ORIGINAL ARTICLE
DOI: https://doi.org/10.30932/1992-3252-2020-19-2-2

World of Transport and Transportation,
2021, Vol. 19, Iss. 2 (93), pp. 156–160

Goals and Risks of Activity as Factors of Regulation in Social Systems in Transport Sector

Nadezhda A. FILIPPOVA **Igor A. BASHMAKOV** **Denis Yu. KOCHEGURA**

Nadezhda A. Filippova[1], Igor A. Bashmakov[2], Denis Yu. Kochegura[3]

[1, 2] Moscow Automobile and Road Construction State Technical University, Moscow, Russia.
[3] Kuban State Technological University, Krasnodar, Russia.
✉ *[1] madizp@mail.ru.*

ABSTRACT

Significant changes that are currently taking place in the external environment are objective prerequisites for emergence of new management methods that predetermine the practical period of transition of enterprises from strategic planning to strategic management (transfer of thinking based on the future to the thinking based on the present following the principle «here and now»).

So, for example, large production structures focus on stability, therefore they react slowly to changes in the external environment, take little risks, and tend to traditional solutions. Modifying options developed at large enterprises are developing what is, as well as complementing and differentiating the existing situation, where the limited possibilities of any kind of evolution of any system can exist solely within its limits.

Efficiency reflects the results of development, but is not identical with the results, because no saving of some factors of production can be achieved without additional costs of others. The strategy turns here into real one only if it based on the concept of developing new specific products or processes subject to the following indicator of progress: the maximum earned with the minimum of expenditures.

The objective of the study is to identify modern regulatory factors in social systems in transport sector concealed in the goals and risks of such activities, while the main object of study is road transportation. The article uses methods of theoretical and empirical research in relation to goals and risks that can be determined and observed in the activities of transport socio-technical systems.

Goals and risks are defined as factors that allow regulating key performance indicators of socio-technical systems that affect their effectiveness.

Keywords: transport, risks, risk reduction, risk management, risk regulation, transport risks, risk identification, efficiency.

For citation: Filippova, N. A., Bashmakov, I. A., Kochegura, D. Yu. Goals and Risks of Activity as Factors of Regulation in Social Systems in Transport Sector. World of Transport and Transportation, 2021, Vol. 19, Iss. 2 (93), pp. 156–160. DOI: https://doi.org/10.30932/1992-3252-2020-19-2-2.

The text of the article originally written in Russian is published in the first part of the issue.
Текст статьи на русском языке публикуется в первой части данного выпуска.

INTRODUCTION

The transport industry is among the sectors more vulnerable to risks, which requires transport companies to use effective enterprise risk management strategies. By using right methods and tools, these companies can reduce a significant portion of their risks and better respond to the situations when they arise [1].

Modern regulatory factors in social systems in transport sector lie in the actual goals of transportation activities, including work in the interests of customers, conscientious fulfilment of obligations undertaken, support and development of mutually beneficial, long-term relationships with partners. Besides, modern regulatory factors in social systems in transport sector are closely related to risks as integral components of transport activities. By managing risks, it is possible to effectively influence both the social and technical components of transport systems.

Risk management is a process of analytical and managerial activity aimed at identifying and responding to emerging uncertainty inherent in managing a complex system and its assets.

The risks that transport companies face vary but can include integrity and safety of the vehicle fleet, safety and retention of drivers, and compliance issues. Some of these risks are directly influenced by external factors such as weather, traffic, and road conditions. Carriers also bear many other risks. They are responsible for delivering the shipments that support the business of their shipper clients. Any disruption, including accidents, loss of cargo or financial problems, can cause a disruption in the supply chain, which damages reputation and lowers profits [2].

Some of the «modern» risks that the transport industry face are related to technological advances, cyber vulnerabilities and market fluctuations caused by international trade disputes. In addition, the deepening shortage of qualified drivers, regulatory compliance and the poor state of road infrastructure are also ongoing challenges. Although many of these risks are beyond the control of transport companies, there are actions they can undertake to reduce their risks and be able to respond to them appropriately [3].

