

DATA-DRIVEN ETA PREDICTION IN UZBEK FREIGHT TRANSPORT: A TOOL FOR IMPROVING DELIVERY RELIABILITY

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Abstract

Estimated Time of Arrival prediction has become an important analytical tool in modern freight transport because delivery reliability depends not only on distance, but also on real-time operational conditions. In Uzbekistan, this issue is especially relevant because road transport carries the dominant share of cargo and national transport policy increasingly emphasizes digitalization, faster delivery, and better logistics performance. This article examines how data-driven ETA prediction can improve freight reliability by using real-time vehicle location, route progress, historical trip patterns, and operational events such as stops and delays. The study argues that ETA prediction can strengthen communication between drivers, dispatchers, and cargo owners, while also reducing uncertainty in freight operations.

Keywords

ETA prediction, freight transport, Uzbekistan, road logistics, real-time tracking, delivery reliability, digital logistics, data-driven decision-making.

Introduction

Uzbekistan is giving increasing attention to transport modernization, including the digitalization of the logistics chain, reduction of barriers to cargo movement, optimization of transport costs, and acceleration of goods delivery. This policy direction makes delivery reliability a strategic issue, especially in road freight transport. Official statistics show that road transport carried 1,434.5 million tons of freight in 2025. Because road transport dominates the movement of goods, even small improvements in trip predictability can have broad economic value.

Applications and Benefits of ETA Prediction

A data-driven ETA model can estimate arrival time more accurately by combining several operational signals: current truck location, route length, travel speed, stop duration, traffic-related delays, and historical trip performance. Instead of relying on rough estimates from drivers or dispatchers, a digital platform can continuously recalculate expected arrival time as conditions change. This gives cargo owners better visibility, helps dispatchers respond earlier to disruptions, and improves communication across the supply chain. In practical terms, such a model is highly relevant for Uzbek freight platforms like Yool, where real-time tracking data can be transformed into useful operational forecasts rather than simple location display alone.

ETA prediction is also important from a broader logistics-performance perspective. The World Bank's Logistics Performance Index evaluates countries partly through the ability to track and trace consignments and the frequency with which shipments arrive within the scheduled or expected delivery time. In 2023, Uzbekistan ranked 88th overall with an LPI score of 2.6, while its tracking and tracing rank was 105 with a score of 2.4 and its timeliness rank was 101 with a score of 2.8. These figures suggest that better visibility and more reliable delivery forecasting remain meaningful areas for improvement.

Main Data Inputs for ETA Prediction

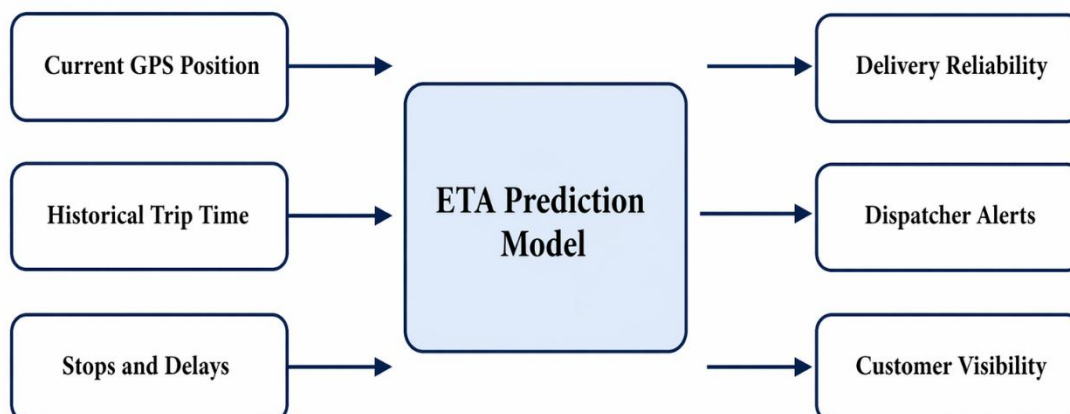


Figure 1. Main data inputs for ETA prediction in Uzbek freight transport

Source: Prepared by the author.

Challenges and Limitations

Despite its advantages, ETA prediction is not automatically accurate. Reliable forecasts depend on high-quality GPS data, stable mobile internet, consistent use of the tracking system by drivers, and enough historical trip data to identify realistic travel patterns. Errors in route updates, long offline periods, or incomplete user adoption may reduce prediction quality. In addition, the usefulness of ETA systems depends on whether companies actually integrate them into dispatching, customer communication, and operational decision-making. Therefore, successful implementation requires both technical infrastructure and disciplined logistics processes.

Conclusion

Data-driven ETA prediction offers a practical way to improve delivery reliability in Uzbek freight transport. By combining real-time tracking with historical and operational data, logistics platforms can provide better forecasts, reduce uncertainty, and support faster response to delays. As Uzbekistan continues to prioritize digital logistics and transport-sector efficiency, ETA prediction can become an important analytical function within modern freight ecosystems and a valuable extension of real-time visibility platforms.

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