

## **Application of marketing digital technologies in high-tech road freight transportation projects**

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### **Abstract**

This paper presents an analysis of trends in the development of the global and domestic markets for transport and logistics services, in particular, the role of marketing digital technologies in IT projects for road freight transportation. A detailed analysis of the current state of existing high-tech IT projects in the market of electronic platforms has been carried out and factors constraining its further development, and specifics of the development of the segment of road freight transportation have been studied. The purpose of this article is to determine the contribution of digital marketing technologies to the renewal and reinvention of high-tech projects in the form of IT products in the road freight transport market in Kazakhstan. The paper discusses the development dynamics of the global market of transport and logistics services using the panel study method. Additional research methods used in this study are comparative analysis, generalization and synthesis, and methods of grouping and comparison. The authors present and substantiate a list of high-tech products that have the greatest impact on the formation of trends in the development of the global transport logistics market. Based on the study, key features, key success factors, and directions for further development of the Kazakhstani market of transport and logistics services are revealed. For example, due to the rapid development of IT technologies, in the next five years - in the period up to 2028, the market will continue to develop steadily with an average annual growth of about 5.7%. In addition, as the research results show, the situation with low activity in the application of the main marketing promotion of the main Internet portals for road freight transport shows that there is a lot of demand for SEO queries, but the promotion of IT projects such as Della and fa-fa is very low. Finally, research findings and provisions may be helpful as a guide for logistics and freight companies who plan to apply digital marketing in their activity.

**Keywords.** Digital logistics, marketing technologies, freight transportation, high-tech projects, IT projects.

**JEL codes:** M31, M37, O32, O33, R40

## **1 Introduction**

The use of marketing technologies in high-tech projects in the transport and logistics services market, in particular in road freight transportation, is characterized as one of the narrow ones, even though it affects most industries and spheres of public life. Being present in all stages of public life, the logistics concept and marketing promotion have a pronounced significance. Transport logistics is currently at the stage of a paradigm shift, in the process of transition from traditional to innovative development. Participants in the transport logistics market for road transport daily face the need to develop the infrastructure and organizational sphere. Within the framework of this direction of development of road transport, a phased application of digital technologies and information integration is also envisaged to create a single information space convenient for all users.

The process of changing technological paradigms is complemented by other objective and subjective factors that create a complex system that requires subject study (Pantano et al., 2018). Currently, the transport and logistics services sector is in the process of accelerating the introduction of disruptive technologies (Parry & Kawakami, 2017) such as the Internet of things, artificial intelligence, machine learning, blockchain, virtual reality, augmented reality, drones, big data, robotics, and cloud computing (Majumdar et al., 2018; Blitz, 2021).

For example, the use of high-tech projects in the form of IT products that ensure the reliability and transparency of supply chain management, where road transport is directly involved, requires the recording, storage, and sharing of the same data by all participants in the process (Nuseir, 2020). IT technologies create the ability to trace from the consignor to the consignee, which ensures efficiency and reduces the risks of transportation operations. This is especially important in the transportation of food products when they are digitally tracked at every stage from suppliers to recipients.

The delivery of small cargo within metropolitan areas and large cities has now started with the innovation of drones, which offers advantages due to high speed, minimal costs, and adaptable delivery times (Perera et al, 2020). Postal companies in the world (UPS from the USA, Swiss Post from Switzerland, DHL from Germany) and retail delivery companies (JD.com from China, Wing from the USA, Rakuten from Japan, DDC from Canada) are already widely using drones in deliveries (DHL Global, 2022; Corrigan, 2020). Drones are operating at ever higher speeds, the logistics network is becoming decentralized with the growth of last-mile warehouses, resulting in reduced operating costs, overheads, and delivery times (Perera et al, 2020).

