

# Advanced Analytics Vital for Redefining Procurement

## Abstract

As disruptions become the order of the day and wreak havoc on supply chains across various industries, the procurement process has emerged as a key focus area. More and more businesses are now using analytics to secure procurements against external influences. However, the traditional tools of analytics, that is descriptive analytics, are no longer adequate to overcome these disruptions. The nature of modern-day disruptions mandates the use of artificial intelligence and machine learning solutions to insulate procurement processes from threats. This is where advanced analytics can take center-stage. Bundled with a unique mix of predictive and prescriptive analytics, advanced analytics can take the role of analytics in procurement to another level by transforming all three focus areas -- procurement planning, supplier selection, and strategic sourcing. The paper discusses the power of advanced analytics in the procurement ecosystem.

## Procurement: A driver of supply chain

Owing to globalization, manufacturers have realized that better planning in the supply chain is necessary to ensure the delivery of the right product at the right price, right place, and the right time to the right people with the right quality and in the right quantity. The key stages in a typical supply chain are illustrated in Figure 1.

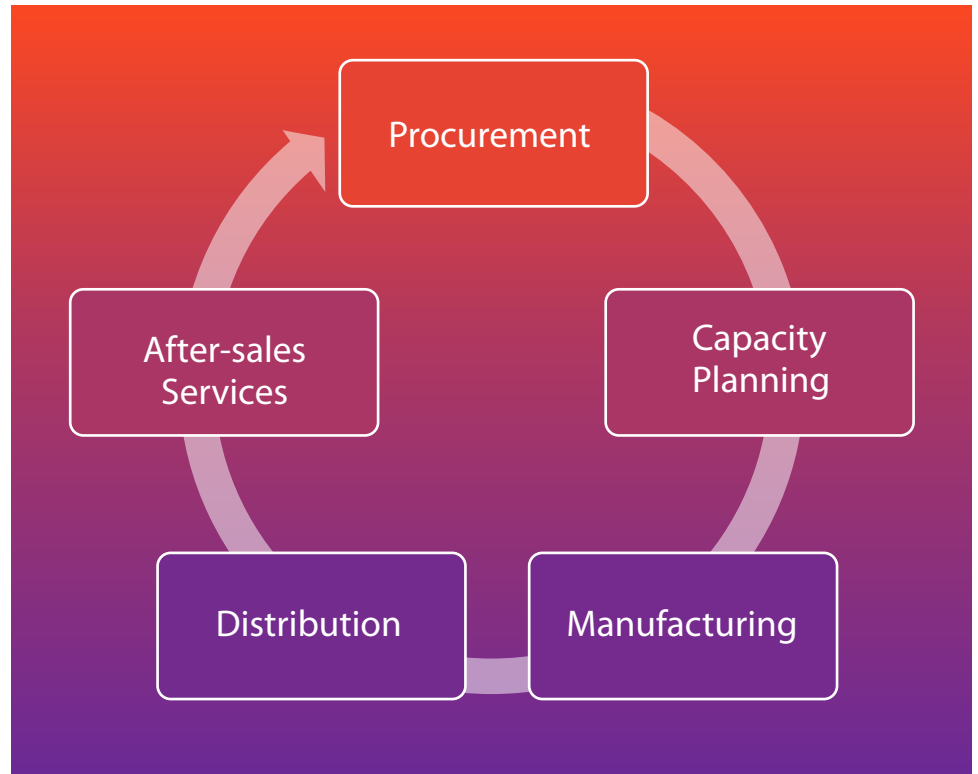


Figure 1: Supply chain functions

As procurement forms the core of the overall performance of any supply chain, leading organizations are seeking new tools to transform the process. Armed with data-driven insights, advanced analytics can assist organizations in better negotiation, supplier selection, and optimal pricing. Using analytics in procurement, an organization can save 3% to 8% in costs.

