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Article

Implementation of the Reengineering Project for the Transport and Logistics System of Business Entities

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Abstract: In the context of globalization, the transport and logistics sector, with a global market volume of $9.6 trillion, has become a strategic factor determining the competitiveness of enterprises. However, the current growth rates and infrastructural constraints in Uzbekistan do not fully meet the targets set in the "Uzbekistan-2030" strategy. The purpose of this paper is to scientifically substantiate the mechanisms of radical reorganization (reengineering) of transport and logistics processes to enhance the efficiency of business entities.

The diagnostics revealed critical systemic issues in the national logistics system: 38.3% of highways require repair, average transport speeds are below international standards (25–45 km/h), and the share of technical service stations is less than 20%. A severe structural imbalance exists in roadside infrastructure, where retail and catering outlets account for over 66%, while maintenance stations represent only 6.3%, and parking lots just 2.0%. Redundant operations—such as 2–3 times repeated reloading, inefficient routing, and bureaucratic documentation—reduce overall operational efficiency by 20–30%.

The proposed "AS IS → TO BE" reengineering model algorithm (comprising diagnostics, bottleneck identification, digital prototyping, and KPI implementation) enables an increase in transport speed to 40–70 km/h (+40–60%) and a reduction in poorly maintained roads to 15%. The implementation of the developed project will ensure a 20–35% reduction in logistics costs for business entities, a 25–40% increase in freight speed, and ultimately foster a synchronous supply chain.

Keywords: transport logistics, business entity, reengineering, "AS IS", "TO BE", business process, roadside infrastructure, efficiency, operational losses.

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1. Introduction

Under the conditions of accelerating global economic integration and cross-border relations, maintaining a competitive advantage in international markets directly depends on the speed, reliability, and cost-effectiveness of the supply chain. This, in turn, brings the creation of modern transport and logistics infrastructure to the forefront as a strategic task. According to the estimation of *Armstrong & Associates* analysts, the global logistics services market is currently valued at $9.6 trillion, accounting for approximately 12% of global Gross Domestic Product (GDP). While the share of this sector reaches a high level of about 20% in the GDP of the European Union countries, it is estimated at around 12% within the EAEU region. Furthermore, the transport services sector accounts for nearly 8% of total global employment [1].

According to research by the United Nations Economic Commission for Europe (UNECE), a 1% increase in the share of infrastructure investments relative to GDP lays the foundation for an additional 2–5% expansion in production volume. IMF experts emphasize that a 1% rise in infrastructure expenditures stimulates annual GDP growth by an average of 0.4% [2]. Prospective estimates indicate that the transport and logistics services market is expected to expand from $6.37 trillion in 2025 to $8.13 trillion by 2030 [3].

In the current environment of intensifying global economic competition and conflicting interests, scientific research aimed at systematically assessing influencing factors and enhancing the efficiency of transport and logistics services provided to business entities has gained particular relevance. Specifically, analyzing and forecasting service dynamics, developing comprehensive criteria for assessing logistical development, and studying the effectiveness of geographical location, infrastructural support, and the operations of logistics centers and clusters are at the center of attention in this field. Additionally, formulating indices to evaluate the impact of investments and available resources on service quality, developing alternative, shorter, and cost-effective transport corridors and multimodal transport systems for landlocked countries, and optimizing the share of transport costs in product prime costs constitute the priority areas of contemporary scientific research.

Theoretical Framework

Applying a reengineering approach to transport and logistics systems is of strategic importance, requiring the introduction of modern, fundamentally redesigned business models to enhance service quality, accelerate transportation processes, and reduce operating costs.

A number of researchers have proposed various approaches regarding the conditions that justify the implementation of a reengineering project, as well as its procedures, stages, and expected results. For instance, B. Andersen suggested specific criteria to determine the situations in which a reengineering project should be applied: first, companies in crisis situations, for whom deciding on a reengineering project is a matter of market survival; second, companies that recognize the inevitability of changes in external factors and take proactive measures to prepare for them; third, companies that opt for a reengineering project to stay ahead of competitors based on the study of market trends [4].

