Road to Optimization:
Assessing the Future of the U.S Transportation Management Systems

March 2024

Table of Contents

Road to Optimization

The logistics and transportation industry stands as a cornerstone of global connectivity in today's rapidly evolving world, powering the movement of goods and services across distances with unparalleled efficiency. Yet supply chains and transportation networks present challenges that demand innovative solutions.

Within this context, I conducted extensive research into the domain of Transportation Management Systems (TMS). The complexity of logistics, with its myriad of variables and interdependencies, compelled me to delve deeper into how TMS harnesses the power of cutting-edge technologies, such as Data Science, IoT, blockchain, and more, to provide transformative solutions for the industry.

This report explores the US Transportation Management Systems market. Through a lens focused on industry targeting, use cases, and the market shares of key players, this report lays out the critical aspects of TMS adoption and its impact on businesses across various sectors.

Furthermore, by navigating through market dynamics, including regulatory shifts and emerging trends, this report provides a comprehensive overview that equips industry professionals and business leaders with invaluable insights for informed decision-making.

Finally, the aim is to offer nuanced perspectives on the evolving outlines of the US transportation industry. By analyzing complex data into actionable takeaways, this report serves as a compass, guiding stakeholders through the domain of TMS.

Raphael B. Dias
SME in Data Analytics

Road to Optimization: Exploring TMS Advancements and Challenges

- Can TMS solve the vehicle routing problems?
- Are there possibilities to address chain disruptions caused by natural disasters, geopolitical conflicts, or pandemics?
- Can the TMS industry be well suited for the rise of autonomous vehicles in the U.S.?
- What concerns do TMS providers address regarding security and risk mitigation?
- How are AI and Machine Learning shaping the future of logistics?

Now: Key Findings

The initial findings of the market research come from 3 different reports at the end of 2023. These reports comprise paid data, surveys, and industry expert analyses highlighting prevalent challenges, use cases, solutions, etc.

Now: Key Findings

1 The TMS industry has been resilient to severe market fluctuations in the U.S.

- TMS felt the impact of COVID-19 to a lesser extent, mainly benefiting from increased demand in industries like consumer-packaged goods (CPG) and food & beverage.
- The surge in e-commerce, amplified by the pandemic, propelled companies to adopt TMS solutions for efficient order fulfillment amid heightened demand.
- Advancements in technology further enhanced TMS performance, driving efficiency and cost reduction across the supply chain.

The current TMS market in the U.S. has surpassed initial projections from 2019 by over 75%

The growth in online retailing has increased the need for TMS applications.

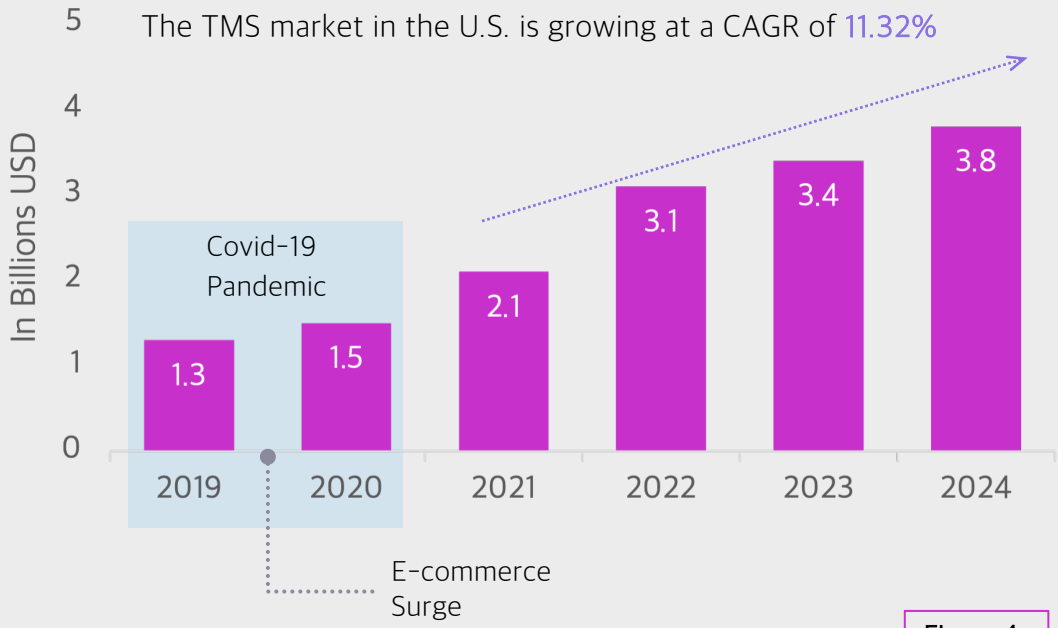

Figure 4

Facts to consider: Despite the initial impact of the COVID-19 pandemic on sales and installations, with constraints on movement and changes in consumer behavior, the transportation and logistics market is now returning to normal, buoyed by increased usage of advanced technologies and data-driven solutions.