## Advanced analytics: Ushering in new era of procurement

Procurement is one of the key protagonist in the success story of an organization. The process is responsible for ensuring the functionality of all other processes by making available every good they need but do not produce themselves. Over the decades, procurement has become globalized, specialized, and leaner. The new era of procurement is characterized by several major disruptions as underlined in Figure 2:

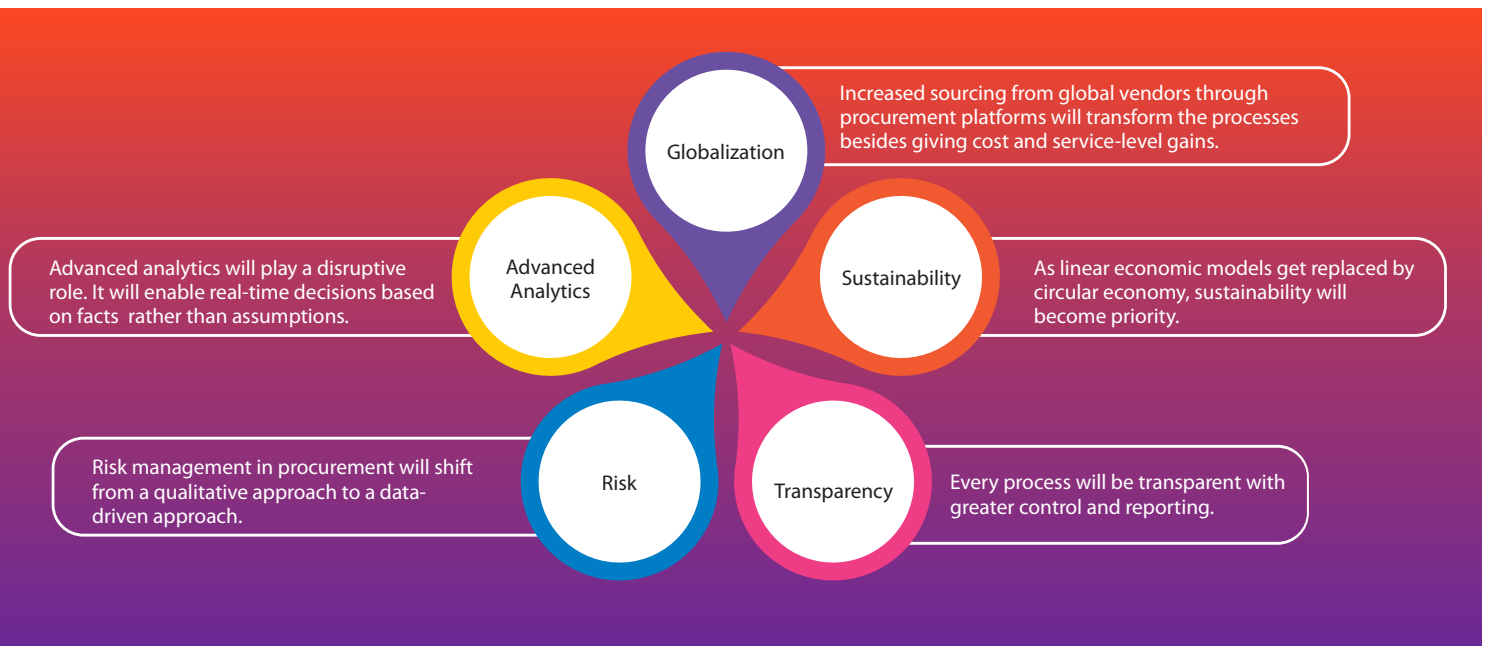


Figure 2: Disruptive forces in procurement

With the world turning into a global village, both competition and opportunities are intensifying. As such, procurement teams can leverage analytics to gain a first-mover advantage. With digitization, sustainability-centric circular economic models have come to the mainstream. To achieve sustainability, analytics can come to the aid of procurement teams to drive operations.

As underlined by COVID-19, procurement and supply chains are likely to be the first casualty in the event of a disruption. Such crises can be mitigated by leveraging advanced analytics to identify local suppliers and build inventories.

