

HARNESSING GENERATIVE AI IN SUPPLY CHAIN MANAGEMENT

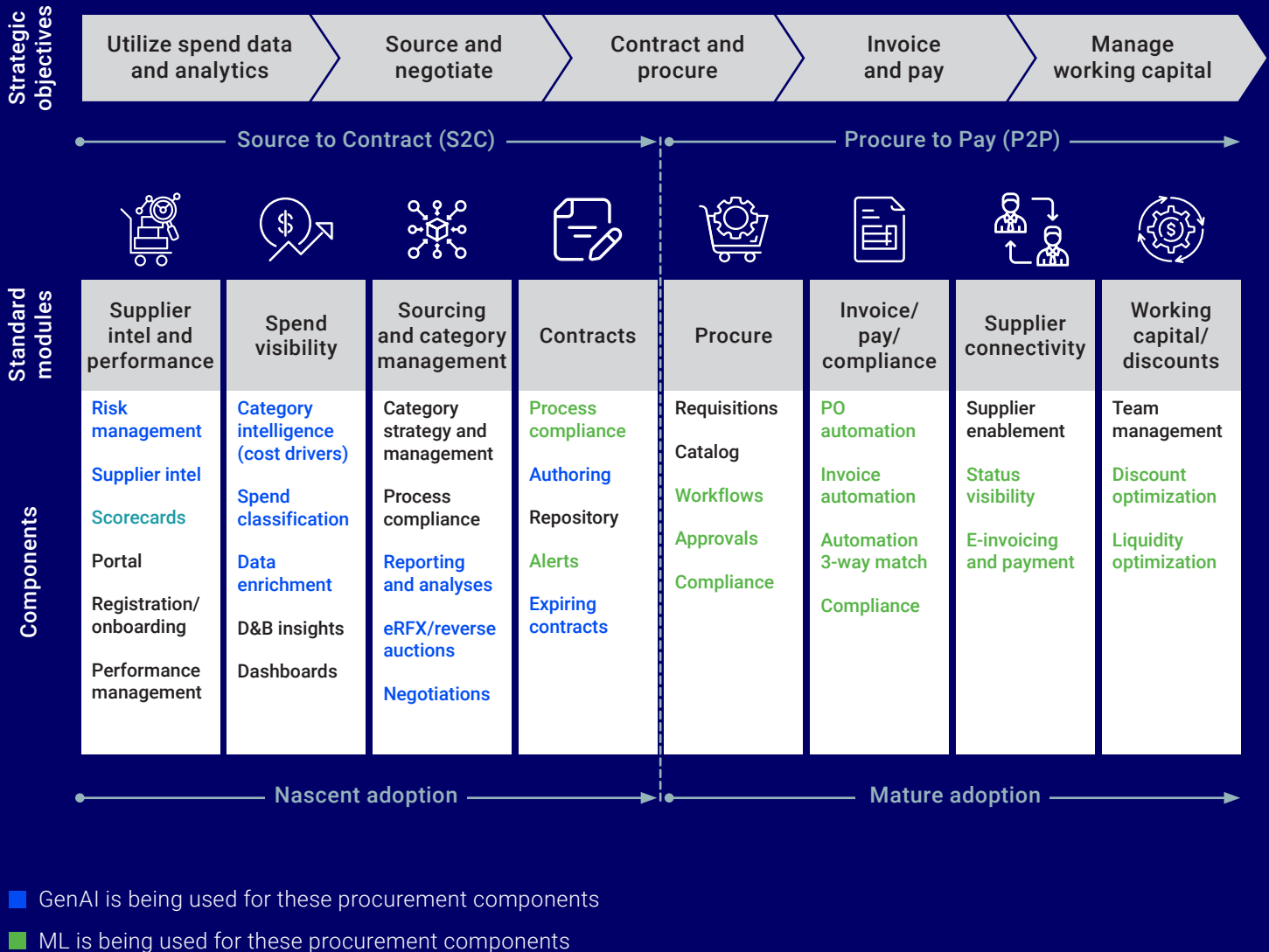
Capturing value through
optimization, transformation,
and predictive capabilities

With so much hype about AI and Generative AI (GenAI), it's almost impossible for companies to know where to place bets or how big an investment should be. Artificial intelligence and machine learning are already widely used in supply-chains. With the advent of GenAI, it is becoming more critical to know how to separate the hype from reality. Among advanced companies, traditional AI tools and machine learning models are mature or close to maturity in transactional areas, from managing invoices and payments, to tracking shipments and guiding workflows and approvals.

