tellius

SUPPLY CHAIN & PROCUREMENT ANALYTICS

The Ultimate Guide

Supply chains are complex. Demand is volatile. Data abounds.

It's challenging to have real-time, data-driven visibility and insights into supply chains. This can lead to subpar operations, higher costs, and lower customer satisfaction (think: stockout/overstock, high carrying costs, longer production cycles, etc.).

Supply chain analytics is a data-driven way to run things more efficiently. Let's dive into the benefits, the challenges of traditional approaches, and how AI and augmented analytics are revolutionizing every part of supply chain management—from planning, to sourcing, to manufacturing, to logistics.

What is supply chain analytics (and the key benefits)?

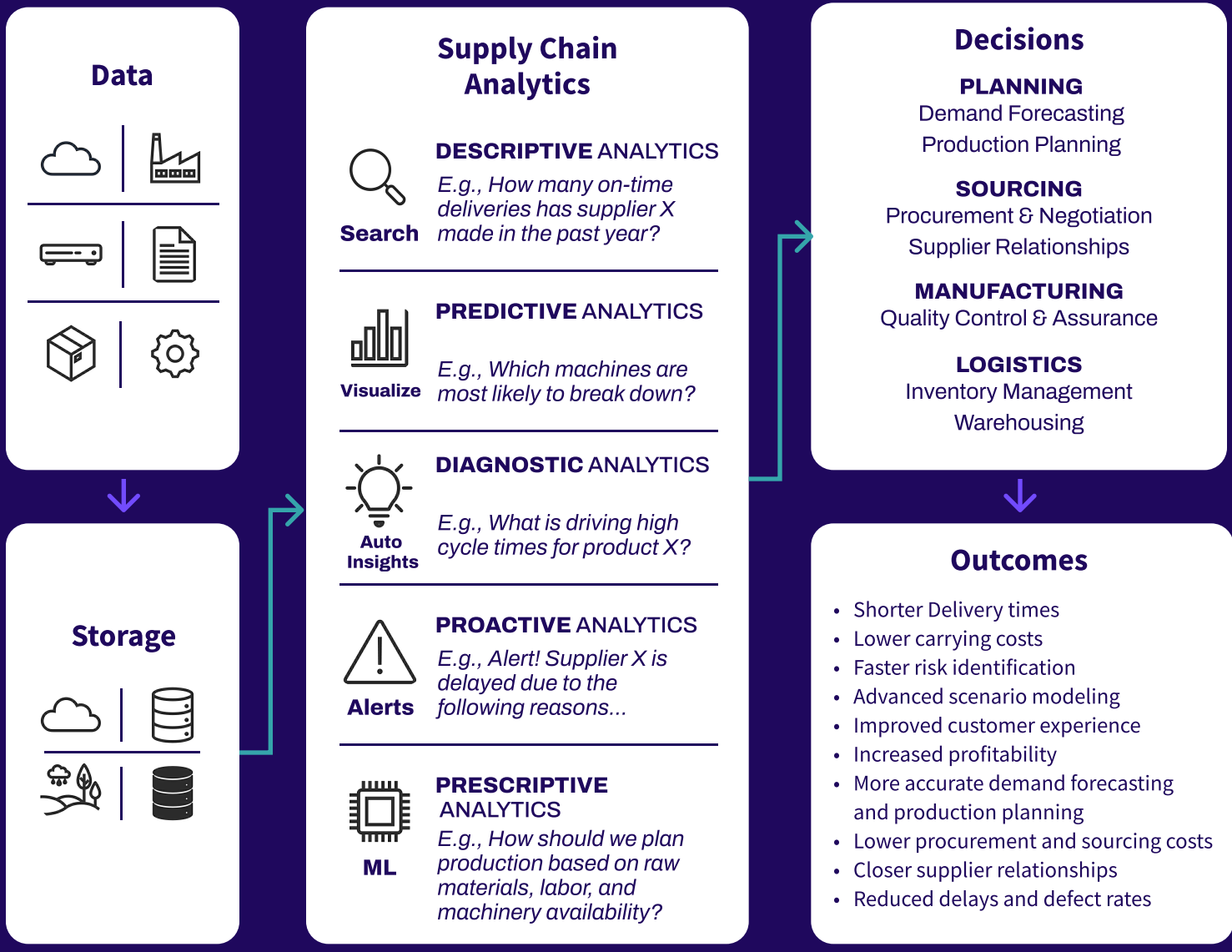
Supply chain analytics refers to a data-driven approach to planning, sourcing, manufacturing, logistics, and monitoring supply chain efforts. It brings visibility, insights, and advanced analytics into each step and throughout the supply chain lifecycle.