Procurement analytics uses quantitative methods to derive actionable insights and outcomes from data collected by an organization during the sourcing of products and services. It typically reports on procurement KPIs such as lead time, procurement cost, ROI, spend leakage, etc., while predictive and prescriptive analytics are deployed to predict procurement value chain events such as OTIF prediction, price forecasting, and prescribing the best procurement strategy. Thus, advanced analytics helps organizations gain a competitive advantage in procurement.

As business operations grow complex, there is a greater need for transparency across various departments. The use of advanced analytics can provide better visibility to procurement teams across all functions.

## Role of advanced analytics in the procurement value chain

The procurement process in organizations across all industries involves several stakeholders and many uncertainties. Some of the key challenges range from supplier related issues such as quality concerns or missed deliveries to inaccurate data (see Figure 3). At almost every stage, advanced analytics can play a significant role.

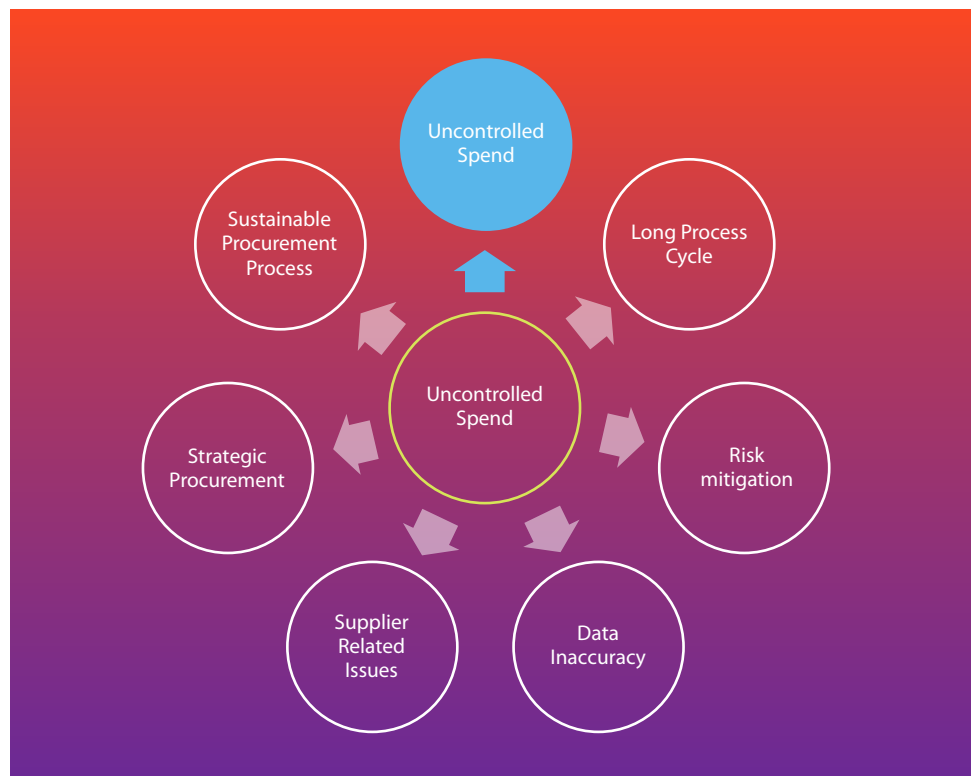


Figure 3: Impact of poor procurement planning

**Long process cycle:** To be the fastest to deliver on customer expectations is the most important competitive advantage. Insights from predictive analytics can help reduce delivery timelines.

**Supplier issues:** The issues emanating from the supplier side, such as late delivery, failure to fulfil demand, low quality products, compliance issues, etc, can trip the entire supply chain. Assessing the risks involved using analytics can help mitigate the fall outs of a disruption.

**Data inaccuracy:** Inaccurate data can create several challenges for the procurement department. Advanced analytics can go a long way in overcoming such shortcomings.