Now: Key Findings

2 As an industry, TMS has aligned its products with data at its core.

- 75% percent of logistics professionals recognize the significance of data in efficient inventory management.
- AI and machine learning enable proactive decision-making and potential reductions of up to 7% in freight expenses.
- Beyond financial gains, transportation management systems contribute to environmental sustainability by optimizing routes and modes and reducing fuel consumption and greenhouse gas emissions.

50% Of all logistics companies will use data analytics to optimize their transportation networks by 2025.

Features that TMS providers in the U.S. aim to achieve through data

Figure 1

Now: Key Findings

3 The logistics industry is more secure than ever with the introduction of Blockchain.

- TMS must offer real-time tracking of shipments, providing visibility into movement, estimated arrival times, and potential delays.
- Blockchain technology secures transactions and enhances cybersecurity for logistics companies, mitigating cyberattack vulnerabilities.
- Real-time visibility in TMS enables informed decision-making, effective supply chain coordination, and centralized stakeholder collaboration.

Supply chain data breaches cost $3.8 million on average, with mega breaches involving 50 million stolen records totaling $392 million in expenses.

TMS providers integrate tech with existing systems to bolster security

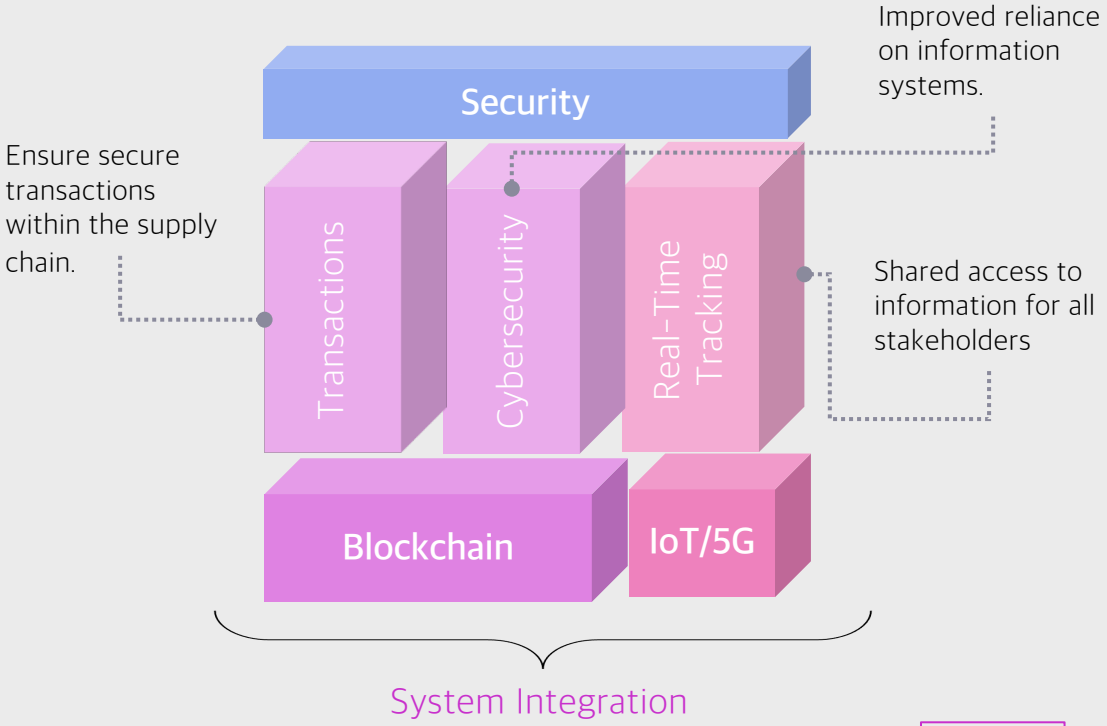

Figure 3

Relevant News: In 2017, NotPetya malware, originating from a Ukrainian software firm's hacked servers, caused $10 billion in damage, severely disrupting transportation firms.

