta LLC confirmed the presence of positive changes in performance indicators, manifested in increased labor productivity, reduced communication costs, and improved efficiency in the use of working time. At the same time, it was established that the impact of digital tools is differentiated and depends on the specifics of team operations; in particular, the most pronounced effect is observed in digital-analytical and managerial-coordinative units.

The proposed approach has practical value, as it can be used to justify management decisions on selecting and implementing digital tools, optimizing communication processes, and improving the organization's human resource utilization. Implementing this approach contributes to the development of more flexible, adaptive management models, enhances competitiveness, and ensures the organization's economic stability amid digital transformation.

Prospects for further research include refining methods for determining the weighting coefficients of the integrated index, expanding the evaluation indicator system, and applying economic-mathematical and analytical methods to deepen the assessment of the impact of digital tools on the performance of distributed teams.

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ОЦІНЮВАННЯ ВПЛИВУ ЦИФРОВИХ ІНСТРУМЕНТІВ КОМУНІКАЦІЙНОГО МЕНЕДЖМЕНТУ НА ЕКОНОМІЧНУ ЕФЕКТИВНІСТЬ РОБОТИ РОЗПОДІЛЕНИХ КОМАНД

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Цифрові інструменти комунікаційного менеджменту відіграють важливу роль у забезпеченні ефективної взаємодії працівників у межах розподілених команд. Їх використання дає змогу впорядкувати інформаційні потоки, зменшити дублювання інформації, скоротити час обміну даними та покращити організацію робочого процесу, що, у свою чергу, впливає на результати діяльності організації та підвищує рівень узгодженості дій між підрозділами. Стаття присвячена дослідженню впливу цифрових інструментів комунікаційного менеджменту на економічну ефективність роботи розподілених команд. Для досягнення поставленої мети використано системний підхід, діалектичний метод пізнання та структурно-логічний метод, що дозволило узагальнити існуючі підходи та запропонувати власне бачення оцінювання. У роботі запропоновано інтегральний індекс ефективності комунікацій, який поєднує показники точності комунікацій, рівня дублювання інформації, тривалості реакції та ефективності використання часу. Додатково враховано індекс інформаційного навантаження, що дає змогу оцінити інтенсивність комунікаційних потоків та їх вплив на результативність діяльності розподілених команд. Аналіз проведено за окремими часовими періодами, що відображають різні етапи розвитку організації, включаючи вплив пандемії COVID-19 та умови воєнного часу. Результати свідчать про поступове покращення комунікаційних показників і зростання ефективності діяльності. Встановлено, що найбільш помітні зміни спостерігаються у цифрово-аналітичних та управлінсько-координаційних командах, тоді як у кур'єрських і клієнтських сервісних командах ці процеси відбуваються повільніше. Практична апробація запропонованого підходу підтвердила його придатність для оцінювання комунікаційних процесів та обґрунтування управлінських рішень. Запропонований підхід може бути використаний для оцінювання організації комунікацій у межах розподілених команд і прийняття рішень щодо їх удосконалення, що сприяє більш ефективному використанню ресурсів і покращенню ре-

Assessing the impact of digital communication management tools on the economic efficiency of distributed teams

зультатів діяльності в умовах цифрової трансформації.

Ключові слова: комунікаційний менеджмент, цифрові інструменти, розподілені команди, економічна ефективність, продуктивність праці, адаптація працівників, кадровий потенціал, логістичні компанії, інтегральний індекс, цифровізація управління.

ASSESSING THE IMPACT OF DIGITAL COMMUNICATION MANAGEMENT TOOLS ON THE ECONOMIC EFFICIENCY OF DISTRIBUTED TEAMS

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Digital communication management tools play a crucial role in enabling effective collaboration among distributed team members. Their use streamlines information flows, reduces information duplication, shortens data exchange times, and improves workflow organization, thereby impacting the organization's performance and enhancing coordination between departments. This article examines the impact of digital communication management tools on the economic efficiency of distributed teams. To achieve this goal, a systematic approach, the dialectical method of cognition, and the structural-logical method were employed, allowing for the synthesis of existing approaches and the proposal of a novel evaluation framework. The paper proposes an integrated communication effectiveness index that combines indicators of communication accuracy, information duplication, response time, and time utilization efficiency. Additionally, the information load index is considered, enabling the assessment of the intensity of communication flows and their impact on the performance of distributed teams. The analysis was conducted for specific time periods reflecting different stages of the organization's development, including the impact of the COVID-19 pandemic and wartime conditions. The results indicate gradual improvement in communication metrics and increased operational efficiency. It was found that the most noticeable changes are observed in digital-analytical and management-coordination teams, while in courier and customer service teams, these processes occur more slowly. Practical testing of the proposed approach confirmed its suitability for evaluating communication processes and justifying management decisions. The proposed approach can be used to evaluate the organization of communications within distributed teams and inform decisions to improve them, thereby enabling a more efficient use of resources and improved performance in the context of digital transformation.

Keywords: communication management, digital tools, distributed teams, economic efficiency, labor productivity, employee adaptation, human resource potential, logistics companies, integrated index, digitalization of management.

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