4 Use Cases for AI in Distribution

By Benj Cohen

Artificial intelligence is no longer a concept reserved for sci-fi depictions of a future state.

AI is affecting every industry today, including distribution. According to Accenture, [84% of executives say](#) they won't achieve their growth objectives without scaling AI.

Adopting AI now is crucial to meeting customer expectations and remaining competitive. Early adopters of AI have a significant advantage over late adopters.

Because of the significant impact AI can have in distribution, it's important to understand what AI is and how it's different from previous technologies. Then consider the practical AI applications available for distributors in all facets of business, including sales, product, inventory and operations.

Why AI Matters Now

Customers must get supplies when they need them to keep their businesses running. They have high expectations – that are only increasing – about how easy this should be because of how easy it is in the B2C world.

Distributors need to build efficiencies and make the buying experience holistically better. AI can play a critical role in making this happen.

Distributors are well-positioned to take advantage of AI because:

- They have a lot of transactional and product data
- The industry has limited regulation unlike other industries such as healthcare
- There is a technology gap because very few have built good tech for this market, so there is lots of opportunity for gain

There are very real ways that distributors can use AI to grow today, including in sales, product, inventory and operations.

What is AI?

AI is any form of intelligence demonstrated by machines.

An easy way to understand AI is to think about how humans learn things. To learn, people need to see examples. From the examples, the brain learns patterns and then applies those patterns to new examples.

When you learned to drive a car, you learned a pattern – first you watched others behind the wheel. When they saw a stop sign, they hit the brakes and stopped. When you practiced driving, you mimicked the behavior and applied that pattern – see a stop sign, hit the brakes and stop.

AI learns in the same way but needs a lot more examples and approximately 11 billion hours of on-the-road training to match the capabilities of human drivers. In most states, people can get a driver's license after only driving 50 hours – 220 million times less than the AI.

Let's consider another real-world example comparing humans with AI.

Imagine you're trying to set up a system to help customers figure out what products go together. You might interview a bunch of customers who bought those items and ask, "What were they trying to do? Why were they buying those products?" Then, you'd use what you learned to try to figure out what other products might commonly go with the items the customer is buying. You would probably need in-depth knowledge about thousands of SKUs within the product catalog; you would then study a few customers' orders of the same products to decide what to recommend to the next customers buying that product.

Rather than studying individual transactions and customer interviews, an AI model might look at all the past transactions the distributor has with the items in the cart to find out what other products people also bought at the same time. It might even consider transactions of products that are similar to gain insight into what the products actually do. AI is good at this task, and it can look at more data faster than a human ever could. While a human would conduct a few interviews and look at some spreadsheets, the AI can quickly identify related items by evaluating hundreds (or even millions) of examples to determine patterns.

Distributors already have years and even decades of transaction and product data, enough for AI models to find patterns. Having a thousand data points is more than enough for AI's results to be useful. Distributors have hundreds of thousands of transactions; some even have hundreds of millions of transactions, which creates a clear opportunity for distributors to take advantage of AI.

Why is AI Different?

AI is exponential by design – and is poised to be as transformational to our economy and lives as the Industrial Revolution. (Yet we haven't seen the economy-wide productivity gains from this technology yet. If you want to read more about the debate over the relationship between technology and productivity, check out this conversation between Brynjolfsson and Gordon).

