Analyst Insight

Aberdeen Group
A Harte-Hanks Company

September 2012

CSCO View of Resilient Supply Chains

The fear of a catastrophic event affecting their business can keep any executive awake at night. The response to these events is completely disruptive to the business and often very costly. The quality and timeliness of the response can make or break reputations in the market and are often determined simply by facility locations or suppliers' locations.

Having a "resilient supply chain" in place to mitigate these risks and dampen the effect of these catastrophic events is a top of mind subject for all executives across all industries.

This report will examine the concept of a resilient supply chain and define what it takes to be considered as one. We will further evaluate the capabilities that companies now have in place and where there are gaps to be overcome for companies across all levels of maturity.

Business Context

Disasters and disruptions come in many forms, both natural and man-made. However, the two most recent large scale natural disasters, the April 2010 volcanic ash cloud caused by the eruption of the Eyjafjallajökull volcano in Iceland, and the March 2011 Tohoku earthquake and resulting tsunami in Japan, were so visible and disruptive that they caused the majority of companies to go back to the drawing board to evaluate how exposed they are from a supply chain risk and resiliency perspective. During the ash cloud when air freight was shut down in Europe, the companies that had visibility to their shipments and access to alternate routes through barge, rail, and over the road, quickly locked up all the available transit options in order to keep their shipments moving. Following the tsunami in Japan, the companies that could see the status of their orders, and had visibility to alternate suppliers, capacity, and transportation options were able to lock in alternate sources of supply and transit before other companies barely got started.

Figure 1 shows the pressures being felt by companies in terms of disruptive forces.

Analyst Insight

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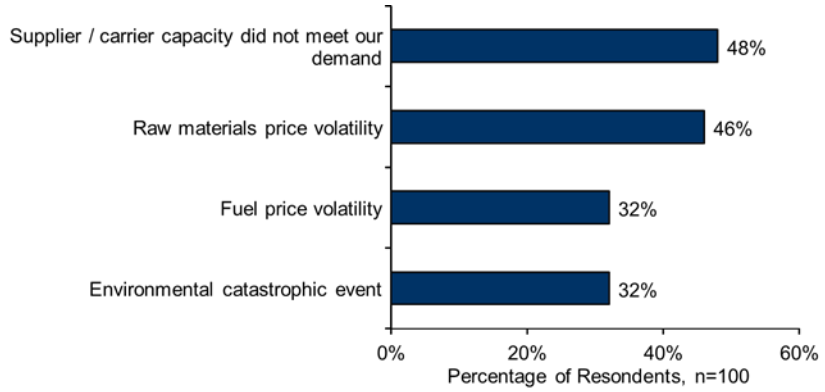
Figure 1: Supply Disruption Pressures



Source: Aberdeen Group, March 2012

Price volatility for raw materials and fuel are ranked as two of the top four pressures and these pressures are felt worldwide due to commodity pricing issues. Their impact is felt by all industries and locations across the globe.

In comparison, "environmental catastrophic event" is a strong third place, even though disruptions are regional in nature. The far reaching impact of the 2011 tsunami to multi-tiered supply chains was quite large, ranking equally to fuel pricing, a worldwide pressure. The impact of the event was much broader than the region in which it occurred and the businesses directly involved. This disruptive pressure has never been ranked as highly before.

It is quite likely that the top ranked pressure of "Suppliers / Carriers not meeting demand" was further influenced, at least indirectly, by the environmental events as well as the man-made issues.

Just understanding the events and actions taken by companies that were the most successful during these events provides clues to the capabilities that had to have been in place in both the organization and the process to respond as a resilient supply chain. In the next section we will drill into these actions and examine the capabilities that enabled their rapid response and recovery.

Resilient Factors

Identifying the basic elements that had to be in place provides a framework for defining a resilient supply chain. We have grouped these into four major foundational pillars; 1) visibility, 2) planning and measurement, 3) sourcing and supplier management and 4) timely execution. These may appear to be generic terms, but the following insights and discussion should be applied when evaluating whether an organization has adequate capabilities in place to enable their resiliency or not.

Visibility

The first requirement described in all accounts was the need for visibility. This would apply to all supply orders and where they were located. It would also include alternate suppliers and their available capacity, shipping lanes, modal options, and customer orders, so that it could be understood which customers were impacted, where, and by how much.

But drilling down a little deeper, it was the timeliness of the visibility and alerts to the issues in near real-time that made the difference. This means that visibility goes beyond connectivity and includes the processes required to interpret the feedback and provide intelligent visibility.

