How Is Technology Reshaping the Supply Chain in 2019?

1 The Road to Digital Maturity – Challenges and Opportunities

The dawn of Industry 4.0 has heralded a new future for the supply chain. Transformative technologies promise to make the supply chain function less linear and more interconnected. Referred to as the digital supply network, this new ecosystem is poised to transform how stakeholders communicate.

Digital maturity allows the supply chain to evolve as a strategically important function for an organization – one that fosters informed decision-making, eventually laying the foundation for a more flexible organization. It also helps organizations break down functional silos and create a common playground where operators and suppliers can seamlessly connect.

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There is still some question however, on whether organizations have caught up with this new strategic role of the digitized supply chain and its potential to drive innovation. A 2017 McKinsey survey reveals that an average supply chain has a digitization level of only 43%, the lowest among five critical business functions that were evaluated.[1] Yet only 2% of executives reported that the supply chain gets a focus in their digital strategies.

There even seems to be some disconnect between opinions on supply chain digitization and actual work done in technology implementation. A recent Deloitte survey reveals that 51% of respondents in the manufacturing sector believe that the digital maturity of their supply chain is above average compared to the competitors. Only 28%, however, have started digitizing their supply chain operations.[2]

Such disconnect can result in devastating consequences for organizations that fail to recognize the implications of inactivity and the potential for disruption. For instance, the same study indicates supply chain transparency is the most important operational goal for manufacturers, as it's key to efficiency. Yet only 6% of the respondents say they are part of an ecosystem with absolute transparency, with each member having access to each other's data.

This low level of supply chain digitization has a lot to do with transformation hurdles that arise with any large-scale change. Research reveals that procurement decision makers face three critical challenges in their supply chain transformation journey – budget, lack of organizational urgency, and implementation of new technology into legacy systems.[3]

The good news is we are in an era of unprecedented technological opportunities. Artificial Intelligence (AI), cloud computing, low-cost sensors, data analytics, and mobility – all in unison have fueled an innovation explosion in the supply chain landscape. Adding to that, there has been a constant migration of ideas from other sectors. For example, blockchain – the distributed ledger technology that underpins crypto currencies such as bitcoin – is being tested for potential supply-chain applications.

With all of this, identifying the right technologies to drive supply chain value becomes a colossal challenge. The potential impact and the applicability of each of these technologies will vary. Some may serve as enhancements to existing processes, some may only have niche applications, and some may eventually prove to be disruptive. All this makes it difficult for companies to determine which technology to invest in.

What complicates this further is the large number of variables that affect the supply chain – and their volatility. Changing workplace safety and labor laws, constantly shifting geopolitical dynamics, and unpredictability in prices continue to impact risk and vendor management. For instance, in the event of Brexit, companies trading with the EU are likely to witness a sharp increase in customs declarations for exports and imports. If the UK stops adhering to EU regulations and adopts different standards, suppliers in the UK might need to urgently address governance gaps.

Companies implementing next-gen supply chain technologies have to factor in these variables in order to effectively respond to market changes and operate efficiently on a global scale.

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Transforming the Supply Chain into an "Opportunity Center"

The rise of supply chain risk management as a priority coincides with the steady evolution of procurement over the past two decades. As organizations manage to achieve increased cost effectiveness through strategic sourcing, the need for procurement to reduce risks across the value chain simultaneously grows.

For instance, if an organization hires a new contractor without thoroughly vetting its practices, the resulting impact can be far-reaching. Not being completely aware of a supplier's processes and financial or litigation history may put the organization's compliance, product quality, and reputation at risk.

Managing this effectively requires a deep level of supplier visibility and insight. Technology can help companies gain a 360-degree view of suppliers across all key interaction points.

Of all the technologies with the potential to transform supply chain operations, we focus on a few that look particularly promising.

Artificial Intelligence

Over the past few years, Artificial Intelligence (AI) has emerged to become something people use every day, often without realizing it. Besides powering next-generation applications and other digital products, AI is poised to transform industry operations, including supply chain and logistics. In fact, companies are already benefitting from investments in AI innovation. A 2017 survey by Vanson Bourne reveals that operations and supply chain serve as the top processes where businesses are driving revenue with AI investments.[4]

Existing supply chain functions can be optimized with machine-assisted planning on the basis of real-time recommendations derived from analysis of current data and historical information. This technology can help companies:

Automate Repetitive Processes

A typical supply chain has repetitive tasks at different phases of production, distribution, and procurement. For instance, besides manual quality checks at every level, procurement also involves time-consuming activities like vendor screening and prequalification. AI has the potential to simplify these tasks and relegate them to intelligent automated systems, helping companies reduce turn-around times and save costs.