The above examples demonstrate the ever-increasing multi variability of transport and logistics systems and the difficulty of achieving key success factors for players in the domestic market segment such as KTZ, KazATO

and private companies providing their services in this area. Based on the foregoing, the purpose of the study was to analyze the key trends and the most important directions for the development of the global and domestic markets for transport and logistics services, as well as to identify the key success factors for business entities operating in the domestic market segment.

The difference between this study and previously published works is that it analyzes and proposes the use of digital marketing technologies, taking into account the specifics of the digital economy of Kazakhstan and allowing existing IT projects in road freight transport on the market in Kazakhstan.

According to the structure of the article, this paper reviews the literature, after which the materials and methods, and methodology of the study are described. Then the results of solving the problems of this study are presented: the task is related to the comparison of the current results of promotion in digital marketing for existing IT products in the road freight transport market, and the task is to develop a plan with a digital marketing approach for the renewal and improvement of projects in high-tech products in the market of transport and logistics services in Kazakhstan. The work ends with a discussion and conclusion.

## **2 Literature review**

The continuous growth of competition and the emergence of technological solutions give impetus to the development of new approaches to the theory and practice of managing high-tech projects and are becoming increasingly important. Classification and official definitions of high-tech projects are not clear in the literature, but the discussion on the relevance of this topic is considered. Trends in economic development and global directions of innovative discoveries in different areas determine industries. The main component of the definition of such projects is industries that apply the latest high-tech technologies.

The phrase "technology" was first used in 1958 in The New York Times article advocating "Atomic energy" for Europe (The New York Times, 1958).

Toffler (Toffler, 2002) presented technology in a very figurative way, saying that "technology is the basis of economic change because new technologies not only imply or require changes in technology - they imply new solutions to social, philosophical and even personal problems, they change all intellectual activity, human environment and his worldview.

According to Cortright (Cortright, & Mayer, 2001), high-tech is a technology that is at the forefront: the most advanced technology available. The opposite of high tech is low tech, referring to simple, often traditional or mechanical technology that can be created and developed using the simplest methods and techniques.

It should be noted that high-tech projects involve the use of breakthrough technologies and innovations, which, in turn, need effective management. The successful implementation of such projects will contribute not only to the development of the competitiveness of transport and logistics services of domestic enterprises but also to the economy as a whole.

Archibald (Archibald, 2010) has researched in depth the management of high-tech projects and mentioned the lack of knowledge about the types and classification of high-tech projects, and prepared a group of projects that can be classified as high-tech projects according to the type of industry. Among the ten recommended categories of projects listed in his book, he identifies the following five groups of high-tech projects:

1. Aerospace/defense projects;
2. Projects of communication systems;
3. Projects of information systems;
4. Projects for the development of products and services;
5. R&D projects.

Summarizing all the authors, it can be noted that certain attention is paid to digital technologies, IT solutions, and their application in the field of transport and logistics services. In particular, in road freight transportation they can be noted as high-tech projects. Shipping companies are already using digital platforms where they post information about orders and look for contractors. And this is a big step towards automating processes, increasing their efficiency and transparency. Around such platforms, an ecosystem of digital services is formed that complements and expands their capabilities. Including helping companies work directly with performers. The logistics industry is quite conservative - many processes have to be managed manually, and the level of automation is still inferior to such areas as finance and retail. But the future of Kazakhstani logistics lies solely with digitalization, and the emergence of an ecosystem of digital services on the market will accelerate this process (Kursiv, 2022).

However, the activity of marketing campaigns to promote IT solutions and platforms is not relevant in Kazakhstan. There are barriers to promoting digitalization both on the part of market participants and on the part of users of embedded applications (Baimukhanbetova et al., 2023).

According to the state program "Digital Kazakhstan", the goal of the program is to accelerate the pace of development of the economy of the republic and improve the quality of life of the population through the use of digital technologies in the medium term, as well as creating conditions for the transition of the economy of Kazakhstan to a fundamentally new development trajectory that ensures the creation of a digital economy of the future in long term. One of the main objectives of the program is the digitalization of transport and logistics (Strategy 2050, 2021).

