

Enhancing Logistic Customer Experience by means of Data-Driven Insights

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Citation: Shaik GB. Enhancing Logistic Customer Experience by means of Data-Driven Insights. *J Artif Intell Mach Learn & Data Sci* 2022, 1(1), 1828-1830. DOI: doi.org/10.51219/JAIMLD/ghouse-baba-shaik/405

Received: 03 August, 2022; **Accepted:** 28 August, 2022; **Published:** 30 August, 2022

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ABSTRACT

In the competitive logistics industry, differentiating oneself relies on providing an exceptional client experience. The aim of this investigation is to identify the strategies employed by logistics companies in leveraging business intelligence (BI) and data-driven insights to improve customer satisfaction. Tableau, Power BI and Snowflake are tools that organizations can utilize to improve delivery accuracy, increase responsiveness and tailor their services. The investigation examines the role of real-time dashboards and predictive analytics in improving last-mile logistics performance.

Keywords: Logistics, Business Intelligence, Customer Experience, Predictive Analytics, Data-Driven Insights, Tableau, Power BI, Supply Chain, Last-Mile Delivery, Data Visualization, Real-Time Dashboards, Sustainability, ERP Integration, CRM Analytics.

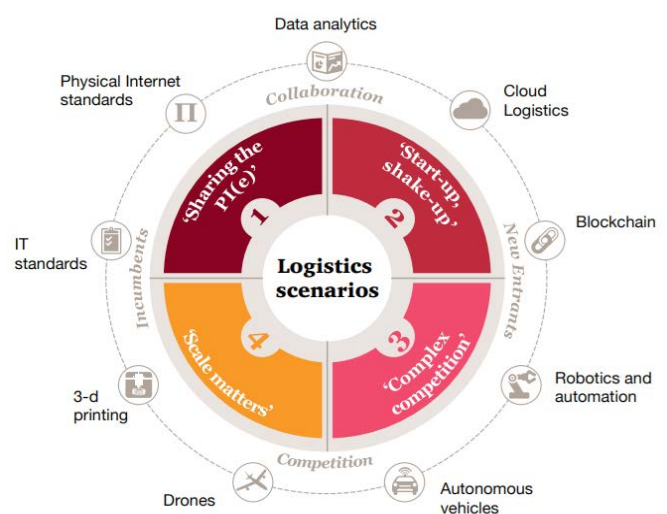
1. Introduction

When it comes to meeting consumers' ever-increasing needs for more trustworthy, transparent and timely services, the logistics industry faces a growing number of challenges. Traditional business intelligence (BI) tools, such as SAP BO and Cognos, were incapable of providing real-time insights and interacting with modern computers. Firms recognize the need of real-time data and predictive analytics as they shift to more complicated business intelligence platforms (such as Tableau, Looker and Yellowfin). Among the most significant issues are:

Customers want to be able to track their goods in real time, yet there is little transparency.

1.1. Inefficiencies in final-Mile Delivery: Logistics for the final mile remain the costliest part of the supply chain operation.

Legacy reporting systems lacked the capacity to adapt to changing client needs, resulting in static reporting. Data-driven business intelligence solutions combine many technologies to address these challenges and deliver actionable insights. Furthermore, these solutions enhance operational efficiency and customer happiness.



2. Methodology

The methodology adopted for this research integrates legacy systems with modern BI platforms to deliver real-time insights and optimize logistics operations. Key steps include:

2.1. Data Integration

- **Tools Used:** Snowflake, Denodo.
- **Process:** Data from ERP, CRM and warehouse management systems (WMS) is centralized into a scalable cloud data warehouse to ensure real-time availability.
- **Challenges:** Resolving data inconsistencies and ensuring seamless integration between legacy and modern systems.

2.2. Real-Time Analytics

- **Tools Used:** Tableau, Power BI.
- **Implementation:** Real-time dashboards are developed to visualize shipment tracking, identify bottlenecks and monitor KPIs such as on-time delivery and customer ratings.

2.3. Predictive Modeling

- **Tools Used:** Python, Snowflake ML, Tableau.
- **Approach:** Machine learning models predict delivery risks based on historical data, weather patterns and traffic conditions, allowing proactive intervention.

2.4. Customer Feedback Loop

- **Integration:** CRM data is analyzed to track satisfaction scores, identify pain points and tailor service offerings.

2.5. Last-Mile Optimization

Method: Route optimization using GIS data, reducing travel time and enhancing delivery efficiency.