An AI solution acts as a self-learning system that is not bound by rigid rules or standard operating procedures (SOPs) like conventional enterprise resource planning (ERP) systems. This enables it to perform the best corrective action based on historical data.

It is this cognitive reasoning ability that makes AI a natural technology solution for simplifying strategic sourcing. Largely manifested as virtual personal assistants (VPAs) and cognitive procurement advisors (CPAs), AI solutions that use natural-language processing (NLP) have been widely tested as a means to further enhance efficiency and automation in procurement. These CPAs and VPAs are similar to their smartphone counterparts such as Cortana and Siri, except that they are capable of doing much more than setting your alarm or retrieving information from the web. A procurement CPA for instance, can provide audit summaries as well as recommendations about everything ranging from supplier qualification and performance management to compliance audit and risk management.[5]

While high performance procurement bots promise to take supply chain risk management to the next level, this is just scratching the surface of the transformative potential that AI brings in for procurement. Cognitive AI is expected to achieve greater levels of trend analysis, with risk modelling used to predict risk patterns. Such a system would prove effective in processes like contractor insurance verification. In a centralized repository containing contractor insurance credential, an AI solution will be able to cross-check every insurance certificate entered and in the process instantly flag any inconsistencies or errors in documentation. In fact, the system can also keep both the operator and contractor updated about the error on a real-time basis – a process that often takes days when done manually.

Enable Real-Time Decision Making and Accurate Forecasts

Next-generation AI technology can also bolster organizational decision-making on the basis of historical data, known failure points, and other information. IBM's Watson Supply Chain Insights serves as an excellent example of how deep thinking and machine learning together can foster new possibilities for supply chain management. According to IBM, this new offering combines a high-end analytical engine with AI to serve as a forecasting machine. The system is capable of capturing regulatory reports, traffic reports, and weather updates to help supply chain professionals predict risk factors.[6] Such AI systems can help shippers analyze and correlate vast streams of data to better anticipate the impact of external factors like traffic and weather on the entire value chain.
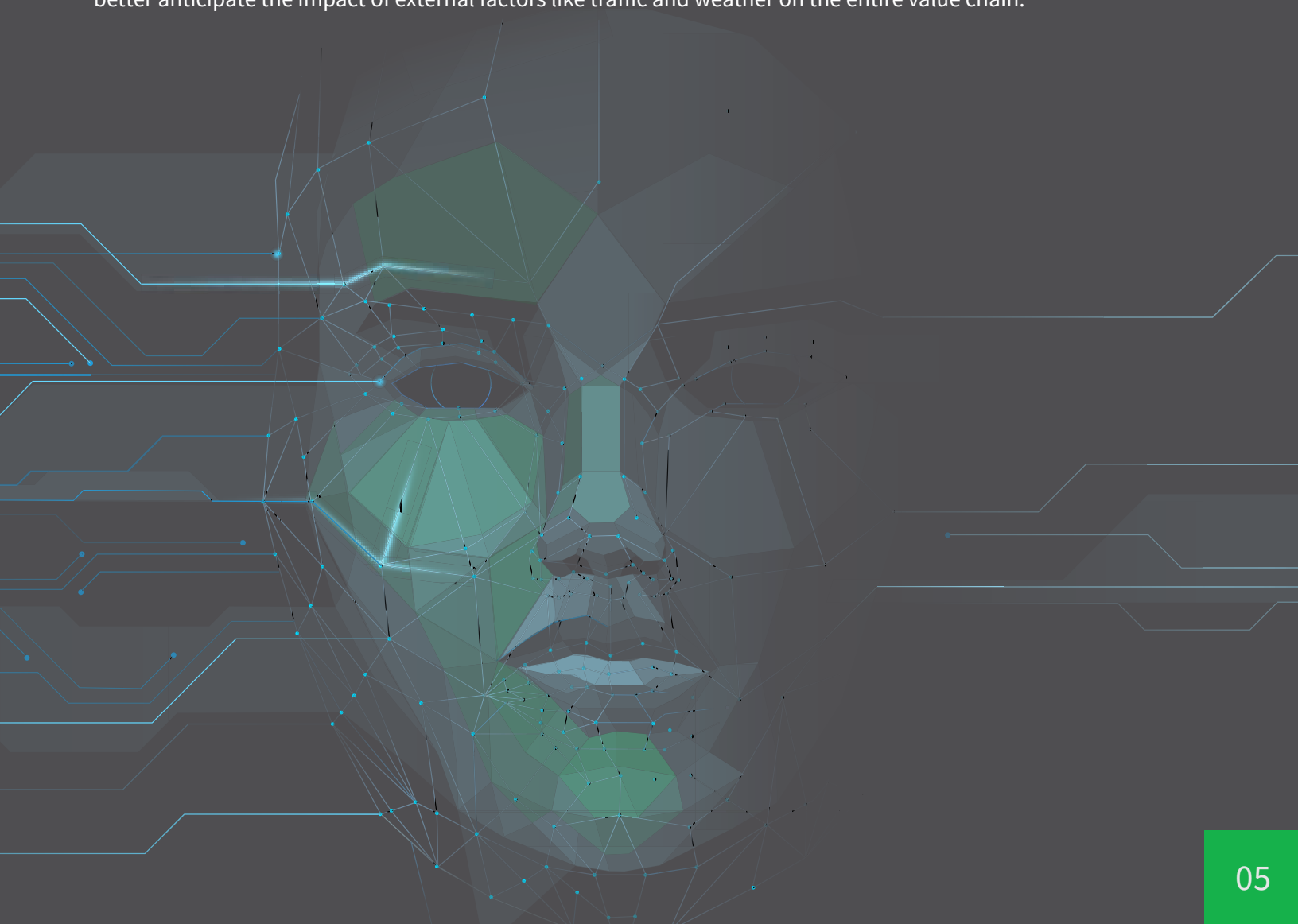
Big Data and Predictive Analytics