4 U.S. logistics companies face regulatory and infrastructure challenges in their supply chain

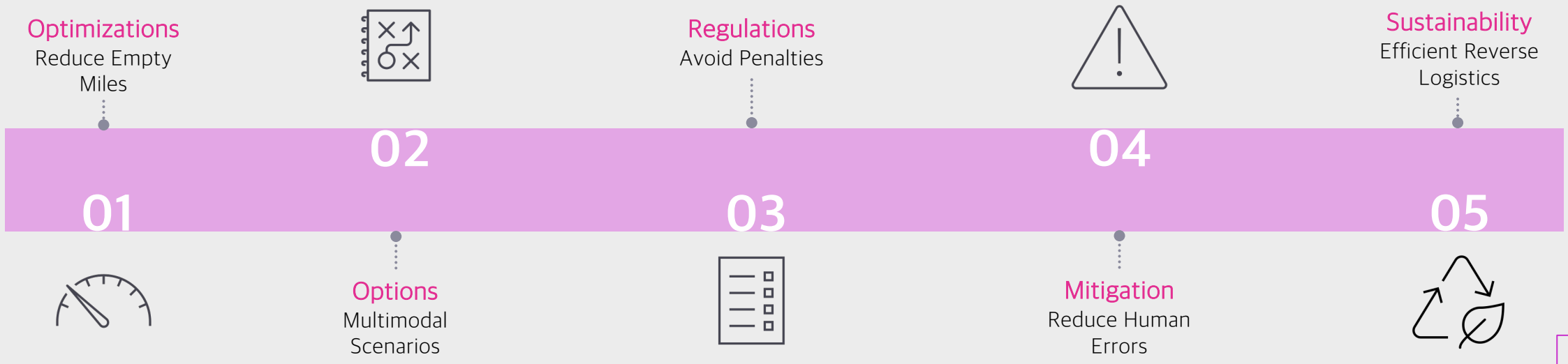

Figure 2

+ Automation of compliance processes ensures adherence to federal, state, and local regulations governing transportation, customs clearance, and environmental standards.
+ Route optimization and Intermodal transportation focus on solving delivery time windows and infrastructure challenges.

34% Logistics costs are reduced for companies using TMS technology in the U.S.

Now: Key Findings

5 E-commerce companies are now compelled to deliver products faster and cheaper.

TMS for E-commerce will...

Accommodate the evolving needs of business scaling, like visibility into warehouse operations and supply chain processes

Enable better delivery options by offering customers multiple delivery choices while managing high delivery costs and maintaining fast order turnarounds.

Optimize inventory management and reduce transportation costs through consolidation and automation.

Carrier-related factors accounted for **82%** of delivery issues experienced by the U.S. e-commerce industry

The entire e-commerce pipeline involves several vital stages where TMS plays a crucial role.

