The Missing Link in Supply Chains:

Analytics Automation

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The worst of the pandemic is in the rearview mirror, and supply chain technology has grown by leaps and bounds—and has been enthusiastically adopted by companies.

So why do many businesses still struggle with the same weaknesses in their supply chains?

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The Pandemic-Era Technology Gold Rush

In 2020 and 2021, supply chain became a household term as disruptions affected everyone trying to manage their lives from lockdown. Across industries, from healthcare to retail to manufacturing, companies recognized the need for more sophisticated technology. They rushed to invest in cutting-edge solutions, attempting to quickly transform their supply chains to deal with supplier volatility and surging customer demand.

> "In almost every sector, more than 90 percent of respondents report that they invested in digital supply chain technologies last year."[1]
>
> 2022 McKinsey survey

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Why New Technology Hasn't Solved Everything

Fast forward to today. Despite investing in new solutions, many businesses' supply chains still have glaring weaknesses that they struggle to patch over.[2] "Although it's not in the headlines every single day, disruptions continue to hurt supply chain performance, and it's hurting businesses—they're losing customers," says Gib Bassett, Solutions Marketing Director for Alteryx.

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Why is that? These companies haven't harnessed the full potential of new technology. According to McKinsey, "An acute shortage of talent is holding organizations back in their efforts to accelerate digitization and implement advanced planning systems. And despite progress over the past 12 months, many companies still lack a comprehensive picture of the risks lurking deep inside complex multi-tier supply networks."

Bassett concurs, noting "a skill shortage for technology talent, especially quantitative talent that truly understands analytics."

In short, many companies went big with their tech investments without the resources, time or talent to analyze and optimize them through analytics. As a result, applications and technologies and the data they provide are disconnected.

The analytics capabilities needed for true visibility and informed decision-making in supply chain logistics are still in short supply: New technologies that optimize aspects of the supply chain itself may not offer a way to automate data gathering or transform raw data into up-to-the-minute actionable insights. Says a director of a global demand planning and supply chain analytics at a multi-level marketing company, a client of Alteryx, "We've often found that when we've deployed a new system, or even upgraded an existing system, there's always going to be gaps. These big systems are meant for the masses; they're not inherently tuned to what a given company may need at the moment. We need our analytical teams—business analysts, analytical data engineers and data scientists—to plug into the data that comes out of those systems and create niche analytics solutions."

A senior manager of supply chain operations technology at a major toy manufacturer, a client of Alteryx, agrees: "Like pretty much every supply chain organization, we're using an ERP, and ERPs have gaps in them. It's very rare to find one that does absolutely everything you need it to do. They're not designed for your business. They're designed for generic businesses like yours, and that leaves gaps. An analyst's job is plugging those gaps."

In many cases, analyst teams struggle with suboptimal tools that don't match the level of investment in other supply chain technologies. They may still use spreadsheets and manually pull data from different sources to create reports. It's time-consuming, and it's impossible to gather all the data needed to create truly comprehensive insights. The result is an incomplete picture, one that's already dated by the time the report is ready.

Businesses also have limited insight into how the external environment—labor strikes and shortages, climate change, geopolitical situations—will impact their supply chain. But they can't afford to be in the dark about these factors; they were the top supply chain disruptors in 2023,[3] and successful companies know they will continue to be challenges for supply chains in the future.[4] As the director of global demand planning and supply chain analytics puts it, "The world's changing not just monthly or weekly, but daily."

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The Transformative Potential of Analytics

Analytics can play a crucial role in addressing many aspects of supply chain, but especially in two overarching areas—both of which have been exacerbated by the pandemic and other global problems—that pose the biggest challenges for companies.

The first is consumer behavior, specifically forecasting and proactively solving for fluctuations in demand. According to McKinsey, “Digitization efforts are shifting to the next big challenge in supply chain management: capturing the demand signal.” Their 2022 survey revealed that respondents’ top two digital-investment priorities were demand (74%) and supply planning (69%).