As companies expand their footprint across continents, operations of global procurement and logistics teams become increasingly complex and challenging. Inconsistent vendor on-boarding, delayed shipments, and inefficient inventory management are common bottlenecks. In this context, big data and analytics have offered a promising solution. Some of the ways in which big data and predictive analytics are transforming supply chain management are:

## Data Integration for Complete Transparency

It wasn't long ago when procurement decisions were largely driven by goodwill and intuition. Critical tasks like vendor selection and supplier management were often neglected. Today however, companies are fast waking up to the reality that poor vendor communication and lack of supplier visibility can have far-reaching impacts.

Collecting, verifying, and storing supplier data – right from when a new supplier is onboarded – is the first step toward ensuring supplier risk management. A high-end analytics engine can analyze this data to generate supplier performance insights on real time. Such insights empower sourcing professionals to easily monitor the supplier/vendor pool, their credentials such as certificates of insurance (COIs), and their compliance status.

Effective Supplier Analysis for Better Decision-Making

Critical supplier information is often trapped in data management systems across different divisions, marketplaces, and geographies. When all that information is consolidated into one common repository, operators get better visibility into spend across the entire value chain. A centralized data architecture complimented by an analytics engine, for example, can help decision makers identify suppliers associated with higher costs or better performance.

A central data management system can also be seamlessly integrated with the legacy system architecture with the help of application programming interfaces (APIs). A secure APIv   allows customers access to Avetta's native supplier pre-qualification data through ERP, vendor management, CRM, or other third-party reporting applications. With such technologies in place, operators can access the information they need without logging into multiple systems.
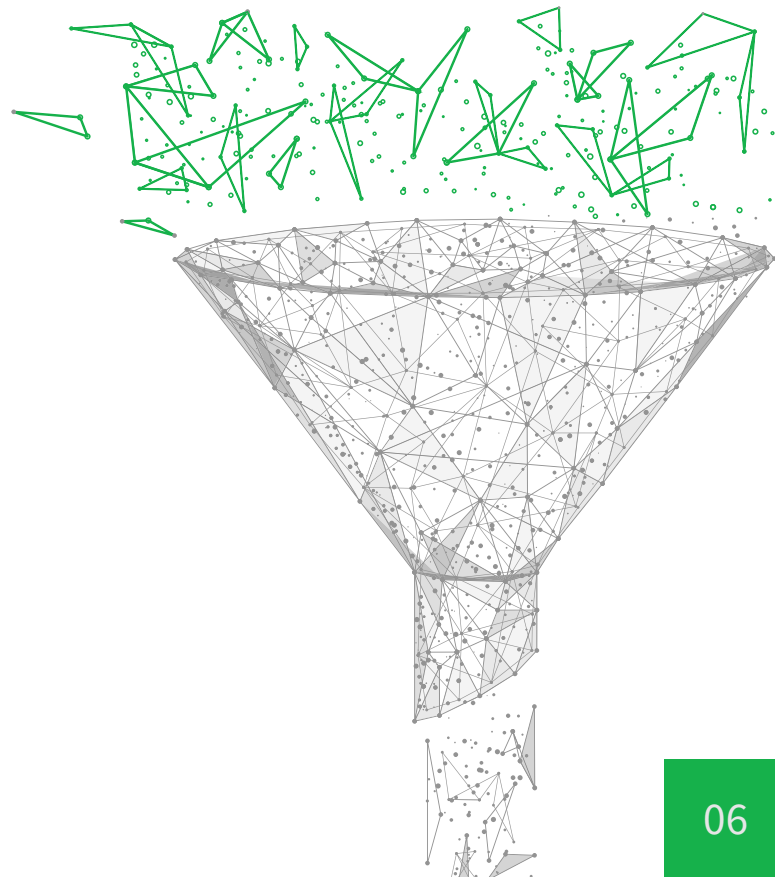
Thorough Supplier Profiling

