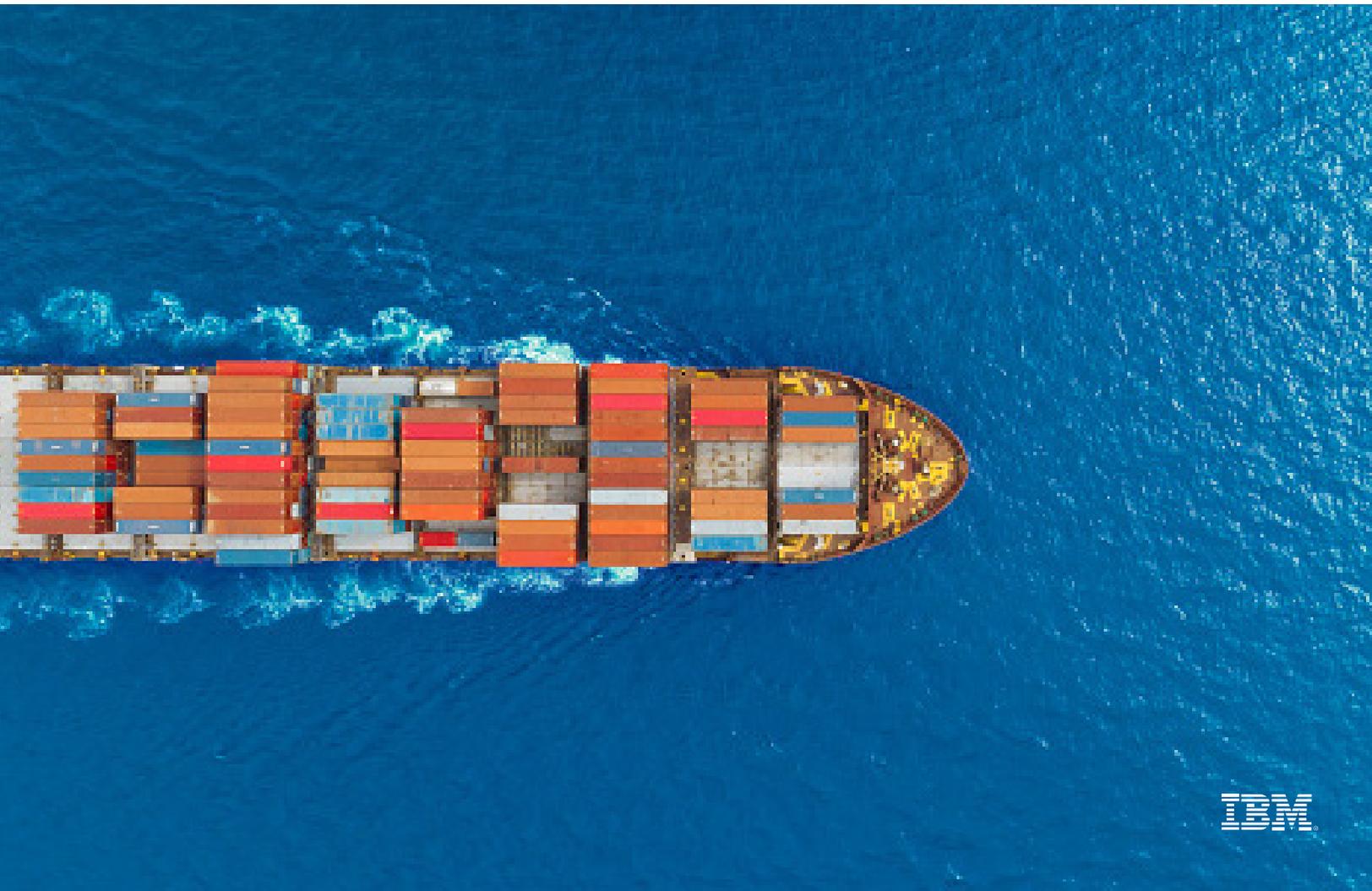# Automated Insight Generation in Procurement: The AI enabler and speed to value

The power of cognitive procurement to control your data and provide actionable insights

Executive summary

Procurement organizations are poised to maximize value from the data they've collected

