

The supply chain is a complex, multi-faceted process encompassing everything from warehouse fulfillment to logistics. With many companies continuing to figure towards supply chain optimization, the industry is ripe for innovation. As new technologies emerge that hold promise for streamlining fulfillment processes to speeding logistics, the traditional supply chain is rapidly transforming into a more advanced, more functional process driven by digital technology, artificial intelligence and other innovations.

As supply chains continue to face unprecedented disruptions, shortages and changing consumer demands, many companies are looking to automate as a way to keep products moving. The challenge is identifying those automation technologies which will help create and strengthen the worldwide supply chains of the longer term.

While a broad range of automation technologies are continually emerging to enable the evolution of the supply chain, it can often be difficult to determine which technologies are viable options, deserving of valuable time, research and investment.

Establishing a scientific process for evaluating and piloting emerging technologies is a good initiative to streamline and accelerate an application for its customers. This allows companies to spot and supply insight on emerging technologies that have the best potential to accelerate the digitalization of the availability chain.

Why you need to address supply chain visibility

There is an increased expectation from customers to be ready to meet demands quicker and more cost-effectively. Visibility of where manufacturers are within the assembly process is a key driver and control for a corporation. Organizations that have an in depth overview of each step of the production process are enabling machine integration with business applications. Without this integration, there's potential for reduced machine utilization, less effective enterprise resource planning, reduced consistency in product quality, and failures in many business performance fundamentals. Increased costs have resulted during a number of producing entities that have growing dependencies within their supply chain. The results are less transparent relationships and more disparate systems.



This features a consequence for supply chain visibility, and once you throw subcontracting into the combination , checking out where a product is within the cycle and accessing accurate reporting becomes even tougher . Ultimately, this leads to poor order-status visibility. Although in many organizations this is often accepted as a “black hole,” it causes problems for patrons and may make meeting delivery dates impossible. Integration between these systems is that the only way manufacturers are addressing supply chain visibility issues.

Managing control across product variations with automation

More than ever, product variations mixed with ever-increasing complexities are keeping organizations on their toes. From procurement to quality, control is that the anchor of all processes. But to take care of control of complex production planning, you need a mixture of flexibility and speed. a method to handle this challenge is to drive automated processes within the assembly line that are aware of variable demand.

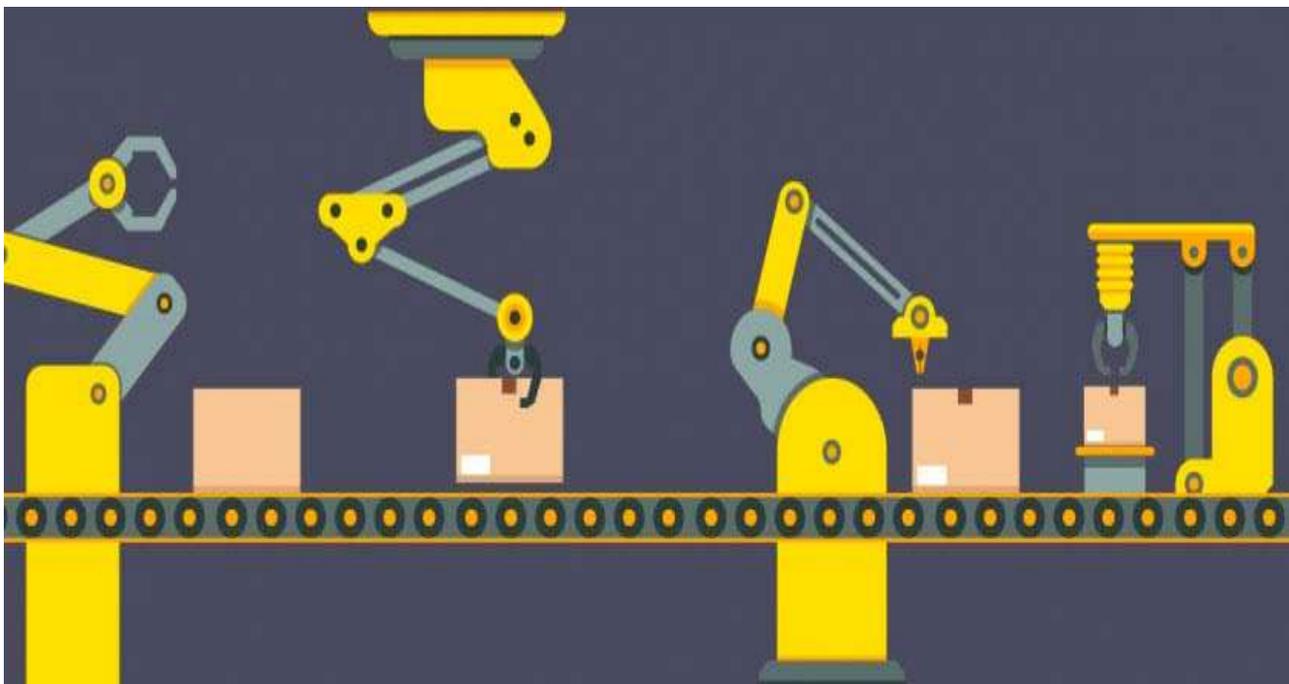
Without this in situ , managing control in product variation can create variety of challenges, including:

- **Security:** Breaches become more likely with an outsized uptake of siloed legacy systems that require to speak to every other. There’s a requirement for faster material requirements planning within one system where security is centrally managed.