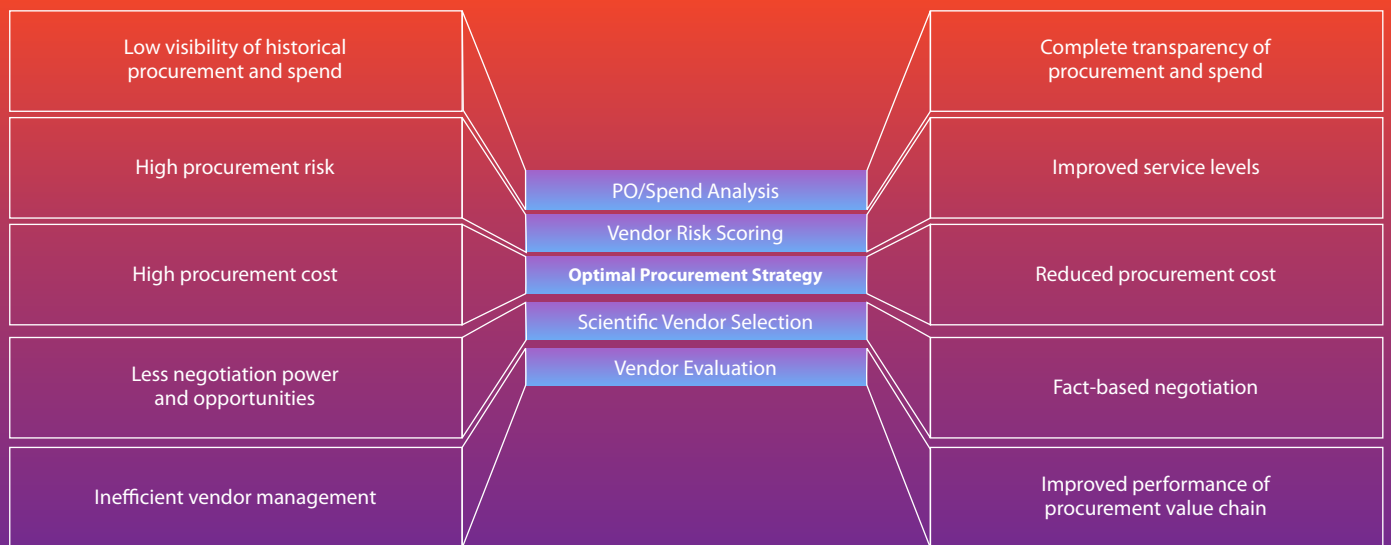
**Uncontrolled spending:** Cost control has assumed paramount importance in the current era. Advanced analytics can help organizations curb wasteful expenditure under various heads.

**Risk mitigation:** Every business process has risks, and procurement is no different. With advanced analytics, procurement teams can mitigate market risks, potential frauds, etc.

**Strategic procurement:** Implementing procurement strategies across all functions is a major challenge for organizations. With advanced analytics, procurement teams can make informed decisions and automate procurement.

**Sustainable procurement:** Indirect procurement remains a major challenge for organizations. Advanced analytics can ensure that the procurement teams always receive quality products at the best price.

In this age of digital intelligence, advanced analytics can be used to enhance all areas of procurement. With tools such as spend analysis, vendor risk scoring, optimal procurement strategy, scientific vendor selection, and vendor evaluation, advanced analytics offers greater visibility to procurement teams on purchase and spend, lowers procurement cost, drives fact-based negotiation, and improves the performance of procurement value chain. Using advanced analytics, procurement analysts can distinguish patterns in complex data sets and determine the significant drivers of price without human intervention.



*Figure 4: Advantages of advanced analytics*

Given the exponential and measurable value that advanced analytics delivers in procurement, organizations are increasingly counting on it. The procurement analytics market is expected to grow from \$1.6 billion in 2018 to \$5.6 billion by 2025, at a CAGR of slightly above 20.9%.