According to "Competing in the Age of AI" by Marco Iansiti and Karim R. Lakhani in the Harvard Business Review, AI-driving digital operating models outpace traditional models because they scale farther faster (Chart 1 on page 5). Traditional models inevitably reach a point of diminishing returns and hit a plateau after a certain number of users.
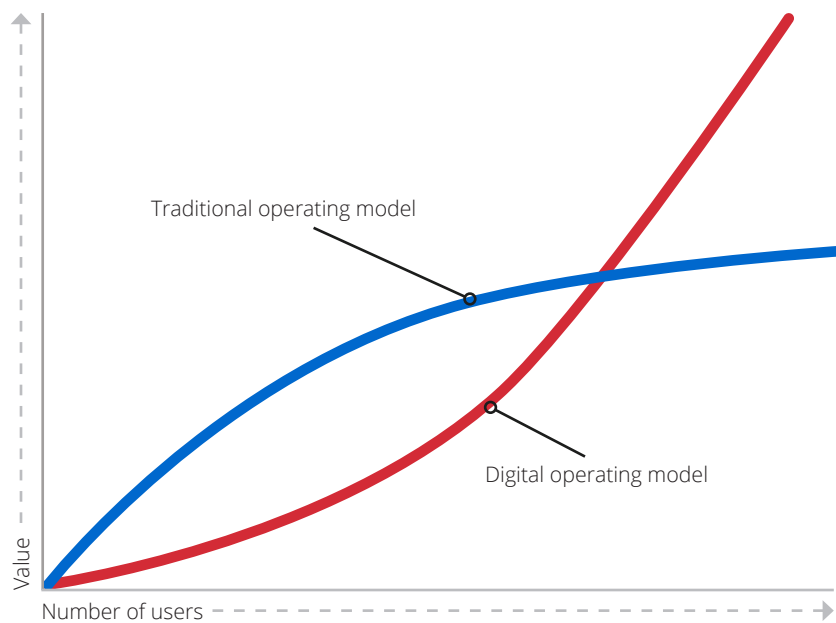
For example, when you deploy a new website, the first few people on the website add a lot of value for subsequent users because they find the bugs. However, when the thousandth person visits the site, the experience isn't more valuable than when the 999th person did.

The more users added to a system with AI at its core, the smarter the system gets. It learns across all users, so adding an incremental user adds value to all the other users.

Consider a search engine. When someone types the first few letters into a search engine, AI algorithms use what many other users have typed in before to predict the full search term and display it in the "auto suggest box." Every keystroke is a data point; every search adds value and helps improve the predictions for future searches by all users based on the results the user ultimately selects.

As the search engine is used more, it creates more data to make the search engine even better ultimately driving more people to get value from the system.

Chart 1: AI's impact is exponential by design

Traditional operating model

Digital operating model

Value

Number of users

With AI, incremental customers add value to all previous customers.

This means value accumulates exponentially, instead of logarithmically.

From: "Competing in the Age of AI," by Marco Iansiti and Karim R. Lakhani, January-February 2020

Source: Harvard Business Review

3 Reasons Why Distributors are the Perfect Use Case for AI

1. Distributors have tons of data and lots of repetitive activity
2. Distributors' data isn't highly regulated
3. Distributors require a large technological leap

4 Areas Where Distributors Can Apply AI

AI can generate an immediate ROI for distributors who adopt the technology in:

- Sales
- Operations
- Inventory
- Products

Continue reading to learn about practical use cases in each of these four areas.

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Sales

There are several interesting AI applications for distributors, but one of the most compelling is to increase sales and support sales efforts to:

→ Suggest products to cross-sell/upsell to sales reps, customer service, inside sales and on ecommerce
→ Prioritize accounts and identify churn risk
→ Optimize prices
→ Maximize efficiency of a sales rep's route

Ready to Adopt

Cross-Sell/Upsell

Distributors can use AI to figure out what each customer needs and when they need it, driving upsell and cross-sell opportunities across sales channels. Distributors who use AI this way from providers like KIBO and Proton personalize the customer experience to increase sales, customer loyalty and margins.

For example, AI can identify wallet-share gaps by looking at what similar customers are buying. AI also recognizes at what frequencies customers buy products and recommends reorder suggestions, so distributors don't lose out on sales. Other examples of this use case would be finding frequently-bought-with items, items that go together or substitute items.

In this example from Proton below, in addition to a notification that the customer is due to reorder, AI also recommended the Small

Equipment category because other similar customers are spending in that category, but this customer hasn't yet. Within the Small Equipment category Proton suggests a Pro-Sys IntraOral Camera. The sales rep accesses this information from their sales platform with specific products to pitch that are relevant to this customer. This insight boosts the customer experience because the sales reps help customers get everything they need.

Using AI for cross-sell and upsell opportunities leads to a 6-12% increase in revenue.

Ready to Adopt

Prioritize accounts and predict churn

Customer churn is a slow process, with a customer who regularly buys six categories slipping down to four categories or fewer until they stop purchasing altogether. Customer churn rate is a lagging indicator of customer satisfaction. Distributors who use AI to identify churn risk can intervene to save the relationship before a customer fully defects to a competitor.

