The Digital Supply Chain:
Meeting Rising Expectations in the Age of Amazon
Abstract

As consumer expectations for real-time visibility in the B2C world grow ever higher, B2B expectations are rising as well. To meet customer expectations, manufacturers must leverage new technologies to develop a digital supply chain, in which real-time tracking and advanced analytics enable end-to-end optimization and an all-around superior customer experience. Digitalization is the future of supply chain operations, and the key to staying ahead in the competitive modern landscape.
Introduction

With the rise of Amazon, Uber, and home IoT products, consumer expectations for real-time visibility and connectivity have never been higher. And these trends are not isolated to the world of B2C. Consumers’ experiences are now informing their professional expectations, and this is driving modernization across every industry — none more so than supply chain.

To meet rising customer expectations, manufacturers are investing in digital supply chain technologies that enable total visibility, from end to end. With global IoT tracking and big data analytics, the modern supply chain manager can rise to the challenge of today’s heightened consumer expectations, delivering an experience on par with and even surpassing the consumer status quo. The digital supply chain makes it possible to increase efficiency, cut costs, and optimize operations, enabling improved internal operations as well as better service for the end customer.

The time to invest in a digital supply chain is now. As consumer expectations continue to rise, forward-thinking manufacturers must develop a strong foundation of digital technology and IoT infrastructure on which to continue to modernize — or be left behind. By leveraging new technologies and maintaining an innovative mindset, the modern manufacturer can ensure that they stay competitive and continue to deliver a superior customer experience in the modern digital world.
Rising Consumer Expectations

From cars to fashion to food and everything in between, digital technologies are setting a new bar for the consumer experience. As these digital products grow ever more commonplace, consumers’ expectations for transparency, convenience, and connectivity have grown in every industry. But what do these rising expectations actually look like? To better understand what the modern consumer expects from their vendors, let’s explore how today’s most successful consumer products and services are driving new trends and increasing expectations.

Transparency & Visibility

One of the biggest areas of recent innovation in the consumer space has been in the level of transparency and visibility available in online shipping. When you order a product on Amazon, you get real-time, to-the-minute updates regarding the status of your shipment. You can see exactly where your package is as it travels to you, and Amazon will proactively send alerts if a package is delivered or encounters a problem. Even more impressive, Amazon will send a picture of the package as soon as it is dropped at your doorstep, providing complete visibility into exactly when and where the package is delivered.

In response to this new standard for consumer shipment visibility, other businesses have developed similar solutions. Target offers real-time status updates for products ordered from its website, and Dominos has pioneered their well-publicized pizza tracker, an online tool that enables customers to track their pizza as it is ordered, cooked, and delivered.

According to a recent study on shifting consumer expectations, 69% of surveyed consumers expect “Amazon-like buying experiences” from their vendors, while a survey from UPS found that 97% of respondents felt shipment tracking was either essential (50%) or nice to have (47%). Consumers are no longer willing to sit in the dark, guessing as to where their packages are and when they will arrive. And this demand for real-time visibility ties in directly to a second major trend in consumer expectations: on-demand services and support.
The Growing Demand for On-Demand

The modern consumer expects to be able to get what they need, when they need it. The prime example of this trend is the skyrocketing popularity of rideshare services like Uber and Lyft, as well as bikeshare services like Mobike, LimeBike, and Bird. These services make it possible to order a car or borrow a bike at low rates without any planning ahead. One recent study found that average the wait time to catch an Uber or Lyft in Boston is just three and a half minutes, compared to average traditional taxi wait times of over twenty minutes, leading to a dramatic shift in consumers’ expectations for a 'reasonable' wait time. In cities around the world, consumers are relying more and more on these on-demand personal transportation services, and have less and less patience for old-fashioned solutions that require longer wait times and more advance planning.

Real-Time Connectivity

Finally, IoT (Internet of Things) products are enabling new levels of constant, real-time connectivity to everything in the life of the consumer. From connected cars to app-controlled home thermostats, these new products are upping the game when it comes to connectivity. For example, Nest, founded in 2010, is now a leader in the home automation space, with over 11 million devices sold. Their popular IoT products enable real-time home temperature control via a smartphone app, as well as video monitoring and other home automation services.

