

Predicting the future: will AI take demand forecasting to the next level?



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The power of forecasting the future

As business leaders set budgets, debate objectives and long-term strategies, and motivate their teams to strive for excellence, one pain point stands head and shoulders above the rest. Getting a hold on customer demand volatility. As the eminent Steve Jobs once said, **“our job is to figure out what they’re going to want before they do”**.

Demand forecasting is the process of using historical data and statistical analysis techniques to predict future customer demand. Those insights will inform high-level decisions about strategy, the launch of new products and/or services, recruitment plans, and more.

Done right, it’s a critical tool for business of all sizes, across every sector – from retail and travel, to food and manufacturing. Accurate demand forecasting can boost customer satisfaction, reduce costs, optimize supply chain management, and enable more effective pricing strategies. It can also help with budgeting, and efforts around sustainability.

Diogo Santos, Director, Data and AI Portfolio, Fujitsu Uvance Digital Shifts, at Fujitsu says **“Accurate demand forecasting can help businesses ensure that they have the right products, available in the right quantities to meet the needs of their customers. It can also be used to reduce energy consumption, manage greenhouse gas emissions by optimizing shipping routes, and avoiding unnecessary transportation. And then it helps to set effective pricing strategies that are both profitable and competitive. It can identify opportunities to offer discounts and promotions at the right moment.”**

In contrast, poor demand forecasting can lead to significant consequences, such as lost sales, dissatisfied customers, wasted resources and strategy mistakes. Growing businesses can scale at the wrong time or at the wrong pace, burning through too much cash, or failing to meet customer needs. Companies can end up holding excess inventory, paying higher material and shipping costs, or run into other cash flow problems.

With today’s fast-moving business climate, with all of its uncertainties about the future, fierce competition, and customer behaviors evolving quickly, a lot can change overnight. It’s never been more important that organizations get a firm handle on their demand forecasting abilities.



Challenges of an unpredictable world

Demand forecasting is simple in theory but difficult in practice. Research by Gartner found less than 50% of sales leaders have high confidence in their organization's forecasting accuracy.¹ Another study found fewer than 20% of organizations have a forecast accuracy of 75% or greater.² It's a time-consuming task for many organizations and can be daunting, particularly in the face of unprecedented circumstances.

Demand is affected by a number of factors, including those within and outside of an organization's control. Within its control are metrics such as seasonality, competition, marketing, pricing and access (e.g., opening a new store). Then there are customer factors (such as loyalty), macro trends (such as the shift to vegetarianism), and one-off, unforeseen events.

Future sales can be difficult to predict at the best of times. But when historical data can't be relied on to predict future events, demand forecasters can struggle. The COVID-19 pandemic, wars in Ukraine and the Middle East, inflation and high energy costs have significantly disrupted supply chains, led to a shortage of key products and components and higher prices.

But there are also issues around data availability and quality, siloed systems, legacy tech, and a lack of visibility throughout the supply chain. **"Even in 2023, where AI is very accessible, and we have plenty of machine learning models available, businesses still often lack the data that they need to accurately forecast demand, because of poor data collection practices, data silos, or the lack of integration between data sources,"** Diogo Santos says.

Too many companies are still relying on manual forecasting and they're missing out on the higher-level insights that next-generation technology can provide.



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¹ <https://www.gartner.com/en/newsroom/press-releases/2020-02-12-gartner-says-less-than-50--of-sales-leaders-and-selle>

² <https://www.kornferry.com/insights/featured-topics/sales-transformation/the-top-4-challenges-in-sales-forecasting>

Solving the puzzle with artificial intelligence

Given today's rapidly changing business environment, traditional demand forecasting methods that rely on historical sales data and statistical models face limitations. Leaders need accurate predictions in real time, so that they can react to shifts in the market as soon as they occur.

Using AI offers a more sophisticated approach. With the right data, they're capable of analyzing vast amounts of data and identifying complex patterns much faster than another model. AI is also able to consider a wide range of complex relationships by using an infinite number of unique data points.

