The Challenge for 2017: Managing the Multitude of Supply Chain Risks
Introduction

Change may be a constant, but for procurement and supply chain professionals these days it feels like anything but. From geopolitics to technology to merger and acquisition (M&A) activity, the pace of change feels like it’s accelerating.

Indeed, a poll conducted by The Hackett Group found that most procurement organizations—83% to be exact—face a business environment that is either moderately or very dynamic.¹ The threats they face include disruptive innovation, intensifying competition, and pressures to transform their business models to compete in the digital age. (See Fig. 1)

More worrying is that many companies have been managing supply risk in an ad hoc fashion for more than a decade, according to a recent survey by A.T. Kearney and RapidRatings. Indeed, nearly half of respondents said they had no plan in place to ensure supply continuity.²

With more change comes more exposure to risk. How successful procurement and supply chain organizations will be in navigating change in 2017 and beyond depends largely on how well it understands the risks and prepares for the potential consequences. Given the diversity and potential magnitude of emerging risks, a concerted, formalized strategy for risk management will be important.

Exposure to risk translates into higher supply chain and sourcing costs. A recent survey by IHS Markit found that the number and financial impact of supply chain disruptions are on the rise.³ Two-thirds of respondents said that the financial costs of supply chain disruptions were increasing, with 19% of respondents saying that they were significantly increasing. This represents a reversal of the 2015 results, when just 1% of respondents held that view. (See Fig. 2.)

This paper reviewed three broad sources of risk, and the disruption each could have on business operations and supply chains in 2017 and beyond:

1. **Geopolitical shifts.** The unexpected Brexit vote in the UK on June 23, 2016, and the US presidential election on November 8, 2016, have set the stage for potentially significant political and economic consequences in 2017. Hard on their heels, Europe braces for the implications that rising nationalism may have on upcoming elections. In the US, the renegotiation of the North American Free Trade Agreement (NAFTA) will commence soon. And globally, challenges to tensions over territorial rights in the South and East China seas are adding to procurement and supply chain risks.

2. **Transformational technologies.** By definition, all technological change is disruptive. And today, there are myriad emerging technologies that are not just disruptive, but promise to be transformative. These include artificial intelligence (AI), the Internet of Things (IoT) and autonomous transportation, among others. All have the potential to drive business efficiencies, lower costs and increase supply chain visibility. But while
creating business opportunity, new technologies introduce organizational risk—the downside of being disruptive. Misjudging what to invest in and when to invest can be costly, providing opportunities for competitors to gain market share. And of course, understanding and managing the security risks associated with the new technologies will be critical.

3. Evolution of the electronics industry. “Moore’s law” was postulated 52 years ago and has been the symbolic engine responsible for the dramatic growth of the electronics industry and the resulting macroeconomic benefits. As the industry has matured, the pace of organic growth has slowed, leading inevitably to consolidation. A rise in M&A activity has very real implications for procurement and supply chain organizations, as product lines are rationalized and the number of viable sources decline. At the same time, the design of new technology products is being democratized with the emergence of the maker market, which challenges assumptions about how, and by whom, products are developed and brought to market.

Feedback loops connect these three categories of risk, adding complexity to the challenges procurement and supply chain professionals face. Geopolitics impacts economic performance and industry growth. And a transformative technology influences economic performance and disrupts industries.

Below, we’ll explore some of these risks and opportunities and offer observations for how to deal with them.

**Strategic challenges**

1. Geopolitical shifts

   **Europe.** The UK’s Brexit vote had relatively modest impact for the UK and the world in 2016. But the steady fall in the value of the British pound in June 2016 has driven up the cost of imported goods, including food and energy, which is putting a damper on consumer spending. Consequently, economists are warning of a slowdown in the UK’s economic growth in 2017, with some projecting GDP growth for the year in the tepid 1.5% range. The UK government is planning to trigger the process to leave the European Union (EU) in March, which sets the clock ticking for a departure by mid-2019. Two questions UK and global businesses face are: What are the implications for long-term business investment in the country? And, what type of unilateral trade agreements will Britain pursue? Both are relevant for supply chain and procurement professionals.

   While Continental Europe shares the UK’s 2017 outlook for sluggish GDP growth, it also faces growing political uncertainty. The Netherlands holds a general election March 15; France has its first round of presidential elections April 23; and Germany has federal elections in September. While nationalist parties are gaining strength in all three countries, odds are they are not expected to win outright victories. But they are expected to increase their representation and political power, which may lead to national referendums on membership in the EU.

