SPECIAL REPORT

IS AI TURNING SUPPLY CHAINS INTO DISRUPTORS?

This Is One Disruption Supply Chains Should Welcome

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Artificial intelligence (AI) is a disruptive force seemingly everywhere, revolutionizing healthcare, finance, agriculture, education, and other industries. In supply chains, it's predicted that generative AI will automate human touchpoints. This means further disruption for an industry that's weathered many.

This doesn't mean humans will be removed from the supply chain. It means both people and AI can increase supply chain resilience, agility, and sustainability. AI adoption offers the data-crunching ability to leverage cross-functional capacity and provide the means for better decision-making.

Supply chains face a critical juncture. Nearly 75% of supply chain functions are still planned using spreadsheets and outdated supply chain planning software, per McKinsey. However, supply chain executives are embracing cognitive computing at a rapid pace, with 46% saying it will be where they're investing in digital operations, according to an IBM survey.

And more than 50% of forward-thinking supply chain leaders say they will be investing in cognitive or thinking technology; 86% said cognitive computing will transform demand planning and forecasting, and 92% believe AI and cognitive computing will improve production planning.

But, in the race for better demand forecasting, improved inventory management, and waste, risk, and cost reduction, only about 20% of companies that have invested in technology have developed an AI-managed supply chain, per a PwC survey. So is AI the next supply chain disruptor, or is it an innovation facilitator that turns disruptions into opportunity?

The Current Supply Chain Role of AI

AI successfully handles inventory optimization, shortage management, and workflow automation. Breaking down decision-making silos improves collaboration, and automation of certain decisions improves efficiency.

AI and its Core Capabilities

AI simulates human intelligence by ingesting data, analyzing patterns, and applying them to make predictions. A key AI component is machine learning, wherein systems learn and improve through experience without human programming.

Core capabilities of AI, according to IBM, include completing tasks without specifically coded instructions, quickly identifying the relevant information in large amounts of data, getting reliable results without explicit training examples, and increasing the quality of predictions through continuous feedback.

AI Technologies Now Used in Supply Chains

Although AI is not being used to its full capacity in supply chains today, it's succeeded in many areas, per *Supply Chain Brain,* including:

- **Inventory optimization** sets an optimal order policy and target inventory level. AI then recommends purchasing based on parameters like lead time, quantity, demand, safety stock, and procurement policy.
- **Smart recommendations** for predictive actions improves outcomes. Linking these AI recommendations with machine learning provides confidence scoring.
- **Data analytics** for more accurate predictive, prescriptive, and collaborative analysis improves decision-making and minimizes waste.
- **Planning** with AI reveals future patterns through the use of large amounts of historical data, informing procurement decisions.

The Benefits of AI for Supply Chains and Transportation Networks

An IBM study on the use of AI in supply chains identifies it as a "natural fit," and 95% of of high performers say the use of AI is inevitable to solve supply chain challenges. Among the top applications of the technology include material quality, preventative maintenance, and end-to-end risk management. The benefits of AI for supply chains and transportation networks include:

- Improved demand forecasting accuracy that leads to inventory optimization
- Enhanced route optimization and logistics planning
- Real-time end-to-end supply chain visibility
- Proactive risk management and mitigation
- Automation of manual tasks
- A hyper-personalized customer experience that improves satisfaction

Overall, AI makes decision-making easier, faster, and more confident, improves efficiency, and allows for better utilization of human resources. Warehouses can be automated, operational costs reduced, and trends predicted.

Fleets can be better managed with real-time tracking and onboard technology that predicts traffic issues, provides route guidance, predicts maintenance needs, and minimizes drive time, downtime, and fuel waste.

Hesitation to Adopt AI for Supply Chains

Adopting AI in supply chains is the obvious path to success, yet many companies hesitate to adopt it. A key barrier to adoption is a lack of understanding about AI and its potential. Once that barrier is overcome, cost and complexity are concerns. A McKinsey and Company survey showed that the use of AI reduced supply chain planning costs by 61%, largely through analytics that optimize both spending and the supply chain network.

Another reason for slow adoption is the "If it ain't broke, don't fix it" mentality. Legacy systems are working well enough, so why change them? The problem is that they aren't working well, and those who fail to embrace change will fall behind, either through customer churn or costinefficiencies.

Resistance to change is always present, and the big fear for many when it comes to AI is job loss. *Supply Chain Digital* predicts that low-skilled jobs would suffer the most, but skilled workers would also face job loss. However, AI will also produce new opportunities that complement the AI-driven supply chain that, as the article states, emphasize design, collaboration, and social skills.

The Challenges to Implementing AI in Supply Chains

The benefits of AI in the supply chain are obvious, but it does have its challenges. Large amounts of data are required for training, and data quality issues – random errors, missing or inaccurate values, confounding factors in generating data, duplicate records, etc. – can limit model accuracy.

Overcoming this barrier requires a unified data platform, clear ownership responsibilities, and investment and commitment to maintaining data quality. Poor data creates difficulty developing AI and machine learning models that align with specific processes.