The second is weak links in the supply chain, caused by both operational problems and external factors. The McKinsey report states that managing risk is a top priority, citing 83% of respondents experiencing recent rawmaterials shortages and 90% saying they want to increase their supply chain’s resilience.

"If businesses are struggling in some facet of their business, chances are they're not able to respond quickly to disruptions because they don't have a good read on the demand environment where their supplier network has been unreliable," Bassett says. "They need to expand the lens of data to the conditions in the region they operate in. Those kinds of signals will help inform that entire process, so companies can really get ahead of it."

The potential for automated analytics to enable problem-solving in these two areas is nothing short of transformational. Analytics technology can be wrapped around any set of processes, seamlessly incorporating data from multiple platforms to uncover deep insights that inform short- and long-term decision-making.

The director of the global demand planning and supply chain analytics team tracks dozens of supply chain metrics to identify trouble spots. "In our old world, we could only see at market level, and only once a month. Now we can see every item every day, every selling location and every market globally. That gives us immediate sensing capabilities of what's going on where and how we're performing."

The supply chain senior manager has similar anecdotes: "Our promotional planning process was a mess, just flinging Excel documents back and forth, lots of emails. A global tool was developed to better support the planning process, but it didn't have a lot of guardrails to prevent errors. So we used analytics automation to build out a set of ETL pipelines and dropped that into our dashboards. We've identified millions of dollars' worth of planning errors and catch dozens of errors every month."

A big part of these success stories is the amount of time and effort saved on the analysts' teams. Automating the toy manufacturer's product allocation process eliminated 90% of the manual work and saved analysts there an estimated 3,000 hours a year.

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Making Analytics User-Friendly

One of the most attractive aspects of the more sophisticated analytics technology offerings is how accessible they are for users without deep tech know-how. Companies can essentially implement "self-serve" analytics tools that work in a way even casual computer users understand: highly visual, with drag-and-drop interfaces that allow them to build workflows without writing complex code. This empowers them to customize analytics in a way one-size-fits-all supply chain technologies have failed to do.

"There are certain things that are the same across businesses—everybody needs to do procurement," Bassett says. "But the way they do that tends to be very different because of the segment, their suppliers, the legacy systems and their contract manufacturers. From a data perspective, it's going to be unique. Companies need something that's going to be very easy to apply to their system and very easy to use."

The recent giant steps forward in AI capabilities have the potential to put automated analytics within reach for even more users.[5,6] AI large language models (LLMs) and chat functions can significantly enhance supply chain analytics, making them more accessible and actionable. Natural language interfaces allow users to interact with supply chain data using plain text queries without needing specialized technical knowledge.

"People are visual learners," Bassett says. "Alteryx helps address a lot of that with visual user experiences that alleviate the need to understand how to code. When you augment that with the way we build in AI, then we're continuing down this path of helping these individuals." LLMs can also assist in scenario modeling: exploring "what if" scenarios, assessing risks and making informed decisions. "Probably 80–90% of people who work in supply chains are not at a computer, doing a lot of manual coding or analysis in a spreadsheet all day," Bassett says. "They're on the ground working with different elements of the supply chain, whether it's trucks, the warehouse, where things are going and where they're leaving from. They don't want to read a report, or see a pie chart showing what sales distribution is—they need an answer to a specific question. Generative AI is a perfect solution. Alteryx is helping manage and set that up using its no-code interfaces, and making it very visual and easy to implement."

The Traditional Method of Adoption

So what's holding companies back from large-scale adoption of analytics automation? One big problem is that current models of introducing analytics need to change.

