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U.S. Resilience Project

BEST PRACTICES IN CYBER SUPPLY CHAIN RISK MANAGEMENT

Resilinc

Leveraging Supply Chain Risk Intelligence for Strategic Advantage

INTERVIEW

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The Next New Things in Risk Management

- Automated solutions to map supply chains to the first and sub-tier levels, including component, product and equipment data. Scales to include assessments of supplier business continuity plans, corporate social responsibility compliance and parts change notifications.
- Suppliers only fill out survey questionnaire once for use by multiple customers, with frequent updating.
- Visualization and analytics on "what-if" scenarios and revenue impacts.

Customer Challenges

As supply chains have grown more complex and more globalized, the likelihood that a manufacturing organization will not experience a disruption in the next 24 months is a mere 2 percent.[1] This means, there is virtually a certainty that a company will experience a major event in the next 24 months that will test their supply chain resiliency. For most companies, an investment in a world class supply chain resiliency capability has become an imperative. This includes having advanced levels of intelligence about their global suppliers across multiple tiers, and analytics that help quantify the critical failure points and enable prioritized and proactive mitigation across the highest exposure areas.

In particular, this begins with knowing who makes up the supply chain — tier 1 suppliers as well as sub-tier suppliers — where they operate, and what their risk profile looks like based on financial stability, location risk, production capacity, operational risk and business continuity/recovery preparedness.

1 The ROI of Supply Chain Resilience, A White Paper by Sourcing Innovation, Sponsored by Resilinc, November 2013, http://info.resilinc.com/roi-of-supply-chain-resiliency-resilinc-sourcing-innovation.

Figure 1. Supplier Risk Scoring

Financial Risk
- Financial Health
- Credit Risk
- Z-score
- Debt Rating

Operational Risk
- Delivery/Lead Time Performance
- Quality
- Cost & Flexibility
- Capacity

Location Risk
- Natural Disaster
- Geopolitical
- Macroeconomic
- Location or Site-Specific Risk

BCP Risk
- Pandemic
- Emergency Response
- Insurance
- Communication

Recovery Risk
- Recovery Times
- Short, Medium, Long-Term

The need for advanced supply chain intelligence and analytics has created tremendous market opportunities for companies like Resilinc, which leverage the best innovations in cloud, mobile and social networking concepts to solve an age-old problem in supply chain management — manage risk proactively, with intelligence and deliberation, and deliver long-term competitive advantage, brand protection and increased shareholder value.

The "Early" Days: The Manual Approach

In the early days of the supply chain risk management discipline, companies used tools like email, spreadsheets, Word documents, etc., to manage and share information about their supply chains. While commodity managers or buyers often had data that was useful to their company in an emergency, it was usually an incomplete, disjointed and inconsistent dataset that was not readily available to the broader organization. Commodity managers and buyers focused on sourcing products at the best cost and managed mostly the highest spend suppliers on an ongoing basis — when they did take risk into account, it was very subjective,

and interpreted and executed according to each individual's risk tolerance levels. All too often, commodity managers did not know where supplier factories were located to be able to conduct a physical site audit. It was not unusual for a commodity manager to find out that multiple suppliers sourced critical parts from the same sub tier supplier. Even when this information was known, it could be lost over time as people moved roles or companies.

To understand how disruptions might affect their supply chains and capture risks associated with sub-tier suppliers, larger companies started sending out regular requests for data. Typically this was done via email with a questionnaire attached. Over time, their suppliers started receiving increasing numbers of similar requests for data in slightly different formats from all of their customers. Large suppliers, like Broadcom, found they had to staff a team that spent their days returning customer surveys.

The New World of Big Data

Companies soon recognized that this was not a productive approach to collecting data and sought alternative approaches — either by building automated solutions in-house or seeking outside help to create tools, manage (cloud) systems, and provide services to gather intelligence and analyze the data for them.