Some researchers argue that integrating the reengineering approach into management processes ensures high organizational efficiency. In particular, R.B. Gamidullaev addresses the effectiveness of management process reengineering through strengthening control, saving time, strictly adhering to the general management principles outlined by Hammer, and organizing the overall governance workflow [5]. He proposes executing management process reengineering through the following stages:

Stage 1: Organization and planning;

Stage 2: Studying the current state of management processes within the target entity;

Stage 3: Identifying pathways for future management reengineering based on the diagnostics of the entity's current state;

Stage 4: Implementation of the developed measures.

Other researchers propose an alternative approach to the implementation of reengineering projects, which slightly differs from the stages outlined by R.B. Gamidullaev:

1. Planning.
2. Reengineering.
3. Introduction of changes.
4. Implementation.
5. Monitoring the implementation process and eliminating any deviations [6].

Certain scholars suggest relying on economic and financial indicators when developing reengineering projects. For example, A.G. Ermolenko proposes focusing on the following financial and economic metrics:

- Analysis of absolute profit indicators;
- Analysis of profitability ratios;
- Assessment of the enterprise's financial stability;
- Analysis of liquidity, solvency, and turnover ratios;
- Evaluation of equity capital utilization;
- Analysis of credit and loan utilization [7].

N.G. Ostroukhova approaches the effective implementation of business process reengineering from the perspective of managers, employees, and external specialists, highlighting the following key prerequisites:

1. A clear understanding of the tasks assigned by the enterprise head, combined with management's strong commitment to conducting reengineering and maintaining strict oversight over innovations.
2. Encouraging employees to adopt a creative stance toward expanding the company's scope of activities, fostering growth, consolidating official authorities, and embracing new responsibilities.
3. The ability to precisely manage corporate operations based on the independent organization of business process reengineering, while considering the recommendations of invited experts (consultants).
4. Utilizing a clear methodological framework for business process reengineering, enriched by the practical experience accumulated by consulting firms in implementing reengineering projects and advanced information technologies [8].

In addition to the aforementioned frameworks for executing reengineering projects, it is essential to consider various existing methodological methodologies and the specific challenges associated with selecting the appropriate approach for a given enterprise [9].

2. Research Methodology

In the course of the research, systematic and empirical analysis methods were utilized alongside the "AS IS" (current state) and "TO BE" (future state) modeling techniques introduced by M. Hammer and J. Champy, which serve as core tools for business process engineering.

3. Analysis and Results

Analyses and the studied empirical data indicate that the current state of transport and logistics services provided to business entities in the republic does not fully align with the target indicators specified in the "Uzbekistan-2030" strategy, the Concept for the "Development of the Transport and Logistics System of the Republic of Uzbekistan until 2030", and other regulatory frameworks aimed at the rapid development of the sector. More precisely, if operations continue at the current growth rates, the likelihood of achieving the strategic indicators stipulated in these documents on time is low. This situation is attributed to infrastructural constraints, the slow pace of technological modernization, an un-renewed transport fleet, and the technical condition of the road network.

In this regard, to ensure the efficient operation of the transport and logistics system, a fundamental improvement of the core factors driving sectoral development becomes necessary [10].

First, enhancing the technical and operational parameters of transport-logistics infrastructure—including highways, transport facilities, warehousing, roadside services, and multimodal logistics centers—is required. These measures represent the primary factors directly influencing freight speed, delivery times, and logistics cost dynamics.

Second, it is essential to renew the fleets of transport vehicles utilized in freight carriage and to introduce modern, ecologically and energetically efficient vehicles that meet contemporary technical requirements. This not only accelerates the transportation process but also reduces operational expenditures while increasing the quality and reliability of logistics services.

Third, revising freight transport routes, effectively utilizing international transport corridors, and increasing the throughput capacity of transit corridors passing through the republic's territory hold strategic importance. Fulfilling these tasks will strengthen the country's position as a transport-transit hub, reduce the costs of delivering export goods to foreign markets, and expand capabilities for the timely import of resources.