The *objective* of the study if to determine modern factors regulating social systems in transport sector concealed in goals and risks of transportation activity. The study uses the *methods* of theoretical research, based on the study of the degree of elaboration of similar issues by other researchers, of their relevance, on their critical assessment. Besides theoretical methods, the article uses methods of empirical research in relation to goals and risks, expressed in the presentation of information obtained empirically.

RESULTS

Goals and Risks in Transport Sector

Implementing transport risk management is a way of assessing specific risks and developing a strategy to meet those risks.

With so much at stake regarding the impact of transport risks on commercial activity, each transport company must develop a transport risk management solution that will guide their policies and operations. The solution not only reduces risk but can also serve as a powerful sales tool that will attract shippers who want to be sure their goods are in good hands.

When a transport company is unable to implement an effective transport risk management solution, its management advises their employees and customers that risk management is not a top priority. This can be detrimental to morale, to attracting knowledgeable, skilled drivers and winning business. Many shippers are now asking their carriers what rules are in place to mitigate the risks that could affect their shipping. Without a concrete and clear risk management solution that they can easily show customers and determine the level of risks involved, shippers are more likely to go to another carrier. There is too much at stake to take risks.

The main concern of a modern carrier is to ensure smooth operation of the supply chain. As part of their transport risk management efforts, carriers should consider insurance coverage and its terms, responsibility at each stage of the supply chain, business continuity plans, the value of their cargo, as well as ensure loss prevention [4].

Transport risk management may not be the same for any company. However, there are fundamental elements that each transport company should implement in their practices. There are some useful recommendations to be made for transport companies looking to mitigate the risks inherent in their industry:

• Development of executive support for risk management.

• Defining the principles of risk management and responsibility of the organisation.

• Formalisation of approaches to risk management, using a holistic approach to support decision-making and improve successful achievement of strategic goals and objectives.

• Using risk management to revise existing policies, processes, and standards.

• Incorporating risk management into existing business processes so that decisions are made successfully when assets, productivity and risk management are pooled.

• Identification of risk owners and risk management at the appropriate level.

• Use of the risk management process to support distribution of risks in decision-making, development of programs and projects.

• Using risk management to obtain a business case for transportation and gain trust of stakeholders.

• Use of sophisticated risk analysis tools followed by communication of the results to stakeholders.

Modern solutions allow carriers to identify risks, analyse their severity and automate the task of finding alternatives with less risk. Revealing risks involves identifying the shipment and the variables that could affect its delivery. Unfavourable weather conditions, extreme temperatures, social hazards, natural disasters and outages (failures) of infrastructure are among the most common risks [4].

The decision can then accept these identified risks and assess their likelihood at any stage of the delivery route. This is an important factor to consider because when looking only at pick-up and drop-off locations, intermediate points are ignored, while the biggest disruptions can occur right there. Most carriers lack the manpower, technology, or time to gather this amount of information, especially when multiple shipments move to different locations across the country. Technology has dramatically improved accuracy, scale, and speed of revealing this data, and it has improved dramatically over the past decade.

Besides identifying potential risks, they must be analysed to find out their likelihood, severity, geography, and timing. For example, forecasted freezing rain may have a 70 percent chance of falling in one of the northern regions of a country on a Monday route, but if vehicles are expected to leave that region on Sunday, shipment can be made as scheduled. Alternatively, if vehicles are not expected to leave until Tuesday, there is a 50 percent chance that the shipment will be delayed due to road icing.

This is where the next stage of a risk management process can be effective which is decision making. With the information obtained, the carrier can decide when the shipment should begin. If you move the pickup date to an earlier week or postpone it until the temperature rises above freezing, freezing rain may not affect the shipment. Yes, the shipment can be early or late, depending on this decision, but cargo will be safe and will not be affected by low temperatures or slippery roads that can damage cargo and/or vehicles [5].

The carrier can better plan a pickup date, determine which risk the company is willing to take with each shipment, decide what equipment might be needed to protect cargo, determine which mode of transport is the best one. This decision-making phase should include accurate real-time data and predictive data presented in a clear manner.