Arguably even more impactful than Nest, Amazon’s Echo product series has taken further strides into the real-time home connectivity space. These products automate everything from grocery shopping to your sound system, and they have achieved an unparalleled level of ubiquity in the consumer IoT marketplace. A recent article from CIO Magazine suggests that 35.6 million Americans will use a voice-activated assistant device at least once a month, and over 70% of those devices will be from the Amazon automation suite. Meanwhile, automotive manufacturers like Tesla have begun to extend these sorts of automation features to cars — you can now turn on the air conditioning or even unlock and move your car all at the touch of a smartphone.

This is no longer a niche area. According to a 2018 MarketSpace study, smart home automation powered by the Internet of Things has shifted from an “early adopter” market to an “early majority” — these are not just luxury tech gadgets; rather, these IoT-powered devices have become standard, widespread consumer products. In fact, the MarketSpace study suggests that by 2021, more than half of American homes will have some sort of IoT technology, indicating a major shift in the status quo for real-time connectivity in the home of the American consumer.
Consumer Trends Drive Commercial Investment

Clearly, the consumer world is experiencing some significant shifts when it comes to expectations for visibility, on-demand services, and real-time connectivity. But how does this translate to the commercial sector? While the consumer and commercial worlds are of course different, there is good reason to think that many of these consumer trends will make their way into the commercial sphere.

The BYOD Phenomenon

One of the most well-publicized examples of a consumer trend reshaping the business world is the Bring Your Own Device movement, or BYOD. In a nutshell, BYOD refers to the early 2010s phenomenon whereby as smart devices became more and more popular, people began to expect similar levels of smart technology and user-friendly interfaces while at work. As an in-depth article from Ars Technica explains, workers “wanted the same easy-to-use iPhone interface that they were using for their personal messaging and mail for when they were conducting business.”

To avoid alienating the majority of their workforce (and to reap the productivity benefits of these new technologies), companies large and small began to develop policies that allowed workers to access company systems on their smartphones and incorporating smart device productivity tools into the corporate environment. According to recent studies from Tech Pro Research and IBM, 72% of workplaces are now adopting BYOD policies, and more than 80% of workers believe that smartphones will become an integral part of the workplace in the near future.

B2B eCommerce

Of course, smartphones aren’t the only consumer trend to grow into a business necessity. Wholesalers that once relied heavily on traditional sales tools such as phone calls and storefronts are now adapting to consumers’ growing expectation for a unified, multi-channel eCommerce experience. This means mobile-friendly digital stores, SEO-optimized online tools, and a smooth, consumer-level shopping and support experience à la Amazon and other online retailers.
In fact, a recent study found that 80% of surveyed companies believe B2C trends have impacted their customers’ expectations for eCommerce, leading some to suggest that a B2B eCommerce platform has become a non-negotiable for modern wholesale distribution. And in an aptly-named report titled Death of a (B2B) Salesman, Forrester found that 74% of B2B buyers preferred to buy online rather than from a traditional sales representative.

**Product Customization**

Similarly, consumer expectations for customizable products and pricing schemes have also been making their way into the B2B world. In the consumer world, many retailers use AI-powered tools to target custom product recommendations to individual consumers. Taking notice of this trend, a 2016 Gartner report found that revenues increased by 15% when B2B companies incorporated personalization into their operations. By adopting product customization strategies pioneered in the consumer space, businesses are both improving their customers’ experiences and increasing their own profits.

**A Transparent, Connected Supply Chain**

Clearly, B2B businesses are far from immune to consumer trends. So how does all of this translate to the world of supply chain? How are consumer trends and shifting expectations impacting the supply chain space?

In one way or another, most of the trends discussed above are reflected in supply chain. Visibility, real-time support, total connectivity — these are things we are coming to expect in every aspect of our lives, and supply chain is no exception. According to a 2016 PWC report on the future of the logistics industry, “like individual consumers, industrial customers now expect to get shipments faster, more flexibly, and with more transparency at a lower price.” As standards for efficiency and transparency rise in the consumer world, people are beginning to bring those expectations for efficient, technology-enabled shipping experiences into the professional realm.

**Meeting New Expectations with New Tech**

Thankfully, new technology is making it possible to meet and even exceed these rising expectations. Both in supply chain specifically, and in the B2B space more broadly, companies have begun to invest in a variety of new
technology-enabled solutions that can bring the benefits of consumer trends into the commercial world.

BYOD Security

On the BYOD front, advances in mobile security technology, as well as increasing investment in mobile-friendly versions of business applications, are helping companies overcome some of the key challenges when it comes to integrating personal mobile devices into a business environment. For many enterprises, security is a key concern, so the development of mobile security technologies such as fingerprint readers or biometric facial recognition has been crucial for widespread adoption.