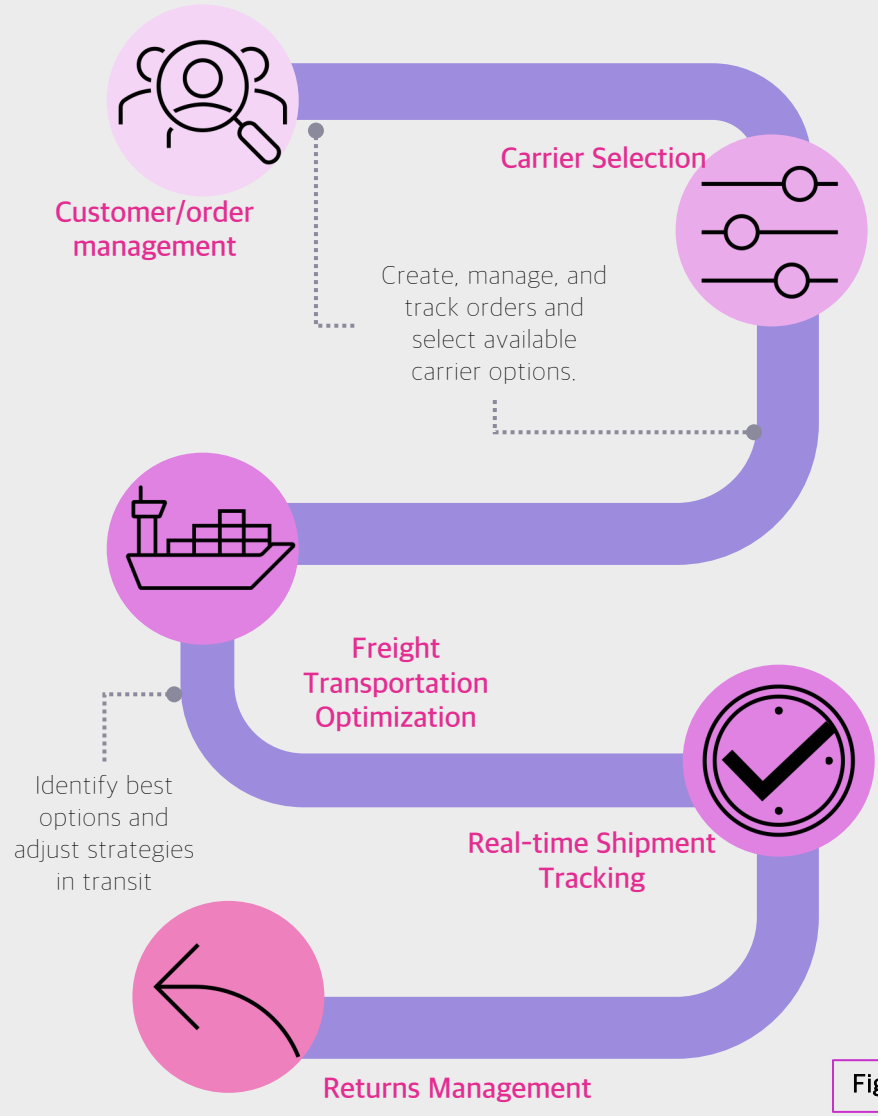

Figure 5

Next: Future Trends

Emerging trends for TMS explored through market analysis of verticals available in the US. These findings come from economic and statistical reports published by the US government. Independent reports and trends were reviewed to determine industry opportunities.

Consumers are returning to physical stores, reducing the miles needed for goods to travel to reach them.

+ Nearly 3% of truck operators in America have ceased activity.
+ The Cass Freight Index, a rail and truck activity measure, is down by 5% over the past year.
+ American parcel-delivery firms have laid off 38,700 workers.
+ Warehouse construction is down by 40%.

It isn't easy to retain talent and attract new drivers

Many workers in the supply chain industry cite stress, low payments, and short job tenure.

The volume of goods flowing through American ports in July 2023 was 14% lower than in the previous year.

TMS providers must start addressing challenges in logistics and supply chain in the post-Covid era

