

DIGITAL TOOLS FOR MONITORING THE DEVELOPMENT OF TRANSPORT ENTERPRISES IN A TURBULENT ENVIRONMENT

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In the context of a highly dynamic external environment and the continuous growth of managerial information flows, the application of digital monitoring tools for enterprise development, particularly in the transport sector, became increasingly significant. These instruments not only ensure the timeliness of data collection and processing but also enhance the analytical depth of strategic progress assessment, thereby facilitating the prompt adoption of corrective decisions. Their integration into the strategic cycle of enterprises contributes to the establishment of a transparent, adaptive, and predictive monitoring system that strengthens organizational resilience in turbulent conditions. Such tools not only ensure the timeliness of data collection and processing but also enhance the analytical depth of strategic progress assessment, thereby facilitating the prompt adoption of corrective decisions. Their integration into the enterprise's strategic cycle contributes to the establishment of a transparent, adaptive, and predictive monitoring system that strengthens organizational resilience to environmental turbulence. For monitoring the development of transport enterprises under such volatile conditions, it is advisable to employ dashboards, Business Intelligence systems, digital scenario trackers, automated reporting tools, and similar solutions.

A dashboard in modern strategic management is considered an integrated digital tool that provides quick analysis of key performance indicators (KPIs) in real time. It combines various forms of visualization (graphs, diagrams, indicators and tables) on a single platform, which significantly simplifies the process of making management decisions. Thanks to this, the company's management gets the opportunity to quickly monitor the status of business processes, marketing campaigns or project implementation without the need to process a large array of reporting documentation. The use of dashboards, which function as interactive visual panels that aggregate key performance indicator in real time, is of particular importance for transport enterprises in the context of strategic management. Such tools allow management to quickly assess the status of strategic goals, timely identify critical deviations and generate management signals, which increases the organization's adaptability to changes in the external environment. Structuring dashboards by scenarios, areas of activity or functional blocks provides flexibility of analytical overview and contributes to the formation of a single information space for strategic control. Interactive dashboards act

not only as a monitoring tool, but also as a means of integrating knowledge and communications between management levels, which increases the transparency of processes and promotes innovative management [1].

Business Intelligence (BI) systems in modern strategic management of transport enterprises are a key tool for in-depth analysis of large data sets generated in the process of implementing development scenarios. Their application allows not only to identify trends, patterns and hidden dependencies between indicators, but also to form the basis for predictive monitoring, which ensures timely adjustment of management decisions. BI platforms integrate with internal and external data sources, creating multidimensional analytics that cover financial, operational, and logistical aspects of an enterprise's activities. In the context of scenario modeling, BI systems allow to model alternative development trajectories, assess their relevance to the current state of the environment, and predict possible risks and opportunities. The use of BI in the transport industry contributes to increasing management efficiency, reducing uncertainty and forming adaptive strategies (Chen et al., 2012; Popović et al., 2012). In addition, modern BI solutions integrate machine learning and artificial intelligence tools, which allows for automated data processing in real time and increasing the accuracy of forecasts (Elbashir et al., 2008). BI systems combined with dashboards form a comprehensive digital monitoring infrastructure that ensures the effectiveness of management decisions, increases the company's resilience to turbulence, and creates conditions for digital transformation (Tabl. 1). Thus, dashboards and BI systems do not compete with each other, but form a single ecosystem: BI systems provide deep analytics, and dashboards provide its convenient and operational visualization.

Table 1. Comparative table of dashboards and BI systems in strategic monitoring of transport enterprises

Criteria	Dashboards	BI systems
Functions	Visualization of key performance indicators (KPIs) in real time; interactive panels for quick overview; data aggregation in a compact format/	Deep analysis of large data sets; integration of internal and external sources; multidimensional analytics; modeling of development scenarios.
Benefits	Ease of use; fast decision-making; increased transparency of management processes; integration of communications between management levels.	Identification of trends and hidden patterns; support for forecasting; reduction of uncertainty; possibility of using machine learning and AI tools.
Limitations	Limited analytical depth; dependent on the quality of incoming data; do not always provide forecasting.	High complexity of implementation; significant financial and time costs; need for specialized knowledge to interpret results.
Complementarity	Provide quick overview and visualization of BI system analysis results.	Generate analytical data that can be presented in dashboards for operational monitoring.