Big Data Analytics

Another major area of recent technological innovation is in big data management and predictive analytics. On the consumer side, this is the secret ingredient behind many impressive products and solutions in eCommerce, product customization, and other trends described above. Amazon uses big data to predict what you want to buy, Uber uses it to predict where you want to go, and even many smaller businesses are now capitalizing on big data analysis tools to develop targeted advertising and product customization for their customers. But this technology is not limited to consumer businesses.

On the B2B side, companies have begun to use the same big data tools and technologies to manage and extract actionable insights from industrial datasets. For example, a recent McKinsey report describes how an industrial chemicals company used big data and advanced statistical analysis to understand their manufacturing process and improve quality levels. Another case study in the report explores how a precious metals mining company significantly improved yield and profitability by leveraging advanced data management tools and mathematical analysis.

Of course, this begs the question: where do you get the data? In manufacturing and other industrial operations within a company’s four walls, access to data is generally simply a matter of establishing collection procedures. But when it comes to supply chain, getting your hands on the in-transit data you need for effective analysis can be a challenge. And that’s where the last big technological advance comes in.

Supply Chain Meets the Internet of Things

To achieve the levels of visibility and insight into industrial supply chain data that have become commonplace in the consumer world, it is
necessary to use an Internet of Things (IoT) tracking solution that monitors everything you care about through the entire duration of the supply chain. Let's discuss the first piece first: monitoring everything you care about.

When it comes to supply chain, a useful IoT tracking device must monitor not just location, but also temperature, humidity, shock, orientation, and any other variable that could indicate damage or delay for in-transit goods. New IoT trackers designed specifically for supply chain offer all those sensors and more within a single device, enabling supply chain managers to access real-time data regarding the precise location and condition of their shipments.

The other key piece is battery life. The modern supply chain can last weeks or even months, so an effective supply chain tracking device must last at least that long to ensure reliable visibility. Thanks to recent advances in cellular components and low-power communication infrastructure, today's supply chain trackers last over a year on a single charge while transmitting data from all of their onboard sensors. This means that trackers can last long enough to support the modern supply chain, while still maintaining a battery small enough not to interfere with supply chain handling requirements.

So what do these technologies look like when applied to the modern supply chain? Put all of these advances together, and you get what we like to call a digital supply chain.

**The Digital Supply Chain**

As manufacturers adapt and grow in response to the consumer trends outlined above, the digital supply chain is the natural evolution of traditional supply chain operations. With a digital supply chain, manufacturers can embrace modern trends and technologies, meeting and even exceeding rising customer expectations with unprecedented levels of real-time visibility, predictive analytics, and large-scale optimization from end to end.

**Real-Time Visibility**

As your partners and customers grow accustomed to ever more visibility in their consumer experiences, a digital supply chain can replicate and even improve upon today's heightened status quo for real-time visibility. With always-connected cellular trackers, manufacturers can know exactly where their shipments are, and how they're doing, throughout the supply chain.
For example, real-time visibility into the temperature of in-transit goods helped an international pharmaceutical company save a highly sensitive shipment when it was inadvertently set to the wrong temperature. Similarly, modern electronics manufacturers have begun to rely on tracker-based visibility solutions to identify exactly when and where harmful shock events are causing damage to fragile electronics shipments, making it possible to plan ahead and mitigate fallout due to in-transit damages. And in almost every industry, real-time visibility into the location of in-transit goods is vital to ensure adequate preparations can be made for late or early shipments.

But it’s not just about in-the-moment visibility. A digital supply chain also makes it possible for manufacturers to leverage predictive analytics tools, using the big data analysis tools that are already widespread in consumer industries to optimize the supply chain.

**Predictive Analytics**

Just as consumer services can now predict everything from your fashion preferences to your pizza toppings, so too is the modern supply chain now capable of predicting delays, damages, and other opportunities for optimization. As manufacturers build more and more comprehensive datasets regarding their shipments, big data analytics tools make it possible to identify patterns and isolate root cause issues for improvement.

For example, analysis of all the routes used on a particular shipment lane can shed light on more or less efficient routes, giving both manufacturer and carrier a shared foundation of data from which to suggest improvements. If certain routes tend to result in significant delays, or a higher number of damages, the manufacturer can request that the carrier not use that route, or choose an alternate carrier.