AI analyzes transaction data, customer behavior, browsing activity and demographics to understand which accounts are likely to churn and why. For example, if a customer typically places an order every Wednesday, but is several days late, AI will alert the sales team to the irregularity. With that information, the sales rep can assess the situation and reach out to the customer to see if there is a problem.
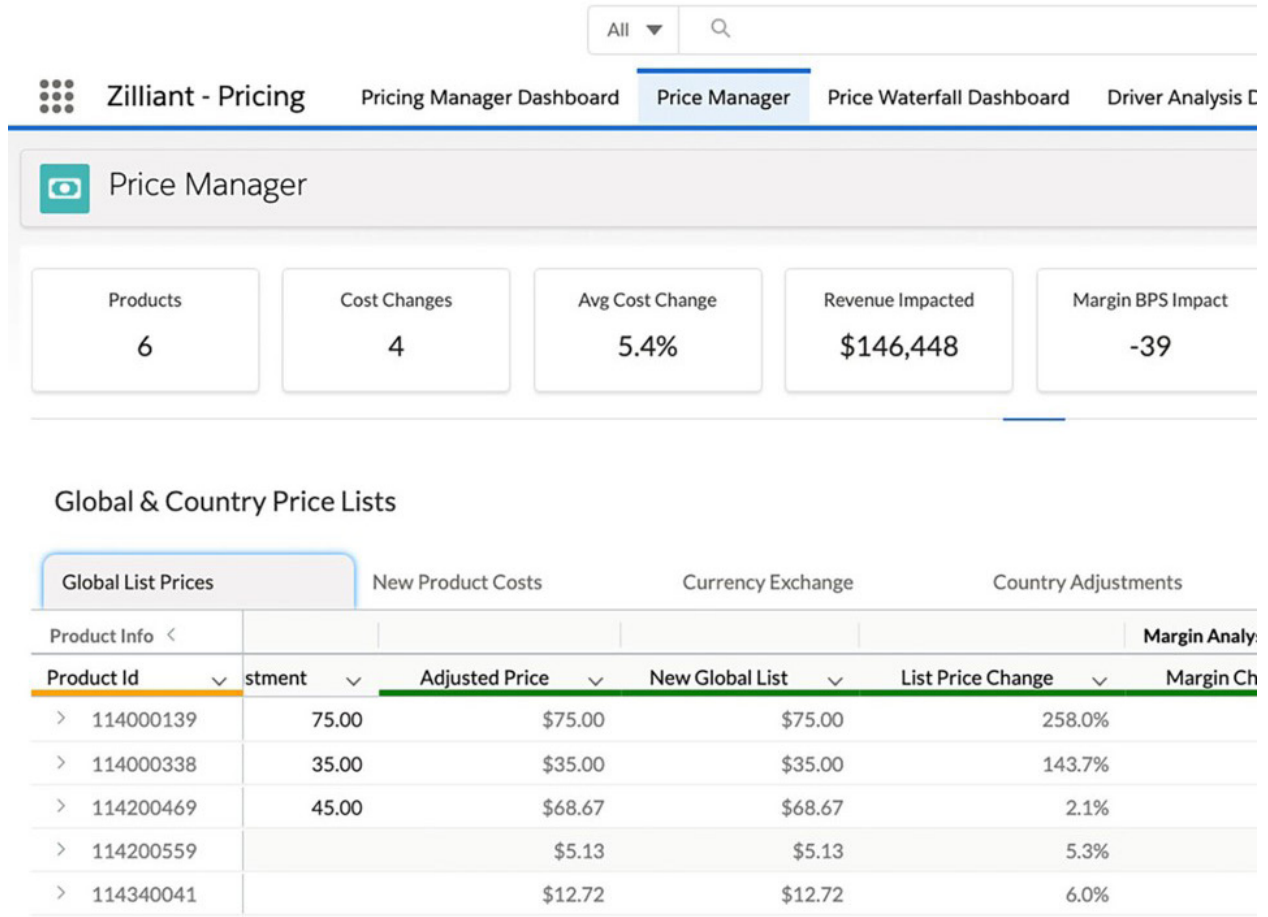
Ready to Adopt

Optimize prices

There are several vendors such as [PROS](#) and [Zilliant](#) that use AI for pricing optimization. AI models can use customer and pricing data to figure out the optimal prices for a specific customer purchasing a set quantity to increase sales and margins for distributors. (See example on Page 8.)

Like the AI model used to recommend products to customers for upsell and cross-sell opportunities, sophisticated pricing systems use AI to estimate demand for a particular customer allowing distributors pricing customization at a customer level instead of only at a segment or full customer-base level.

