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Maximize supply chain efficiency with location data

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Introduction

In today's fast-paced global economy, supply chain and logistics businesses must constantly innovate to optimize their operations, reduce costs, and increase efficiency. Facing urgent issues such as routing and navigation, minimizing fuel consumption, monitoring inventory, and adhering to ESG commitments, supply chain executives need efficient platforms and actionable insights into their operations.

Point of Interest (POI) and mobile location data offer a game-changing approach to streamline supply chain operations. Utilizing POI data enables businesses to optimize navigation and route planning, while mobility data provides valuable insights into their facilities. Properly leveraging location data can help address numerous potential disruptions and promote operational efficiencies, leading to increased profitability and customer loyalty.

In this eBook, we explore various real-world examples and applications, highlight the primary challenges businesses encounter in managing their supply chains, and discuss best practices for harnessing POI and mobile location data to address these issues effectively.

What's Inside

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Key challenges facing supply chain and logistics functions

Inefficient routing systems

Transportation of goods is a vital aspect of supply chain operations, and businesses often rely on routing and navigation software for procurement and fulfillment. However, outdated and incomplete POI data can lead to operational issues, increased expenses, and reduced revenues, hindering profitability.

Suboptimal navigation directs delivery personnel to wrong locations or longer, congested routes, causing higher fuel consumption and fleet maintenance costs. Inefficient routing can result in delays, missed deliveries, and cancellations, affecting customer satisfaction and sales. Moreover, poor routing can frustrate drivers, increasing turnover rates and associated hiring and training costs.

ESG liability and commitments

Companies today have strict ESG goals (Environmental, social, and corporate governance) face immense pressure to address issues around them. Supply chains can create significant environmental and social impacts, potentially leading to reputational damage and substantial regulatory fines if not addressed timely.

Reducing environmental impact requires lowering carbon footprint, enhancing resource efficiency, and adopting sustainable materials and production methods. Additionally, ensuring social performance in large supply chain networks can be challenging; businesses must ensure supplier partners adhere to ethical labor standards, provide fair wages, and maintain safe working conditions.

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Lack of visibility

Insufficient on-ground visibility into the movement of goods, assets, and personnel is a significant challenge for supply chain executives and can lead to poor operational and strategic decisions. The lack of visibility can result in losses due to lost inventory, inefficient resource allocation, decreased workforce productivity and more. Lack of visibility can also hinder logistics managers' ability to identify and respond to disruptions. Operational issues, delivery delays, loss of goods can not only increase costs, they can drive customers to competitors, costing the business market share. Thus, it is crucial for companies to maintain oversight of goods movement, enabling informed decisions and optimized supply chain operations.

Issues in identifying and mitigating disruptions

In today's interconnected world, complex and globalized supply chains present numerous challenges for businesses attempting to anticipate and address potential disruptions. This primarily stems from the difficulty of identifying potential risks and vulnerabilities amidst the extensive network of companies involved in upstream and downstream supply chains.

A wide variety of disruption sources, such as natural disasters, political unrest, and labor conflicts, only add to the complexity. Limited visibility into suppliers' activities and insufficient control make addressing these vulnerabilities even more challenging.

Managing supply chain disruptions requires substantial resources, cross-functional coordination within the business, and effective communication with external parties. To successfully navigate supply chain risks, businesses must invest in risk management strategies and technology, that enables continuous monitoring of their supply chain to maintain operational continuity and resilience.

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How location data allows firms to improve supply chain management

Location data can help optimize supply chain tech, significantly improve visibility for supply chain operations and enable data driven strategy - leading to better decision-making, increased efficiency, and cost reduction.

Building robust navigation systems

With high quality POI and mobile location data, businesses can optimize the navigation and route planning systems that power their delivery operations. This, in turn, enables firms to secure several perks that collectively engender more cost-effective and reliable fulfillment systems. Some significant advantages include:

Reliable technology

Location data can help augment maps with useful attributes tailored to the nature of a business, allowing their personnel (including fleet managers, delivery drivers etc.) to make intuitive and contextual decision in the field.

Minimize delivery delays

Combined with traffic intelligence, location data can help dynamically reroute shipments to avoid congestion, accidents, or road closures, ensuring timely deliveries and minimizing delays.

Last-mile delivery

Incorporating relevant contextual attributes such as pick-up and drop off points can enhance last-mile delivery operations by minimizing errors, reducing delivery time, and improving customer satisfaction.

