



STOPPAGE OF RSR-OWNED WAGONS IN FREIGHT OPERATIONS

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Abstract – The stoppage of wagons in freight operations, particularly when the railway operator lacks a sufficient number of wagons in a specific series, adversely impacts the wagon turnaround cycle and freight traffic. This situation can potentially lead to negative consequences in fulfilling transport contracts and increased business costs, necessitating the use of foreign wagons to meet contracted freight transport volumes. This paper analyzes the stoppage of RSR-owned wagons in freight operations during the loading and unloading of various goods. The analysis considers the technology and methods used for loading and unloading, as well as the duration of wagon stoppages on handling and industrial tracks. It proposes improvements to the technological processes of loading and unloading wagons with the aim of reducing wagon stoppages in freight operations.

Keywords: periods allowed for loading and unloading, type of goods, loading and unloading machinery, handling tracks.

1. INTRODUCTION

Wagon stoppage in freight operations is a key aspect of rail transport efficiency. The process of loading and unloading wagons can significantly affect the productivity, costs and overall operational capability of railway companies. In situations where the wagons are stopped longer than intended, a number of problems arise, including increased costs, reduced availability of the wagons for other transport tasks, and possible delays in the supply chain.

The efficiency of the loading and unloading process directly affects the wagon turnaround cycle, a key indicator in railway traffic. A faster turnaround cycle enables better utilization of the wagon fleet and reduces operating costs.

Conversely, wagon stoppage beyond the prescribed time limits may result in additional fees and penalties (demurrage charges), increasing the total transport costs for customers.

2. PERIODS ALLOWED FOR LOADING AND UNLOADING OF WAGONS AT RSR

Pursuant to the goods tariff RT-131, the periods for loading and unloading wagonloads in freight traffic at the Republika Srpska Railways (RSR) are clearly defined to ensure efficiency and accuracy in the transport process. This regulation specifies different periods depending on the type of consignment and type of train, providing a framework for the planning and execution of logistics operations.

For single wagonloads, the loading and unloading periods are set at 6 hours. These periods allow for quick processing of smaller consignments, reducing wagon stoppage and optimizing the turnaround cycle of the rolling stock. In the case of block trains, which transport larger quantities of goods in the same direction, these periods are extended to 10 hours. This extension is justified by the more complex operations involved in loading and unloading larger quantities of freight.

In regards to the RSR-owned wagons, the periods

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are further specified according to the type of consignment. Single wagonloads have a 6-hour period, while groups of wagons have an extended period of 10 hours. For block trains, the loading and unloading periods are set at 18 hours. These deadlines account for the additional operational and logistical requirements arising from the increased workload and the need for coordination between different parts of the railway system.

It is important to emphasize that these periods are defined irrespective of the loading and unloading technology employed by the customer. This approach ensures uniformity and fairness in applying these periods, providing all customers with equal terms for conducting their logistics operations. Whether utilizing a manual, semi-automatic, or fully automated loading and unloading system, all customers must adhere to the allotted periods to uphold the efficiency and punctuality of rail traffic.

Defining these periods is crucial for enhancing RSR's operational efficiency, minimizing wagon

stoppages, and enhancing overall logistical support for customers. Proper management of these periods helps reduce costs and boosts the competitiveness of rail transport compared to other modes

3. OVERVIEW OF RSR KEEPER WAGON STOPPAGE IN FREIGHT OPERATIONS

Throughout 2023, various types of goods were loaded and unloaded into RSR-keeper wagons at stations across the RS Railways network. Iron ore was primarily loaded at Omarska station, coal at Prijedor station, and scrap iron at Doboј and Banja Luka stations, with smaller quantities of other goods. Additionally, tin coils were unloaded at Doboј station, granite stone at Banja Luka station, quartz stone at Vrbanja station, raw sugar at Brčko station, and smaller quantities of other goods were handled at other stations on the RSR railway network.

An overview of wagon stoppage is presented in the Table 1 below.

Tab.1. Overview of wagon stoppage for loading

No.	Loading station/type of goods	Average stoppage period per train/number of wagons	Loading method
1.	Doboј/scrap iron	48 hours/20 wagons	lifter
2.	Omarska/iron ore	2 hours/15 wagons	Specialized facility "Separation"
3.	Prijedor/clay	7 hours/14 wagons	loader
4.	Prijedor/coal	8 hours/16 wagons	loader

The data from the previous table clearly shows that the loading duration varies depending on the facility used. Loading performed by a specialized facility allows for the loading of 15 wagons in approximately 2 hours, averaging 8 minutes per wagon. Conversely, when the consignor loads goods directly from trucks to wagons using a lifter, the process of loading 20 wagons takes 48 hours, averaging 144 minutes per wagon. It is important to note that in this case, the consignor does not store the goods at the loading site but transports them directly by trucks.

An overview of wagons stoppage for unloading is presented in the Table 2 below.

