



THE IMPACT OF DIGITALIZATION ON THE FINANCIAL PERFORMANCE OF TRANSPORT COMPANIES

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Abstract

This article examines the impact of digitalization on the financial performance of transport companies in the context of modern economic transformation. Particular attention is paid to analyzing the implementation of digital technologies in key business processes of transport companies, including transportation management, vehicle condition monitoring, data processing, and customer interaction. The role of automation and integration of information systems in improving the transparency and manageability of financial flows is explored.

The study demonstrates that digitalization is a key tool for reducing operating costs by optimizing routes, reducing downtime, and increasing resource efficiency. It also demonstrates that the use of big data and analytics technologies facilitates more accurate demand forecasting and improves the quality of management decisions, ultimately leading to increased revenue for transport companies.

Particular attention is paid to the risks of digitalization, including high initial investments, the need to ensure information security, and a shortage of qualified personnel. Despite this, the article demonstrates that the strategic implementation of digital solutions ensures long-term growth in the financial stability and competitiveness of transport organizations.

The study's findings confirm that digital transformation is essential for improving the efficiency of transport companies and developing sustainable business models in the digital economy.



Scientific novelty. The scientific novelty of this study lies in its comprehensive analysis of the impact of digitalization on the financial performance of transport companies, taking into account modern technological trends and industry-specific characteristics. The paper proposes a systematic approach to assessing digital transformations through the lens of their impact on key financial metrics, including costs, revenues, and financial stability.

Another novelty lies in the identification of a relationship between the level of digitalization of business processes and the degree of financial management transparency. The role of digital platform integration as a factor in expanding market opportunities and increasing the profitability of transport companies is further substantiated.

Purpose of the study. The purpose of the study is to identify and substantiate the impact of digitalization on the financial performance of transport companies, as well as to identify key areas for implementing digital technologies that will enhance their economic performance and sustainability.

Keywords: digitalization, transport companies, financial efficiency, digital technologies, automation, big data, logistics, transport management, cost optimization, digital platforms.

Introduction

The development of the transportation industry has historically been linked to technological transformations that have determined the speed, scale, and efficiency of freight and passenger movement. Even during the industrialization era, the introduction of steam engines became a key factor in increasing transportation productivity. Subsequently, the advent of rail transport, followed by road and air travel, significantly changed logistics chains and the structure of the global economy. Each technological innovation led to cost reductions, increased delivery speeds, and increased accessibility to transportation services. The second half of the twentieth century ushered in a new era of development, driven by automated management and the use of computing technology. Computerization enabled companies to optimize accounting, route planning, and resource management. However, the most significant changes occurred at the



beginning of the twenty-first century with the spread of digital technologies, the internet, and mobile solutions. Digitalization has become more than just a tool for improving efficiency; it's a fundamental foundation for transforming the business models of transportation companies.

In today's environment, digitalization encompasses all aspects of transport companies' operations, including fleet management, logistics, customer interactions, financial accounting, and strategic planning. This has a direct impact on financial performance, resulting in reduced costs, increased revenue, and improved business sustainability. This paper examines the key areas of digitalization for transport companies and analyzes their impact on financial performance.

Theoretical foundations of digitalization in the transport sector.

Digitalization is currently being considered as a key path to improving the efficiency of the national economy and its transport sector. Clearly, information integration between trading partners, transport participants, transport market operators, and enterprises operating in various modes of transport will contribute to an overall reduction in transportation organization time and enable effective planning and operational management of transportation based on accounting and analysis. It will also facilitate access to the transport market for customers and carriers, eliminating potential discrimination based on production scale [1].

Digitalization is the process of implementing digital technologies in various areas of an enterprise's operations to improve management efficiency and optimize business processes. In the transportation industry, digitalization manifests itself through the use of transportation management systems, Internet of Things technologies, big data, and artificial intelligence.

A transport company's financial performance is determined by its revenue-to-expense ratio, as well as its profitability, liquidity, and financial stability. Digital technologies impact all of these metrics through cost optimization, improved service quality, and enhanced resource management.