Route optimization

By analyzing historical and real-time location data, companies can identify the most efficient routes for shipments, reducing fuel consumption, transit times, and overall transportation costs.

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Maximizing space utilization

Mobile location data allows firms to produce granular insights on their facilities – which, in turn, can be leveraged to improve their operations. By analyzing historical location data, facility managers can identify movement patterns and make data-driven decisions to improve the layout of the warehouse, adjust staffing levels, and optimize resource allocation. Mobility data can also be used to generate density heat maps to identify congested and underutilized areas within warehouses – information that can play a crucial role in rectifying operational bottlenecks caused by poor utilization of space.

Use case: How logistics companies optimize warehouse performance using location data

One of our clients, a large industrial equipment manufacturer, uses raw location data to determine how efficiently items are moved between different buildings within their premises. They utilize mobility data to create models that track the logistical relationships between buildings within a single site and with consumers across the geographies they are operating in.

This project required scanning over 20 billion rows of data per month, looking at hundreds of device identification codes, some within considerably smaller geofences. Data scientists identified devices originating at the distribution centers and observed them over a period to gather insights about how they move, the average distance traveled, and more. By estimating the relationship between the different POIs, the customer identified previously unknown client-supplier relationships and revealed actionable insights for nurturing partnerships, increasing operational efficiency, and driving profitability.

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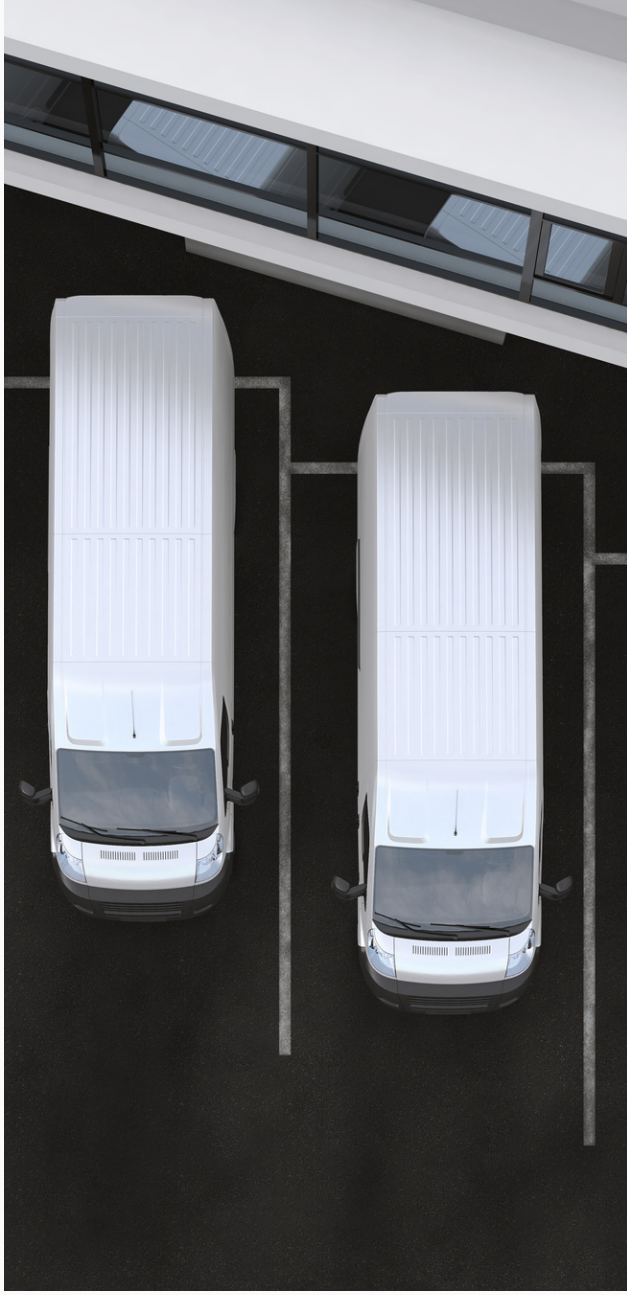

Optimizing fleet management

As an accurate reference of the various facilities involved in the supply chain, POI data is the prime enabler of fleet management operations. Verified POI data provides accurate information on addresses, directions, and parking availability, enabling fleet managers to plan efficient routes, improve navigation platforms, and increase workforce productivity.