Resilinc is one solution provider that took an innovative approach to solving the data collection problem. First, the company standardized the set of inputs that a supplier should provide to customers. Then, Resilinc harnessed the power of social networking platforms and applied it to supply chain by making this standardized set of information shareable with multiple customers, simply by approving their access. Thus, the suppliers could complete a survey request once and approve access to that intelligence to multiple customers. For example, if Broadcom is a supplier to Apple, Hewlett-Packard, Motorola, IBM, and Dell, and those companies all use Resilinc, then Broadcom only has to fill out one survey to satisfy five of its customers. Resilinc has effectively created the network effects of a LinkedIn like model for supply chain data. Since suppliers get to approve the customers with whom their information gets shared, it builds trust and confidence about the sanctity of the information. Most importantly, it creates a lot of efficiency in the information over time, because with a single refresh, the supplier can satisfy all approved customers. This is foundational to an ongoing capability that endures over time.

End-to-End Visibility for Supply Chain Risk Management

1. Map the Supply Chain
2. Gather Supply Chain Intel down to the part level
3. Centralize in the Cloud: Risk, Compliance, BCP, Capacity, CSR
4. Visualize and Analyze (what-if scenarios, revenue impacts)
5. Global Monitoring 24x7

This trend benefits both customers — who get timely and consistent information sets from all of their critical participating supply chain partners — and a productivity boost for suppliers who only have to provide the information once. In fact, this has been such a successful approach to collecting supply chain risk information that Resilinc's onboarding process for potential suppliers has evolved to include data collection for conflict materials compliance, corporate social responsibility issues (e.g. compliance with equal opportunity and fair labor requirements to environmental concerns), business continuity planning, and capacity management. The workflow naturally supports any information request and could be expanded to include supply chain physical and cyber security as well.

The Specific Challenges

When Resilinc started its business five years ago, it set out to solve three specific strategic problems with which companies were struggling:

- Streamline supply chain visibility and deliver a win for customers and suppliers;
- Harness the power of advanced supply chain intelligence by enabling the broader organization to access it and leverage it for various purposes; and
- Sense global events 24x7 and notify customers quickly, enabling them to beat the competition and secure parts and capacity quickly and cost effectively.

Streamlining Supply Chain Intelligence

Companies need visibility into tier 1 and sub-tier suppliers as a foundation for their resiliency programs. However, manual methods do not scale for companies with hundreds or thousands of tier 1 suppliers, or for the sub-tiers where supplier numbers grow exponentially. It becomes even more complicated when a supplier sits at multiple levels within the same supply chain. While large companies are

often able to make suppliers adopt solutions that they prefer, smaller companies do not have the deep relationships or the power to get the information they need. A standardized set of information residing in a central repository and an interconnected, but fully controlled, network could benefit all parties and enable suppliers to satisfy customers large and small, without any corresponding proportional increase in effort.

In many cases, it is not sufficient to just map supplier locations. Pertinent information needs to be collected at a site and part level. Product, component and equipment data is also necessary. A factory fire on one production line may disrupt a single or sole-sourced component and bring a global supply chain to a halt as quickly as it takes to put out the fire. Alternately, the fire could destroy a unique long lead-time piece of equipment that is used for fabrication, so that it becomes critical to know the capabilities of the equipment supplier to ensure that does not become a failure point. Resilinc also collects information about the supplier's recovery time for a given activity at a specific location. This is important to understand how long it will take the supplier to restart operations as well as recover to 100 percent in the event the site is impacted by a major event.

The Resilinc solution not only collects this information, but also renders it visually and with analytics that quickly shine the spotlight on potential chokepoints and single points of failure.

Harness the Power of Supply Chain Intelligence

Traditionally, only commodity management or operations had critical supplier data, and this knowledge resided in their laptops or in their memories. This created a huge gap in the ability to analyze the patterns and glean comprehensive intelligence that could be leveraged for various purposes. Additionally, the thirst for the broader organization to have information created a bottleneck around the commodity management function.

The best companies in the world harness this advanced intelligence to shape strategic decisions that have a lasting impact on the long-term resiliency of the company, such as supply chain network design, new product design, etc. It is now recognized that this information can serve multiple purposes, and it would be of tremendous value to many teams — such as risk management, finance, legal and IT to name a few. As data is collected from the suppliers and scrubbed for accuracy, it is continuously added to the shared datasets for ongoing analysis. Since Resilinc aggregates data across all suppliers, all parts and all products — and makes it available to users through the cloud — it opens up a lot of potential applications where this can be applied, without a dependency on the commodity manager to provide it.