As Procurement organizations are incentivized to simultaneously reduce spend and optimize their productivity, there's a burgeoning opportunity to combine their structured spend data and unstructured business reporting information to glean actionable and valuable insights. Artificial Intelligence (AI) powered Automated Insight Generation (AIG) technology is poised to transform Procurement by evaluating spend in the same way as a Procurement professional would. AIG does so automatically at unprecedented speed, in an unbiased manner and gives every transaction equal attention. IBM statisticians developed AIG, and the insights yielded from AIG coupled with the experience of category professionals make up the power behind IBM's Procurement Analytics as a Service platform and associated actionable insights.

Industry trends

Traditional spend analytics tools are no longer enough

The current Procurement technology landscape is rapidly pivoting away from the historical Spend Analytics tools and toward advanced Procurement Analytics platforms. These platforms help drive insights from spend and other unstructured data sources. Complex global organizations have spent untold sums digitizing all aspects of their business. According to Allied Market Research[1], the Enterprise Resource Planning (ERP) software and deployment market will reach USD 41 billion by 2020. Yet traditional Spend Analytics remains relegated to data sets from purchase orders and accounts payable.

Mature organizations are beginning the process of contract automation, item master rationalization and supplier master data enrichment. An IBM Institute for Business Value study concluded that 69 percent of speed-driven analytics organizations created a positive impact on business outcomes[2]. There's a drive for Procurement to monetize and otherwise use their data to increase value in the indirect spend space. The advent of Machine Learning, robotics and other AI tools has enabled Procurement's work and transformed what is possible with data. As Procurement Analytics platforms are becoming more common as a mainstream practice, the advancement of true AI driven Procurement Analytics platforms persists at the core of our investments and strategy.

Client needs and challenges

Drowning in data

Analysts frequently spend hours creating spreadsheet formulas and tables to help identify potential gaps in their company's supplier ecosystem. For a Procurement organization, analysts often target areas that may contain insights: anything a Procurement organization can take action on and derive value from.

The introduction and subsequent rise of big data and the power of Procurement Analytics at scale have prompted industry wide transformation. Procurement can benefit from the large amount of data drawn from different facets of business, and as data storage becomes cheaper, content becomes more efficient to process and easier to use for automation. Businesses are retaining more data and garnering greater potential for new insights. Business intelligence data related to markets and demand is becoming more available, accurate and cost-effective to procure and maintain. However, integrating all of these in meaningful ways remains expensive and complex, and the integration process can result in a dated analysis by the time it's actionable.

Procurement organizations across industries are recognizing the advantages of investing in AI initiatives that can derive value from their aggregate data. When these initiatives are applied with normalization and enrichment, the client can explore insights from their accurate supplier environment with all parent-child relationships, mergers and variations of the same supplier name normalized.

As Procurement offices feel the pinch of shrinking budgets, managers are driven to quickly locate insights within their data and optimize their employees' time. Procurement organizations understand this barrier, but are unable to create a predictive understanding of demand, consumption and markets across both their goods and services domains. The friction between investment and outcome is a daily challenge for Chief Procurement Officers (CPO), Chief Financial Officers and business strategists. The timing for advancements within optimized, AI driven Procurement Analytics and automated insight identification couldn't be better.
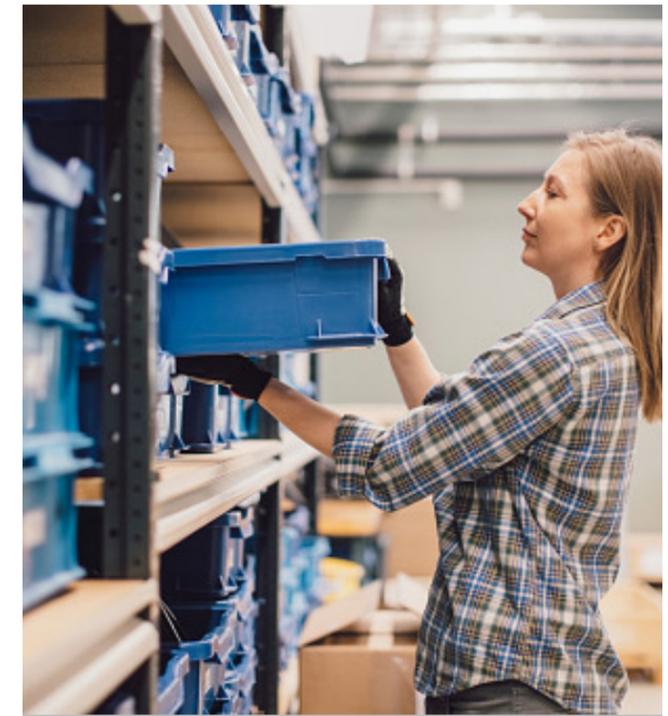
IBM Solutions and capabilities
How a computer finds actionable Procurement insight