At the same time, any transportation is the result of a fairly long chain of relationships and typically involves several modes of transport (which is why the volume of road transportation is almost twice the combined volume of other



modes of transport, due to the so-called "last mile" associated with road transport). At the same time, the lists, volumes, and forms of necessary information used across trunk transport modes vary significantly [2]. Thus, the structure of integrated electronic documents accompanying the entire multimodal transportation process is a problematic issue.

Key elements of digitalization include process automation, information system integration, and the use of analytical tools. These elements help reduce operating costs, increase the transparency of financial flows, and improve management decision-making.

Key areas of digitalization for transport companies. Digitalization of transport companies includes several key areas, each of which has a significant impact on financial efficiency.

Table 1 - Main directions of digitalization and their impact on the financial efficiency of transport companies

Direction of digitalization	Implementation Contents	Financial effect
Automation of transportation management	Using route planning and order distribution systems	Reducing fuel costs and increasing vehicle utilization
Internet of Things	Installation of sensors to monitor the condition of transport	Reducing repair and maintenance costs
Big data and analytics	Demand analysis and logistics optimization	Increasing revenue through effective planning
Digital platforms	Association of participants in the transportation process	Increase in customer base and revenue
Electronic document management	Transition to digital documents	Reducing administrative costs
CRM systems	Customer Interaction Management	Increased customer retention and repeat business



The table reflects key areas of digitalization in the transport industry and demonstrates their impact on companies' financial performance through specific efficiency improvement mechanisms.

Automation of transportation management. By their epistemological nature, processes occur in three separate subspaces: informational, financial, and material (the financial and material can be considered the operational subspace). Marketing, advertising, contracting, transfers of ownership, etc., occur in the information space. Payments and compensations stipulated in individual transactions or general provisions are made in the financial space. The material space accommodates the movement of vehicles, both loaded and empty, and the transportation and warehousing of freight. All three subspaces are interconnected, enabling the planning and coordination of the flows occurring within them. Any individual transportation operation consists of a dynamic set of flows in all three spaces, i.e., processes evolving over time. In turn, each individual stage of the process occurring in a given subspace consists of individual steps called transactions [3].

Modern transportation management systems automate route planning, order distribution, and shipment monitoring. This reduces fuel costs, minimizes vehicle downtime, and increases fleet utilization.

The use of such systems helps minimize human error and reduce the number of errors, which also has a positive impact on the company's financial results.

Implementation of internet of things technologies. The Internet of Things market has demonstrated steady growth over the past ten years. Just under thirty years have passed since the first "Internet of Things"—an internet-connected toaster—appeared. The number of devices connected to the Internet (excluding PCs, tablets, and smartphones) has already exceeded the Earth's population and, according to analysts' forecasts, will exceed 8.4 billion devices by the end of 2017. The Internet of Things market reached nearly \$600 billion in 2015, and by 2027 it will exceed \$800 billion. The Internet of Things has assumed a significant role in everyday life. By 2020, it is predicted that there will be tens



of billions of devices connected to the global network, representing a market worth \$117 billion [4].

Internet of Things technologies make it possible to monitor the condition of vehicles in real time. Sensors collect information on fuel consumption, technical condition, and travel routes [5].

This enables timely maintenance, prevents breakdowns, and reduces repair costs. Furthermore, fuel consumption monitoring helps identify inefficient resource use.

Using big data and analytics. Big data analysis allows transport companies to identify demand patterns, optimize routes, and forecast capacity. This leads to more efficient use of resources and increased revenue.

The use of analytical tools also allows us to evaluate the effectiveness of individual areas of activity and make informed management decisions.

Digital platforms and systems. The stages of digitalization, understood in a narrow sense (the transformation of any information into digital form, the use of digital information, and the translation of digital information into another form), form the basis for the creation of digitalization products themselves, through which the influence of digitalization as a trend influencing the development of society is manifested.

The creation of digital platforms enables the unification of various participants in the transport process, including carriers, shippers, and customers [6]. This simplifies interaction, reduces transaction costs, and increases operational transparency.

Platform solutions facilitate market expansion and attract new customers, which positively impacts the company's revenue.

The impact of digitalization on cost reduction. One of the key effects of digitalization is a reduction in operating costs for transport companies. This is achieved through route optimization, reduced downtime, and increased resource efficiency.