This is especially effective on long-tail items where a sales rep might not intuitively understand how to price due to less experience with those products.

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Maximize efficiency of a sales rep's route

Ready to Adopt

Another way distributors can increase sales is to use AI to optimize a sales rep's route. Badger is one vendor that uses AI to help sales reps prioritize efforts and filter opportunities based on schedule and location.

Using an AI-enabled tool like this, outside sales reps no longer waste valuable selling time planning their schedule. They can maximize schedules, reach more customers and sell more.

Product

Many large distributors are focused on using AI on the product side to compete with companies like Amazon and The Home Depot. Using AI, distributors and customers can:

→ Find and order products by image
→ Find and order products by voice
→ Enable semantic search for products and spec sheets
→ Categorize products

Early

Find and order products by image

All the large cloud providers have begun to commoditize image search making it accessible to more companies. Large distributors such as Grainger are starting to launch image search, although it's still in the nascent stage.

Finding and ordering products by image for distribution is challenging because there isn't a lot of image data available to train the AI models. There will need to be wide-scale access to synthetic or real image data to train on before this technology can really take off. Although image search is an emerging technology, sales reps have used this technology to scan items in customer facilities sold by competitors to identify what, in their catalog, could replace it.

Early

Find and order products by voice

Like finding and ordering products by image, large cloud providers also have technology that enables the ability to find and order products by voice command, such as with Amazon's Alexa platform. Once deployed in distribution, this technology will enable easy ordering of products especially from mobile devices.

Voice ordering systems use intelligent virtual assistants, natural language processing and AI to identify words and phrases. They can even extrapolate meaning of mispronounced words. Then it can search for the products and place orders through voice command.

While a few distributors are using this technology today, it hasn't yet gained traction from a customer perspective. However, it's an exciting development and the technology is available and ready to support it.

Semantic search for products and spec sheets

Ready to Adopt

Distributors have gigantic product catalogs. It's impossible for any sales rep to have deep knowledge of every product. Vendors such as Proton, Amazon Web Services and Elastic have AI-powered search that make it easier for customers and sales reps to find products and important product information for every item with semantic search of products and spec sheets.

AI search solutions make it easier for customers to find products they're looking for by correcting misspellings. They can even do more sophisticated things such as knowing that someone looking for a blue apron might also be interested in a purple apron because the colors are similar.

Another place this AI technology is effective is when searching through product spec sheets. Companies can load all the spec sheets into an AI-powered search tool to give reps an easy way to search product data.