From analysts to CPOs, analytics helps Procurement professionals shift from transactional buys with low value to sourcing and to better understanding their internal demands and consumption. This shift is possible when organizations can find needles of Procurement opportunity hidden within haystacks of data. The ability to create insights from client data that a Procurement organization can action immediately is crucial. Applying cognitive techniques to Procurement data can revolutionize the way organizations purchase and plan.

AIG technology uses key performance indicators (KPIs) along with a cognitive modeler to narrow all client spend down to 10 - 20 percent of spend that is most likely to contain an insight. This process occurs automatically and continuously refreshes without human intervention. KPIs created by IBM's data scientists range from the straightforward and industry-spanning, such as Strategic Supplier Spend, to KPIs created for a specific industry pain point.

The first step in AIG technology is to expand a client's foundational data with other client data sources that are available but underused. Spend data has been a valuable resource for Procurement professionals, but with the incorporation of unstructured information, such as job role descriptions, statements of work and supplier reporting, spend data can become a top line driver for the entire business.

IBM's method is built upon the combination of foundational and unstructured client data. It's then fused with our proprietary unstructured knowledgebase and benchmarks that have been tested for functional use in the AIG algorithm and subsequent insight creation. From there, the algorithm creates 30 - 40 KPIs that serve as a flashlight illuminating potential problem areas in the client's spend.

IBM's KPIs can be sorted into four groups:

1. KPIs used exclusively by the client
2. KPIs based on relevant market intelligence, such as recommended strategic vendors and price benchmarks
3. KPIs created and updated by IBM, but tailored for use in a particular industry
4. KPIs created by our team of data scientists

After those KPIs are generated, then a modeler is created using the KPIs to segment spend into distinct attribute segments. These segments are then classified by our proprietary algorithm as high, medium and low likelihood of containing an actionable insight.

For each commodity and geography, an Insight Indicator metric is used to detail the likelihood of an insight presence that is measured from zero to one, with one indicating a glaring error. Insight Indicators can be used to detail within high, medium and low likelihood of insight spend buckets to which commodities and geographies require immediate attention. After attention is drawn to a specific severity of Insight Indicator, then variable filters can be applied throughout the client's platform to pinpoint where action warrants being taken. IBM category specialists can then review the insights and validate them based on their knowledge of the client's Procurement structure, other client environments, market intelligence and IBM's own strategies. These category insight reviews become the basis for IBM's insight presentations, detailing an actionable insight based on the client's data, the output of AIG and our category expertise.

The benefits of a cognitive technique

Cognitive and Artificial Intelligence processes remove unknown biases from the analysis, and replicate, compliment and enable human thinking and action. Cognitive and AI processes function as if we had given an unbiased analyst the client's spend file, then asked the analyst for recommendations on which area of spend to address. This analyst would have a complete understanding of IBM's knowledgebase and benchmarks at the transaction level for every industry and category. This AI process helps to narrow the focus on problem areas of spend by training the model to take the same steps that our analyst would likely have taken. This amplifies the focus of human behavior at scale. Furthermore, this process leaves no commodity or geography unexplored. All spend, vendors, commodities and geographies receive the same amount of attention when using a Cognitive and AI process.

The benefits of this technique are particularly relevant for organizations that want to spotlight Procurement opportunities within their tail spend. The AI shows no bias towards the presence of problems in the higher spend lines. Tail examination after AIG has evaluated client data allows Procurement consultants to quickly evaluate opportunities for catalog buying or other strategic aggregated tail initiatives that would take an organization far too long to normalize and aggregate by hand with the same techniques.