But a new frontier has opened with the emergence of GenAI. It has the potential to make step-change impacts in the more strategic elements of supply chain management that were once dependent on human intelligence: activities in which companies identify and evaluate potential partners and backups, analyze cost and quality drivers, field requests for proposals, and manage negotiations (Figure 1). GenAI is also beginning to create the ability to predict risk, not just identify it, and to propose risk mitigation strategies based on scenarios and in accordance with a company's strategic goals.

FIGURE 1: GENERATIVE AI IMPACTS 60-70% OF S2P (SOURCE-TO-PAY) ELEMENTS

GenAI is already being applied to make disruptive impact on 60% to 70% of the primary S2P elements; this can drive significant efficiency and cost savings



It is no wonder that in a survey of more than 3,000 executives conducted by AlixPartners in 2023, more than 80% of executives told us that investing in AI supply chain solutions has become critical to their competitiveness. In this article, we will discuss several examples in which Gen AI has created content, models, and insights with a speed and at a scale never before possible. We will also discuss what companies need to do to adjust operating models, identify potential trouble spots, and upskill workforces to get the most value from GenAI.

GENERATIVE AI CAN CREATE STEP-CHANGE IMPACT ON A WIDE RANGE OF ACTIVITIES

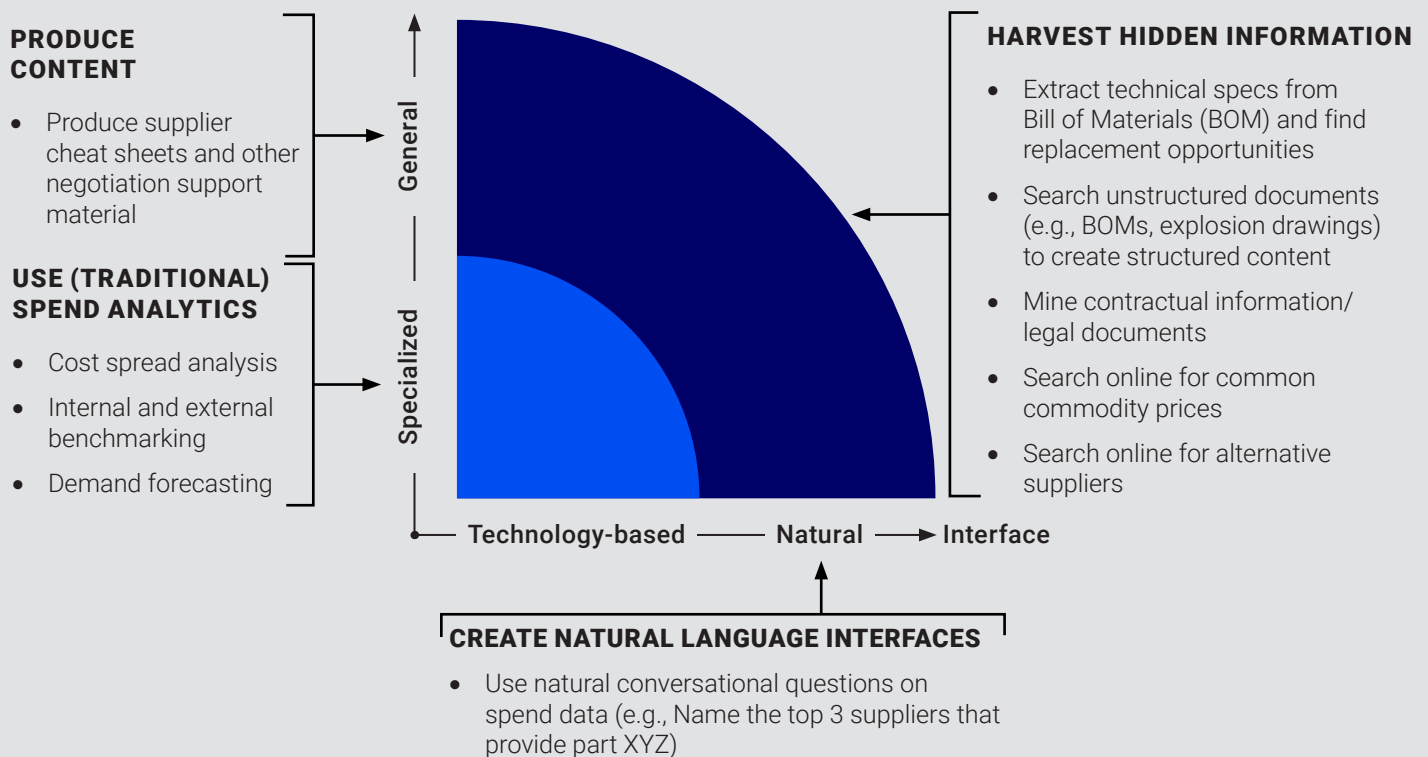
Traditional ML and AI capabilities, while impressive, have some limitations. They focus on specialized, narrow tasks like demand forecasting, predicting customer churn, and internal and external benchmarking—insights they derive by identifying patterns in limited, labeled data sets.

