Introduction

From the factory-of-the-future and the Internet of Things (IoT) to big data, mobility and cloud computing, new technologies are unleashing massive disruption in the marketplace. Now more than ever, electronics manufacturing companies require unprecedented visibility into all the parts of their business to help bring new products to market faster, more affordably and with less risk. This visibility is especially critical for supply chains that span diverse suppliers from across the globe, which need real-time information about manufacturing processes, suppliers, performance, transportation and customers.

The following report, sponsored by Jabil Circuit, Inc., is based on a survey of 315 individuals with responsibility for their company’s supply chain function. Questions were asked on a variety of supply chain topics, including visibility, factory-of-the-future technology, IoT and more. The goal of the survey was to understand experiences, challenges, and trends with the supply chains of electronic manufacturing companies.

Key Findings

Lack of supply chain visibility is pervasive, slowing responsiveness and growth
- 89% face challenges with lack of visibility into the status of their supply chain
- 96% report lack of visibility introduces risk to their supply chain
- 70% have real-time status updates for less than half of their supply chain
- 82% would take days to understand the impact of an extreme global weather event
- 92% would find value in increased visibility and management capabilities

End-to-end supply chain solutions are desirable for manufacturing companies
- Half of respondents have abandoned an idea because of price or procurement complexity
- 93% see potential benefit in supply chain vendors helping procure components
- Working with one partner across the product lifecycle is considered very valuable

Existing manufacturing processes cannot support factory-of-the-future functionality
- 58% say existing manufacturing processes are difficult to change
- Insufficient manufacturing processes limit product portfolios
- Manufacturers see value in factory-of-the-future technologies
- 80% would launch products more often if processes supported faster, cheaper delivery

The Internet of Things (IoT) is growing exponentially, but supply chains are not ready
- 53% are moving forward aggressively with development of “Things”
- 77% lack skills needed to fully deliver IoT solutions
- IoT is forcing manufacturing companies to acquire new skills
Detailed Findings

**Intelligence will fundamentally change the supply chain of the future**

New technology innovation is unleashing massive disruptions in the marketplace that fuel more complexity in supply chains — including extra processes, suppliers, channels, transportation and logistics. Synchronization between all groups is more important than ever, especially for large enterprises with global supply chains and suppliers. To make smarter business decisions today and prepare for next-generation products, businesses require enhanced visibility across their end-to-end supply chains.

When asked about visibility into the status of their end-to-end supply chains, the vast majority of electronic manufacturing companies (89%) said they face challenges with lack of visibility. Nearly two-thirds (61%) must maintain excess inventory to mitigate risk with their supply chains, and more than half (58%) report difficulty tracking and reporting on service levels from their vendors. The most frequently mentioned “Other” responses were limited visibility into risk and mitigation, as well as lack of management support. Only 11% stated they do not face challenges with the visibility of their supply chains.

![Bar chart showing the percentage of respondents facing various challenges with visibility into their end-to-end supply chains.](image)
Furthermore, 96% of supply chain professionals report lack of visibility introduces risk to their supply chains. What are the most common risks affecting global supply chains?

Top challenges cited in our survey included lead times are longer than desired (58%), needing to allow for extra shipment time (53%), difficulty in managing capacity (47%), and hard to change locations if business environments shift (42%).

**Real-time updates on supply chain status are challenging for manufacturing**

Today’s manufacturing companies need to sense and respond to changes in real time across their supply chains. For example, will they be able to quickly spot a line when it goes down in an overseas location? Or, how long does it take to recognize that a shipment from a parts supplier is late? Surprisingly, only 30% of manufacturing companies have real-time status updates for more than half of their supply chains. This means that 70% lack a real-time view for the remaining half of their operations.
Understanding the impact of extreme weather is even tougher

Hurricanes, earthquakes and tsunamis are not everyday occurrences, but they can greatly disrupt a global supply chain. According to the vast majority of responding supply chain professionals (82%), it would take anywhere from a few days to a few weeks to understand the impact of an extreme global weather event. Only a very small number (4%) would know immediately about its impact. While it is nearly impossible to predict extreme weather or natural disasters, companies can be better prepared by adopting automated solutions that provide real-time visibility of their supply chains on an end-to-end basis.

Supply chain leaders want more visibility and management functions

Successful supply chain leaders possess process and people expertise to effectively deal with suppliers and customers worldwide. To do their jobs even more effectively, they must rely on automated solutions with advanced capabilities. Almost all the supply chain professionals (92%) responding to the survey found value in increased visibility and management capabilities. The top three requested capabilities in our survey included dashboards with visibility into supply chain status (77%), real-time alerts on problems (59%) and risk assessment reporting (47%). Only a small minority (8%) reported that these types of capabilities would not be valuable.
End-to-end supply chain solutions are desirable for manufacturing

Today’s global supply chains are mammoth. They extend end-to-end within a company and even outside the company, including relationships with suppliers, logistics and transportation firms, as well as customers. But due to their complexity and interdependencies on third parties, it’s often difficult for supply chain professionals to see the big picture without end-to-end supply chain solutions designed to highlight key variables and risk factors. Yet without this “big picture” viewpoint, stakeholders may focus on narrow opportunities today, such as procuring cheaper parts, instead of long-term benefits like reducing supplier risk or accelerating product lifecycles.