However, none of the real-time alerts would have been feasible at all without first having the connectivity and the ability to see from the beginning. This makes visibility a basic pillar underlying all of the other components.

Plan and Measurement Capability

Given the ability to see what was happening, the next critical item was to compare to or measure against the plan of record, and to do so quickly. This required that there be a plan of record in place to start with so that feedback and exception management capability could highlight any issues relative to the plan. The critical differentiator for most companies was the time required to have this assessment in place as events unfolded. Those that had answers within hours, or the first couple of days, were able to take advantage of opportunities quickly compared to those that lagged behind.

Visibility must be there to start with, but knowing its impact on the customer or partner orders is the catalyst that triggers the responses of how much and by when. By the same token, having great planning capability by itself would also be ineffective, without visibility into the issues.

The next component is supply alternatives, which assumes that there are some options available. This can only come from having a sourcing plan in place that had already considered risk mitigation concerns.

Sourcing and Supplier Management

When managing the supplier base, there are always tradeoffs to be considered. One of the first options is to determine if there is more than one source available in order to avoid the single point of failure concern. Issues to consider are quality, total landed cost, and stability. If there is no difference, the decision is fairly straightforward. If there is a difference, then a strategy of a preferred and secondary supplier might be in order. The key is to have some alternative sources in play if at all possible. From a sourcing standpoint, a supplier development effort might be necessary. The evaluation should include the total landed cost of purchase, quality, and stability. Stability itself should encompass not just the country concerns, but also the reliability of the transportation network in terms of carriers and infrastructure to support the flow of goods.

In addition to the typical sourcing concerns of total landed cost and quality, location may now be weighted more heavily in the selection criteria. If the product or supplier sourced is critical from a supply standpoint and could shut down the business, finding an alternative in another geographic location makes a lot of sense. However, it can be an expensive proposition depending on labor rates, particularly if the primary source is in a low cost country. These are part of the tradeoffs to be weighed when considering alternate suppliers.

Let us also consider the situation where there is a sole source supplier, meaning there is only one supplier that can be found that provides the specific product or service. This type of situation often exists when part of a company's competitive advantage is due to a technological edge and possibly dependent upon a unique product or process co-developed with a supplier. It can also come in the form of a service where only one mode of transportation or carrier is available. In this type of situation there may not be a second option available, but there is still a possible solution.

Along with being a sole source comes a certain level of responsibility. This could come in many forms, but the basic responsibility centers around the commitment to never cause a supply disruption regardless of circumstances. That is the type of responsibility that a sole source supplier must accept in order to hold that position. Typically that is understood up front in the discussion where joint development or a proprietary product / process is involved. It should also be incorporated into any service level agreements for those involved in product movement.

Given the ash cloud and tsunami that affected entire regions in the last two years, this type of commitment may take on an even greater meaning in the form of creating an alternate facility in a new location or stocking inventory in a different country for insurance. However it is handled, supply agreements must address the risk mitigation considerations for sole supplier situations.

Managing the supply base with a risk mitigation mentality up front provides alternatives when disruptions do occur and action is required. The fourth key pillar that enables a resilient supply chain, and ties these elements together, is the ability to execute.

Timely Execution

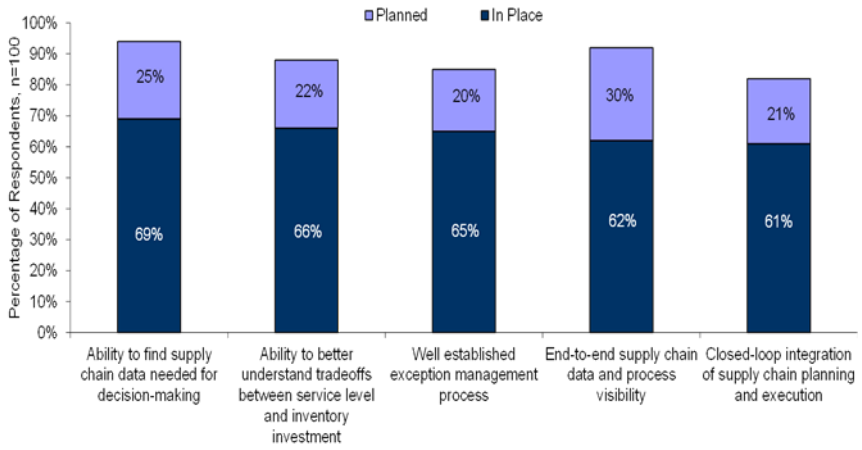
All organizations execute at some level or they would cease to exist. In the context of a resilient supply chain, the type of execution we are describing is one of a collaborative, exception-based type of performance, often described as collaborative execution. The key here is that the collaborative framework would already exist and once decisions are made regarding preferred alternatives, they would quickly and systematically be executed. In some instances, face to face or phone conversations might be required, but being able to make things happen quickly, across the entire business is the key. Having this execution framework in place enables scalability and frees up the supply chain team for those situations requiring hands on attention.

