BUSINESS WHITE PAPER

Strengthening the Modern Supply Chain

Reducing Risk & Adding Resiliency with Cross-Border Trade Data

Minimizing Risk in a Disruptive Trade Environment

For supply chain executives, this past decade has been notable for a large number of supply chain disruptions. These disruptions have highlighted vulnerabilities for individual companies as well as entire industries on a global basis.

A stoppage in production could cost tens of thousands of dollars in lost revenue and constitutes one of the most demanding concerns facing companies today. External factors, such as national disasters, financial crises, and trade policy changes can cause substantial disruptions and highlight the importance of an effective supply chain.

For example, the Tohoku tsunami that struck Japan in 2011 left both the global auto industry and key segments of the electronics industry reeling. As a result, the disaster amounted to a nearly $20 billion USD reduction in exports from Japan for several months.

More recently, the case of the ongoing drought combined with socio-economic factors in Madagascar is a perfect example of supply chain risks and the need for resilience. The drought left importers scrambling to find the necessary and cost-effective suppliers for the vanilla bean. While just a small bean, the impact has been substantial since Madagascar produces nearly eighty percent of the world's supply. Over the past several years, the price per kilogram had grown exponentially to be equivalent of that of gold. Today, with the trade skirmishes swirling among many major trading partners, supply chain executives are experiencing shortages of the product. Production from the two other leading exporters, Indonesia and India, simply cannot meet demand.

Less widespread disruptions such as factory fires, labor strikes, or quality assurance issues, can also have costly repercussions to individual companies. In these cases, a different kind of operational response from the organization is required depending upon the nature of the disruption. For example, a product recall would require a review of sourcing and manufacturing whereas a disruption in the transportation network, such as labor strikes, would need a more rapid-response and a costlier shift in distribution.

Unforeseen, sudden impact disruptions are not the only factors of consideration for today's supply chain executives. Recurrent risks, such as demand fluctuations or seasonal market variances, require efficient management by experts with constant improvements geared toward seamless control of the way a company reacts to supply and demand needs. These are more likely to have a gradual onset and longer impact.

Unfortunately, the cause of these disruptions can often go unexposed until the negative repercussions appear. By then, it may be too late to account for the changes that should have happened to prevent the disruptions. This can lead to major operational challenges and a potential loss of revenue.

Disruptions have a major impact on all parties across a supply chain. It can negatively impact the flow of materials from manufacturing plants through to customer delivery.

Today's market leaders know that they must protect their supply chains from serious and costly disruptions. However, the more obvious solutions – increasing inventory, adding capacity at distribution centers, adding multiple new suppliers – can drive up costs and can undermine supply chain efficiency.

Efficiency Versus Risk Reduction

Maximized supply chain performance at the lowest costs is the strict definition of an efficient supply chain. This, however, is only part of a well-built supply chain. "Effectively efficient" supply chains have added concerns placed on outcomes – whether the end consumer is happy with the product and the level of service. To create both an efficient and effective supply chain, companies invest in faster delivery times, shorter factory processing times, and better inventory management.

Over the past several decades, many businesses have implemented techniques and technologies such as lean production methods, just-in-time manufacturing, outsourcing, and single-source suppliers. Such processes can both improve margins and drive positive consumer experiences; however, these practices also come with added risk.

Supply chain effectiveness and efficiency, aimed at improving a company's financial performance, is very different from supply chain resilience and risk reduction and can be often seen as having an inverse relationship with one another. Risk mitigation tactics simply involve more resources than would be required of a streamlined, effectively efficient supply chain.

Risk management should also be continuous. Market leaders should repeatedly detect, measure, and evaluate real or potential risks in order to reduce or eliminate negative exposure. Unless the risk mitigation process is continuous, businesses will always be in a reactive position, playing catch up, and dealing with the damage.