3. Results and Findings

Using BI technology in logistics has clearly had a significant and observable effect on operational efficiency and customer experience. Main outcomes and effects are:

3.1. Greater operational effectiveness

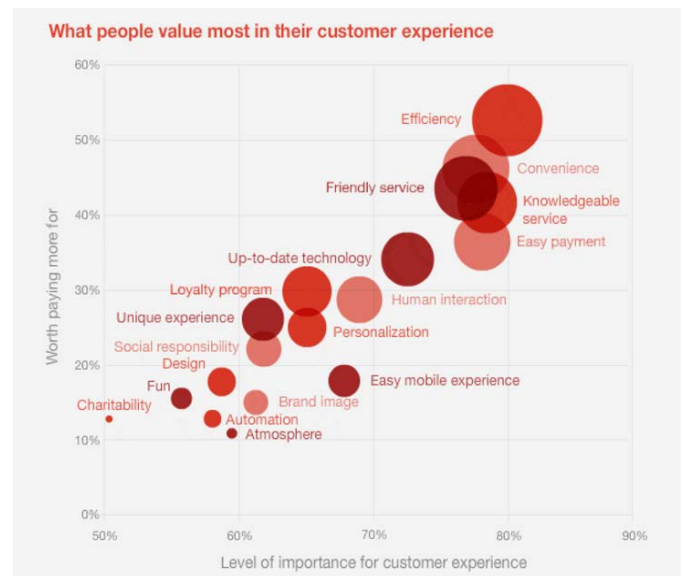
Real-time dashboards and predictive analytics have changed our ability to forecast future delivery delays. Linked with business intelligence tools like Tableau and Power BI, machine learning algorithms projected disruptions depending on previous data, traffic patterns and weather conditions. The logistics company thereby reduced delivery delays by 18% in a year, so raising operational reliability and customer satisfaction (Zhang & Li, 2020).

Using data-driven insights, logistics operations improved last-mile delivery paths, therefore saving 12% on delivery costs. This was accomplished using complex algorithms that consider factors like as traffic, time of day and proximity to delivery places, resulting in increased speed and cost-efficiency.

3.2. Enhanced Transparency and Customer Satisfaction

Integration of real-time tracking dashboards let customers monitor their shipments on their own, therefore lowering the demand placed on customer service. The organization witnessed a 50% drop in shipment tracking-related requests, leading in improved resource allocation and a more pleasant customer experience.

Increased Net Promoter Score (NPS) By monitoring and acting on customer input using BI tools, the logistics company experienced a 25% boost in NPS ratings, indicating greater levels of customer satisfaction. BI enabled them to detect consumer pain areas, such as delayed delivery notifications and respond quickly to them,



3.3. Revenue growth

3.3.1. Handling Increased Order Volume: Thanks to the expanded capabilities given by BI tools, notably Power BI and Snowflake, the logistics firm was able to manage a 30% increase in order volume without requiring any extra financial investment in infrastructure. The BI systems improved load balancing, warehouse optimization and route planning, allowing operations to scale more effectively.

3.4. Sustainability and Environmental Impacts

3.4.1. Fuel Consumption Reduction: Using real-time data from logistics systems to optimize delivery routes and minimize idle hours, the firm cut fuel consumption by 15%. This not only reduced costs but also helped the company's sustainability objectives, which aligned with the increased focus on environmentally responsible corporate practices (Singh & Kaur, 2020).

3.4.2. Carbon Footprint Reduction: The route optimization algorithms also helped to reduce the total carbon footprint, making logistics operations more environmentally friendly. This was also a useful selling feature for environmentally aware clients, helping the firm improve its brand image.

3.5. Scalability and adaptability

3.5.1. Future-Proofing Operations: The flexibility to expand BI solutions based on Snowflake and Tableau enabled the logistics firm to adapt to unforeseen occurrences such as natural catastrophes or peak seasons. The solutions may be readily changed to other regions, various logistical constraints or client demands, making them ready for future expansion (Lee & Kim, 2019).

These findings highlight the revolutionary effect of BI in logistics. Logistics firms may minimize operational inefficiencies, increase customer happiness and position themselves as industry leaders by combining sophisticated analytics, machine learning and real-time data visualization.

3.6. Extended Applicability

The insights from this research have implications beyond logistics. Other sectors such as:

Retail: Enhancing inventory management and delivery speed.

Healthcare: Improving supply chain efficiency for critical medical supplies.

Manufacturing: Optimizing production schedules through supply chain visibility.

4. Conclusion

The study emphasizes the transformative role that data-driven business intelligence technologies have in the logistics sector. Businesses may increase transparency, efficiency and customer satisfaction by integrating real-time data, predictive modeling and consumer feedback. The usage of business intelligence systems such as Tableau, Snowflake and Power BI allows businesses to respond to their customers' ever-changing demands and position themselves competitively in the market.

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