Fourth, creating favorable conditions for business entities in conducting export and import operations, making the logistics services market more competitive, and optimizing transport costs remain crucial tasks. This fosters the country's rise in international transport-logistics indices, improves service quality, and encourages deep integration into global supply chains.

Finally, digitalizing the management system of the transport and logistics sector, introducing performance indicators, automating data exchange, and modernizing regulatory mechanisms ensure that all structural reforms are executed in pursuit of a unified goal. The implementation of these approaches serves as an integral methodological framework for executing the tasks derived from the target indicators defined in regulatory documents [11].

The aforementioned analyses demonstrate a significant discrepancy between the volume of reforms being implemented in the transport-logistics sector and the target indicators set in state strategic documents. Specifically, given the current pace, the indicators established in the "Uzbekistan-2030" strategy and the sector development Concept cannot be fully secured due to structural, technological, and organizational constraints. This situation implies that traditional models of transport-logistics service organization have lost their efficiency, necessitating a radical restructuring of workflows within the sector.

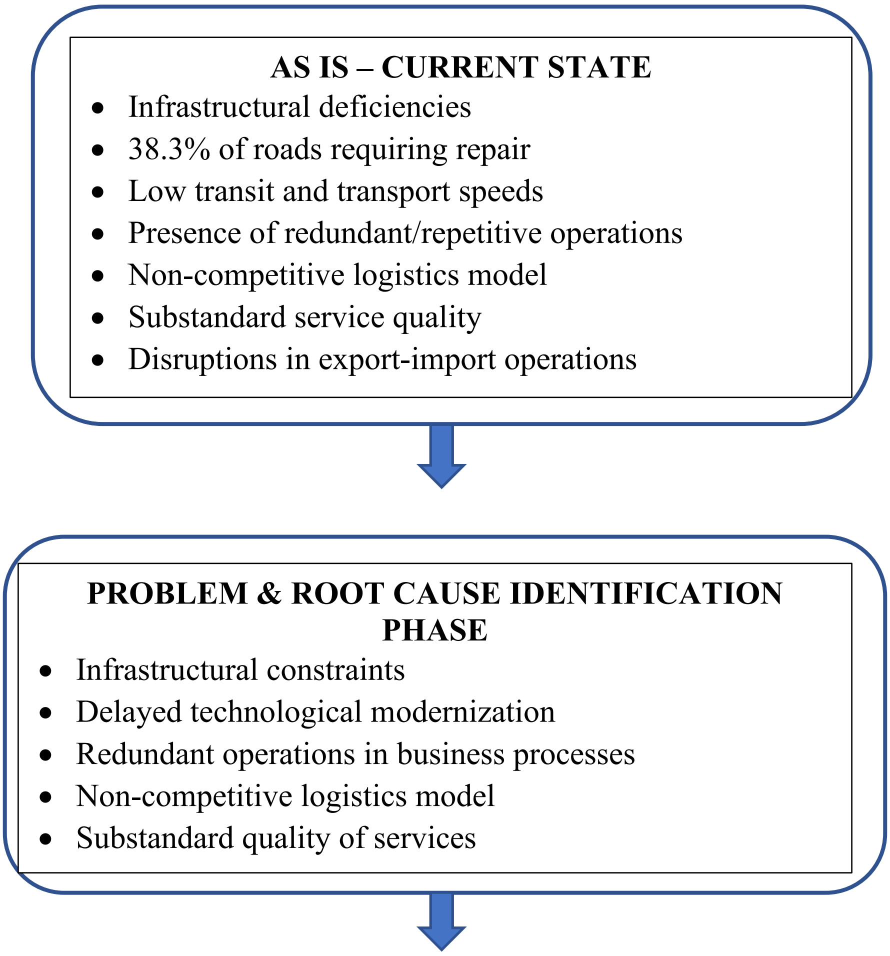
Modeling is the primary tool for business process analysis and design. In analyzing and improving business processes, "AS IS" and "TO BE" modeling frameworks are utilized. The concepts of "AS IS" and "TO BE" are terms that naturally formed in the domain of business process analysis and reengineering design. Michael Hammer and James Champy were the first to methodologically demonstrate the necessity of conducting business processes through these models [12], [13].