According to this task, the program considered the introduction of an intelligent transport system in the following areas

- Weighing system in motion.
- Toll collection system on road sections.
- Mobile road laboratories.
- Video monitoring and detection of traffic violations.
- Analysis and forecasting of climatic conditions for transportation.
- Implementation of artificial intelligence on roads.

For multimodal transportation within the transport and logistics system, the maximum introduction of automation of cargo transportation processes by all modes of transport is envisaged:

- Trucking
- Railway transportation
- Sea and river transportation
- Air transportation (Egov, n.d.)

Breakthrough projects, in particular, their results, can bring multimillion-dollar profits, improve the conditions and living standards of the population, and create and develop various advanced industries.

What is known about high-tech projects for the digitalization of transport and logistics services, in particular road transport, is that they belong to the category of those projects that use the latest achievements and the results of research and development in priority sectors and sectors of the economy.

A review of the literature helps to identify that high-tech projects in the form of IT products in the field of road freight transportation have insufficient use of marketing promotion channels and require development in several areas. The first is based on the use of marketing digital technologies in the field of transport and logistics services, the second involves a more accurate promotion of IT products that are no longer relevant for the general information content of the population, the third is based on a review of existing projects, showing the practical absence of digital marketing technologies such as SMM and SEO promotion.

### **3 Methodology**

In the course of the analysis of the global and domestic markets for transport and logistics services, in particular, IT products focused on road freight transportation, primary and secondary data were used. As well as the research database, statistical and analytical information, international and domestic analytical reports, databases of patents and scientific articles, the google analytics platform, and Yandex metrics were used. The main research methods were general scientific methods of systemic and comparative analysis, generalization and synthesis, and methods of grouping and

comparison. When sampling the type of users of Internet search resources, a methodological analysis was carried out using panel and desk research tools.

#### 4 Results and Discussion

According to the analytical agency Research and Markets (Research and Markets, 2022), the volume of the global market for transport and logistics services reached \$9,525.1 billion in 2021. At the same time, experts are confident that due to the rapid development of IT technologies, in the next five years - in the period up to 2028, the market will continue to develop steadily with an average annual growth of about 5.7% and 2027 will reach a volume of 13,326.3 billion dollars (Fig. 1).

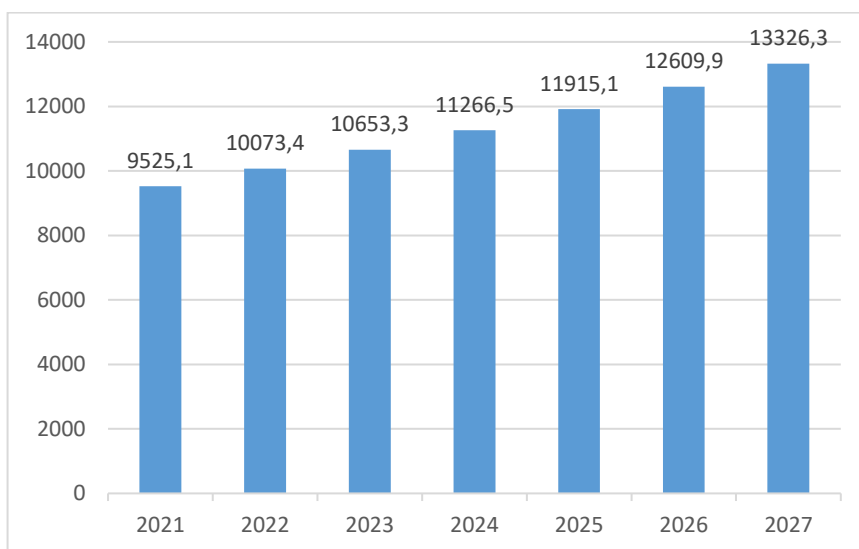


Fig.1. Dynamics of the global market of transport and logistics services, billion dollars (Research and Markets, 2022)

According to the data, all areas of transport and logistics services are indicated, but in particular, the field of road freight transport is characterized by a high level of competition. The market shows consistently strong performance, but not too strong growth rates, and market participants are not fully aware of the digital products used in road transport. In addition, in search of a sustainable position in the market and ensuring long-term development, transport, and logistics companies focus on introducing innovations with high-tech products, including the development of IT solutions and systems in the field of transport and logistics services, which improves their product offering and leads to reduce costs, thereby improving competitiveness.