**Large-Scale Optimization**

Ultimately, the digital supply chain makes it possible to apply macro-level optimization strategies rooted in Lean and Six Sigma methodologies across supply chain operations. For example, with the well-known Six Sigma tool SPC (Statistical Process Control), the supply chain manager can identify key variables for analysis — such as delays or damage rates — and plot each incoming data point for that variable against historical data on a Control Chart. This chart helps to identify how current data compares to past data, and whether outliers are statistically significant issues or normal variation.
In addition to Six Sigma quality control strategies, the digital supply chain also makes it possible to apply Lean methodologies for cost control and waste reduction. Based on comprehensive datasets, buffer inventory can be removed from historically low-risk routes and added to areas that tend to experience more damages or delays, enabling the manufacturer to reduce facility shutdowns due to missing inventory and reduce resources wasted on storing excess stock.

Control Charts are a useful tool for determining whether variation is statistically significant or just noise. Image credit: ASQ

Benefits for Manufacturers (And Their Customers)

The benefits of the digital supply chain for manufacturers are clear: improved visibility enables greater efficiency, smoother operations, and ultimately, cost savings. But perhaps even more important than the internal benefits is the ability to meet and even exceed rising customer expectations. The modern customer demands transparency, continuous support, and real-time connectivity, and with a digital supply chain, the modern manufacturer can deliver. The digital supply chain enables manufacturers to offer a new level of visibility into their customers’ shipments, solving problems before they occur and delivering a superior experience all around.
Meeting Tomorrow’s Expectations: The Digital Supply Chain of the Future

Today’s digital supply chain is just the beginning. Customer expectations never stop rising, and so both the requirements and possibilities for the IoT-powered supply chain will also continue to expand. As consumers grow accustomed to ever greater levels of visibility and real-time connectivity in their personal lives, those trends will make their way into the commercial sector as well. So what can the forward-thinking manufacturer do to make sure they stay relevant, and stay ahead of the game?

Gartner’s 2018 Top Trends in Supply Chain: AI, IoT, and Advanced Analytics AKA the Digital Supply Chain

— Gartner 2018 Top Supply Chain Technology Trends

Step number one is to foster a culture of innovation. While the specifics will vary tremendously from company to company, there are a few strategies that are relatively universal.

1) **Make it explicit.** The company’s top leadership needs to make it clear that innovation is a priority, and that innovative projects (including anything from a BYOD push to a digital supply chain solution) will be supported from the top down.

2) **Make it accountable.** Consider developing an advisory board or committee that is specifically responsible for championing innovation. This can help ensure that departments are able to work together effectively, since innovative projects will often rely on cooperation between multiple departments.

3) **Make it quantitative.** It’s easy enough to talk about innovation, but as a recent McKinsey study explains, quantifying the results you hope to achieve through your various innovative projects is key to maximizing your chances of success. So write down your goals in terms of money saved, shipments delivered, or whatever metric is important for your business.
The next step is to stay informed. A culture of innovation is great in theory, but it isn’t very useful if you’re not staying up to date with the latest trends and technologies that may impact your business. Read white papers, subscribe to publications, and attend events both in your field and in adjacent fields, to ensure that you’re aware of opportunities to incorporate innovative solutions into your business as they arise.

Finally, invest in digitalization now. Although innovation inevitably comes with some growing pains, it will only get harder to play catch up. Making sure your company has a strong technical foundation on which to continue to modernize will be vital as digital technologies and consumer expectations continue to advance. Of course, digitalization will mean different things for different companies. For some, it will mean supplementing traditional storefront operations with an eCommerce platform. For others, it will mean updating IT policies to allow workers to increase productivity through a BYOD policy. And when it comes to supply chain, it will mean building out a digital supply chain that leverages IoT trackers and cloud-based analytics to maintain real-time visibility, from end to end.

While it can be tempting to write off consumer expectations as irrelevant to the B2B world, the reality is that consumer trends have always had a significant impact on commercial operations. Now more than ever, keeping your supply chain up to date with modern, digital technologies is vital to ensuring that you stay competitive and stay relevant in the minds of your customers.
Tive helps companies eliminate surprises in their supply chain by providing real-time visibility of the location and condition of their shipments. Tive’s combination of cellular-connected trackers and cloud-based software enables customized alerts, reporting and analysis on shipments across all modes of transport. As a result, companies are never caught off guard by damage or delays, helping them improve customer service while reducing disruptions and logistics costs.

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