Viewing these four areas as pillars for the foundation of a resilient supply chain, let's now examine what capabilities organizations have in place compared to these requirements for resiliency.

Capabilities to Support Resiliency

Most organizations have a centralized supply chain function (81% of respondents) and the ability to monitor adherence to plan (80%) already in place. However, as we drill down further into supply chain process capabilities, the percentage of companies having critical elements in place drops down into the sixties as a percentage as shown in Figure 2. Although not as high a percentage for in place capabilities it still represents a majority. The encouraging observation when factoring in intentions, most companies seem to recognize their shortcomings and plan to address the gaps by putting those capabilities in place, moving the percentage back up into the eighties and nineties.

Figure 2: Basic Supply Chain Process Capabilities



Source: Aberdeen Group, May 2012

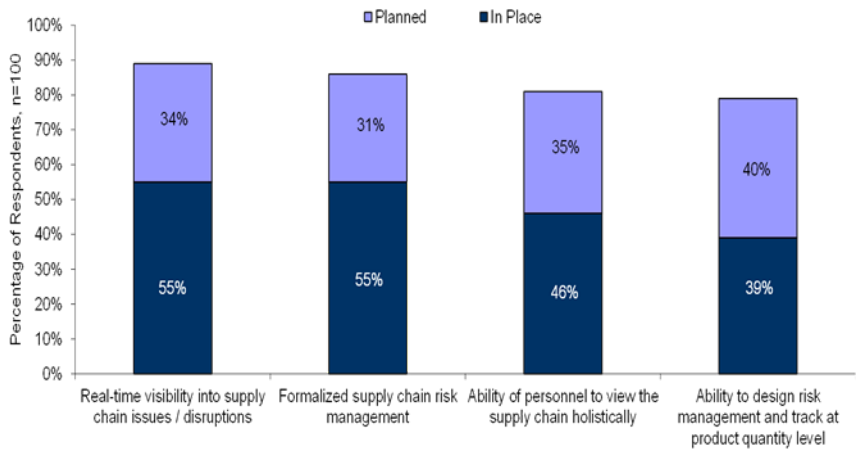
Compared to the descriptions for our pillars of resiliency, the majority of companies have in place or plan to have in place (82% or greater) many of the core competency elements identified as necessities to have a resilient supply chain.

- Ability to find the supply chain data needed for decision making is part of visibility into all elements and having them in the proper form. In place 69% and 25% planned.
- Ability to better understand tradeoffs between service level and inventory investment is critical to the sourcing strategy and positioning of contingency buffers when discussing risk mitigation. In place 66% and 22% planned.

- Well established exception management is critical to identifying where issues exist. In place 65% and 20% planned.
- End-to-end supply chain data and process visibility is a must have to understand the impact of disruptions to customers and prioritize corrective actions. 62 % in place and 30% planned.
- Closed-loop integration of supply chain planning and execution indicates the ability to execute against a plan and monitor feedback against one system through a collaborative process. In place 61% and 21% planned.

All of these indicate that the majority of organizations understand what capabilities need to be put in place, even though a third or greater still fall short of having them in place today. However, when the elements of speed and risk management are incorporated, there is greater fall-off in capability adoption as shown in Figure 3.

Figure 3: Risk Management and Time Driven Capabilities



Source: Aberdeen Group, May 2012

Real time visibility and the ability to view the supply chain holistically are indications of the timeliness required for the data and the process synchronization. Even though the processes exist and integration of the processes may be in place, the real-time element and seamlessness necessary to create a holistic view at a given point in time, upon demand, identifies a higher degree of difficulty. The critical element is the on demand synchronization resulting from process speed.

Having real-time visibility into disruptions (55%) and building it into the product management view (39%) show a lesser percentage than those having basic visibility as shown in Figure 2 (62%). This is not a huge surprise when the sourcing discussion is considered. The time required to actually onboard new sources for non-commodity items, allowing for first article samples, pilot runs, and process capability studies, is typically measured in

months and not weeks. Identifying the need is the first step in the process, but implementation can take time.