While this sounds simple, it's not being done regularly so reps find it really hard to find product information. Internal search enhancement is a great application for AI in distribution today.
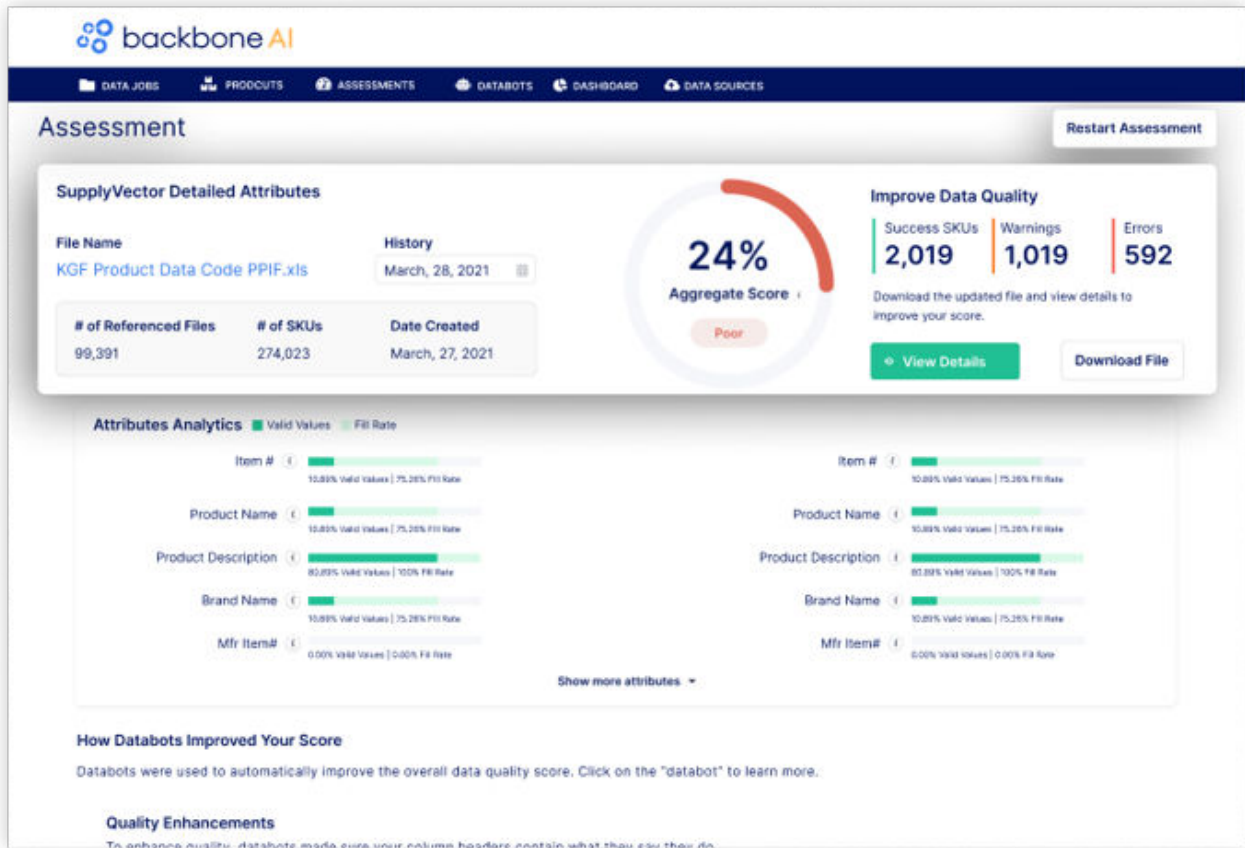
Product categorization

Ready to Adopt

Companies like Backbone.ai use AI to understand product catalogs and harmonize them across different distributors and manufacturers. Distributors must manage divergent data streams from multiple manufacturers.

They need to make sense of it and map it to the data already in their systems. AI automates this normalization.

The same technology uses metadata to put products in the right categories. AI understands the products and the relationships between products, categorizes them and knows where gaps are.

AI product categorization makes it easier for reps and customers to find products. It also helps distributors better manage and optimize product data which is a powerful way for distributors to compete against companies like Amazon especially as product data gets much wider and deeper and customers' demands increase.

Inventory

There has been significant growth over the past 10 years with AI solutions for warehousing and to manage inventory. COVID and supply chain disruptions put even more pressure on distributors to optimize inventory management. AI helps distributors:

→ Predict supplier lead time
→ Efficiently run warehouses with autonomous mobile robots (AMRs)
→ Pick products through voice command
→ Optimize inventory based on predicted demand

Predict supplier lead time

Early

Historically, there are significant errors when distributors estimate the expected date of delivery of goods from suppliers to the actual receipt of those goods. These errors have negative business impacts. This became even more of a problem during COVID and in the subsequent supply chain disruptions. Distributors strive to maintain the perfect balance – delight customers with high service levels while not tying up too much working capital in inventory.

AI and machine learning techniques can help distributors reduce these estimation errors by 30% to 60%.

If you're getting a four-week estimate from the supplier, AI can help you better predict supplier lead time by looking at the historical data on that supplier as well as other data including the supplier estimate, product category, SKU, geography, season/date and more. Whether the optimized estimate is two weeks or five, distributors can take this into account for better planning to increase service levels while reducing the working capital for inventory. Even a 10% reduction in working capital for inventory is significant.

AI: Build Versus Buy?

When you're ready to invest in an AI solution, how do you know whether you should build it internally or find a vendor?

	Pros	Cons
Building AI	• Customization • Specific applications for your company's use cases • Ownership of solutions	• Too time intensive • Not enough training data • In-house skills not sufficient
Buying AI	• AI for use case already available • Quicker adoption • Vetted by others	• Loss of flexibility • May not be compatible with other systems • No customization

Whether you build or buy, the first step is to determine a use case that will deliver high ROI for your organization. For example, hiring a data scientist to build an AI model to predict supplier lead time for your business would be a great first AI project in part because it will deliver a high ROI.