Flexible planning means transport risk management and it is critical to stay competitive, profitable, and delivering value to the customers.

The key to finding a solution to transport risk management is understanding transparency associated with risks. Both shippers and carriers need to receive real-time information about shipments: what each vehicle carries, how a specific cargo should be transported, delivery routes, expected and actual times of receipt and delivery, as well as all the variables that may affect these various elements [6].

There are many variables, and some of them are unpredictable. Weather, natural disasters, crime, protests or riots, infrastructure problems, drivers' health and safety, and other issues can directly or indirectly affect delivery reliability. By predicting these variables in advance, carriers can better set expectations, lower costs, and ensure that goods are properly cared for and delivered as expected.

This type of detailed visibility, of course, requires appropriate technology, but basic or outdated technology does not meet the needs. Today, more and more companies are relying on artificial intelligence, cognitive technology, and machine learning to collect data that is distributed across multiple systems. The opportunities are numerous, and now the transportation industry must use them to manage their solutions.

When looking for a solution for managing transport risks, it is imperative to find the one that eliminates all risk threats to the company, and provides useful data that will be used for decision making. This means that the company must be aware of its risks, regularly conducting a thorough assessment of them. Transport companies should ask themselves: «What risks can affect the strategic goals and objectives of the company? How should we prioritise our investments? What is the likelihood of delivery on time and on budget» [7]?

Once these factors are understood, a risk management solution can be developed.

In addition to weather and other variables that can affect a carrier's performance, there are always safety concerns. If, for example, the driver does not adhere to the rules of safe driving, not only the cargo is at risk, but also the company, which can be liable for accidents, injury and even death. They are

responsible for each vehicle leaving the warehouse/storage/dock. The responsibility for compliance by drivers with safety regulations and serviceability of rolling stock lies with the carrier. These considerations are critical to mitigate risks.

Compliance, safety, accountability are pillars of risk prevention, making carriers and their drivers responsible for complying with rules that directly affect safety [8].

Factors of Risk Management in Social Systems in Transport Sector

Below are the risk management factors in social systems in transport sectors.

1. *Unsafe driving* – unsafe driving of a commercial vehicle, for example, speeding, reckless driving, wrong lane changes, inattention, etc. [9].

2. *Failure to comply with working hours* – violation or non-observance of the rules of working hours or driving when tired.

3. *Fitness of a driver* – drivers must have adequate health, psychological and personal qualities, as well as appropriate training and experience to safely operate a vehicle.

4. *Prohibited substances / alcohol* – misuse of prescribed or over-the-counter drugs, or a change in the driver's condition for the worse due to prohibited substances.

5. *Vehicle maintenance* – non-observance of vehicle maintenance rules (headlights, brakes, necessary damage repair, timely maintenance).

6. *Failure to comply with the rules for transportation of dangerous goods* – prevention of leakage of containers and tanks with hazardous substances, incorrect labelling, improperly packed and loaded dangerous goods.

7. *Failure indicator* – frequency and severity of failures.

The goal of transport risk management is not to eliminate risks. Risks are inherent in every industry, and many of them are completely outside the control of any organisation. Instead, transport risk management serves as a system for predicting potential disruptions with a single goal: to help transport companies develop dynamic processes and systems that respond quickly, efficiently, and reliably to changing logistics and transportation challenges [10].

These predictions are just the beginning. They shed light on what can happen sometime and somewhere, but the main goal is to have the right mechanisms available to respond appropriately to these predictions before they negatively impact the business. To have a plan of action in all circumstances (known, foreseeable or unknown), transport companies must constantly reassess their risks. These are also not one-time procedures. Risks «travel» with each vehicle across thousands of kilometres of roads and across borders. They fluctuate and can change every kilometre of the route [11].

Companies must have access to accurate, reliable, and comprehensive information that provides a clear understanding of vulnerabilities of the supply chain and transport networks. By anticipating outages, companies can proactively minimise their impact. They can create backup plans or reverse plans to reduce the impact. In fact, they can be more resilient to change and threats [12].