Analyzing the products used by participants in road freight transport at the moment in the domestic market and the space of Internet networks, it is found that there are several of the most popular Internet platforms used by market participants, these are Della.kz, fa-fa.kz, inDrive, Yandex.

The DELLA Internet platform has been successfully operating in the road freight transport market since 1995 and provides users with the services of 20 years of experience in organizing domestic and international cargo transportation. By posting their data as a participant in the road freight transportation market, companies have the opportunity to receive the required number of offers from both operators of forwarding services and the contractors themselves (DELLA, n.d.)

A similar Internet product of a domestic company to provide an opportunity for vehicle owners who want to constantly have a sufficient number of orders for cargo transportation in Kazakhstan, and for cargo owners who want to reduce logistics costs, the FA-FA website will be equally useful. Having a variety of offers for transportation from customers, the site also provides for the selection of vehicles of the required carrying capacity and different characteristics, such as refrigerators, long vehicles, car carriers and other vehicles for transporting specific goods. The resource allows companies that send goods to save up to 50-70% on cargo transportation in Kazakhstan (FA-FA, n.d.).

The next Internet product and IT solution in the field of transport and logistics services for road freight transportation are provided in the form of the InDrive mobile application, which gives mobility and efficiency for use. According to the page on the official website of this platform, there are also additional services for both road freight transportation and passenger transportation in intracity and intercity traffic (InDrive, n.d.).

The digital ecosystem of products like Yandex is a multinational corporation that invests in Internet search, cloud computing and advertising technologies and is also active in the transportation of both passengers and small cargo. In the field of transport and other services, the information service is actively provided by the legal entity Yandex.Taxi LLC, under the trade name Yandex Go (Taxi.Yandex, n.d.).

In the market of transport and logistics services and, in particular, road freight transportation, in addition to direct orders to participating companies, searches are carried out through Internet systems. Numerous requests for road transport on the Internet are carried out through the search portals Google and Yandex. According to google analytics, the number of trend queries over the past 90 days in Kazakhstan, by keywords, "freight transportation" and "truck" is shown in the figure (Fig. 2).

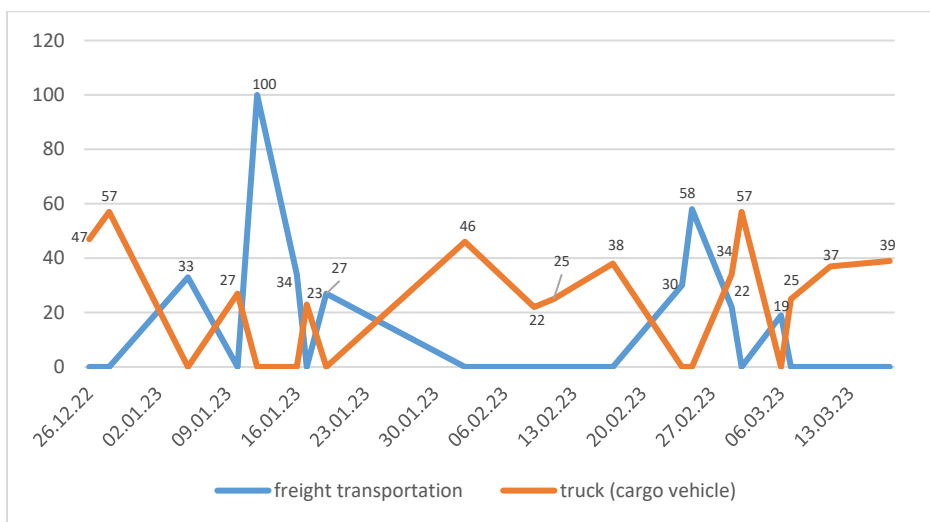


Fig.2. Dynamics of requests for keywords, “freight transportation” and “truck” for the period from 12/26/2022. to 13.03.2023 according to google analytics in Kazakhstan  
(The chart was compiled by the authors according to Google Analytics data)