Autonomous Mobile Robots (AMRs)

Early

Autonomous mobile robots (AMRs) use sensors and machine vision to navigate space and perform tasks without needing predefined routes or instructions. In a distribution setting, AMRs do repetitive tasks and can dynamically get from point A to point B, pausing as necessary to avoid obstacles and collisions by using sensors and 3D vision. AMRs learn from the experience of other autonomous robots in the network, which is part of the exponential power of AI. AMRs increase the lines that can be picked.

Companies like Amazon Robotics, BionicHIVE and Clearpath Robotics have fully automated robotic solutions that use AI to adapt to its surroundings so distributors don't have to change boxes or shelving racks to accommodate the robots. AMRs are used in picking products and moving them to where they need to be packed. They are used with or in lieu of a conveyor belt and different models can handle load capacities from 80 pounds to more than a ton.

AMRs boost productivity, accuracy and safety.

Voice picking

Ready to Adopt

Order picking is a time-consuming, manual task. With AI, it can be automated and accelerated.

AI tells the associates the exact products and volumes to pick for the order. Then the picker tells the system when the task is done and results are 99.9% accurate. AI-generated speech and AI voice recognition for voice picking can increase productivity by 30% to 50%.

Employee satisfaction and safety improve, as well.

Optimize inventory based on predicted demand

Ready to Adopt

Supply chains continue to be challenged. Yet customers expect to have immediate access to products. AI can help distributors discover the delicate balance of having the right products available at the right time. Using data about customer buying behaviors, suppliers, weather, locations and more, AI helps distributors create accurate forecasts to optimize inventory based on demand.

With real-time insights enabled by AI, distributors can decrease dead stock and increase sales while never pushing customers to competitors because of stockouts.

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Operations

AI is improving operations for distributors in many ways. Some of the use cases are still being tested and refined but are expected to create efficiencies and cost savings for distributors, including:

- → Order entry automation
- → Warehouse automation
- → Safety
- → Route optimization
- → Autonomous vehicles and delivery robots
- → Cashierless checkout

Ready to Adopt

Order entry automation

Vendors such as [DataXStream](#) use optical character recognition (OCR) to scan purchase orders, translate that into text and then use semantic search to find a match in their catalog.

With this technology, sales reps are unburdened from manually keying in orders. Sales rep efficiency and accuracy of order entry is increased. Sales reps have more time to build client relationships and focus on upselling and cross selling when they are freed from manual data entry.

Warehouse automation

Ready to Adopt

As mentioned earlier, autonomous robots reduce pick errors and increase net profit margin for distributors who use them in warehouses. Automated storage and retrieval solutions from vendors such as Autostore optimize order fulfillment and increase storage capacity at warehouses.

Warehouse automation is customizable to each distributor's needs.

Safety

Ready to Adopt

Nothing is more important than the safety of your workers. AI from companies such as Modjoul makes is easier to monitor employee behavior to ensure safety and compliance. Using RFID technology, wearable devices and monitors, these systems proactively identify issues that could result in injury.


Source: modjoul.com

Route optimization

Ready to Adopt

Another important way AI supports distributor operations is route planning and optimization for deliveries and sales rep visits to customers. Like how Google Maps adjusts your route based on traffic and accidents in real-time, AI helps distributors plan travel routes for maximum efficiency. This technology has been in place for over a decade.