An important aspect is the development of relevant skills of management to cope with risks management and to create motivation systems diversified by criteria and rewards [13] comprising development and implementation of corporate risk management systems as evaluated and rewarded indicator. The risk management should be included into corporate training, strategies and concepts of efficiency improvement, leadership development at the corporate headquarters', divisional and front-line units. Many works are dedicated to the development of those systems, particularly regarding risk management (e.g., [14–16]) but each transport company should thoroughly adapt its own system of indicators to existing risks and to remedial actions within its managerial system. It should be explained by the fact that transport companies (in contrast to e.g., banking) have widely different activity features predetermined by body of factors comprising features of rolling stock, transported goods, customers (big shippers, general cargo, etc.), logistics facilities, geography of activity, other factors.

CONCLUSION

So, risk is the effect of uncertainty on goals. In the broadest sense, risk is everything that can become an obstacle to achieving goals and objectives. Risk management is a process of analytical and managerial activity aimed at identifying and responding to uncertainties inherent in managing a complex organisation and its assets.

The practices of risk management in biggest companies show the following:

• Risk management supports strategic organisational alignment.

• Mature organisations have a clear structure for risk management.

• Successful organisations have a culture of risk management.

• A wide range of risk management tools are used.

• Risk management tools are key for making program investment decisions.

• Various methods of risk management are available.

• Active risk communication strategies improve decision making.

• Risk management improves knowledge management and personnel development.

The conclusions drawn are general ones and make a basis for development of risk management systems in particular transport companies.

REFERENCES

1. Biryukova, O. Yu. Logistic technologies of synchronisation of interaction of interacting modes of transport in the national economy of Russia [*Logisticheskie tekhnologii sinkhronizatsii vzaimodeistviya smezhnykh vidov transporta v natsionalnoi ekonomike Rossii*]. *Innovative economy: proceedings of IV International scientific conference (Kazan, October 2017)*. Kazan, Book publ., 2017, pp. 91–93. [Electronic resource]: https://moluch.ru/conf/econ/archive/262/13032/. Last accessed 26.12.2020.

2. Vlasov, V. M., Velikanov, A. Yu., Filippova, N. A., Litvinenko, R. V. Improving operational requirements for the car and the process of organising movement of perishable goods by special road transport [*Sovershenstvovanie ekspluatatsionnykh trebovanii, predyavlyaemykh k avtomobilyu i protsessu organizatsii peremeshcheniya skoroportyashchikhsya gruzov spetsialnym avtomobilnym transportom*]. *Bulletin of Moscow Automobile and Road Construction State Technical University (MADI)*, 2020, Iss. 3 (62), pp. 30–35.

3. Nekrasov, A. G., Belyaev, V. M., Mirotin, L. B., Volkov, V. D., Spirin, I. V. Logistics engineering for road transport [*Logistichesky inginiring na avtomobilnom transporte*]. *Bulletin of Moscow Automobile and Road Construction State Technical University (MADI)*, 2017, Iss. 1 (48), pp. 3–12.

4. Lebedev, E. A., Mirotin, L. B., Naumenko, M. A. Digital transformation of transport [*Tsifrovaya transformatsiya transporta*]. Logistics: Modern development trends. Proceedings of the 17th International scientific and practical conference. St. Petersburg, GUMRF named after Admiral S. O. Makarov, 2018, pp. 279–283.

5. Zelenova, E. S., Bykova, Yu. A. Insurance as a method for minimising risks during transportation [*Strakhovanie kak metod minimizatsii riskov pri transportirovke*]. *Economics, management, finance: proceedings of VI International scientific conference (Krasnodar, February 2016)*. Krasnodar, Novation publ., 2016, pp. 116–118. [Electronic resource]: https://moluch.ru/conf/econ/archive/172/9591/. Last accessed 26.12.2020.

6. Mirotin, L. B., Baginova, V. V., Fedorov, L. S., Morozov, V. N., Apatsev, V. I. Logistics methods as a factor of management efficiency [*Metody logistiki kak factor effektivnosti upravleniya*]. *Competitiveness in the global world: economics, science, technology*, 2017, Iss. 2–3 (31), pp. 91–98.