Today, supply chain managers understand that they can no longer simply focus on maximizing the supply chain profitability. Resiliency must also be a determining factor. To be truly resilient, a supply chain must be flexible with both its suppliers and modes of transportation. They must also have contingencies in place should a disruption occur.

Adding this type of resiliency to a modern, international supply chain requires effective management solutions. Tracking import and export data can help pinpoint trends in real-time while also identifying potential new suppliers to serve as a contingency. Global trade data adds business intelligence to decision-making and enables supply chain managers to make more informed, and ultimately better, decisions.

Global Impact of Supply Chain Disruptions

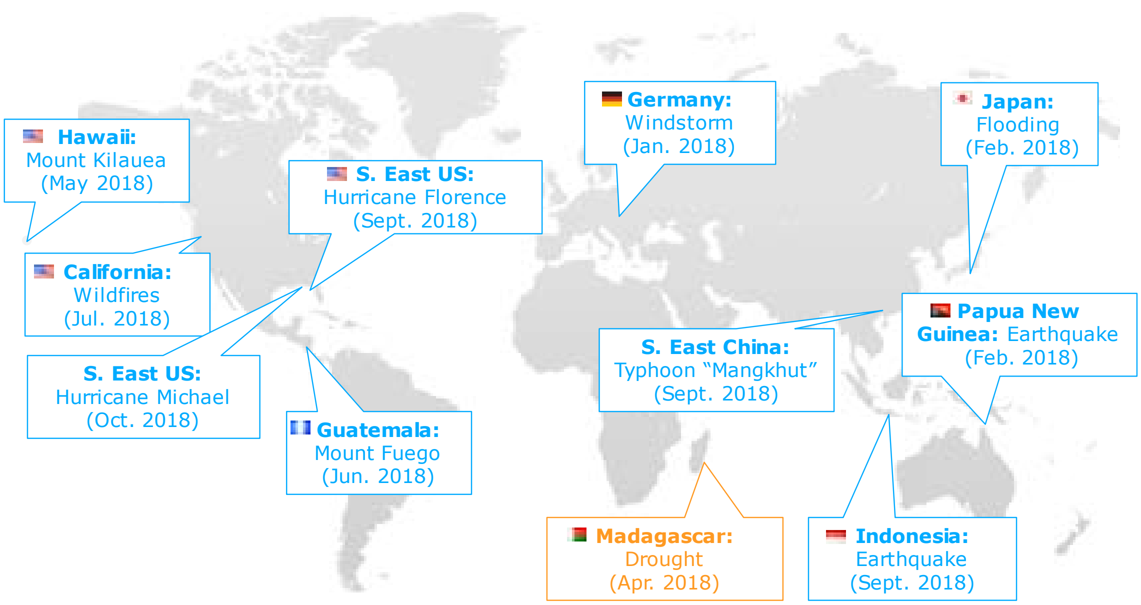
Major unforeseen supply chain disruptions are becoming more frequent. Events like the earthquakes in Indonesia this past year, Hurricanes Harvey and Irma in 2017, and large scale flooding in India and China underscore the immense risk natural disasters poses to supply chains.

One of the more illuminating examples of this effect, and the potential costs of not adequately reducing risks, comes from Japanese manufacturers. The 2011 earthquake exposed key vulnerabilities to the just-in-time manufacturing philosophy pioneered by Japanese companies. Those businesses reportedly invested significant resources into more resilient supply chains. As a result, the companies increased inventory supply, diversified production, and created alternative manufacturing capabilities.

In April 2016, a series of earthquakes struck the Kyushu Region of Japan. This would prove to be the first major test of the improved supply chains. However, automobile manufacturers across Japan were forced to suspend much of their production as part manufacturers in the region were shut down. Globally, automobile exports fell nearly twenty-five percent over the next months with a total loss of almost $2 billion USD according to Japanese census data from Descartes Datamyne™.