## Transforming procurement: The advanced analytics way

The use of advanced analytics can transform all three major areas of procurement – procurement planning, supplier selection, and strategic sourcing (see Figure 5):

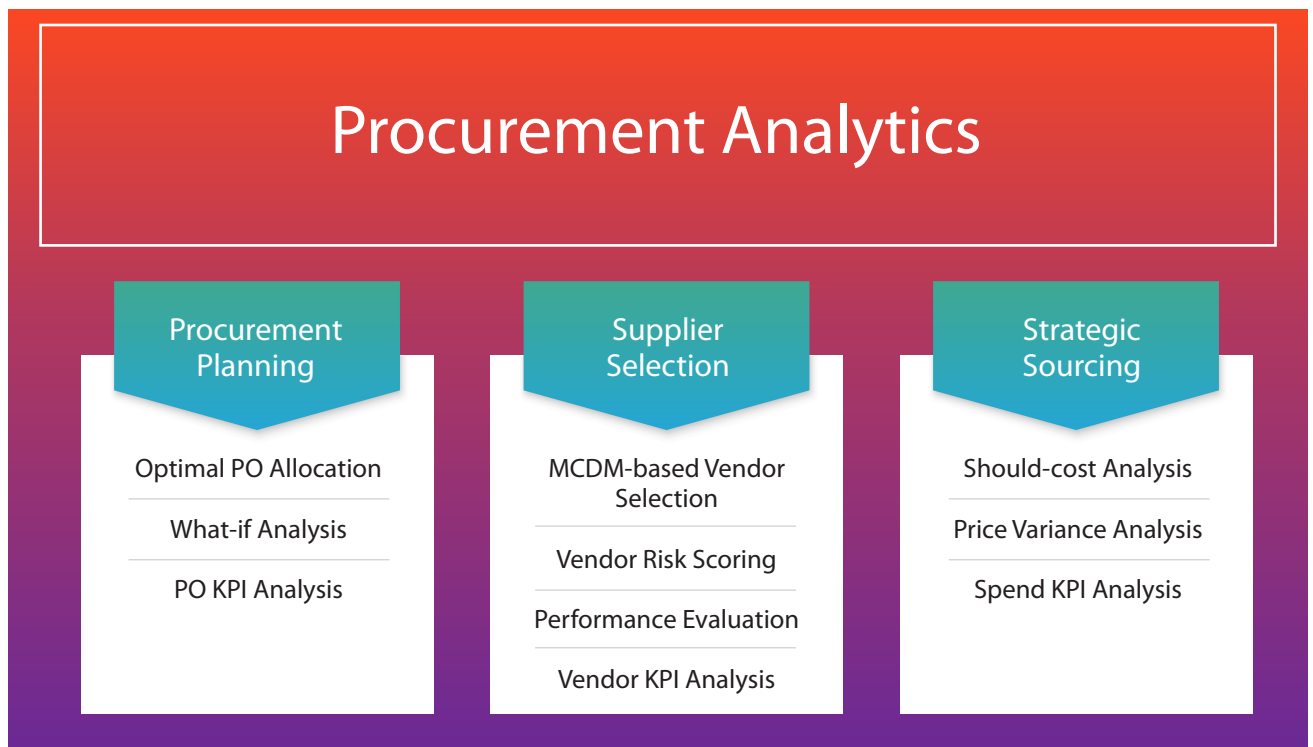


Figure 5: Procurement analytics use cases

**Procurement planning:** The introduction of advanced analytics can optimize overall procurement planning. While managers earlier used to allocate purchase orders to vendors based on intuition and experience, the use of analytics enables allocation in a way that procurement cost and risk are minimized, and orders can be allocated to vendors without any human bias.

**Supplier selection:** Leveraging vendor data, advanced analytics helps procurement teams select vendors based on various criteria and with less human intervention. By enabling the risk scoring of vendors, prescriptive analytics also assists vendor performance scoring. The use of analytics has reduced procurement risks.

**Strategic sourcing:** The utility of advanced analytics in spend and cost analysis comes to the aid of procurement teams in strategic sourcing. Here, prescriptive and predictive analytics can be leveraged to forecast the cost of any material and future spend.

## Value delivered by advanced analytics

There are five broad areas where advanced analytics has delivered major value in the procurement process.