- **Mismanaged variation:**

Products and services have moved faraway from being standardized and are being introduced more frequently. there's a risk if the business overstocks to satisfy demand for one variation, yet the wants change shortly after – hence the necessity for both flexibility and speed.

Automating functions brings simpler control during a number of core business processes. for instance , by automating background jobs between planning and execution, you'll drive greater visibility over production lines, ensuring that the proper materials are available and therefore the orders are correctly sequenced before coordinating the assembly floor. When working with highly variable product lines, the power to autorun availability checks, perform capacity leveling, and auto-print production orders helps you maximize usage and be more efficient.



SUPPLY CHAIN AUTOMATION



FUTURE TECHNOLOGIES

Percentage of manufacturers using each technology to address supply chain issues in the following 12 months



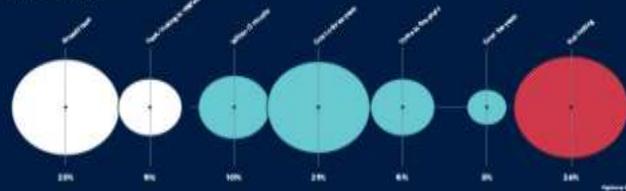
EXTENT OF SUPPLY CHAIN AUTOMATION

Percentage of manufacturers using each technology to address supply chain issues in the following 12 months



TIMELINE FOR ACQUIRING NEW AUTOMATION TECH

Survey of manufacturers



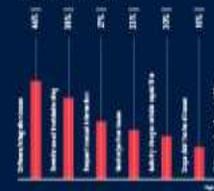
TOP BARRIERS FOR MANUFACTURERS ADOPTING AUTOMATION

Survey of manufacturers



AUTOMATION PERFORMANCE CHALLENGES

Survey of manufacturers



HOW AUTOMATION ROI IS MEASURED

Survey of manufacturers



The right technology enables agile and responsive supply chain management

Change and uncertainty are inevitable in manufacturing. While effective production planning can support you, there'll always be factors outside your control. Changes in people resources, system configurations, the availability chain itself, and machine downtime can have serious consequences. Although many manufacturers face these challenges a day, only a little number are realizing the competitive advantage of automation and innovation. The proper technology stack is critical in manufacturing to:

1. Enable responsive production planning and deal with variation
2. Integrate systems and have visibility over the complete supply chain, however disparate it's going to be
3. Reduce reliance on subcontracting and using resources more effectively

There are many various approaches out there for aligning technology to deal with the challenges ahead folks , drive value, and enable strategic objectives. this will be distilled into variety of key areas:

- **An integrated enterprise solution – on-premises or cloud-based counting on organizational imperatives**
- **Aligned analytics and data-governance solutions**
- **Industry-based, best-of-breed solutions where specialist capabilities are required**
- **The right integration support to harness operational information within the best way and embrace innovation**

To put this in additional technology-based language, we will label this “the intelligent enterprise.” briefly , this suggests a technology stack that has been developed to align and enable the specifics of the business in question across four areas:

- **Analytics**
- **Data management**
- **Business cloud platform**
- **Intelligent technologies**

Automation inside the warehouse

One of the most important advances inside the warehouse is that the move faraway from inflexible and capital-intensive mechanized automation systems to more flexible autonomous guided vehicles (AGVs) and robotics.

AGVs are already well-established within the warehouse and can still play a key role in enabling greater productivity. Available during a sort of sizes and configurations, they will be an economic alternative to conveyors or forklifts for products moving repetitively over fixed routes, like transporting raw materials to production lines or finished goods from packaging to shipping.

Forklifts also now entail automation capabilities that allow them to figure in either autonomous or manual mode. This provides the pliability for the truck to figure as an AGV when performing repetitive tasks or as a standard forklift operated by a driver when required.

Automation outside the warehouse

Venturing beyond the warehouse, autonomous driving is additionally quickly gaining traction. it's most easily achieved in closed, private environments where processes are clearly defined and controlled, so it are often challenging to use automation to outdoor logistics operations.

The industry as an entire is making progress, and therefore the era of semi-autonomous vehicles is quickly arriving. Semi-trucks controlled entirely by AI (AI) should be a couple of years away, but companies managing large vehicle fleets got to remember of the advances in technology and therefore the impact they could have. Autonomous and semi-autonomous delivery vehicles also are being tested to work out their viability to be used in shuttle and same-day customer deliveries. Mileage efficiency is additionally being tested ion longer runs from major markets to other operations across the country.