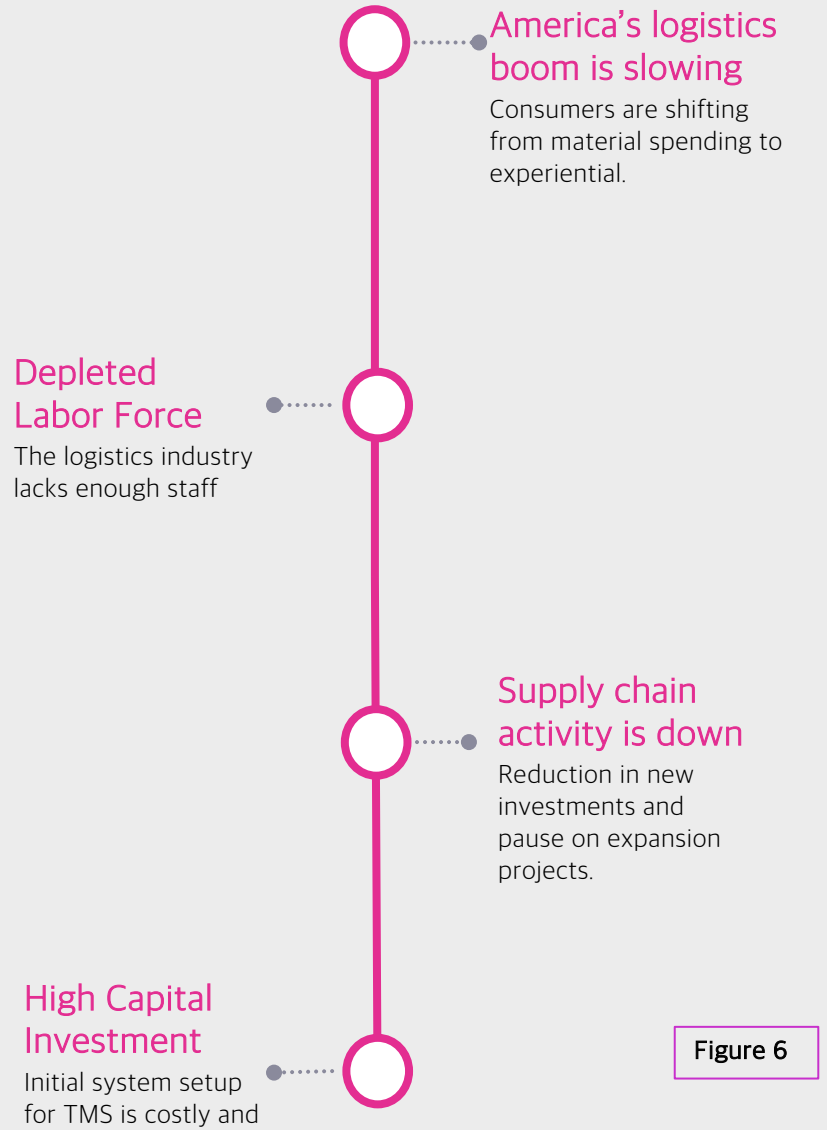

Figure 6

Authorship and Acknowledgements

Raphael B. Dias

Data Analyst and Python Expert

diasraphael31@gmail.com

Methodology

Our methodology involves a comprehensive understanding of the US market's Transportation Management Systems (TMS). We begin by thoroughly defining our client's TMS offerings and assessing their unique features and strengths. Subsequently, we conduct an in-depth analysis of the US TMS market, focusing on market size, growth trends, and critical players while identifying industries with high demand for TMS solutions.

We then evaluate the alignment between our client's offerings and market needs, focusing on success stories to showcase effectiveness. Additionally, we assess how well our offerings fit market demands and propose strategies for enhancement or development to address any identified gaps.

We conduct competitive analysis to identify opportunities for differentiation and innovation. We share market insights regarding emerging trends, customer preferences, and technological advancements, with recommendations tailored to align with or capitalize on these trends. We also consider regulatory and compliance factors to ensure alignment with market requirements.

Endnotes

Alpega Group (2024) Top five biggest challenges to your logistics in 2024 - and how to tackle them.

Banker, S. (2021) 'Transportation management system market continues to grow despite the pandemic.

Banker, S. (2022) 'What does it cost to implement a transportation management system? How long does it take?,' Forbes, 6 July.

Banker, S. (2024a) 'Top transportation Management system Providers,' Forbes, 20 February.

Banker, S. (2024b) 'Top transportation Management system Providers,' Forbes, 20 February.

Digital Commerce 360, Internet Retailer (2023) Food & Beverage ecommerce statistics.

The Economist (2023) 'America's logistics boom has turned to bust,' The Economist, 10 August.

Fact.MR - Transportation Management System Market Analysis by Component (Transportation Management Solutions, Transportation Management Services), by Transportation Mode (Roadways, Railways, Airways, Maritime), by Deployment, by Vertical, by Region – Global Forecast 2022-2032 (no date).

Grocery eCommerce market in U.S. – Data, trends, top stores | ECDB.com (no date).

Inc, S.S. (2023) 'Transportation Management Systems: Best Vendors,' Svitla Systems, Inc, 5 September.

Market Insights, MGR (2024) Transportation Management Systems Market worth ~ US$ 38621.42 Million by 2031 with Increasing CAGR of 16.33% [Exclusive Report of 101+ Pages].

Shipsy (2023) 5 Key challenges in transportation Management system.

Statista (2024) Revenue of the e-commerce industry in the U.S. 2017-2027.

Transportation Management System Market Growth Drivers & Opportunities | MarketsandMarkets (no date).

Transportation Management System Market Size, Industry Share | Forecast, 2032 (no date)..

Transportation Management System Market Size, Share & Trends Analysis Report by Solution(Operational Planning, Fright & Order Management), by deployment, by mode of transportation, by end user, by region, and segment Forecasts, 2024 – 2030 (2023).

Transportation Management Systems Market Size, Report by 2032 (no date)..

Transportation Systems Sector | Cybersecurity and Infrastructure Security Agency CISA (no date).

US Transportation Management Systems market Size (no date)..

User_Ux (2024) 'How Data Analytics is Used in Logistics – 10 Key Benefits,' Heinsohn NA, 19 March.