In an immensely competitive industry, speed and reliability of service delivery is essential for customer retention. Mobile location data can further enhance supply chain management. Using mobility data, firms can set up geofences around all the facilities that are a part of their upstream or downstream supply chain. This allows for real-time notifications when shipments enter or exit these areas, improving visibility and coordination.

Establishing adequate physical touchpoints

By analyzing human mobility data alongside third-party data (such as census information, purchase data, etc.) businesses can gauge the distribution and density of target demographics across various areas. These insights can be utilized to identify ideal sites for physical touchpoints (self-collection centers). Once established, such facilities can offer customers and prospects more options on how, when, and where they get their goods – a surefire way to improve brand loyalty. **Additionally, they provide firms with a way to make up for missed deliveries – and therefore – decrease losses.**

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Leveraging POI attributes for faster in-field decisions and quicker deliveries

To provide top-notch services while keeping in-field personnel content, companies must ensure that their delivery processes are efficient and hassle-free. This can be achieved by mapping key collection and delivery points, accurately classifying areas, and regularly updating in-app information to keep up with evolving physical spaces. These measures not only help to reduce costly errors but also minimize complications for delivery staff, ultimately resulting in improved operational efficiency and greater reliability. Moreover, they enhance employee satisfaction because drivers can earn more by delivering more – which also helps firms with recruitment and retention efforts.

For example, if a customer lives in a high-rise condo, the dispatcher can be directed to a nearby landmark or use a specific entrance to make the delivery process as smooth as possible. Similarly, to make deliveries to commercial complexes (ones with dedicated sites for receiving cargo) simpler, personnel can be guided to the exact locations of unloading areas. By providing drivers with contextually relevant location information, companies can ensure a seamless delivery process – thereby minimizing losses caused by order returns, cancellations, and termination of B2B partnerships.

The images above captured during a custom POI collection project for Gojek show pick-up and drop-off point recorded at a residential and commercial buildings. Apps with such POI data can enable drivers to make faster in-field decisions and swift deliveries.

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Monitoring and mitigating supply chain risks

POI data is a vital resource for businesses looking to properly map out their supply chain network. By providing accurate information on the location and characteristics of critical points in the supply chain (partner firms, procurement and distribution hubs, etc.) POI data can help companies mitigate supply chain risk and reap a myriad of additional benefits. One of the most significant advantages of POI data is its ability to support risk monitoring.

Combined with meteorological, climatic, and movement data, POI data can help companies identify potential risks in their supply chain, such as natural disasters, political instability, or other events that can disrupt the flow of goods and services.

By anticipating and preparing such eventualities, companies can reduce their vulnerability to supply chain disruptions and better ensure business continuity. For example, companies can use POI datasets with extensive coverage of commercial locations to identify alternative suppliers. For example: by having a comprehensive list of potential suppliers and their locations, businesses can rapidly choose a different supplier if one is unable to deliver goods due to unforeseen circumstances.

Improving inventory management

Businesses can analyze footfall data to determine consumer activity at various scales and manage their inventory in real-time – without having to wait for monthly or quarterly sales information. For example, increased footfall at certain outlets shows firms that they need to increase inventory allocation for specific stores to match increased consumer demand. Similarly, if they notice decreased footfall at certain POSs, they can order less inventory to avoid wasting resources. Location intelligence gives supply chain managers the ability to adapt to evolving customer demand and devise effective fulfillment plans.

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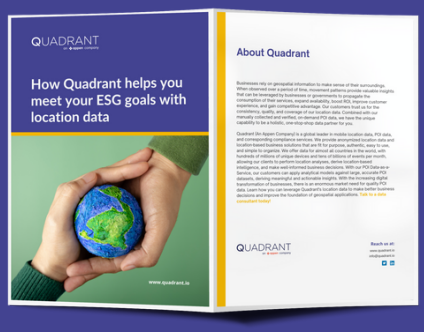
Ensuring transparency & supporting ESG goals

Another crucial benefit of using POI data is that it enhances transparency, and therefore, can help companies build trust with their stakeholders. This is especially important for businesses with ESG commitments that centre around sustainability.

POI data acts as the foundational information required to determine if partners or even subsidiaries are complying with regulatory frameworks. By knowing the exact locations of all the facilities that constitute the supply chain, compliance divisions within businesses can research activities to determine compliance with local regulations, such as environmental, labour, and industrial standards. This can help companies identify potential risks or ethical violations and take proactive measures to address them.