   Of course, the consequences of the EU unraveling would be profound for global trade. EU countries would have to revert back to national currencies, renegotiate trade agreements and institute border restrictions of goods and people. There would be a wholesale reassessment of European supply chains and sourcing relationships. The only silver lining to such a scenario—as the UK is demonstrating—is that governments and corporations would likely have time to adapt to the new order.
North America. There is one major risk on the front burner of great importance to procurement and supply chain organizations: the future of NAFTA. The Trump administration’s renegotiation of the Agreement is expected to commence soon after the confirmation of Wilbur Ross as US Secretary of Commerce. The Mexican government has reportedly already begun planning its position and has said it would walk away from NAFTA rather than accept a bad deal. As with the breakup of the EU, a renegotiated NAFTA—or no NAFTA at all—would disrupt decades-old sourcing and supply chain relationships among the US, Mexico and Canada, with global implications.

Asia. Competing territorial claims in both the South and East China seas have implications for sourcing and supply chains. Claims for islands and maritime rights in the South China Sea are pitting Brunei, China, Indonesia, Taiwan and Vietnam against each other, while other nations, including the US, want the Sea to remain as international waters. In the East China Sea, China, Japan and South Korea have competing claims to “exclusive economic zones” and to islands. The danger for sourcing and supply chains is that with tensions running high an incident could spark an international crisis, impacting maritime traffic in the Pacific and causing cargo delivery delays or worse.

2. Transformational Technologies

The Cognitive Era
If semiconductors, personal computing and the internet defined the 20th century’s digital age, then artificial intelligence heralds the cognitive age of the 21st century. While AI is in its infancy, a growing number of applications, most notably machine learning (ML), are enjoying commercial success, including the likes of Apple’s Siri, Amazon’s Alexa and IBM’s Watson.

Perhaps the most compelling application of ML for procurement and supply chain organizations is advanced predictive analytics. By analyzing vast quantities of data and applying algorithms and statistical analysis, predictive analytics reveals sophisticated patterns, relationships and forecasts. It can help procurement organizations evaluate the performance of existing suppliers, select new ones, optimize delivery and improve payment processes. As new AI applications incorporating deep learning come to market, the quality and value of the solutions will only improve.

This seems to be well understood by procurement professionals. Indeed, research conducted last year by The Hackett Group on key procurement issues found that of all the emerging technology trends that will shape the future of procurement in the digital-first economy, predictive analytics and forecasting tools will experience the greatest level of transformation in the next decade. (See Fig. 3.)

Of course, AI does not function in a vacuum. New applications will utilize the vast quantity of data produced by the proliferation of constellations of IoT devices. And the maturation of infrastructure technologies such as cloud, software-defined networks (SDNs) and the debut of 5G will expand AI’s relevance to businesses.

![Figure 3. Trends with the greatest transformational impact on procurement over next decade](source: Key Issues Study, The Hackett Group, 2016)
Autonomous Logistics
The commercialization of autonomous vehicles and intelligent transportation systems will have direct and immediate implications for procurement and supply chain operations. Last April, a “platoon” of autonomous trucks made history by traveling through Belgium, Denmark, Germany and Sweden to the port of Rotterdam in the Netherlands. Participating vehicle manufacturers included Daimler, Volvo and Scania, a Volkswagen subsidiary.

Daimler, Navistar and Tesla are among the companies planning to introduce autonomous tractor-trailers in the US. Tesla announced in November 2016 it would start production this year. Given the advantages of safety and fuel efficiency and the progress being made in vehicle-to-vehicle and vehicle-to-infrastructure technologies, truck platoons could become a reality on the roads within a few years.

Autonomous transportation is not restricted to roads. Rolls-Royce, for one, is designing autonomous cargo vessels to plow the high seas. The first commercial autonomous vessels are still a decade or more away, but the technologies paving the way are being deployed today. New constellations of satellites that allow for deep-water communications across the oceans have been launched in the last couple of years, and shipping companies are updating communications systems in cargo vessels.

The first practical application of autonomous vessels could be a harbor tug that transports cargo, such as cars, from the cargo ship anchored in port to the dock. Rolls-Royce believes these types of remotely controlled vessels could be in commercial operation within the next few years.⁶

Security and Blockchain
While AI, IoT, autonomous vehicles and other transformative technologies create opportunity, they also introduce risk. Investment in cyber security is paramount, and protecting against malicious attacks must be a corporate priority. One part of the solution is the integration of ML as a first line of defense against security breaches, as it promises quick detection and rapid response.⁶

Complementing the cyber security strategy is ensuring the security of the extended supply chain. It is critical to operating an efficient, cost-effective supply chain. Secure communications between supply chain partners are integral to the protection of intellectual property.

One technology that shows promise for improving supply chain security is blockchain, a data structure that uses cryptography to securely create and share a digital ledger of transactions. The ledger creates a permanent, traceable record of all transactions, requiring no centralized management. Top-priority use cases of blockchain in supply chain management include data interchange between supply chain partners and visibility, tracking and tracing capabilities.⁷

Last year, IBM introduced a platform that allows companies to test blockchain record-keeping technology in their supply chains. And blockchain startup Skuchain is developing a blockchain-powered platform that it says will streamline the issuance of letters of credit, handling of vendor-managed inventory and verifying component origins. The potential savings could be significant, as lenders can quickly assess the quality of the collateral and issue payment—something Skuchain calls “deep trust financing.”