During the reverse engineering stage: A model of the existing real state of the business system is constructed (**"Current State" – "AS IS"**). The "AS IS" model is applied to comprehensively understand the business process, identify bottlenecks, and lay the foundation for improving the current situation. It describes the existing workflow, identifies present problems and barriers to development, and specifies necessary resources, required time, and responsible executors.

During the forward engineering stage: A new business model is designed ("**Target State" – "TO BE"**). The "TO BE" model is utilized to enhance business process efficiency, reduce process expenditures and time consumption, and digitalize and automate workflows. Within this framework, the digitalization and automation of the business process are substantiated, redundant stages are eliminated, resource and time consumption are optimized, and the process is brought to a highly efficient level.

By re-evaluating existing processes based on the "AS IS → TO BE" model of reengineering, eliminating redundant operations and informal costs, and integrating digital technologies and automated management systems, the competitiveness of the transport-logistics sector can be substantially strengthened. Consequently, a transport-logistics system redesigned through reengineering becomes a decisive factor for business entities in securing timely resource delivery, optimizing export-import operations, strengthening integration into global supply chains, and enhancing the country's transport-transit potential [14].

The Necessity of Reengineering the Transport-Logistics System and the "AS IS → TO BE" Transformation Cycle



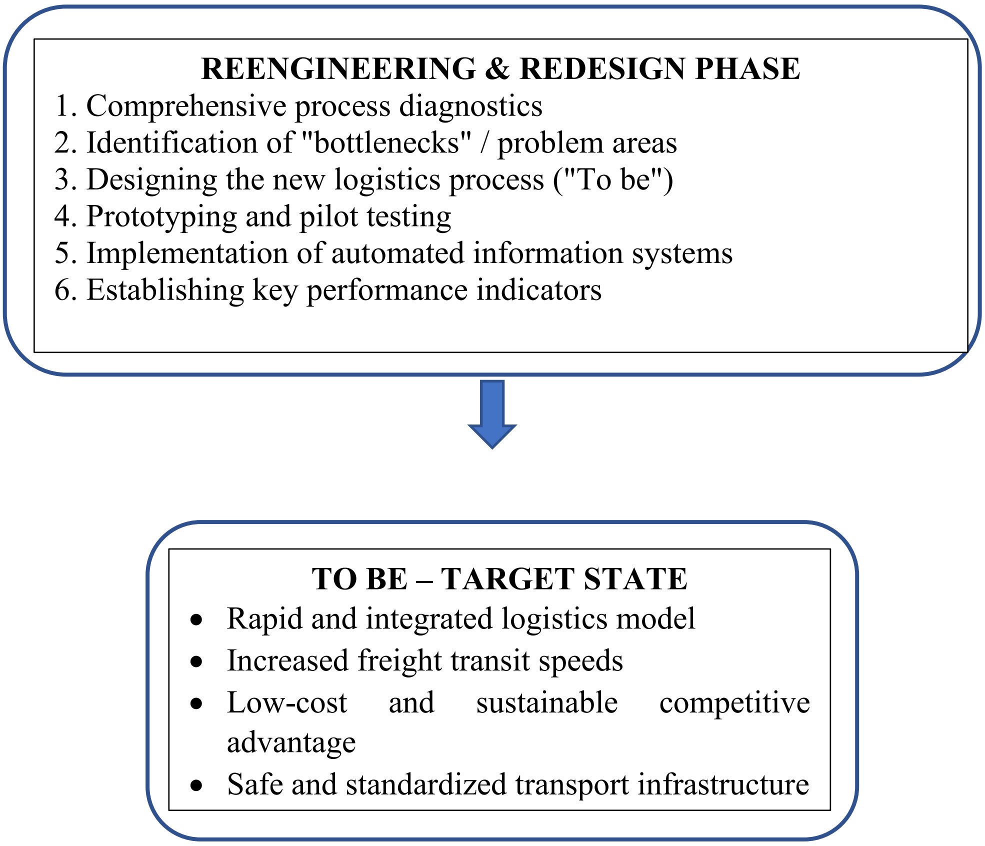


Figure 1. Block diagram of the transport-logistics system reengineering process.