Analytics can help companies gauge supplier/vendor capabilities across key product categories and track data on supplier's compliance or performance. Traditionally, this information was amassed by different departments through paper records. This meant that any decision-maker needed to sift through piles of papers to get the information they wanted. Today, advanced analytics allows operators to align unlimited attributes to supplier definitions and categorize the same into logical profile sections. Extensive supplier profiles make it easier for operators to quickly retrieve, process, and validate supplier information in a matter of seconds.

A case in point is Avetta's 360-degree supplier feedback management system. CEMEX, a global building solutions company, teamed up with Avetta to identify and maximize the presence of compliant suppliers across its business units. Avetta's solution included an advanced feedback system that helped CEMEX site managers easily assess supplier performance. The solution eventually generated around 6,000 reports in the year, enabling the company to easily identify high-performing contractors.[7]

Quick Supplier Onboarding

With access to a ready database of suppliers, vendor onboarding becomes much easier. Such a database should have configurable supplier profiles that include credentials like contacts, address, service/product category, banking details, business diversity classification, and so on. A prospective supplier or contractor can create an independent profile on the central database as a part of the initial prequalification procedure. To support conditional prequalification procedures, administrators can publish Request for Information (RFI) documents that capture compliance and profile information of a prospect in a questionnaire format.

IoT and Cloud Computing

Cloud computing and the Internet of Things (IoT) have already transformed the way manufacturing operates, and they have the potential to do the same for supply chain. These technologies can deliver both operational efficiencies and additional revenue opportunities by improving transparency.

Remote Supplier Management

A cloud-based worker management system can help organizations easily manage their vendors down to each individual worker, across geographically dispersed worksites. By serving as a common link between an operator and a supplier, a cloud based system allows an organization to take control of the supply chain with employee-level prequalification and training.

Avetta's worker management system also empowers companies to manage and deliver their supplier training and qualification process. Workers can complete site-specific orientation and induction training online even before they start working, and operators can track training completion and assess knowledge retention through online evaluations.

Real-time Monitoring

Cloud can also help companies respond to supply chain exigencies in real time. With spreadsheets and, worse, paper files, information may be weeks or months out of date. With a cloud-based, mobile-enabled solution, supervisors can fill in information from the worksite, and operators can be notified immediately.

For instance, Avetta's insurance verification solution comes with an intuitive analytics dashboard that operators can access anytime, anywhere to stay updated about any changes in suppliers' insurance status. This solution eliminates the need for manual processes and eases the administrative burden of physical contractor management, allowing staff to focus on value-adding activities.

Blockchain

A blockchain-driven supply chain ecosystem can help every stakeholder securely save information pertaining to product price, location, quality, and certification. The availability of this critical data within a network can enhance traceability in the material supply chain, reduce losses from counterfeits, and enhance compliance on and visibility into outsourced contract manufacturing.

Recent innovations around this technology promise even greater gains. For instance, a "supply-chain-as-a-service" platform provider teamed up with an IoT solutions provider. The resulting SCaaS platform is a Blockchain based ecosystem which will leverage IoT solutions to assign a digital identity to physical items and enable tracking of goods throughout the value chain.[8]

Drones

While drone-based shipment delivery is no more a distant reality, some experts believe that drones might also be useful at the top end of the value chain. The applications of unmanned aerial vehicles (UAVs) in distribution facilities, inventories, and warehouses are expected to increase in the next two years.[9]

UAVs promise to enhance safety and security, apart from promoting efficiency. For instance, drones with embedded cameras can scout facilities, monitoring areas that are beyond human reach. Inside warehouses and inventories, drones can perform regular safety inspections and maintenance tasks – all of which can reduce human work hours, resulting in cost savings, as well as reduce safety risks.