Let us take the example of environmental goals. Insights derived from POI data and mobility trends can help businesses assess the environmental impact of their suppliers. With the help of geospatial intelligence, firms can determine their suppliers' energy usage, transportation emissions, sourcing mechanisms, and waste prevention initiatives – knowledge they can leverage to choose more compliant suppliers or invest in capacity-building initiatives where none exist. As a result, businesses can avoid fulling out of favor with conscientious investors and consumers alike.



Learn how Quadrant helps companies achieve ESG goals by providing high-quality location data that promotes sustainability, social equity, and data privacy. Our data offerings support the development of sustainable cities, efficient transportation systems, reduced fuel consumption, and emissions tracking.

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Site selection and expansion

Businesses are continuously searching for methods to cut expenses while boosting customer satisfaction. One practical solution is to position goods closer to the end consumer. Unfortunately, many businesses commit the costly mistake of choosing the site of their distribution centers based only on short-term considerations, such as tax breaks or inexpensive real estate, without considering how this will affect their long-term operations.

Location data can be used to identify optimal locations for warehouses, distribution centers, or manufacturing facilities, considering factors such as proximity to suppliers, customers, and transportation networks. Relocating or expanding distribution centers closer to areas with higher demand, shorter routes, and proximity to raw materials can reduce costs and increase revenues. POI data can also reveal the position of suppliers in relation to a company's operations, allowing supply chain managers to choose partners closer to their warehouses or distribution hubs to save on transportation costs and speed up delivery times.

From our exploration of the transformative power of POI and mobile location data, it's evident that geospatial intelligence has a vital role to play in enhancing procurement and fulfillment systems. By harnessing the rich insights provided by such data, businesses can improve strategic decision making, optimize routing, and gain unparalleled visibility into their facilities, ultimately driving operational efficiencies that boost profitability.

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Case study

Harnessing location data to enhance supply chain efficiency

Through the analysis of anonymized mobile location data, it is possible to identify and investigate the relationships that exist between distribution centers (i.e., warehouses) and points of sale (stores). PREDIK Data-Driven undertook such a project in Florida (USA) to analyze the interdependencies that exist between Walmart's stores, distribution centers and other logistics facilities. The state was divided into five regions (central, northwest, northeast, southwest and southeast) to reflect the distribution of Walmart's distribution centers.

The analysis revealed that one of the largest supermarket and drugstore chains in the US (Publix) relied heavily on distribution centers that serve Walmart from the central and north-eastern regions. Similarly, Sam's Club was dependent on a south-eastern distribution center that supplied Walmart. Finally, PREDIK Data-Driven also identified a lot of movement between a south-western distribution centre and ALDI Distribution Centre (a logistics hub). The findings from the analysis proved crucial in improving supply chain operations, measuring losses due to damage to goods and churn, and making accurate predictions of sales during specific periods.

PREDIK Data-Driven, a leading market intelligence firm, leverages Quadrant's mobile location datasets to execute competitive and supply chain analyses. Their analytics enable firms across industries to increase revenue and reduce operational costs by enhancing supply chain efficiency.

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About Quadrant

Businesses rely on geospatial information to make sense of their surroundings. When observed over a period of time, movement patterns provide valuable insights that can be leveraged by businesses or governments to propagate the consumption of their services, expand availability, boost ROI, improve customer experience, and gain competitive advantage. Our customers trust us for the consistency, quality, and coverage of our location data. Combined with our manually collected and verified, on-demand POI data, we have the unique capability to be a holistic, one-stop-shop data partner for you.

Quadrant (An Appen Company) is a global leader in mobile location data, POI data, and corresponding compliance services. We provide anonymized location data and location-based business solutions that are fit for purpose, authentic, easy to use, and simple to organize. We offer data for almost all countries in the world, with hundreds of millions of unique devices and tens of billions of events per month, allowing our clients to perform location analyses, derive location-based intelligence, and make well-informed business decisions. With our POI Data-as-a-Service, our customers can apply analytical models against large, accurate POI datasets, deriving meaningful and actionable insights. With the increasing digital transformation of businesses, there is an enormous market need for quality POI data. Learn how you can leverage Quadrant's location data to make better business decisions and improve the foundation of geospatial applications. **Talk to a data consultant today!**

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