The block diagram above systematically illustrates the necessity of reengineering the transport-logistics system based on the "AS IS → TO BE" transformation model. At the "AS IS" current state stage, core problems in the sector—such as insufficient infrastructure, a large portion of roads requiring repair, redundant operations in service workflows, and low transport speeds—are clearly depicted. This situation not only complicates transportation but also limits the capabilities of business entities to deliver resources, execute export-import operations, and maintain continuity in the supply chain.

The second stage—the problem and root cause identification process—focuses on locating structural bottlenecks, highlighting systemic deficiencies such as infrastructural limitations, slow technological renewal, and the misalignment of logistics processes with competitive market environments. This stage scientifically substantiates the necessity of thoroughly reviewing processes, eliminating redundant operations, and digitalizing the logistics system, which constitutes the central task of reengineering [15].

In the third and fourth stages—namely, direct reengineering and the "TO BE" model—a new, efficient, integrated, and rapidly operating form of the transport-logistics system emerges. Mechanisms such as comprehensive process diagnostics, prototyping, testing, and the deployment of automated information systems serve to drastically improve the quality of transport-logistics services, increase freight speeds, reduce costs, and generate a competitive advantage in service delivery. In this sense, the block diagram functions as a full-cycle modernization model for the transport-logistics system, scientifically illuminating a consistent transformation process from existing problems to strategic solutions.

Table 1. Diagnostic indicators of the current state ("AS IS") in the transport-logistics system.

Indicators	Current State (%)	Problem Level	Remarks
Share of roads requiring repair	38.3	Very High	Cause of logistical delays
Transport speed (km/h)	25–45	Medium	Below international standards
Share of technical service stations	<20	Extremely Low	Slows down transport flows
Share of "Door-to-Door" delivery	Low	Low	Insufficient density
Logistics costs	Rising	Medium-High	Impacts competitiveness

The diagnostic indicators presented in the table reveal structural weaknesses in the current state of the transport-logistics system. The fact that 38.3% of roads require repair and transport speeds fall below international benchmarks constitutes the main cause of disruptions in the supply chain. Furthermore, the share of technical service stations and maintenance infrastructure being below 20% negatively affects vehicle performance, limiting the capability to deliver essential resources to business entities on time.

Similarly, high logistics costs and constraints within the "door-to-door" service model diminish the market competitiveness of enterprises [16]. Therefore, the indicators in this table construct a "problem map" for the reengineering project, demanding targeted measures such as reducing redundant operations, improving road infrastructure quality, and expanding service networks.

Table 2. Core processes and redundant operations in the transport-logistics system (AS IS).

Process	Primary Objective	Redundant Operations	Type of Loss
Freight Loading/Unloading	Rapid transportation	2–3 times repeated reloading	Time loss
Routing	Fast delivery	Inefficient route selection	Distance loss
Technical Inspection	Vehicle readiness	Waiting in queues	Production delay
Documentation	Ensuring compliance	Repeated paperwork	Management loss

Table 2 comprehensively outlines the redundant operations within transport-logistics processes and the resulting losses. Carrying freight through multiple reloadings or roundabout routes, bureaucratic stages in documentation, and sequential delays in technical maintenance extend total service delivery times and elevate costs. All of these are categorized as "operational losses," which lower overall logistical efficiency by 20–30%.

From a reengineering perspective, this table is vital because it pinpoints exact "bottleneck" areas for process optimization. In particular, routing errors and repeated handling operations during loading and unloading exert the greatest negative impact on logistical speed. Consequently, this table serves as the methodological foundation for stages 1 and 2 of reengineering—namely, process diagnostics and redesign [17].

Table 3 explicitly demonstrates the variance between the current state of the transport-logistics system ("AS IS") and its redesigned target model ("TO BE"). For instance, increasing transport speed from 25–45 km/h to 40–70 km/h substantially improves service efficiency. Restructuring and reducing the share of poorly maintained roads from 38.3% to 15% expands the capacity to deliver resources to entrepreneurs on time.