In this new world of "big data," there are sophisticated tools and services to allow general users to turn massive (and growing) data sets into actionable intelligence and reports. Access to a repository of supplier data enables various teams to proactively analyze the data for risk mitigation purposes. Users can slice and dice data to create functional-specific reports based on various risk tolerances and thresholds, such as supplier financial health, long lead times on single or sole source components, or a concentration of suppliers in a geographically undesirable location. Often these reports are graphical so that they are easy to digest. For example, Resilinc's dashboards show "hot spots" where many tier 1 suppliers are reliant on a single tier 2 supplier. It also shows suppliers with the highest impact to the business who also have an inherent risk, whether location based, financial, sourcing, recovery or continuity risk etc.

The information and capabilities can be applied proactively, but also be very effective in responding to disruption as they occur. "What if" tools can assess the potential impact of an incident in minutes and hours, not weeks, and present it in a visually powerful and actionable manner for executives to make fast and accurate decisions. According to a 2012 Zurich study:

> ...The average cost of a single disruption was £230,000 pounds or $360,000 dollars before management time, lost customers, and damage to corporate reputation (which could be substantial) is factored in. Without quick and proactive efforts to mitigate a supply chain disruption, an organization can expect to lose 11 percent of the revenue at risk from a disruption. Given that a major disruption for a $1 billion manufacturer will often put 10 percent, or more, of the organization's revenue at risk, this translates into a revenue loss of over $10 million from a single disruption for a $1 billion manufacturer.[2]

In addition, Resilinc provides its customers an integrated collaborative "war room" function to improve communication, reporting and decision making during an incident. The war room provides data on the event including impacted parts, products, suppliers, sub-tier suppliers, customers, revenue at risk, and so on to team members involved in incident response.

Sense Global Disruptions 24x7

Companies still recognize that the best data collection and analysis capability may help proactively mitigate many supply chain risks and quickly respond to unanticipated events, but they cannot prevent bad things from happening. Therefore, keeping a finger on the pulse of global events is really important to ensure that companies are first to the scene securing parts and capacity in the

2 https://www.resilinc.com/the-roi-of-supply-chain-resiliency-its-more-than-you-think/.

event of a disruption occurring. Companies must complement their proactive risk management capabilities with ongoing monitoring of their global supply chains on a 24x7 basis for a wide range of events. Resilinc monitors almost 30 different types of disruptions, from catastrophic and weather related events to factory fires; terrorism; regulatory actions by FDA/EPA/OSHA; ongoing merger, acquisition and spin-off activity; etc. Keeping tabs on global events 24x7 in multiple languages and investing in social media listening tools, of course, is a resource intensive effort to perform in-house. In addition to Resilinc, there are several companies offering global event monitoring and notification services that leverage traditional and social media sources and cover various types of events.

Beyond Traditional Supply Chain Risk

Once the initial three challenges of mapping the supply chain, providing analytical tools and event monitoring were solved, Resilinc saw opportunities to expand the existing workflow capability in other functional areas to address compliance risk, and CSR/brand risks as well as capacity risk. All these required centralized information gathering, a "LinkedIn" like connected network and platform facilitating information exchange in a controlled and secure fashion.

For example, the system facilitates the new conflict minerals reporting requirements in the United States. Resilinc applied the EICC-developed supplier and part level survey to its existing workflow process. Again, this has benefitted both the companies and their suppliers by scaling the requests and responses to serve many organizations. Since customers are on different cycles to request their conflict mineral data, there is almost a continuous update of the data set. In addition the data request and responses are tracked through the system to provide an audit trail so companies can demonstrate compliance with the regulations.

The same workflow system can be used to collect supplier Business Continuity Plans, information and CSR data (e.g. Environmental Health and Safety (EH&S) programs, and supply chain security. The traditional BCP approach was to collect lengthy plans that could not be easily compared or assessed for completeness, accuracy or gaps. In the Resilinc approach, suppliers provide a self-assessment at a site level, which is easily quantifiable so areas of improvement and noncompliance can be identified visually and at a glance. This increases the effectiveness of the BCP program exponentially, makes it actionable, and drives targeted improvement over time.

Most recently, Resilinc is beginning to leverage its global supplier network and information to support the supplier Part Change Notification (PCN) process. Today this process in extremely manual, error-prone and slow. Failure to process supplier and part change notifications in the high-tech and life sciences industries in particular can cause shipping delays, product failures, quality issues, and compliance exposures with both top and bottom line impact. To address these pain points, Resilinc provides an integrated inter-enterprise collaboration solution for both suppliers that issue change notifications and brand owners that consume them.