3. Evolution of the Electronics Industry
Industry Consolidation
The maturation of the electronics industry is forcing consolidation across the supply chain. At the same time, leading technology companies are locked in battle to dominate, or at least compete, for market share to deliver the products and services that will drive the cognitive era.

In the last few years, the number and size of technology acquisitions, including semiconductors, has skyrocketed. Global technology M&A volume in 2016 was the second-highest annual total on record, behind...
the $692 billion announced in 2015, according to Dealogic. Global semiconductor M&A volume hit an annual high of $127 billion in 2016, up 13% from the previous record set in 2015. (See Fig. 4)

The standout deal in 2016 was Qualcomm’s offer of $47 billion for Dutch chipmaker NXP Semiconductors, the biggest semiconductor-targeted M&A deal on record globally, according to Dealogic. That’s if the deal goes through, as there is concern it may get derailed following new challenges regarding Qualcomm’s patent-licensing segment.8

Consolidation in other sectors of the electronics supply chain, while not as dramatic, has followed a similar trajectory. Since 2000, the two largest electronics distributors—Avnet and Arrow Electronics—have together acquired over 90 companies. Most notable was Avnet’s 2016 acquisition of Premier Farnell for approximately $860 million, which included Newark element14, a distributor that caters to design engineers and the emerging “maker” market.

The maker market is defined loosely as electronics DIY enthusiasts, which includes millions of hobbyists as well as serious design engineers. There were an estimated 190 Maker Faires in over 35 countries in 2016. Former President Barack Obama declared the week of June 17, 2016, as National Week of Making.

The focus for many makers is the development of IoT products and services. An innovative product design could lead to a successful product launch, which could generate millions of component sales from the likes of Avnet and others.

**Tactical challenges**

When an electronics component supplier acquires another component supplier, the newly merged company typically rationalizes its overlapping product lines and discontinues some of its SKUs to eliminate product redundancy. The bigger the merger and the more products, the higher the chance there is of accelerating end-of-life decisions for components. And with mergers and acquisitions on the rise, the trend is likely to continue in 2017.

Obsolescence traditionally impacts industries that have long product life cycles, such as the medical, communications, defense and aerospace sectors. But the recent acquisition trends suggest that consumer electronics companies such as smartphone manufacturers, which have shorter end-product lifecycles, will also be impacted. This would place a heavy burden on contract manufacturers that are responsible for managing the production of products for multiple OEM customers. The worst-case scenario could be the delay of a product launch.

Another perennial sourcing challenge is managing component counterfeit risk. Counterfeiters are always trying to keep one step ahead of the law. One recent trend is the importation of blank chips into the US. To be considered truly counterfeit, components must show the trademark or logo of the rights holder without permission. But if the parts carry no such marks when they enter the country, US Customs and Border Protection has no way of knowing whether they are fraudulent or not. Once these components are in the country, counterfeiters can then mark and sell them to unwitting buyers.9
Action Items

The diversity of the changes outlined above—and their associated risks—require procurement and supply chain organizations to have processes in place to manage strategic investments and, at the same time, be agile and responsive in dealing with potential threats to operations. Technology adoption is an example of the former. Component life-cycle management is an example of the latter. Geopolitical shifts such as NAFTA renegotiations and EU elections span both.

Specific observations for how supply chain and procurement organizations can mitigate risk include:

1. Create or leverage existing cross-functional teams to prioritize the sourcing and supply chain challenges your organization faces. Monitor developments regularly and update your contingency plans accordingly.

2. Communicate and collaborate with trusted supply chain partners to validate your perception of challenges; align strategies and action plans as necessary.

3. If your organization has used an ad hoc approach to managing risk, consider a more formalized approach and evaluate commercial risk-management tools.

4. Research and benchmark companies that are leading the charge in implementing innovative technologies such as AI and blockchain and create a roadmap for your organization’s investments.

5. Remain current regarding component end-of-life and counterfeit trends, working closely with authorized distributors and trusted suppliers.

REFERENCES

1 “Building agility and resilience into procurement for a digital economy” The Hackett Group, Aug. 12, 2016
3 “An update on trends in global sourcing” IHS Markit, Jan. 2017
4 “The pitfalls of renegotiating NAFTA” The Economist, Feb. 11, 2017
5 “Forget autonomous cars – Autonomous ships are almost here” Oskar Levander, IEEE Spectrum, Jan. 28, 2017
6 “The role of artificial intelligence in cyber security” Thorsten George, Security Week, Jan. 11, 2017
7 “Supply chain hot trends Q3 and Q4 2016” eyefortransport, 2016
8 “It can get worse for Qualcomm: Legal blitz threatens NXP Semiconductor acquisition” Andrew Tonner, Motley Fool, Feb. 10, 2017

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