Another example of natural disasters disrupting supply chains is the Atlantic hurricane season in 2017. After Hurricane Maria devastated Puerto Rico, manufacturing was at a standstill for months as power was slowly restored across the island. One of the sectors that felt a profound impact of this delay was the U.S. healthcare industry. There are a very small number of manufacturers in the United States producing IV fluid bags and Puerto Rico is a key manufacturing hub for the product as well as other pharmaceuticals and medical equipment.

As inventory ran low at wholesale medical supply companies and wellness clinics saw themselves paying a nearly 600 percent markup, Hospitals, unable to afford the markup, resorted to alternative means of drug delivery. Several months after the hurricane, the FDA permitted the import of the product. This decision resulted in a nearly 2000 percent increase in imports of IV saline and IV equipment according to census data from Descartes Datamyne.



Protecting a Supply Chain

As outlined above, there are a wide array of unforeseen disruptions that can have a dramatic impact upon a business. The ability for a company to reduce risk and address anticipated and unanticipated events occurring across the supply chain is critical. Because of the devastating potential of unmitigated disruptions, a comprehensive strategy to alleviate disruption should be a top priority.

In order to manage supply chain risks, organizations need to first identify those risks. Properly assessing risks requires careful consideration of where to buy a product, where to manufacture, where to locate distribution centers, and which ports to use. Valuable time and effort can be saved if the majority of this information can be found within a trade content solution that can aggregate the data, clean the information, and present the global trade statistics in an easy-to-use platform.

1 *Establish Contingencies*

The potential for any supply chain disruption presents a challenge to supply chain experts since there is no way to determine when or if a disruption will occur. The correct response, then, is to plan around the possibility. If a critical supplier is hampered, an alternate supplier should already have been identified.

> One of the more famous examples of proper supply chain disruption mitigation can be found in the early days of cell phone adoption.
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> In the late-90s, one of the largest companies in the mobile phone industry was competing with another large Finnish mobile phone manufacturer for marketshare in the rapidly-growing industry.
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> In March of 2000, a small factory fire hit the manufacturer of the microchips used by both companies. While the fire was easily contained, almost the entire plant's inventory of microchips was destroyed by the smoke and water damage. The Finish manufacturer quickly reacted by shifting their sourcing to other plants and any other supplier they could find. The business even went to the point of re-engineering their phones to be modular and compatible with other types of microchips produced in America and Japan. Unfortunately for the first company, they had decided to rely upon a single-source supplier for their key components and mistakenly accepted assurances that the damage from the fire would be minor. After recognizing the gravity of the situation, they found no other source of supply and would ultimately lose many months of production, a significant share of the market, and an estimated $400 million in annual earnings.
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> The Finish company's pre-established contingency plan to diversify their suppliers in the event of a major disruption enabled them to gain a significant market share on their competitors and, even with the costly shifts in the supply chain, increase profits by 42 percent that year.

Protecting a Supply Chain

2 *Flexible Transportation*

To protect against disruptions that may occur in the ocean, in the air, on the road, or at distribution centers, market leaders utilize a flexible logistics strategy that relies on multiple modes of transportation, multiple partner carriers, and alternative routes.

> During the Atlantic hurricane season in 2017, Hurricanes Harvey and Irma completely shut down significant parts of Texas and Florida and truck shipments were at a standstill. While highways were shut down, rail lines were not and remained open throughout the disasters. Companies with flexible logistics strategies were able to see minimal impact on their shipment times.

3 *Segmenting & Regionalizing Supply Chains*

For many products, especially those with high transportation costs, segmenting and regionalizing the supply chain can reduce cost and improves supply chain resilience.

Employing some segmentation for specialized goods in the supply chain based on product volume, variety and demand uncertainty not only increases profits; it also improves the ability of the supply chain to contain the impact of a disruption.

Regionalization often helps companies reduce costs and minimize the impact of disruptive events. In the event that an issue arises, affected markets can still be temporarily served by supply chains in neighboring regions. So, although many companies regionalize to lower costs, they also experience the added benefit of a more resilient supply chain.