For suppliers, the solution provides a centralized process for creating and securely sharing change notifications, and tracking customer responses. For brand owners, the solution automates the inefficient activities associated with processing the potentially overwhelming volume of supplier PCNs.

The Return on Investment for Big Data

Companies that have invested in building their SCRM processes and supporting analytic technology have demonstrated the ROI of these capabilities during multiple major incidents in the past few years. Many of these systems allow a company to map an incident and the impact to suppliers in a geographic area around the event, e.g., what suppliers sit within a 50- or 100-mile radius of an earthquake, flood or other natural catastrophe, and begin to take almost immediate action to contact suppliers and start identifying alternate suppliers. Cisco has attributed its fast reaction and savings of millions of dollars following the Japan earthquake in 2011 to its supply chain risk management team and the dataset they had collected.[3]

Supply chain data and analytics allows companies to engage in proactive risk mitigation, including redesigning supply chains to avoid geographic concentrations of tier 1 and sub-tier suppliers and setting risk thresholds for capacity to ensure continuity of supply. Amgen, for example, has used the sub-tier supplier data Resilinc collects for them to support their operations mission "to ensure that product is available for every patient, every time."[4] Other companies such as EMC and Cisco have leveraged their supply chain risk data to implement "design for resiliency" programs. These minimize the number of single and sole source parts used during product development that could cause continuity challenges once the product goes to market.

3 https://www.instituteforsupplymanagement.org/files/RichterAwards/CiscoSubmissionSupportDoc2012.pdf.

4 http://www.amgen.com/pdfs/misc/Fact_Sheet_Manufacturing.pdf.

For small companies, the data can be enlightening and empowering. Often small companies are highly dependent on their contract manufacturers to manage not only production but sourcing and supplier management as well. This means that often they have no direct contact with their suppliers, and therefore become extremely vulnerable during major disruptions where supplier relationships play a huge part. The Resilinc platform enables these companies to connect with suppliers directly, gives them new visibility into their supply chain, exposes areas of weaknesses, and enables them to target their scarce resources on the real problem areas — and putting them in better control when disruptions occur.

Insurance brokers and underwriters are rewarding strategic supply chain resiliency capabilities with better access to contingent business interruption insurance with increased coverage, lower deductibles and faster processing of claims. Companies are rewarding suppliers with a strong focus on resiliency with trusted or preferred partner status, forging long-term relationships and awarding a greater share of their business.

Finally, information and analytics investments allow companies to improve productivity of their supply chain experts, and invest their expertise in other areas of the business that cannot be automated. According to a white paper on the ROI of resiliency:

> Good supply chain visibility significantly reduces two types of manpower costs in an average supply management organization: Supplier Information Management (SIM) and risk management event monitoring. When one considers that a large organization can easily have 20,000 suppliers, maintaining supplier information takes a considerable amount of effort, especially considering the breadth of information required by the supply management, engineering, accounts payable, risk management and logistics departments of the organization. In fact, Gartner found that an average $1 billion company spends 1,000 hours every week managing suppliers and their information. This time is primarily spent on data entry and maintenance, contact requests for updated data, compliance monitoring, performance monitoring, accounts payable and invoice verification. At least one-quarter to one-half of this time is spent on supplier information management alone, which is the equivalent of 6 to 8 FTEs (Full Time Employees) for a $1 billion dollar company.[5]

5 https://www.resilinc.com/the-roi-of-supply-chain-resiliency-its-more-than-you-think/.

Companies are confronting the fact that supply chain risk management and resiliency is no longer an optional activity. If they are not doing it now, customers or their board of directors will soon demand it. Mapping and analytics solutions help get the work done effectively and efficiently so that companies can meet these demands without adding a lot of expensive headcount. Cloud, mobile and social networking technologies have significantly reduced the cost of delivering these capabilities. Moreover, the advanced supply chain intelligence benefits a wide range of strategic business initiatives and objectives, including long-term shareholder value preservation, compliance, brand loyalty, and ongoing competitive advantage. The new breed of innovative companies, such as Resilinc, is enabling supply chain resiliency to be within reach of companies of all sizes and all budgets.