Generative AI can greatly expand the realm in which supply-chain analytics operates (see Figure 2). It can search for patterns in unstructured data from both inside and outside a company. It can read weather reports as well as financial statements. Think of GenAI as a well-trained coworker, of average intelligence, but with multi-lingual superpowers, access to lots of data, unlimited resources—and no need to sleep.

When GenAI works alongside traditional analytics, it can provide supply chain solutions that were not possible before. But while GenAI can do amazing things, it's not a magic wand. This powerful technology needs to be aimed at the tasks and opportunities that matter most to the company using them. These tasks need to be overseen by experienced business and technology leaders to ensure that they are doing the right things and doing them in the right way. The success of these initiatives largely depends on a practical, business-driven choice of use cases, and on understanding a model's limitations, strengths, and weaknesses, as well as on a team's ability to creatively define scope, tests, and training.

FIGURE 2: KEY FEATURES OF GENERATIVE AI

Naturalness and generality widen the space of use cases and opportunities for GenAI in supply chain management



Source: AlixPartners

Below are some examples of the ways GenAI can be used to impact supply chain management:



Research new suppliers

A furniture retailer, pressed by price competition and wrestling with stock-outs of popular items, urgently needed to expand its supply base. Using GenAI, it was able to dig through supplier portals, trade publications, and enormous amounts of other online data. GenAI compiled the information into a predefined format to produce coherent descriptions and assessments of current and potential suppliers. This project would have taken an analyst days, or even weeks, but with GenAI it was completed within hours.



Understand and evaluate supplier capacity

An omnichannel retailer needed to understand the capacity available from their supply base to better plan merchandising actions. It used a combination of AI and GenAI to scan its supplier contracts and extract insights about the suppliers' capacity. The results from 1000+ scanned contracts were put into structured tables, to allow merchants to see likely production capacity for every supplier and every item across the supplier's network. This enabled much tighter integration between merchandising and supply, producing more successful campaigns and higher revenue.



Gain better control of cost of materials and components

A home goods company was struggling to manage its margin and costs. It sourced 8,000+ items from scores of vendors with no realistic assessment of price competitiveness. In some cases, it did not even have detailed specifications. Using GenAI to read historical purchase orders and crawl the web, they developed product specifications. They further leveraged traditional AI models to understand patterns (commodity trends, drivers, attributes, specifications) to build should-cost models, with 95% accuracy and within 10% of the time the same project would have taken if done by analysts. The company was not only able to source products more cost effectively; it now also had documented specs for its private label product portfolios, enabling competitive bidding and faster future product development.