- **Sources savings opportunities identification:** Identifies vendor consolidation opportunities and delivers significant benefits through spend analytics. Leveraging advanced analytics, a leading medical devices company streamlined 89 vendor categories to a mere 20.
- **Procurement process bottleneck analysis:** Identifies bottlenecks and provides sensitivity analysis on multiple demand scenarios. With advanced analytics, a leading software company minimized procurement time from an average of 69 days to 48 days.
- **Procurement spend leakage detection:** Explores spend saving opportunity in terms of total spend and chooses the most optimum buyer. Advanced analytics helped a leading heavy utility manufacturer identify a potential opportunity of \$1.4 million/annum of savings by avoiding data issues.
- **Spend analysis:** Identifies major consolidation areas and creates roadmaps for gaining significant operational benefit. Using advanced analytics, a leading natural gas company brought significant sourcing savings with supplier rationalization and reduction in transactional workload.
- **Direct spend reduction:** Earmarks cost reduction opportunities through vendor consolidation. The use of advanced analytics has helped a global manufacturing major save \$39 million through control of price variance.

## Embedding analytics in supply chain

To derive value from procurement analytics, however, organizations need to factor in analytics at various stages, such as collecting data from various sources, vendor selection, purchase order distribution, invoice processing, etc. Not only is it necessary to collect data from but also establish processes to calibrate the information and disseminate the insights derived effectively (Figure 6):

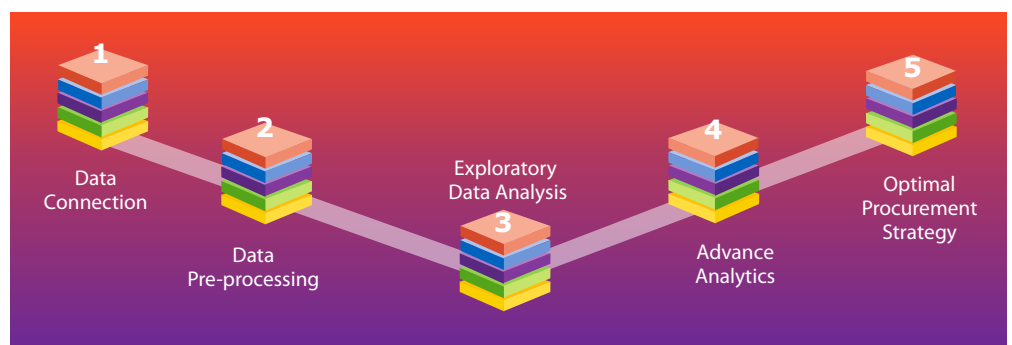


Figure 6: Setting the roadmap for procurement analytics

- 1. Data connection** – Connect various data sources to get a single view of data after consolidation.
- 2. Data pre-processing** – Harmonize and enrich data by accounting for missing value, negative value and outliers.
- 3. Exploratory data analysis** – Analyze trends of procurement/spend/vendor data and understand business rules.
- 4. Advanced analytics** – Implement advanced analytics for optimal PO allocation, vendor selection strategy, etc.
- 5. Optimal procurement strategy** – Implement an optimal strategy for procurement based on advanced analytics.

## Conclusion

Advanced analytics in procurement is the prerequisite of the new era. Without advanced analytics, survival in the competitive market is difficult. The industries have to understand the need for advanced analytics in procurement as it can help in faster recovery from the current pandemic. Procurement analytics helps prepare a better strategy, provides better control, minimizes costs and risks, improves savings and ROI, evaluates alternatives faster, and offers intelligent insights into the market. Simultaneously, procurement analytics helps improve customer satisfaction, speed up order fulfillment, and minimize the lead time and cost to make the supply chain more efficient.

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### About The Author

#### Anuj Prakash

Anuj Prakash is a lead in the TCS Analytics and Insights team, with more than 14 years of experience in formulating and driving industry solutions in supply chain management, operation management, optimization, flexible manufacturing system, and computer integrated manufacturing. He holds a Ph.D. from IIT Delhi and has completed a post-doctoral fellowship from a Hong Kong institute. His research involves application of fuzzy systems to flexible system problems. Anuj has also published and presented several papers in international journals and conferences.

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