Companies such as DispatchTrack use AI to account for many factors including distance, drive time, time of day, traffic patterns, driver availability and cost, customer availability and preferred time windows when planning routes. It's able to do these calculations in seconds. Distributors minimize lost time, improve delivery times and increase safety when they use AI to optimize travel routes.
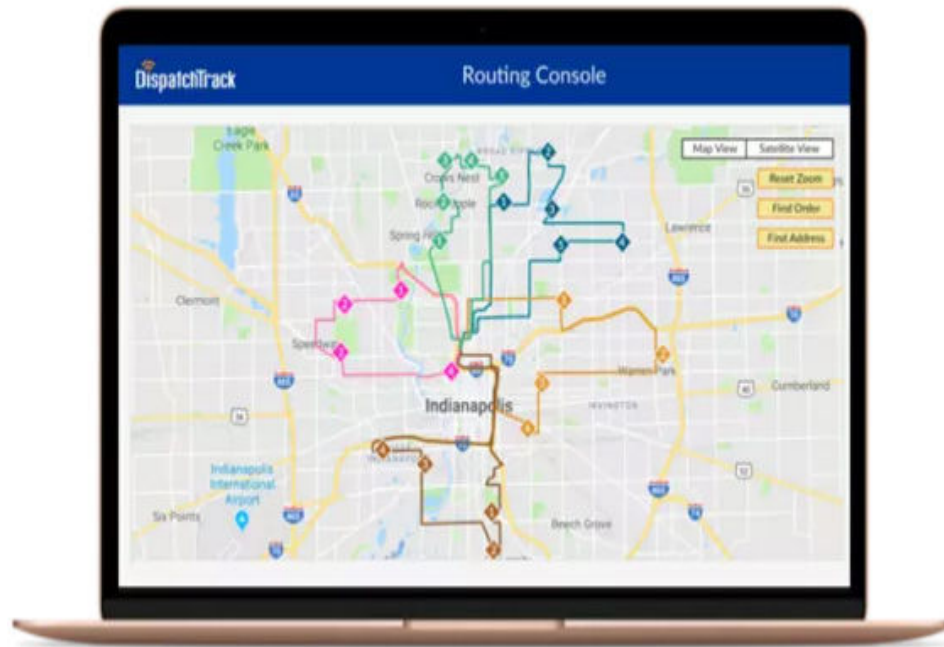
Autonomous vehicles and delivery robots

Not yet ready

While autonomous vehicles and delivery robots are not quite ready for wide-scale adoption, there's increased interest in them as a solution for the labor shortage. Companies such as Nuro, Amazon and FedEx are refining autonomous vehicles for local delivery. Nuro's vehicle can carry a 300-pound payload. Eventually all the major logistics companies will provide autonomous services.
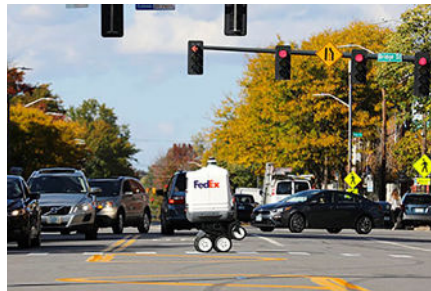
Most of these are used in the consumer retail world, but they will eventually make it to distribution in the next three to five years.

Delivery drones are currently in the trial phase at Walmart, Alphabet, Amazon Prime Air, DHL and FedEx. Walmart's drones can deliver a 10-pound package and are currently available in 34 cities to millions of people.

In addition to helping solve labor shortages, autonomous delivery robots will increase convenience and safety.

Not yet ready

Cashierless checkout

A consumer example of cashierless checkout is [Amazon Go](). At Amazon Go, shoppers walk into the store, pick up what they need and leave. No waiting in lines, no checkout process, no registers. Using sensors and cameras, the items you pick up are automatically added to your virtual cart. The items you take from the store are added to your Amazon account where you are charged.

Distributors will eventually have this technology available at their branches. Customers will be able to walk into will call or pick up products from the branch. AI will be able to identify the shopper and charge the account accurately.

Once deployed, cashierless checkout will delight customers, free up customer service reps and reduce costs for distributors. Cashierless checkout will also allow distributors to unlock more remote branches because the cost of running the branch decreases.

How to Get Started

With all these potential use cases for AI in distribution, it can be overwhelming to determine where to start.

Companies who are most successful implementing AI solutions are those that use the technology to provide a fast and predictable return. Some distributors see payback within months once they implement AI.

Pick a use case that you believe will have the highest ROI opportunity for your organization and get started.

For example, you can leverage AI to make one of your sales channels smarter. Once you realize the benefit in that channel, you can bring it to other channels. One distributor used AI to optimize the parts they put into their service vans, reducing the cost of service and delivering an immediate ROI.

The key is to get started – today. This helps you learn what works and what doesn't through experimentation. Delaying AI implementation will only leave you further behind your competition and struggling to catch up.

About the Author

Benj Cohen, Founder of Proton.ai
Benj Cohen founded Proton to help distributors harness cutting-edge artificial intelligence. He learned about distribution firsthand at Benco Dental, a business started by his great-grandfather. Later, while studying Applied Math and Data Science at Harvard University, Cohen saw an opportunity to bring his two worlds together. He's on a mission to supply distributors with the innovative technology they need to thrive in modern markets.

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Distribution Strategy Group offers strategic guidance for distributors in the face of disruption, including:

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