Identify and forecast cash flow risks

A large global shipyard, a maker of cruise ships, had long cash cycles and needed to predict cash flow with better accuracy. Many of the parts and components the company sourced were complex and costly, requiring enormous up-front outlays, and tying up working capital until vessel completion and delivery. Understanding the deadlines, costs, and risk was daunting, as the company had complete data for less than 7% of its material costs. A GenAI model was used to scan purchase orders, match them with ongoing production data, and create forecasts and visualizations to inform cash flow patterns and risks. With this structured information, the company was able to work with suppliers to manage delivery dates to minimize its working capital and improve cash management.

In each of these cases, companies used GenAI alongside traditional AI models to attack data sets that were so big or so scattered that it hadn't been practical to deal with them before. By identifying issues that had a material impact on the business, and devising the right combination of expert human guidance, well-deployed GenAI use cases, and solid management of the underlying data, these companies achieved better prices and quality, increased sales, improved resilience, and greater profitability.

HOW SUPPLY CHAIN ORGANIZATIONS CAN PREPARE TO GET THE BEST FROM GENERATIVE AI

GenAI solutions are not plug-and-play; there is no out-of-the-box supply chain solution. Each solution needs to be pointed at a specific business problem. Like any analytical capability, human or technological, it gets better the more you use it, as it learns how to maximize output quality. And like any capability, it requires investments in data and skill development.

It is critical, therefore, to get strategy and structure right. Supply-chain management needs to flow from a company's strategy and value proposition. An every-day-low-price retailer like Walmart will manage its supplier network differently than a specialty retailer like REI, or a manufacturer like General Motors. That seems obvious, but it's critically important, because strategy and value proposition drive where and from whom a company should source materials, determine what its margin and growth levers are, and reveal which supply chain issues (cost, availability, innovation, quality, sustainability, etc.) have the biggest impact on value. Only by understanding those drivers can you determine where to put GenAI to work.

It is also necessary to build the right structure for AI/GenAI implementation. In our experience, efforts bog down unless they are managed by cross-functional, empowered teams. Technical experts know what's possible; business experts know what's important. It is also crucial that these teams have the power to act. As GenAI gets up and running, it will identify problems and opportunities (such as risks or price changes) that require urgent attention. And because GenAI, while extraordinarily capable, is still 'just' a technology, its use should always be supervised by business experts. Furthermore, you need experts to help you understand which tools are right for which jobs. For example, a large language model (LLM) is good with unstructured documents or text-based synthesis, but when it comes to engineering, computation, or semi-structured Excel, it lacks maturity, and traditional models might be better. While AI experts educate business leaders, the reverse is also true: functional operators need to upskill, and data scientists to develop a better understanding of business issues, and limitations. That happens best if they're on the same team and in the same room.



To put all of this into action, the organization and its people must overcome some challenges

1 Use case selection

The use cases selected need to be impactful rather than interesting. The link to corporate priorities must be strong; the lift in terms of technology and data availability must not be too great; the ROI should be meaningful.

2 Stakeholder engagement and change management

AI initiatives need to be integrated into business practices, not imposed upon them. Some managers are uncomfortable with the 'black box' appearance of AI/ML models and especially GenAI; some employees may feel threatened. Others will be eager to explore, and it is among those stakeholders that you should look for the team to be a part of your first projects. The 'fail fast' model is even more critical to consider as part of change management. On several occasions, our initial hypothesis of GenAI's ability to solve our use case didn't pan out the way we anticipated. We had to change course, by changing the scope, as well shifting to another LLM model altogether.

3 Building and scaling

Successful use of AI depends on developing and scaling models, while for GenAI, success depends on best use of available LLMs. These models, like GPT4 or Bard, are good at generating content, and need to be used in conjunction with prompt engineering and techniques like Retrieval Augmented Generation (RAG). RAG combines the generation capabilities of LLMs with the research and data retrieval capabilities of search engines, specialized databases, and AI-powered web scraping, among other techniques.