Why Visibility is More Important than Ever

Visibility remains one of the most vital aspects of an effective, resilient supply chain. It is a critical component to limit disruptions and end the domino effects of delays and uncertainty.

Another best practice to mitigate risk is to have end-to-end visibility across the entire supply chain. This includes visibility across all trading partners, suppliers, manufacturers, distributors, customers — from raw materials to the point of delivery.

Along with reducing risk of disruption, accurate supply chain visibility enables businesses to readily disclose information about sourcing and shipping practices. Transferring and reusing line item detail for customs and security filing is also key. Market leading businesses are also notifying customers when their goods have crossed borders to add clearance visibility.

Descartes's Business-to-Business (B2B) Integration Solution solves the technical complexity of global collaboration between different players. It provides access to centralized, fully automated electronic capabilities through the Descartes Global Logistics Network™ (Descartes GLN™). Users can gain complete real-time global visibility of their supply chain through secure connection and communication with trading partners.

Global Trade Content

In addition to enabling better informed business decisions and market determinations, actionable global trade content (GTC) allows businesses to identify potential disruptions and establish a more resilient supply chain. However, such insight is only possible with robust, flexible, and scalable GTC solutions.

With a comprehensive database of accurate, up-to-date import-export information, powered by the Bill of Lading and Census data of 230 markets across 5 continents, Descartes Datamyne enables risk reduction through supplier diversification. By identifying alternate suppliers based on Harmonized System codes, users can search across multiple nations and sort by country of origin. Users can then narrow the search to identify suppliers based on port of delivery.

Finally, responsibly identifying potential alternate suppliers would not be complete without due-diligence vetting. Descartes Denied Party Screening™ (Descartes DPS™) provides organizations with easy-to-use options to screen those suppliers (as well as other trading partners and customers) against one of the most comprehensive databases of consolidated denied and restricted part lists available.

Outside of identifying alternate suppliers, global trade content allows companies to foresee potential disruptions before they occur. By examining market overviews and historical trends, users can identify demand shifts and coordinate their supply chains accordingly.

Conclusion

The number and diversity of disruption events is on the rise with many emerging and growing threats across every continent. From the prevalence of factory fires and extreme weather events to the rise of cyber-attacks, the larger risk picture is extremely fragmented. A thorough, well thought-out risk management strategy is therefore vital.

In today's risk intensive environment, it is critical to better pinpoint risk, diversify suppliers, better connect to trading partners, identify trends and potential points of supply chain disruption before they occur. World class import and export data as well as systems that can connect and re-use supply chain information are key to adding supply chain resiliency and mitigating risk.

Descartes B2B Integration Services™ - Trading Partner Collaboration

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Descartes B2B Integration Services offers outsourced IT services that enable an organization to remain focused on its core business while facilitating seamless integration and interaction with global supply chain partners through the Descartes GLN.

- Messaging
- Workflow Management
- Routing Options
- Data/Document Management
- Certificate Management
- Integration and Transformation Services
- Alerts & Notification Management
- Trading Partner Management

About Descartes

Descartes (Nasdaq:DSGX) (TSX:DSG) is the global leader in providing on-demand, software-as-a-service solutions focused on improving the productivity, performance and security of logistics-intensive businesses. Customers use our modular, software-as-a-service solutions to route, schedule, track and measure delivery resources; plan, allocate and execute shipments; rate, audit and pay transportation invoices; access global trade data; file customs and security documents for imports and exports; and complete numerous other logistics processes by participating in the world's largest, collaborative multimodal logistics community. Our headquarters are in Waterloo, Ontario, Canada and we have offices and partners around the world. Learn more at www.descartes.com, and connect with us on LinkedIn and Twitter.

The Descartes Systems Group Inc.
120 Randall Drive, Waterloo, Ontario, N2V 1C6, Canada
Toll Free 800.419.8495 | Int'l 519.746.8110
www.descartes.com | info@descartes.com

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