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Seven Effective Ways to Improve Demand Forecasting Using AI

Enhance customer relationships, end-to-end visibility, and operating margins using advanced technologies

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Introduction

Supply chain disruption is here to stay. Factors such as increased raw material pricing, surging costs of packing and logistics, accelerated geopolitical tensions, escalated labor shortages, new trade tariffs, and evolving buying behaviors contribute to its ongoing challenges. Some organizations may pivot toward implementing an advanced planning system (APS) to tackle these problems, but the results will remain subpar if demand planning is not utilizing advanced artificial intelligence (AI) models and machine learning (ML) methods to account for random variability.

Striving for supply chain predictability and agility

Advanced AI models are transforming demand forecasting by helping teams make decisions, manage exceptions, and orchestrate supply chains. Advanced AI/ML demand sensing and forecast engines analyze internal and external data to predict future patterns with improved accuracy.

While the concept of AI is not new, generative AI (gen AI) is the new kid on the block that creates the "next best action" for decision recommendations. In fact, organizations are looking to increase gen AI investments with the goal of reaping more value. In a recent HFS study in collaboration with Genpact, 53% of supply chain and procurement executives stated that they are shifting funds from other resources to fund gen AI initiatives. The number indicates that companies are willing to cautiously experiment with new technologies to surpass the limitations of traditional AI systems to make supply chain operations predictive and autonomous.

These advanced technologies aim to enhance demand forecasting by:

- Analyzing vast amounts of data in real time to provide insights
- Identifying trade promotion performance across geographies, regions, categories, and SKUs
- Tracking emerging trends and predicting market disruptions, economic indicators, and more to optimize your enterprise and network
- Flagging causal impacts of leading indicators to improve predictions about future customer demands, business cycles, and market opportunities
- Optimizing inventory levels across the network to improve master production schedule and enable on-time, in-full deliveries

These are just a few ways to use advanced AI capabilities. And because these technologies are constantly learning and improving while keeping humans in the loop, they help forecasts remain relevant, updated, and reliable — from raw material procurement through the production process to final delivery to the end customer.

Managing volatility by leveraging new opportunities

When developing demand forecast strategies, how do you manage random variability or events as part of your larger plan?

Traditional demand forecasting methods don't account for black swan events such as sudden market crash, industry-wide cyber breach, or drastic climatic event. Traditional forecasting methods are historical in nature and time-consuming, and companies often struggle to extract meaningful insights from siloed data. Put simply, methods and data that center on business cycles and historical events aren't always accurate, nor do they produce reliable forecasts.

A sales and operations planning (S&OP) process forecasts demand and creates an optimal mix of finished goods or services to optimize earnings per share (EPS). The end deliverable of such a process is a master production schedule — a detailed document that lays out what to produce, how much to produce, and when to produce. However, many companies struggle to achieve an above-average forecast

accuracy. So even if everything else goes according to plan, 30% to 50% of demand is missed. The impact of this demand miss is earnings leakage that suboptimizes your entire supply chain network and negatively impacts EPS, customer satisfaction, and the brand.

Incorporating advanced AI and deep ML methods into demand forecasting allows better risk management. Probabilistic methods coupled with non-linear, multivariate models that utilize random variability provide a better picture of demand. This approach inherently addresses risk by building risk management into algorithmic models.

Seven steps to improve demand forecasting

If you're ready to break out of your traditional methods of forecasting and start integrating AI and ML into your forecasting processes, follow these seven steps:

1

Identify potential disruptions and impacts. Develop buyer and supplier personas into your models. Use this information to identify the possible disruptions or issues related to each of those personas that may impact your sales.

2

Think like a problem solver. Utilize critical thinking skills to carefully consider what you want your AI- and ML-enabled demand forecasts to answer. Factor in the major problems that need to be resolved now, and the flexibility to support future demands of your supply chains.

3

Lead with business value. Align AI initiatives with strategic business objectives and demonstrate tangible benefits and metrics. This approach will help you secure buy-in from stakeholders and support the successful adoption of these advanced technologies.