4 Continuous learning and improvement

LLMs can hallucinate—that is, make up content that is not true, and provide generic answers based on how they have been trained. Two-in-a-box teams should be able to continuously update prompts, data sources, and factual inputs. At the same time, it is important to continuously assess and reassess model outputs with human eyes and experience to adjust inputs accordingly.

5 Strong data foundations

Data is the lifeblood of AI/GenAI. This data is both structured and unstructured, numerical and textual. It is essential, therefore, that companies assess their data readiness, and deploy AI and GenAI only where the foundations are strong. Data issues include completeness, accuracy, and accessibility, of course, but also data governance to ensure quality and compliance, and a resilient infrastructure capable of handling large volumes of data efficiently and securely.



IN CONCLUSION

GenAI is still in its infancy, but its transformational potential is already obvious. When we have utilized GenAI for projects, they have regularly been completed 20-30% faster. We have seen similar reductions in administrative and analytic costs. There are even more exciting opportunities beyond optimization and productivity improvement.

But all of these gains can only be utilized when companies ask the right questions to create strategic alignment, develop the right capabilities by upskilling teams, make the right technology architecture choices, and address their challenges by selecting use cases based on impact rather than ingenuity. This requires putting the right combination of SMEs and data scientists 'in a box' to review and sanity check GenAI outputs and adjust prompts and input data to improve results. Finally, organizations need to ensure that management is comfortable with the black box nature of GenAI and AI models by having the right model evaluation metrics.

A SUPPLY CHAIN PLATFORM LEVERAGING AI AND GEN AI



AlixPartners' Global Trade Optimizer (GTO) Platform helps address supply chain resiliency, agility, and cost efficiency using technology, data, AI, and GenAI in a rapid and practical way

Margin and cost management

Drives margin and cost improvement leveraging AI and Gen AI to extract specs and current contract summaries at scale to enable input factor analysis and simulation of award scenarios, and to forecast and monitor cost exposures based on indices.

Global supply chain optimization

Enables simulations and scenarios for supply chain configurations and locations. GenAI is used to generate competitive supply base intelligence, and to create and evaluate supply chain configuration options.

Supply Risk management

Detects supply risk, and enables mitigation through prediction, reaction, prevention, and recovery. GenAI is used in detection, and to suggest actions to address the issue detected by alerting and informing suppliers and other supply chain participants.

The cases highlighted earlier used GTO to enable the impact.

CONTACT THE AUTHORS:

Michael Chiock

Global Leader, Supply Chain & Operations Practice Group, Partner & Managing Director
+1 404 353 7788
mchiock@alixpartners.com

Steve DuBuc

Americas Leader of Sourcing & Procurement Transformation, Partner & Managing Director
+1 248 797 1122
sdubuc@alixpartners.com

Marc Iampieri

Global Co-leader Logistics & Transportation, Partner & Managing Director
+1 267 253 7889
mlampieri@alixpartners.com

Sudeep Suman

Partner & Managing Director
+1 347 510 8629
ssuman@alixpartners.com

Hoyoung Pak

Global Co-Leader, AI and Data Practice Group, Partner and Managing Director
+1 312 515 7469
hpak@alixpartners.com

Richeek Maitra

Director
+1 617 378 8093
rmaitra@alixpartners.com

Abhi Goel

Senior Vice President
+1 917 975 9715
agoel@alixpartners.com

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These are the moments when everything is on the line – a sudden shift in the market, an unexpected performance decline, a time-sensitive deal, a fork-in-the-road decision. But it's not what we do that makes a difference, it's how we do it.

Tackling situations when time is of the essence is part of our DNA – so we adopt an action-oriented approach at all times. We work in small, highly qualified teams with specific industry and functional expertise, and we operate at pace, moving quickly from analysis to implementation. We stand shoulder to shoulder with our clients until the job is done, and only measure our success in terms of the results we deliver.

Our approach enables us to help our clients confront and overcome truly future-defining challenges. We partner with you to make the right decisions and take the right actions. And we are right by your side. When it really matters.

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