According to Figure 2, it can be seen that requests through the google search platform from potential customers are characterized by different dynamics. For a period of 90 calendar days, 12 of them have requests of a different number, and especially it can be noted that before the New Year, as well as after a long weekend at the beginning of the year there was high activity in search.

The activity of search queries in the domestic market and the Internet platform is also noted on the Yandex portal, where participants in the freight transportation market also carry out their requests for the keywords “freight transportation” and “trucks” (Fig. 3.)



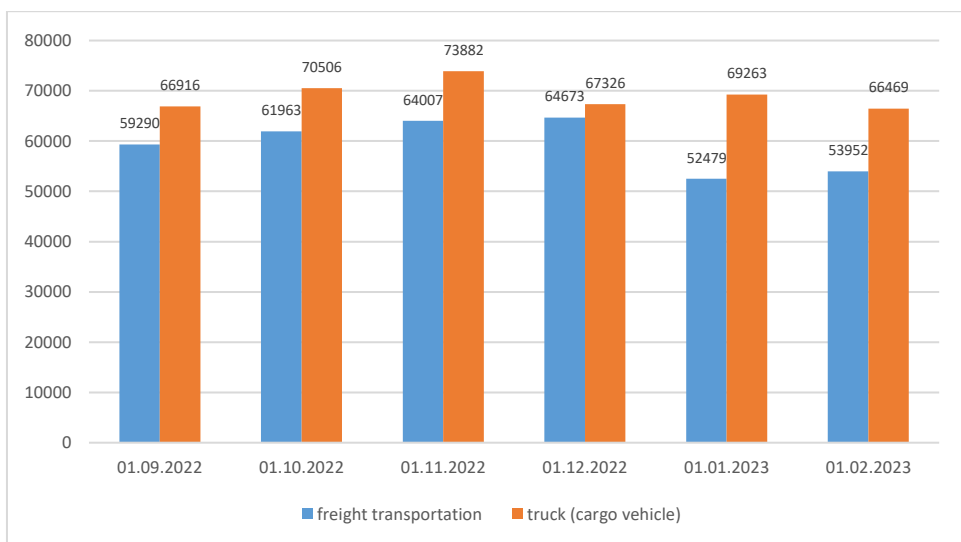


Fig.3. Dynamics of requests for the period from September to the month of 2022 to February 2023 according to Yandex analytics (The diagram was compiled by the author according to Yandex analytics data)

According to the figure, it can be noted that most of the search queries of those interested in freight transportation are observed on the Yandex platform. The demand dynamics were also affected by the long weekend at the beginning of the year, and then there is an increase in the dynamics for the following months.

Research on secondary data of search query metrics showed evidence of the need to use marketing digital technologies in the field of transport and logistics services, in particular freight and road transport. According to the analysis of Internet platforms on the use of digital technologies in Internet marketing, it is necessary to note the weak promotion of specialized platforms in road freight transportation for the search for the keyword "road freight transportation" (Table 1).