4

Enable frictionless operations. Embed enterprise business planning strategies, streamline data flows, automate processes, and foster collaboration across teams to seamlessly integrate AI into your existing workflows. This way, your AI and other advanced technology investments can yield higher returns.

5

Avoid overloading your new system. Your data must be properly structured, cleaned, and labeled before you bring AI and ML into the mix. Take the time to examine your current internal and external data first. Also, do a current-state analysis of your technology solutions to evaluate tradeoffs when adding AI/ML. Then, determine the migration path to your new target operating model.

6

Leverage AI-driven analytics. Strengthen and accelerate your company's forecast by blending forecasting models with predictive analytics. Then use the power of gen AI for "what-if scenarios" and deep dive into your supply chain to make better decisions.

7

Boost customer and user experience. Empower the users with no code capabilities and a top-notch user experience. This will lead to increased adoption, higher accuracy, and greater overall value.

Case studies: AI in action

Making spare parts planning simple

Penske Transportation Solutions is an industry leader in transportation and logistics. The company wanted to strengthen its customer commitment to 100% vehicle uptime by having its parts inventory in the right place, at the right price, at the right time. But with 700+ locations servicing nearly 430,000 trucks and many different makes and models, this was a tough inventory planning challenge for the company.

To solve the problem, it partnered with Genpact to customize a machine learning model to predict demand and maintenance repair and synchronize with parts inventory. Utilizing the power of artificial neural networks, Genpact created the ability to optimize spare parts inventory based on fleet age, vendor capabilities, and location capacity.

Today, the AI solution helps Penske Transportation Solutions deliver on its commitment to customers. So far, the organization has improved forecast accuracy by 15%, cut inventory levels by 10%, and delivered better insights on supplier performance. It also helped the company better manage part shortages and stock-out situations.