Table 3. Comparative matrix of "AS IS" and "TO BE" states.

Indicator	AS IS (Current State)	TO BE (Target State)	Effect / Impact
Transport speed	25–45 km/h	40–70 km/h	+40–60% Speed increase
Roads requiring repair	38.3%	15% (by 2030)	Disruptions minimized
Technical maintenance infrastructure	<20%	50–60%	Technical breakdowns reduced
Logistics costs	High	Moderate	Lower prime costs

Additionally, expanding the share of technical maintenance facilities, reducing logistics costs, and enhancing service quality validate the economic and organizational efficacy of the reengineering project. This table visually and numerically substantiates radical sectoral improvements.

Table 4. Distribution of roadside infrastructure (Current problem analysis).

Facility Type	Quantity	Share (%)
Retail outlets	10133	53.5
Catering facilities	2484	13.1
Fuel stations	1740	9.2
Technical service stations (TSS)	1197	6.3
Parking lots	370	2.0
Rest areas	77	0.4

Table 4 highlights the disproportionate development of roadside infrastructure: retail and catering outlets hold an overwhelmingly high share (over 66%), whereas facilities ensuring the technical readiness of transport vehicles (such as technical service stations, parking lots, and short-term rest areas) exhibit an extremely low share. This structural imbalance causes delays during freight transportation, increases vehicle breakdowns, and escalates total logistics costs.

Table 4 effectively identifies the priority areas for structural reengineering in infrastructure: it is essential to increase the number of technical maintenance points, enhance the network of parking lots, and balance the overall structure of roadside services.

The analysis of the presented tables demonstrates that systemic issues persist in the current state ("AS IS") of the transport-logistics system, where constraints in infrastructure, service quality, and organizational workflows severely diminish sectoral efficiency. The poor condition of a large portion of the road network, low transport speeds, structural imbalances in service facilities, and the presence of redundant operations justify the strategic necessity of executing a reengineering project. The current situation generates supply disruptions for entrepreneurs and threatens the stability of production cycles.

At the same time, the redundant activities embedded in the processes reflect high losses of time, financial resources, and labor within the logistics system. The lack of optimization in route planning, repeated administrative tasks in documentation, and limited access to maintenance networks confirm that approximately 20–30% of logistical processes operate inefficiently. This calls for targeted pathways to fundamentally redesign the transport-logistics system—focusing on process optimization, digitalization, and structural reorganization of service infrastructure.

4. Conclusion

The frameworks compiled according to the stages of reengineering indicate that the system redesign algorithm is precise and consistent. A comprehensive approach encompassing diagnostics, the development of the "AS IS → TO BE" model, prototype testing, automation, and continuous monitoring establishes the necessary methodological foundation for enhancing transport and logistics services. When these processes are executed, the transformation of the transport system occurs not merely at the infrastructural level, but triggers a fundamental renewal within the internal mechanisms of business processes.

The comparative matrices of the "AS IS" and "TO BE" states demonstrate the explicit positive impacts of transformation within the sector. Increasing transport speeds, minimizing operational expenditures, upgrading the technical maintenance infrastructure, and enhancing supply chain stability signify that logistics workflows are being elevated to a qualitatively new level. Concurrently, the analysis of roadside infrastructure reveals that the current composition of service facilities fails to align with the technical requirements of transport flows, thereby justifying the urgent necessity for infrastructural diversification.

Furthermore, the defined Key Performance Indicators (KPIs) concretely substantiate the practical outcomes of the reengineering project. A 20–35% reduction in total logistics costs, a 25–40% increase in freight transportation speed, improved service quality, and enhanced customer satisfaction levels demonstrate a substantial strengthening of the competitiveness of the transport-logistics system.

In conclusion, the empirical data and structural insights presented in this study confirm that reengineering the transport-logistics system serves as a decisive vehicle for achieving superior efficiency within the country's entrepreneurial environment. This approach enables the formation of a synchronized supply chain network and significantly accelerates the nation's advancement in international transport and logistics performance indices.

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