"A demand forecasting platform uses data from multiple sources such as the weather, media trends, sales history, the fact that you just had a football game in the last week – whatever specific business case you're addressing," Diogo Santos says, "when we combine all of those data points, it's obvious we will be getting a more accurate prediction."

According to Gartner, demand forecasting is the most widely used machine learning application in supply chain planning. Almost half (45%) of companies are already using the technology and 43% are planning to do so within two years.³ Analysis by McKinsey found AI-powered forecasting can reduce errors in supply chain networks by up to 50%, leading to lower warehousing costs and fewer lost sales.⁴

It's clearly powerful then but automating predictions with machine learning is also a relatively simple thing to implement if the right foundations are in place. Demand forecasting requires information that can be spread across databases, spreadsheets, and systems. Naturally, this can lead to issues caused by bad recordkeeping, inaccurate, or outdated data, resulting in misleading forecasts. Lack of sharing across companies within a supply chain can also significantly impact the type (or quality) of data available. Plus, it's important to know what those insights will be used for, rather than generating insights as a purely theoretical exercise. But when everything is implemented correctly, the effects are profound. Machine learning demand planning allows organizations to become much more efficient and agile, providing intelligence to their distributors and supply chains, and making the overall process much more efficient and faster. That leads to improved decision making across all business functions, including marketing, sales, research and development, procurement, and HR.

Want to learn how artificial intelligence is helping forward-thinking enterprise leaders achieve sustainable transformation? Find out in our blog; [Why the path to sustainability transformation is built on data and AI.](#)

With the right parameters in place, an organization can connect the dots of disparate, seemingly unrelated data with real business problems. **"AI is just an enabler – without a real connection to a business problem, there is no added value. It's really the ability to know how a decision should be taken and making sure that you are getting the most value from that specific decision,"** Diogo Santos adds, **"But don't ever assume you can just jump right to AI deployments without making sure the data is accessible, clean, and validated, and that the process makes sense. We need to know exactly how we will use the decision which is being made by the forecasting model."**



AI-powered forecasting can reduce errors in supply chain networks by up to 50%. – McKinsey



³ <https://research.aimultiple.com/demand-forecasting/>

⁴ <https://www.mckinsey.com/~media/McKinsey/Industries/Semiconductors/Our%20Insights/Smartening%20up%20with%20artificial%20intelligence/Smartening-up-with-artificial-intelligence.ashx%20str%209>

The human touch

An enterprise's ability to collect data has increased in recent years, thanks to digitalization, the affordability of data storage, and the rise of e-commerce and feedback loops. But technology is not a silver bullet when it comes to demand forecasting. It also requires the input of people.

"It will always be important to have people who know exactly which data must be fed, with which frequency, ensuring that the bias is removed from this data, and understand that we are currently facing, for instance, a cost-of-living crisis," Diogo Santos says, **"They'll be the ones who know when these models will need to be updated because the consumer is changing their behavior. And they will be needed to effectively interpret and utilize the insights generated by AI models."**

Business leaders need humans to know they're collecting the right data to feed into the AI model. They need to question whether that information still fits with the business's purpose and strategy. Humans are an integral part of the process, able to identify where models need updating, to decide which data is being fed into the system, and to sense check the predictions being generated. **"Now, more than ever, you need to pay a lot of attention to whether the data you're collecting is enough, and that it's still covering all of the dimensions that are really impacting the predictions you're trying to make,"** he adds.

Goldman Sachs has estimated AI could replace the equivalent of 300 million full-time jobs worldwide,⁵ and the World Economic Forum predicts 42% of business tasks will be automated by 2027, with six in 10 workers requiring training before then⁶. Given that pace of change, it's understandable some are apprehensive – the UK's Office for National Statistics, for example, estimates 32% of adults in work fear that technology might put their jobs at risk⁷.



Change management must be part of any AI implementation, but it's often one that's overlooked, Diogo Santos says, **"Most data problems in an organization are not technical but cultural. The project is not just about building the codes, setting up the infrastructure, and making it to production. It's about bringing the people along with you, making sure that they understand the solution, that they really value it and that they understand how this will impact their work."**

AI will not replace the people in an organization, but will be used to complement their work, leaving them free to focus on higher level strategy, armed with the accurate insights delivered by machine learning.