Reimagining inventory planning

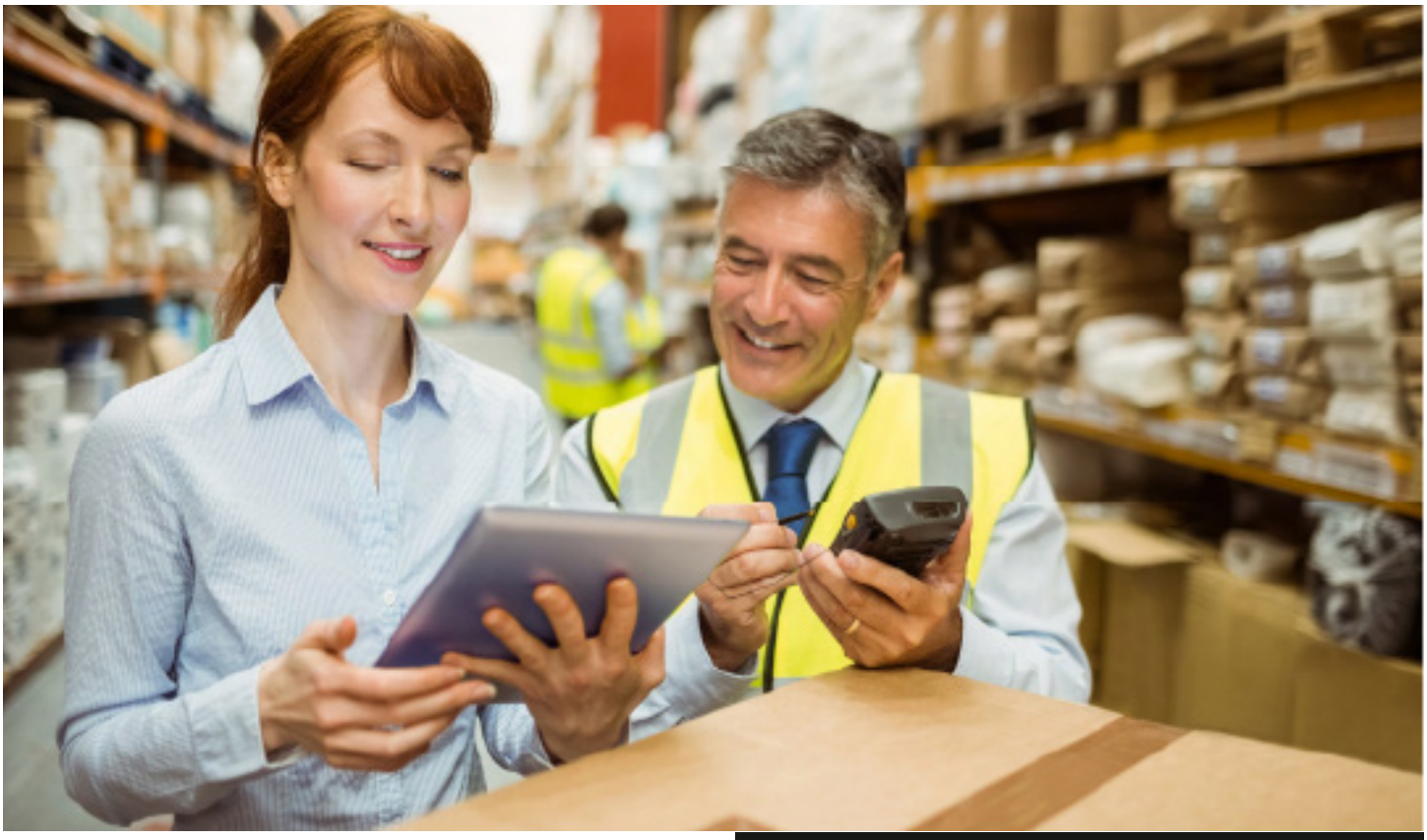
In another real-life example, a Japanese consumer product company with 40 brands and 600 products generates 50% of its sales through geographically dispersed vending machines. The company's biggest challenge is aligning demand for its products with the supply of vending machines and keeping those machines operable. The company was using a legacy system, but lacked the operational data to work with and couldn't properly plan those functions.

By partnering with Genpact, the company modernized its field operations fleet, implemented an intelligence planning solution, and developed a smart command center. Genpact's advanced AI capabilities help to develop inventory planning scenarios within seconds (versus days) and provide insights to help maintain up-time and improve operational performance.

The company is also using AI to generate digital work orders sent to field service technicians, including fulfillment or repair instructions for specific vending machines. The AI solution looks at the machine's history and error codes and determines the necessary fixes. Next, the consumer product company plans to use AI models to ensure that its highest-revenue vending machines receive priority attention.

Toward predictive, AI-powered supply chains

As technology advances, businesses can expect to see improved AI adoption in demand forecasting. And with responsible agentic AI solutions actively entering today's supply chain scene, companies can now anticipate



enhanced forecast accuracy to minimize overstock and stockouts, make operations scalable, cut customer wait times, and manage risks better. Companies in the retail, healthcare, and energy sectors will use these advanced technologies along with real-time supplier data and external data to improve their "what-if scenario" models to enable end-to-end supply chain orchestration.

You'll need a strong partner ecosystem to support you through this journey. A partner that aligns with your AI vision can help you navigate the complexities of the technology and potentially enhance the return on technology investment. The right partner will provide the necessary expertise, implementation guidance, and ongoing support to evaluate the right technology, design proper change management plans, and help you track results against company goals. This way, you can build, design, operate end-to-end supply chains with advanced technology-led services and solutions that eliminate silos, enhance visibility, and build resilience.

About Genpact: Genpact (NYSE: G) is an advanced technology services and solutions company that delivers lasting value for leading enterprises globally. Through our deep business knowledge, operational excellence, and cutting-edge solutions – we help companies across industries get ahead and stay ahead. Powered by curiosity, courage, and innovation, our teams implement data, technology, and AI to create tomorrow, today.