Table 1

Comparative analysis of the use of digital marketing technologies in IT projects for road freight transportation

Key digital marketing activities	IT products in the form of high-tech projects			
	Della	Fa-Fa	InDrive	Yandex Go
Search engine optimization (SEO)	There is a website, but poor SEO promotion	There is a website, but poor SEO promotion	There is a website, but poor SEO promotion	There is a website, but

				poor SEO promotion
Search engine marketing (SEM)	No event to increase website traffic	No event to increase website traffic	Outdoor ads with the app name	Outdoor ads with the app name
Content marketing, User-generated content (UGS)	Available as text only at the bottom of the site	Available as text only on the main page of the site	Available both on the website and outdoor advertising	Available both on the website and outdoor advertising
Social media marketing (SMM)	No	No	Rare	Available, youtube, Instagram, TikTok, etc.
Content creation automation	No	No	Upon completion of the service, an assessment is provided	Upon completion of the service, an assessment and a report on the service are provided by e-mail.
E-commerce marketing	No	No	It is considered in the mobile app	Available, the possibility of charging from a bank card
Direct mailings	No	No	Rare emails	Calling on the cooperation of the company and sending e-mails
Advertising other IT products of the population	No	No	Available on other internet platforms	Available in other digital ecosystems
Note: the table was compiled by the authors based on the analysis of Internet product sites (DELLA, n.d.; FA-FA, n.d.; InDrive, n.d.; YandexGo, n.d.)				

Analyzing the use of high-tech IT projects for road freight transportation, and the use of modern digital marketing technologies in transport, it should be noted that, first of all, all Internet platforms are used in the form of a website and a mobile application. The main digital marketing activities such as SEO, SMM, SEM, UGS, contextual advertising, and others are not actively used. An analysis of the situation with low activity in the application of the main marketing promotion of the main Internet portals for road freight transport shows that there is a lot of demand for SEO queries, but the promotion of IT projects such as Della and fa-fa is very low. Promotion through other major digital marketing activities has the potential to renew the life cycle of Internet platforms, as well as the application of innovative

capabilities, which would once again increase the project's high-tech significance.

As a result of the analysis of the data presented, it can be concluded that Internet products that specialize only in road freight transportation are at the stage of decline in the project life cycle and it is necessary to focus on marketing activities and supplement digital ecosystems as their counterparts. The described trends are of current importance, and at this stage in the development of digitalization of transport logistics at the international level, it is very necessary to use the opportunities for developing domestic products. Working on the proposed IT products with additions and updates towards ecosystems in the coming years, it is highly likely that they will retain their influence on the development of the road freight transportation segment and the entire market of transport and logistics services in the country.

## **5 Conclusion**

The results of comparisons, research and analysis, applied according to the methodology of trends in the development of the market of transport and logistics services, show that there are ample development opportunities and the market trend will be the formation of connected end-to-end processes of logistics ecosystems built based on digital technologies and promotion by marketing technologies. All internal functions within the provision of transport and logistics services will be integrated using a common data network, from procurement to production, logistics, marketing and sales management (PWC, n.d.).

Moreover, the gradual development to integrate digital workflow and digital ecosystem in new or renewed high-tech projects in the field of road freight transport, which is an important part of transport and logistics services in the supply chain, will lead to the transparency of the entire supply line. Such a future development will give market participants access to information online and allow them to make optimal and informed decisions that require prompt responses.

In the coming years, the recovery of the global economy from the 2020 recession, the growth of pent-up demand, the rapid development of e-commerce and express delivery segments, as well as the development of domestic consumer demand will also contribute to the further growth of the global transport and logistics services market (Tels Global, 2022).

In the context of the intensive development of digitalization in all areas and taking into account the constantly changing environmental conditions, the players of the domestic road freight transportation market must constantly improve their product offering by introducing high-tech solutions and innovative products, as well as the timely application of digital marketing campaigns, as they promptly provide information to users. It is also important

for companies with Internet products to focus on the development of human resources in the field of IT specialization and marketing, including staff development. When implementing solutions for the renewal of the life cycles of existing projects during the implementation and renovation of projects, it is possible to attract external experts in the field of intelligent technologies and high-tech project management, who can work effectively in cross-functional teams. The success factor in the current situation is based on the development of interaction with external partners across the region, state, and international transport and logistics ecosystems to enhance integration and an innovative component that increases organizational flexibility, quality of services and responsiveness.

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