7. Filippova, N. A., Bogumil, V. N. Practical testing of the method to forecast the start and end time of navigation period to reduce the risks of in sufficient delivery of goods within Northern delivery campaign [*Prakticheskaya aprobatsiya metoda prognozirovaniya nachala i kontsa navigatsii dlia snizheniya riska nedopostavki gruzov severnogo zavoza*]. *Bulletin of Moscow Automobile and Road Construction State Technical University (MADI)*, 2019, Iss. 3 (58), pp. 88–93.

8. Pokrovsky, A. K., Mirotin, L. B., Bashmakov, I. A. New approaches to transport management in the context of economic globalisation: Monograph [*Novie podkhody k upravleniyu na transporte v usloviyakh globalizatsii ekonomiki: Monografiya*]. Moscow, Tekhpoligraftsentr publ., 2019, 288 p.

9. Pokrovsky, A. K., Mirotin, L. B. Logistic management is the key to mutual understanding in the supply chain [*Logisticheskiy menedzhment – klyuch k vzaimoponimaniyu v tsepi postavok*]. Logistics: modern development trends. Proceedings of the 19th International scientific and practical conference. St. Petersburg, GUMRF named after Admiral S. O. Makarov, 2020, pp. 38–43. [Electronic resource]: https://elibrary.ru/item.asp?id=43773913. Last accessed 26.12.2020.

10. Filippova, N. A., Karimova, P. A. Organisation of work of interacting modes of transport according to uniform technological processes [*Organizatsiya raboty vzaimodeistvuyushchikh vidov transporta po edinym tekhnologicheskim protsessam*]. *Repair, restoration, modernization*, 2019, Iss. 2, pp. 42–45. DOI: 10.31044/1684-2561-2019-0-2-42-45.

11. Loza-Hernandez, L., Gendreau, M. A framework for assessing hazmat risk at nodes of transport networks. *International journal of disaster risk reduction*, 2020, Vol. 50, pp. 101854. DOI: 10.1016/j.ijdrr.2020.101854.

12. Guo, Jingni; Xu, Junxiang; He, Zhenggang; Liao, Wei. Research on risk propagation method of multimodal transport network under uncertainty. *Physica A: Statistical Mechanics and its Applications*, Vol. 563. DOI: 10.1016/j.physa.2020.125494.

13. Lovett, S., Rasheed, A. A., Wanrong, Hou. Stock options, restricted stock, salary, or bonus? Managing CEO compensation to maximize organizational performance. *Business Horizons*, 2021. DOI: 10.1016/j.bushor.2021.02.041.

14. Almeida, J., Daniel, A., Figueiredo, C. The future of management education: The role of entrepreneurship education and junior enterprises. *The International Journal of Management Education,* 2019, pp. 100318. DOI: 10.1016/j.ijme.2019.100318.

15. Afshari, L., Hadian, Nasab Ali. Enhancing organizational learning capability through managing talent: mediation effect of intellectual capital. *Human Resource Development International,* 2020, Vol. 24, pp. 1–17. DOI: 10.1080/13678868.2020.1727239.

16. Hamlin, R. G., Patel, T. Toward an emergent Asian behavioural model of perceived managerial and leadership effectiveness: a cross-nation comparative analysis of effective and ineffective managerial behaviour of private sector managers in India and South Korea. *Human Resource Development International*, 2020, Vol. 31, pp. 259–282, DOI: 10.1080/13678868.2019.1700076.

Information about the authors:

Filippova, Nadezhda A., *Ph.D. (Eng), Associate Professor at the Department of Road Transportation of Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia, madizp@mail.ru.*

Bashmakov, Igor A., *Ph.D. (Eng), Associate Professor at the Department of Management of Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia, bashmakov-igor@rambler.ru.*

Kochegura, Denis Yu., *Ph.D. student at Kuban State Technological University (KubSTU), Krasnodar, Russia, d.kochegura@mail.ru.*

Article received 02.08.2020, approved 21.04.2021, accepted 23.04.2021.