Future direction
AIG accelerates Procurement into the future

In Procurement, applying big data techniques leads to success. The ability to gain the equivalent of five years of Procurement experience instantly from five years of data allows an AI algorithm to learn the nuances of a commodity, client, or industry at scale. AIG technology has the power to dramatically reduce time spent by a Procurement organization searching through a data lake of unstructured information for an actionable insight. AIG technology increases the productive value of a professional's time, giving them greater availability to drive strategy, troubleshoot or problem solve and negotiate when they would otherwise need to search for problems by sifting through mountains of spend.

AIG technology also removes bias from the problem identification process and provides a way to indiscriminately view the spend without geography, category or vocal buyer-based biases, and to verify each potential issue with Statistics. This output yields the degree of various problems within the spend, be it high risk vendors, out of policy buys, lack of best in class buying practices and many more. Additionally, it provides a ranking of problems within each geography and commodity.
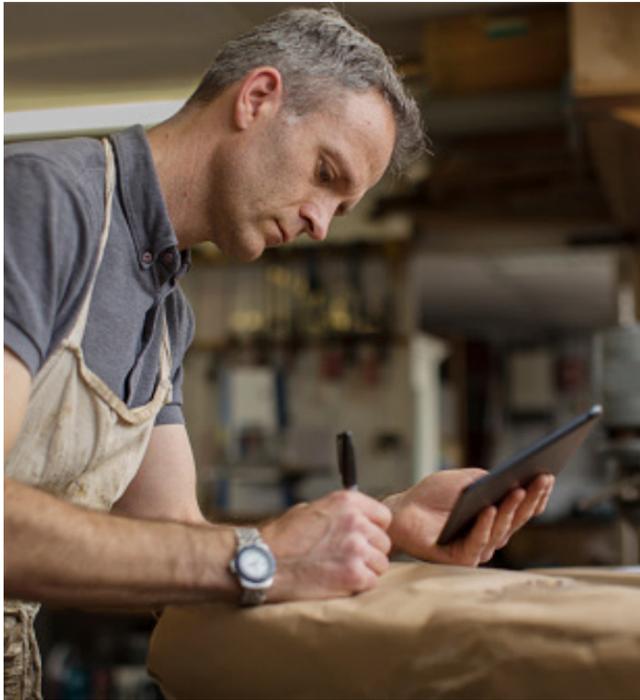
Conclusion

Driving insight value and returning time to the procurement professional

Giving Procurement professionals time back from being mired in data table analysis and removing bias from the identification process makes AIG an alluring proposition for Procurement leaders. These benefits span industries and deliver a compelling value proposition based off of client's existing data. Procurement spend platforms and technologies like AIG are quickly changing the way Procurement teams operate, enabling increased speed to insight and driving value more effectively than ever before.

Glossary of Terms

– **Automated Insight Generation**. The process of taking all client spend and identifying 10 - 20 percent of that spend that is most likely to contain an actionable Procurement insight.
– **Big data**. The wealth of structured and unstructured data being collected by businesses in all industries and of all sizes.
– **Insight.** A pattern, trend or relationship in data that identifies an issue that is actionable immediately by the client.
– **Key Performance Indicator.** Various statistics used to evaluate granular problems in client data, often made from various types of data (spend, vendor count, risk, and other dats types).
– **Procurement Analytics as a Service.** An IBM offering for external client to drive data strategy, enrichment and visualization, and to communicate potential spend issues.
– **Tail Spend.** Roughly the bottom 20 percent of a client's spend, segmented by AIG to identify the best method of tail spend reduction.

For more information

To learn more about IBM Services, please contact your IBM representative or IBM Business Partner, or visit:
ibm.com/services/procurement

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Prior to coming to IBM Laura Beth has worked in predictive analytics, manufacturing analytics, and Procurement analytics at Boeing and dunnhumby, a global data science company in London. She has a BS in Business Analytics and Supply Chain Management from The University of Tennessee, Knoxville and resides in Raleigh, North Carolina.