Source: compiled by the author based on [1, 2]

The use of digital scenario trackers, which function as specialized modules to track the implementation of individual stages of strategic development, is of particular importance in the transportation industry. They provide recording of progress, deviations and status of key actions, which allows structuring the implementation of scenarios in the form of a digital roadmap with the integration of KPIs, risk indicators and resource parameters. This approach contributes to the formation of a strategic control system that combines analytical depth and operational management decisions. Trackers provide convenient navigation through the scenario cycle, automatic status updates and generation of signals for correction, which increases the "discipline" of strategy implementation and consistency between management levels. Digital trackers and project management systems integrated with BI platforms can increase process transparency, reduce risks, and ensure alignment of strategic goals with current operational activities. In addition, their use in transportation enterprises contributes to the creation of a single information space that ensures effective communication between departments and supports adaptive management in turbulent environments [3]. Thus, digital scenario trackers are an important element of a modern strategic monitoring system, combining the functions of control, forecasting and integration of management decisions.

Automated reports in the strategic management of transport enterprises are an important tool for the regular generation of analytical documents that summarize the results of monitoring the implementation of development scenarios. They are generated according to predefined templates and can include graphs, tables, interpretations and recommendations for management, which ensures standardization of analytical content and reduces the time spent on its preparation. As a result of automation of reporting processes, data accuracy is increased, the risk of human errors is reduced and analytical information is ensured in a timely manner. In a strategic context, such reports become the basis for making management decisions regarding scenario adjustments, resource policy revisions, or goal updates, contributing to the formation of an adaptive management system. Automated reporting systems integrated with Business Intelligence platforms allow for multidimensional data analysis, support strategic control processes, and ensure transparency of management decisions [3]. In addition, modern management practices emphasize the importance of automated reporting to improve the effectiveness of corporate controlling and ensure consistency between strategic and operational levels of management [4]. Thus, automated reporting is a key element of the digital transformation of transport enterprises, ensuring the integration of analytics, forecasting and strategic control in a turbulent environment.

The integration of digital monitoring tools into the strategic cycle of transport enterprises ensures increased transparency, efficiency and analytical validity of management decisions. The use of dashboards, BI systems, scenario trackers and automated reports forms a comprehensive strategic control infrastructure that contributes to the adaptability of enterprises and their resilience to turbulent changes in the external environment. As a result, the digital transformation of monitoring processes becomes a key factor in the effective management and long-term development of transport enterprises.

References

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УДОСКОНАЛЕННЯ СИСТЕМИ УПРАВЛІННЯ РИЗИКАМИ ІНВЕСТИЦІЙНИХ ПРОЄКТІВ ТОРГОВЕЛЬНИХ ПІДПРИЄМСТВ

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Анотація. У роботі розглянуто питання удосконалення системи управління ризиками інвестиційних проєктів торговельних підприємств в умовах сучасної економічної нестабільності. Обґрунтовано необхідність системного підходу до управління ризиками, враховуючи, що основним джерелом фінансування галузі в Україні залишаються власні кошти підприємств. Авторами запропоновано методику тривимірної оцінки ризику, яка базується на євклідовій нормі та враховує ймовірність, частоту та рівень впливу загроз.

За допомогою когнітивного моделювання та аналізу імпульсних процесів досліджено взаємозв'язки між ризиками на прикладі мереж «МК Ювілейний» та «Lukas». Виявлено найбільш критичні чинники, такі як фінансові ризики та ризики невиконання показників проєкту. Як практичний інструмент оптимізації запропоновано впровадження паспортизації ризиків для систематизації стратегій реагування та підвищення обґрунтованості стратегічних рішень.

Ключові слова: інвестиційний проєкт, управління ризиками, когнітивне моделювання, індекс ризику, паспортизація ризиків, стратегія мінімізації.