*Most data problems in an organization are not technical but cultural.
It's about bringing the people along with you – Diogo Santos*



⁵ <https://www.gspublishing.com/content/research/en/reports/2023/03/27/d64e052b-0f6e-45d7-967b-d7be35fabd16.html>

⁶ <https://www.weforum.org/publications/the-future-of-jobs-report-2023/digest/>

⁷ <https://www.standard.co.uk/news/tech/office-for-national-statistics-men-graham-artificial-intelligence-b1116773>

The winning solution

Alongside investing in the right technology and training of employees, businesses also need to work with skilled partners who can manage the deployment of machine learning models and help align demand forecasting strategies with a company's overall needs and goals.

One effective method of simplifying this challenge is using a demand forecasting platform. These tools ensure more accuracy and stability of predictions, allowing business leaders to analyze forecasts at a regional, store, and product level. Armed with daily visibility into demand fluctuations, businesses are empowered to make proactive adjustments. Dashboards can be customized and businesses managing multiple sites or outlets can collaborate seamlessly, using the same data.

Of course, the chosen tool is only part of the story. It's also valuable for a business to work with a partner with deep technology expertise and a wealth of cross-sector consulting knowledge. That way, a chosen partner can guide an organizations to specific goals for the project, Diogo Santos says, **"are you looking to improve the accuracy of your forecasts? Are you intending to reduce your inventory costs or just to improve your customer satisfaction? Having a clear idea of your goals will help you to make informed decisions about the type of AI that's most appropriate. A lot of people jump straight to technology and don't think enough about their current situation and where they want to be."**

An experienced partner should also help organizations assess their data readiness and legacy system requirements, as well as people management needs, then overseeing a small pilot before scaling it to the wider business. **"A pilot allows you to test the solution, identify potential problems, and understand if your people are ready. That will avoid a business spending a huge amount of money on something that does not then bring in a return,"** Diogo Santos adds.

Optimizing inventory to prevent spoilage

A leading grocery chain with over 300 stores across Japan has faced the immense challenge of accurately forecasting demand for their fresh produce. It's a highly perishable category prone to rapid spoilage and can lead to significant financial losses due to overstocking or stockouts. Traditional forecasting methods had proved inadequate in capturing the nuances of fresh produce demand, which is influenced by factors like weather, seasonality, and consumer preferences.

By partnering with Fujitsu, the organization was able to implement a sophisticated system that leverages machine learning algorithms to analyze vast amounts of historical sales data, external weather patterns, and real-time customer behavior insights. The system generates granular demand forecasts for each type of fresh produce, enabling the customer to:

- **Make data-driven decisions that optimize inventory management**
- **Reduce waste**
- **Enhance customer satisfaction.**



Exciting possibilities ahead with the right guidance

Data and advanced AI models have never been as accessible to enterprise as they are today. That's great news for forecasting that's more accurate, insightful and sustainable in the face of uncertainty. But accessibility doesn't mean that this technology is easy to implement. The right guidance is essential.

"Deploying AI that generates value and improves decisions is still hard," Diogo Santos says, **"there is no easy path to successful AI implementations. Without proper integrations, quality of data, and validated pipelines, an AI model will just be doomed from the start."**

Demand forecasting will always be iterative. In the future, there will be more types of data to collect, analyze and feed into decision making. Good foundations will be more important than ever. But technology will only ever be an enabler. Business leaders need to focus on the business problem they're trying to solve, and the cultural change needed before introducing technology.

That said, in the face of a more turbulent world, where competitiveness continues to increase, consumers keep defying behavioral norms, and technology presses on with accelerating progress, there's one tool every thriving enterprise will have in its arsenal. AI-powered demand forecasting.



Our contributors



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Diogo Santos is a seasoned data leader with extensive experience in machine learning, analytics engineering, and data product management. He has held various leadership positions across multiple consulting and IT strategy firms, and has implemented a diverse range of data engineering, AI projects and data strategy plans for clients in different industries.

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**If you are still facing demand
forecasting challenges, take
action today and get in touch:**

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