To understand the impact, we asked a series of questions related to procurement and supplier partners. We discovered more than half of electronic manufacturing companies (51%) abandoned a product idea because of the price or complexity of procuring components.

Gaining vendor expertise is considered advantageous

Clearly, companies are not taking full advantage of third-party expertise and the implications are far reaching, especially in procurement. Nearly all the supply chain professionals responding to the survey (93%) said they could see the potential benefits of getting assistance from their supply chain partners with component procurement. The most important benefits mentioned included better integration of procurement and inventory management (67%), expertise in materials marketplace (58%), diminished component costs through volume purchasing (55%) and a streamlined negotiation and contracts process (49%). Only a small number (7%) said there would be no benefit in getting help with component procurement from their partners.
Sometimes managing too many vendors can generate more risk, longer product cycles and additional costs for manufacturing companies. Often relying on a single partner across the product lifecycle is an advantage. In fact, 53% of professionals surveyed considered it very valuable to work with a manufacturing partner that provides solutions across the entire product lifecycle, from idea to distribution.

Existing processes cannot support factory-of-the-future functionality

To rise above the competition, innovative electronics manufacturers often are thinking more like Silicon Valley technology companies and less like traditional manufacturers. Using more robotics, computer-aided design, 3D printing, cloud computing and other sophisticated technology, they are powering up their supply chains for speed, agility and large-scale volume. But not all manufacturers can support factory-of-the-future functionality within their current supply chains.

Many companies indicated that their existing manufacturing processes lack the flexibility needed to change. For the manufacturers in our study, there were significant impediments that rose to the top of the list. These obstacles included difficulty in changing existing processes (58%), the expense of making changes once in production (54%), manual processes that are too slow or too error prone (45%) and the cost of labor driving up costs (35%). On the opposite side, only 8% of manufacturers said they had no obstacles with their manufacturing processes.
Similarly, manufacturers often are unable to extend their product portfolios because of inadequate manufacturing processes. In fact, 57% of supply chain professionals surveyed have passed on a product idea because existing processes were insufficient.

Stakeholders see value in factory-of-the-future technologies

Electronics manufacturers see value in certain factory-of-the-future technologies. Advanced materials technology, predictive supply chain analytics and increased manufacturing automation were viewed as very valuable by more than half of the survey respondents. Surprisingly, 3D printing was not viewed as valuable by approximately one-third of the participants.
Faster, cheaper delivery would increase pace of product launches

Getting products to market faster with fewer costs involved are the bottom-line benefits of factory-of-the-future technology.

Supply chain professionals said that if their companies’ manufacturing supported faster (80%) and more cost effective (78%) delivery, they would launch new or upgraded products more frequently.

Ultimately, savvy supply chain professionals who are able to find and drive opportunities that increase economic profit via new technology will be more likely to affect their buy-in by the executive team.

The Internet of Things is booming, but supply chains aren’t ready

IoT is dramatically reshaping many aspects of everyday life, from the clothing we wear to the cars we drive and the homes we live in. There are massive manufacturing implications for companies that are developing IoT products. From incorporating new business models to sourcing new types of parts and suppliers to optimizing existing manufacturing processes, supply chains will need to change dramatically — and right away. But are they ready?

When asked about the status of their company’s products for IoT, more than half (53%) of electronics manufacturing companies are moving forward aggressively with development of IoT solutions. Of that 53%, 30% have IoT solutions in production and 23% are in development. Only a quarter of companies have no plans for IoT.
IoT is forcing manufacturing companies to acquire new skill sets

As companies enter the connected world, many lack the required expertise in complex electronics that will enable and support remote connectivity, data collection and data analysis for their particular devices and use cases. We discovered that while most supply chain stakeholders are moving forward with IoT initiatives, 77% lack the skills needed to fully deliver IoT solutions.

This prominent skill gap is forcing manufacturing companies to seek new knowledge and technical expertise, in-house or from third-party partners, to deliver IoT solutions. The top five skills cited by supply chain professionals included security (50%), analytics (47%), user experience and usability (46%), device software (44%) and cloud technologies for connecting and storing information (40%). Only a very few (3%) have not changed their skill sets or have no plans to do so.
The untapped potential of the IoT will drive product innovation

While still in its infancy, IoT is a wide-open opportunity for electronics manufacturers. It clearly has the potential to revolutionize business processes across the entire supply chain and, ultimately, improve the customer experience.

The potential value seen in using data connected by “Things” to drive product innovation varies from company to company. Among our supply chain professionals, the ability to deliver additional product capabilities (57%); create new products, services, or business models (55%); understand failures to increase quality (53%); and measure feature usage to impact user design (47%) would provide the most potential value.

Survey Methodology and Participant Demographics

In April 2015, professionals working at companies that manufacture electronics goods were invited to participate in an online survey about current supply chain experiences, challenges and trends. Participants were asked a series of questions on a variety of topics related to their supply chains, including visibility, factory-of-the-future technology, Internet of Things and more.
A total of 315 individuals completed the survey. All respondents had professional responsibility for their company’s supply chain. Participants represented a wide range of geographies, company sizes, supply chain complexity, types of goods manufactured and roles.
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