Automation of processes allows for a reduction in administrative staff and lower management costs [7]. Furthermore, the use of digital technologies reduces paperwork costs and speeds up information processing.

Monitoring the technical condition of vehicles and ensuring timely maintenance reduce repair costs and extend the service life of equipment. This is especially important for companies with large fleets.

Table 2 - Comparison of financial indicators before and after digitalization

Indicator	Change after digitalization
Operating expenses	Decrease
Revenue	Height
Profitability	Increase
Order processing time	Reduction
Transport downtime	Decrease
Financial transparency	Promotion

The table shows a comparative analysis of key financial indicators of transport companies before and after the implementation of digital technologies.

Increasing revenue through digital technologies. Currently, for example, increasing attention is being paid to the role and potential of artificial intelligence as a learning mechanism used in working with digital information [8]. At the same time, the emergence of a new stage of digitalization development and the resulting formation of a new core digitalization product will be determined by the impact this stage and its core product will have on the development of the economy and society.

Digitalization not only reduces costs but also increases revenue for transport companies. This is due to improved service quality, shorter delivery times, and increased reliability.



The use of digital platforms allows for the acquisition of new clients and the expansion of geographic reach [9]. Furthermore, data analytics helps identify the most profitable areas and focus resources on their development.

Implementing customer relationship management systems improves communication and increases customer satisfaction, which leads to increased repeat business.

Increased financial transparency and manageability. Digitalization ensures a high level of transparency in financial flows. Integration of information systems allows for up-to-date information on income and expenses in real time. This facilitates more efficient cash flow management, reduces financial risks, and increases the company's resilience. Management is empowered to respond quickly to changes and make informed decisions.

In addition, digital technologies simplify the process of financial analysis and audit, which increases confidence among investors and partners.

Risks and Limitations of Digitalization. Digitalization, as a key trend in modern economic and social development, can have both positive and negative consequences. For it to have a positive impact, the demands it poses to society as challenges must be met. Failure to meet these demands creates the risk of negative consequences, which are described as risks.

Being an effective factor in social development, digitalization presents society with certain challenges - those requirements that must be met in order for it (digitalization) to truly become a trend of effective development in a company or enterprise [10].

Therefore, despite significant advantages, digitalization is associated with a number of risks and limitations. One of the main ones is the high cost of technology implementation, especially for small and medium-sized companies. Furthermore, there is a risk of cyberthreats and data leaks, which require additional information security investments. A clear example of the challenge of digitalization and the corresponding threat is the challenge (requirement) of digitalization to combat fraud at the organizational level, for example, when certain digital products and information technologies are used to work with



them. However, if effective fraud prevention is absent—whether the requirement is not met or the measures taken are insufficient—the threat of negative consequences from digitalization arises. In this case, the possibility of digital fraud arises, which, in turn, can lead to a variety of negative consequences, including the loss of the organization's financial resources.

A lack of qualified personnel can also become an obstacle to the successful implementation of digital projects.

It is important to consider that digitalization requires changes in organizational culture and business processes, which may cause resistance from employees.

Presenting the possible negative consequences of the implementation of a particular threat, caused by a specific digitalization challenge, in the form of risks allows us to formulate a risk management program aimed at mitigating or reducing the negative consequences associated with the corresponding digitalization threats.

Prospects for digitalization in the transport industry. Further advancement of digital technologies in the transport industry is expected in the coming years. Artificial intelligence, autonomous vehicles, and blockchain solutions will be particularly important.

Process automation will reach a higher level, significantly reducing costs and increasing efficiency. The development of digital platforms will lead to the formation of global logistics ecosystems.

Companies that actively implement digital technologies will gain a competitive advantage and be able to significantly improve their financial performance.

Conclusion

Digitalization is a key factor in improving the financial efficiency of transport companies. It reduces costs, increases revenue, and enhances business sustainability.

The implementation of digital technologies facilitates process optimization, improved service quality, and increased transparency of financial transactions. Despite existing risks and limitations, the benefits of digitalization significantly outweigh the potential drawbacks.



Thus, digitalization is becoming a prerequisite for the successful development of transport companies in today's environment. Its further development will determine the competitiveness of the industry and the efficiency of transport systems as a whole.

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