Benefits include:

- More accurate demand forecasting and production planning
- Lower procurement and sourcing costs
- Closer supplier relationships
- Reduced delays and defect rates
- Shorter delivery times
- Lower carrying costs
- Faster risk identification
- Advanced scenario modeling
- Improved customer experience
- Increased revenue

How does supply chain analytics work?

Supply chain analytics relies on a variety of analytical techniques to derive actionable insights from historical, operational, and third-party data sources.



Data.

Structured and semi-structured data from a variety of sources is gathered. Data might include POS, supplier, demand, and production data, as well as third-party data from marketplaces or exchanges like weather, demographics, competitive movements, etc.

Storage.

Data is stored in a database or data lake in the cloud, on-premises, or both, with data pipelines refreshing everything as necessary.

Decisions and outcomes.

Insights drive decisions related to supply chain planning, sourcing, manufacturing, and logistics, impacting outcomes (and the bottom line).

Data analytics.

Relationships are inferred or defined on these datasets, and then a variety of analytics features —like natural language search, visualizations and dashboards, automated insights, embedded analytics, alerts, machine learning modeling, etc. —enable various analytics modes:

- Descriptive analytics: Answers the question “What happened?”
- Diagnostic analytics: Answers the question “Why did it happen?”
- Predictive analytics: Answers the question “What might happen?”
- Prescriptive analytics: Answers the question “What should we do next?”
- Proactive analytics: Answers the question “What am I not thinking about?”

Challenges with current supply chain analytics

Current approaches to supply chain analysis, manufacturing and quality analytics, and procurement face a number of challenges.

Siloed data and lack of granularity.

Siloed data sources and a lack of granular information across departments hinder a comprehensive understanding of the supply chain. This can lead to inefficiencies and missed optimization opportunities within supply chain steps and holistically.

Partial, dated visibility (not holistic or real-time).

Traditional BI tools only provide historic-looking and partial visibility into supply chain operations. This results in limited foresight and difficulty responding swiftly to disruptions or capitalizing on emerging trends.

Ad hoc analysis takes too long, opportunities are missed.

Manual ad hoc analysis in SQL, pivot tables, and other tools consumes valuable time. This delays decision-making and leads to sluggish responses to changing market dynamics.

Slow time to insights and root causes.

Lengthy processes for uncovering insights and identifying root causes of issues prevent swift corrective actions. This can lead to prolonged disruptions and increased operational costs.

Inaccessible advanced analytics.

Predictive analytics is hard for typical supply chain analysts to understand. Expertise limitations and limited data science team access hinders the supply chain team's ability to gain deeper insights. This can decrease the potential to unlock hidden efficiencies and improvements in the supply chain process.

AI-powered analytics for supply chain analysis

Modern AI-powered analytics platforms are designed to overcome these challenges and lower the barrier to entry to various types of supply chain analytics for all users.

Leading platforms are marked by:

Easily bringing together a variety of data sources.

Technical and non-technical users alike can bring together a variety of data sources—historical, operational, and external data—to inform analysis.

Lightweight data prep and semantic layer.

Data is never clean, nor is it 100% straightforward how various datasets relate to each other. Modern analytics platforms allow simple, no-code, AI-suggested joins and cleaning steps, as well as full-code flexibility to get the data into analysis-ready form.

Automated root cause and key driver analysis.

Automated insights help organizations make better-informed decisions about supplier relationships by identifying patterns of on-time deliveries, quality issues, and other performance metrics using key driver and trend analysis.

Real-time visibility.