Table 2 indicates that the duration of unloading varies depending on the facilities where the wagons are unloaded. When unloading is conducted using a lifter or by gravity, approximately 12 wagons can be unloaded in about 5 hours, averaging around 25 minutes per wagon. In cases where unloading involves transferring goods from wagons to trucks using a

grapple, unloading 15 wagons takes approximately 30 hours, equating to about 120 minutes per wagon.

The preceding analysis demonstrates that the duration of loading and unloading primarily hinges on the technology and machinery available for these operations to the customer.

4. SWOT ANALYSIS

SWOT analysis is a method of marketing research at a strategic level, named after the initial letters of the English words Strengths / Weaknesses / Opportunities / Threats.

Through this analysis, a company can assess its primary advantages (strengths) and disadvantages (weaknesses), as well as identify opportunities (chances) and threats (limitations) that affect its goal achievement [2].

The ultimate objective of the SWOT analysis is to determine the company's strategic position and select

Tab. 2. Overview of wagon stoppage for unloading

No.	Unloading station/type of goods	Average stoppage period per train/number of wagons	Unloading method
1.	Doboј/sheet metal	5 hours/12 wagons	lifter
2.	Banja Luka/granite stone	10 hours/18 wagons	lifter
3.	Vrbanja/quartz stone	30 hours/15 wagons	grapple
4.	Brčko/sugar	8 hours/13 wagons	gravity

Tab. 3. SWOT analysis for RSR JSC Doboj in the domain of transport and relations with transport users

Strengths • Standardized periods allowed for loading and unloading: The defined periods in the goods tariff RT-131 provide clear guidelines and expectations for all participants in the process, enhancing organization and planning. • Wagon fleet turnaround efficiency: Clear deadlines reduce wagon stoppage times, facilitating faster turnaround cycles and optimizing fleet utilization. • Improvement of operational processes: Effective management of wagon stoppages can lead to streamlined operational procedures, minimized downtime, and increased overall efficiency. • Fairness in implementation of deadlines: Consistent deadlines irrespective of loading and unloading technologies ensure equitable treatment of all customers.	Weaknesses • Limited flexibility: Strict deadlines may pose challenges for users with specific requirements or unforeseen circumstances, potentially resulting in delays and additional costs. • Technical and organizational problems: Infrastructure issues, such as faulty loading and unloading devices or manpower shortages, can extend wagon stoppage times. • Insufficiently integrated systems: Lack of integration between various IT systems and platforms may hinder the monitoring and management of loading and unloading processes. • Overdue fees: Imposition of additional overdue fees and penalties can escalate overall costs for customers.
Opportunities • Technological improvements: Implementation of new technologies, such as automated loading and unloading systems, can reduce stoppage time and increase efficiency. • Process optimization: Analyzing data on wagon stoppage may help to identify bottlenecks and improve operational processes. • Increasing competitiveness: Improving efficiency and reducing stoppage times can increase the competitiveness of rail transport compared to other modes. • Collaboration with customers: Developing partnership relationships with customers and adapting to their needs can lead to better process management and reduced stoppage time.	Threats • Alternating regulations: Changes in legislation and regulations can impact operational procedures and increase the complexity of managing wagon stoppages. • Economic factors: Economic fluctuations can influence the volume of freight transport, potentially causing resource disparities and increased stoppages. • Competition with other modes of transport: Growing competition from road, maritime, and air transport can affect the profitability and sustainability of rail transport. • Unforeseen situations: Unexpected events such as natural disasters, strikes, or technical failures can result in significant wagon stoppages and operational disruptions.

an appropriate development strategy.

In this analysis, strengths and weaknesses pertain to internal factors within the company, such as its resources in comparison to competitors and transport service users. Meanwhile, opportunities and threats relate to external factors affecting the transport company.

Advantages denote areas where a company has achieved noticeable success, while disadvantages highlight areas where it has encountered failures [1]. Opportunities are favorable environmental trends, whereas threats are trends that could potentially lead to negative outcomes. Naturally, a company aims to leverage its strengths and opportunities while mitigating its weaknesses and limitations [1].

Given the competition and the relationship between railways and road transport, a specialized analysis is necessary to formulate measures that redirect goods significantly towards rail traffic [1].

To fully capitalize on the advantages of rail

transport for users, it is essential to conduct both internal (strengths and weaknesses) and external (opportunities and threats) analyses through a SWOT analysis.

Strengths and weaknesses should be analyzed considering anticipated opportunities and threats. Evaluating competitive advantage underscores the importance of assessing one's position relative to competitors. The initial phase of this analysis involves examining strengths and weaknesses, followed by opportunities and threats (Table 3).

The purpose of the SWOT analysis is to identify internal strengths and weaknesses, along with external opportunities and threats. This analysis enables RSR JSC to assess its capabilities, leverage its strengths, and address weaknesses in response to external changes.

4. CONCLUSION

The SWOT analysis of wagon stoppage in freight operations underscores the need for ongoing enhancement of technological and organizational aspects to minimize stoppage times and enhance overall efficiency in rail transport. Capitalizing on opportunities for technological advancements and process optimization, while addressing weaknesses and threats, can significantly improve operational outcomes and increase customer satisfaction.

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