3 Ready for the Future

Last year, supply chain disruptions hit a record high, with North America topping the charts as the most affected region. A total of 1,069 disruptive events took place within just the first six months of the year – the highest since 2010. What's an even bigger concern is that these events in unison caused the highest potential for revenue or financial impact in three years.[10]

As new markets open up or change, even greater risks may come to the fore. It is more critical than ever for companies to not only increase visibility into their own operations, but also their supplier/vendor ecosystem. With so much risk in play, any technology that can help companies stay immune to forces of disruption is well worth the investment.

Every organization needs to develop a futuristic vision for their supply chain, carry out systematic evaluation of existing process performance, and chart out a long-term digital transformation roadmap. This enables you to not only drive better outcomes in terms of mitigating risk and brand damage, but also automate activities and achieve increased cost savings. With Avetta's Software-as-a-Service solution, clients report savings of up to 75% in administrative expenses. These savings can be attributed to enhanced efficiency, higher supplier visibility, and automation of manual processes.

We're all used to apps like Uber and Amazon, with the unprecedented tracking and visibility they offer. You can see the ratings your driver has before you decide to get in the car. Software like Avetta can bring that same level of transparency to your supply chain. You can select new vendors from an established pool and shortlist based on your preferred criteria. Your staff can prequalify them easily, and continue to monitor their processes and performance from their phones.

The prevalence of internet-based and other new technologies have already created high transparency standards and made end-to-end supply chain visibility a reality. At the same time, the risk of reputational loss from compliance violations or poor vendor quality is higher than ever. Employees and customers are expecting more, and because technology enables you to ensure high standards, the time to act is now.
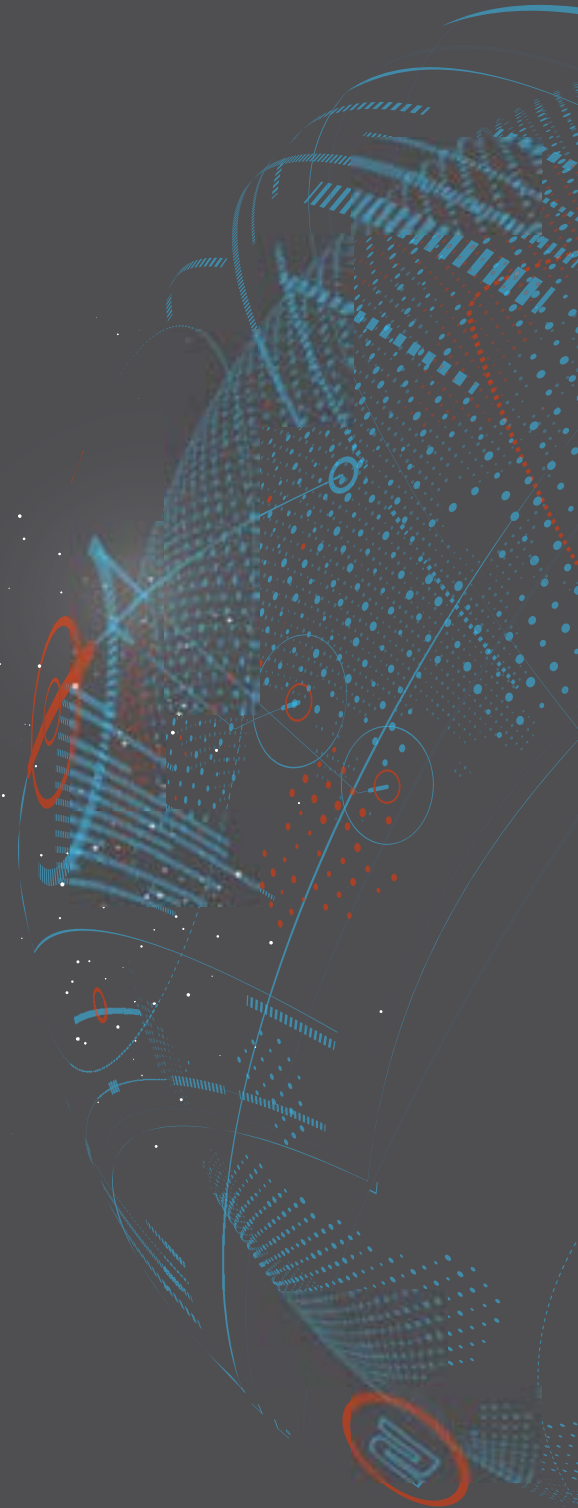
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About Avetta

Avetta connects leading global organizations with more than 85,000 qualified suppliers, contractors, and vendors across 100+ countries. We support the sustainable growth of supply chains through our trusted contractor prequalification, supplier audits, insurance monitoring, robust analytics and more. With real results in helping companies reduce TRIR, our highly configurable solutions elevate safety and sustainability in workplaces around the world—helping workers get home to their families each night.