Real-time anomaly detection and alerting allow supply chain analysts to respond swiftly to prevent disruptions and minimize impact on operations. Demand fluctuations inform inventory levels, production schedules, and distribution strategies in response to sudden changes.

Rapid free-form analysis.

Natural language search and automated best-fit visualization enable anyone—not just those who understand SQL—to explore vast datasets easily.

Accessible advanced analytics.

Predictive and prescriptive analytics are available with just a few clicks instead of an army of data scientists.

Use cases of AI-powered analytics throughout the supply chain

Planning

Demand forecasting.

Accurate demand forecasting is critical to streamlined and cost-effective supply chain operations. AI-powered analytics is useful for factoring in external data related to market trends, seasonality, and competitive landscape alongside dynamic customer behavior insights (generated by automated insights) for more accurate demand forecasting and higher inventory turnover and fill rates.

Success Story: Using Tellius, a leading retail company transformed its consumer demand forecasting process. They seamlessly integrated historical sales data with external variables, such as social trends and economic indicators, to achieve a 30% reduction in forecast errors.

Procurement strategy.

Sourcing strategies (make vs. buy, single vs. multiple suppliers, etc.) and identifying potential suppliers to evaluate their capabilities, reliability, and costs all require immense amounts of data. AI analytics can be used to analyze supplier data, market conditions, and cost fluctuations to recommend optimal procurement strategies based on real-time insights. This positively impacts supplier lead time and reduces procurement costs.

Production planning.

Planning manufacturing processes—by taking into account raw materials, labor, and available machinery—are well suited for AI analytics, which can be used to analyze production data and external factors to dynamically adjust production plans in real time. This optimizes capacity usage, minimizes downtime, improves production schedule adherence, and lowers work-in-progress inventory.

Sourcing

Supplier relationship management.

Continuously assessing and building stronger supplier relationships can lead to a host of positive supply chain outcomes, such as cost reduction, innovation, and risk mitigation. AI-powered analytics can be used to track and analyze supplier performance based on on-time delivery, quality, lead times, and responsiveness to provide insights and surface patterns for building stronger supplier relationships and driving collaboration. Automated root cause analysis can also be used to troubleshoot challenges or improve negotiation strategies.

Success Story: A leading pharmaceutical firm minimized variation into ordering patterns and supplier usage through ML/AI-based automated trend spotting and clustering, using Tellius.

Procurement and negotiation.

Augmented analytics is useful for ranking and scoring potential suppliers based on multiple criteria such as quality, cost, lead time, and location, helping procurement professionals negotiate terms, pricing, payment conditions, and contracts more intelligently.

Manufacturing

Quality control and assurance.

Augmented analytics can analyze quality control data to detect patterns of defects. This helps manufacturers proactively address issues and reduce manufacturing cycle times, defect rates, quality complaints, and inspection times; improve first pass yields; and increase overall equipment efficiency.

Success Story: A global food product manufacturer saves millions a year using Tellius to reduce damaged and defective goods using automated analysis of all variables to identify underlying drivers—down to the product and plant level.

Predictive maintenance.

Augmented analytics can monitor production processes using real-time data, detecting anomalies and predicting equipment failures to enhance overall manufacturing efficiency and reduce machine downtown.

Delivering/returning

Inventory management.

Optimizing inventory levels is crucial to avoid overstocking or stockouts. Supply chain teams use AI-powered analytics to analyze historical consumption patterns, lead times, supplier performance, and demand variability to identify reorder points and order quantities. This ensures inventory is maintained at the right levels while minimizing carrying costs.

Success Story: A multinational CPG firm's supply chain used Tellius as a single source of truth and a self-service way to perform better inventory allocation, avoiding stockouts, optimizing costs, and reducing inventory clawbacks.

Warehousing.

AI-powered analytics can be used to optimize warehouse layout and storage allocation based on historical order patterns and current inventory levels, improving picking efficiency and accuracy, boosting warehouse utilization optimization, and lowering warehouse dwell time.

Logistics/reverse logistics route optimization.

Augmented analytics can be used to analyze traffic data, weather conditions, and transportation costs to recommend optimal routes and modes of transportation. It can also go a step beyond and spot savings opportunities for frequent routes and logistics channels for logistics and reverse logistics. This can boost on-time delivery performance and value of recovered goods while reducing transportation cost per unit, return rates, freight damage rates, and return processing time.