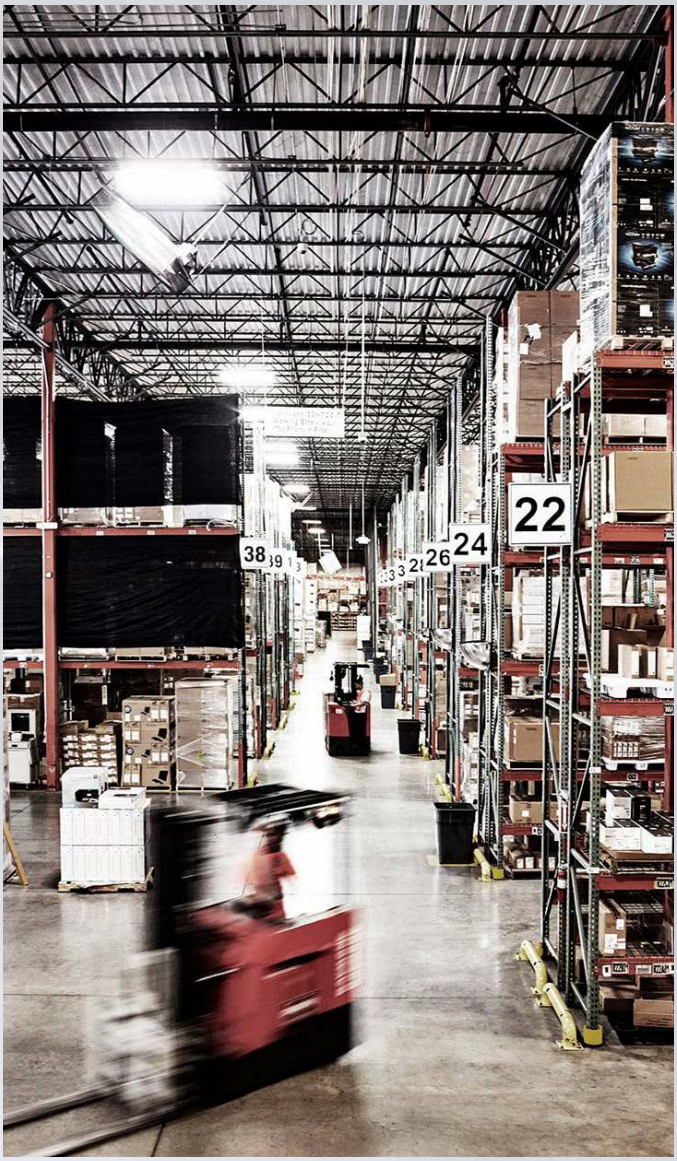
Then there are the ethical and legal concerns related to AI-driven decision making. The United Nations Educational, Scientific, and Cultural Organization and other experts note that it's unknown exactly how AI is making decisions. AI delivers biased results because humans have provided instructions.

To manage legal consequences of using AI in the supply chain, protect your sensitive data when vendors or distributors use AI tools. Make sure you have authorization to use data, and mitigate any risk of bias or discrimination in vendor choices or products. And while AI tools are self-learning, they must be monitored, and models adjusted.

Future Trends and Considerations

While supply chains are slow to adopt current technologies, behind the scenes, work commences on the supply chain of the future: the self-thinking supply chain. This supply chain will be autonomous with predictive capabilities and leverage Internet of Things devices for data collection as well as human data scientists.

An essential consideration is the balance between AI and humans. The key is to assess where AI excels and where people offer unique value. An example would be automating routine work, and using AI to inform human decision-making that requires expertise.



Making AI Adoption Easier: the Role of Third-Party Logistics Providers

Third-party logistics providers (3PLs) offer receiving, storing, packing, shipping services. Some also offer inventory management, kitting and assembly, and procurement. In a nutshell, a 3PL offers outsourced logistics services.

How does a 3PL ease AI adoption? They're already using it, and have the technology and experts to implement AI, reducing the work and cost of doing it yourself. You'll form a collaborative partnership where knowledge is shared, with industry best practices leveraged to optimize supply chain operations and navigate implementation challenges.

AI offers an unparalleled opportunity to disrupt the supply chains positively. Efficiency, optimization, automation, data forecasting, and predictive analytics all contribute to a resilient, sustainable, forward-looking supply chain. However, a balanced approach is needed. AI is disruptive, yet it's also facilitating better logistics management. It certainly has implementation challenges, but those can be met with strategic implementation and collaboration with a 3PL.

At Ryder, we're leading the AI supply chain revolution. We know that supply chain management can be exhausting, and disruptions can tarnish brand reputation, damage customer relationships, and hurt profits. That's why we use AI, machine learning, and automation that simplifies operations. Let us help you harness the power of AI for your logistical needs.

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In addition, Ryder manages nearly 260,000 commercial vehicles and operates approximately 300 warehouses encompassing more than 95 million square feet. Ryder is regularly recognized for its industry-leading practices in third-party logistics, technology-driven innovations, commercial vehicle maintenance, environmental stewardship, corporate social responsibility, world-class safety and security programs, military veteran recruitment initiatives, and the hiring of a diverse workforce. Visit **ryder.com** to learn more.

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