Historically, analytics software was often a desktop product; users might buy individual licenses and implement them on their own. The supply chain senior manager's path to success is typical of that time. "I was one of those guys who would stuff as much data into Excel as possible, write some VBA and hope it doesn't break. Someone pointed me to Alteryx and I was able to build out a set of pipelines that pull data in from a dozen or so different sources, smash it all together and write it into a data analytics platform. This changed the way that we worked with data in our department; suddenly, we had a one-stop shop for everything we needed. That success led to leadership kicking off a project to figure out how we could do the same thing for the rest of supply chain operations, which led to the creation of my current supply chain operations technology team. Now, we're a team of six analysts plus our director."

The thing is, these grassroots methods don't work as well in a cloud-based world, where data is centralized and firewall-protected. The analyst team at the toy manufacturer experienced pushback from their IT organization as their fast-increasing use of data attracted attention. "They started to get anxious about it; they started putting a lot of restrictions on new licenses."

The senior manager sees where they're coming from, to a certain extent. "It gets into governance and security standards. They're trying to prevent a wild west scenario, where you have all kinds of people building and scheduling workflows, dropping data into databases without any plans for maintenance, monitoring and data quality assurances. I do think they should be trying to teach us those best practices. But I don't think that should be an excuse for telling us not to do this work."

The director of global demand planning and supply chain analytics agrees: "Our technology team would love to do more for us, but they don't have the business domain knowledge needed to advance beyond generic curation of data. As you get closer to the end user, that knowledge must go up. That's not something IT alone is ever going to be able to master. End users need to be able to use it, not just the technology specialists."

The other issue with the old way of getting buy-in is how long it might take. The license-at-a-time pace of building use cases as proof for enterprise-wide adoption cannot keep pace with the urgent need for full-scale transformation. Without a larger plan in place, transformative change can get stymied and analytics can be in danger of defunding during budget cuts and strategic changes.

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A Future Path to Analytics Adoption

"Every supply chain is like a snowflake. Each one is unique," Bassett says. "The way analytics is organized in a lot of organizations, even in any industry, tends to vary. The lack of standards means that every company's way of doing analytics is unique, totally foreign to what another company is doing in the same space—how they're organized, how they staff, the number of people, the data scientists they have versus the analysts, whether they're using tools like Alteryx or not." That makes it challenging to provide a one-size-fits-all solution or recommendation for how to successfully integrate analytics.

Most organizations progress through states of analytics maturity, marking their evolution from descriptive to predictive analytics, and now generative AI. This advancement, supported by process automation and intuitive, visual user experiences, caters to diverse roles within the supply chain, fostering collaboration across a spectrum of stakeholders from executives and business analysts to warehouse workers. The best solutions narrow the divide between different decision-makers and those who create insights, streamlining the analytics development process with greater efficacy and confidence. Such an approach not only simplifies analytics tasks but also harnesses analytics to offer a cohesive, well-informed overview of the entire supply chain.

The optimal path forward involves crafting a scale adoption strategy, centered on compelling use cases, that integrates technology leadership into the process."What we needed early on in our adoption of Alteryx was my leadership to start a conversation with IT leadership, because IT is the gatekeeper and they don't fully understand the use cases," says the toy manufacturer's supply chain senior manager. "There was a lack of understanding on both sides where we didn't know we needed to have these kinds of conversations, and IT didn't really understand what we do."

When properly structured and supported, says the director of global demand planning and supply chain analytics, "Analytics helps fill a lot of different gaps. It gives you a lot of power—to change, adapt, iterate and evolve. Analytics is an inherently fluid business where one question leads to another so you need to be able to pivot and iterate. Alteryx is very good at letting our teams do that at the 'final mile' of analytics where the data in its final form meets the actual end user. That's where you need the most agility and iterative capabilities. That's what Alteryx gives us."

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Alteryx powers actionable insights with the AI Platform for Enterprise Analytics. With Alteryx, organizations can drive smarter, faster decisions with a secure platform deployable in on-prem, hybrid, and cloud environments. More than 8,000 customers globally rely on Alteryx to automate analytics to improve revenue performance, manage costs, and mitigate risks across their organizations.

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