Monitoring

Performance analysis.

Augmented analytics can analyze quality control data to detect patterns of defects. This helps manufacturers proactively address issues and reduce manufacturing cycle times, defect rates, quality complaints, and inspection times; improve first pass yields; and increase overall equipment efficiency.

Success Story: A global food product manufacturer saves millions a year using Tellius to reduce damaged and defective goods using automated analysis of all variables to identify underlying drivers—down to the product and plant level.

Sustainability and compliance monitoring.

Augmented analytics can monitor compliance metrics and sustainability initiatives, providing real-time insights for measuring and improving environmental and ethical practices. This includes a company's carbon footprint, regulatory compliance rate, and supplier Code of Conduct adherence.

What does the future of supply chain analytics look like?

The future of supply chain analytics will be:

Multi-tier / multi-echelon

Data from various stages of the supply chain will be seamlessly integrated and analyzed to provide a comprehensive view of dependencies to optimize operations across the entire supply network.

AI-augmented

The future of supply chain analytics will be characterized by AI-augmented capabilities. Advanced algorithms and machine learning will work alongside human experts, speeding up data analysis, pattern recognition, and insights generation. This symbiotic relationship will empower supply chain professionals to make quicker and more accurate decisions, leading to operational excellence.

Proactive (vs. reactive)

Moving away from a reactive approach, the future of supply chain analytics will emphasize proactive strategies. By harnessing predictive analytics and real-time data insights, businesses can anticipate disruptions and make informed decisions preemptively, reducing downtime and enhancing customer satisfaction.

Why supply chain and procurement teams choose Tellius

Tellius is a leading AI-powered analytics platform that provides supply chain and procurement leaders and teams with greater visibility throughout their supply chain.

Firms gain real-time visibility into ERP systems, TMS, POS, supplier, demand, and production systems to reduce stockouts, optimize safety-stock levels, lower carrying costs, increase customer satisfaction, and better anticipate inventory trends and needs.

Tellius enables firms to:

- Automatically analyze millions of data points to identify true drivers and root causes to identify disruptions.
- Ask and answer supply chain questions to unlock efficiencies for the entire organization.
- Unify data across all channels, perform last-mile data prep as necessary, and dive into analysis faster in one place.
- Predict the impact of potential events through AutoML and accessible ML modeling capabilities.

Supply chain analytics with Tellius in action

A large pharmaceutical firm's quality assurance (QA) team struggled to identify product delay root causes due to technology (inaccessible quality/audit data stored in legacy DBs with no reporting capability) and skill gaps (QA specialists manually analyzing raw data in Excel). QA delays meant high regulatory risk.

The QA team now uses Tellius for accessible, up-to-date metric tracking, dashboarding, natural language search for ad hoc investigative work, and automated insights to diagnose what drove quality process failures and segment identification of processes most prone to failure—proactively attacking the problem.

The firm has reduced its aggregate quality process cycle time by 30%—reacting faster to quality issues and ensuring that they avoid costly regulatory investigations and fines.

A global food manufacturer faced a recurring, growing multimillion-dollar problem: damaged and defective goods (DDG). The firm's supply chain analytics team was manually quantifying and tracking DDG on a brand- and SKU-level to produce DDG risk scorecards but struggled with how to act on the data.

Tellius syncs with the firm's data and provides a way to both continuously monitor DDG, as well as perform a comprehensive automated analysis of all variables to identify underlying drivers of DDG via AI-powered trend drivers. The result was that the firm was able to track DDG down to product and plant level.

Conclusion

The role of the supply chain team is evolving, and the challenges they face require innovative solutions.

AI-powered supply chain analytics is not a magic bullet, but it does help in so many ways—demand forecasting, inventory management, real-time visibility, root cause analysis for disruptions, supplier management, and much more.

By providing actionable insights, streamlining processes, and enhancing decision-making, augmented analytics empowers supply chain leaders to navigate complexities with agility and foresight, ultimately driving efficiency and success.