As figures 2 and 3 indicate, the majority of companies are moving in the right direction, but as the degree of solution completeness increases the number of companies with all the pieces drops to 39%.

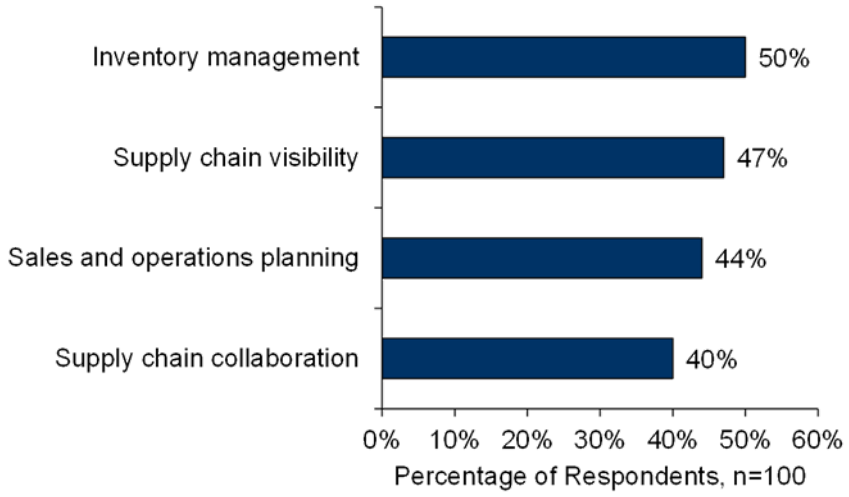
Now that we understand where gaps appear, let us examine where companies are prioritizing for improvement.

Focus for Process Improvement

Figure 4 indicates the processes targeted for improvement and they are very representative of the four pillars identified for resiliency. The ranking is across all levels of maturity.

Inventory being number one might reflect the realization that efficiency and lean thinking may have gone a little too far and there is a need to really right size the inventory, allowing for strategic buffers as part of the risk mitigation plan.

Figure 4: Processes Targeted for Improvement



Source: Aberdeen Group, May 2012

Visibility is a close second and as already highlighted, companies cannot live without it if they hope to have resiliency. The completeness and timeliness of this capability will vary by organization, but 47% have made it one of their top process concerns.

Sales and Operations Planning and supply chain collaboration deal directly with the planning, exception management, and the incorporation of risk into the formal management review process. These address the greater gaps in process capability shown in Figure 3.

Let us now examine where companies have identified priorities for investment in technology to support these process changes. The urgency to take action is high when a major event occurs, but following through on the commitment to improve is indicative of a company's resolve.

Technology Investment Priorities

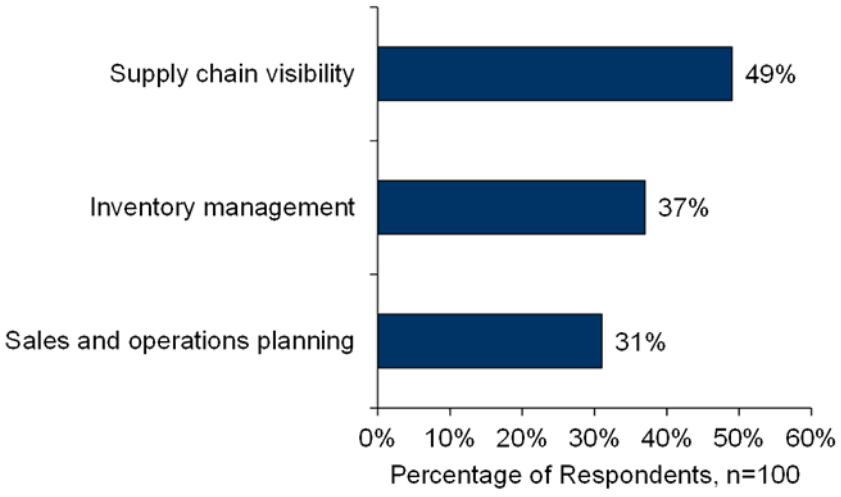
Figure 5 reflects the priorities for technology investment and they are quite consistent with the process improvement directions, although not quite as high from a percentage aspect. In many cases the technology may be there, but the organizational maturity or process maturity is the reason for the capability gap.

In the case of investment, visibility is ranked the highest and by its very definition reflects the need to see beyond the enterprise into supplier and partner networks, as well as transportation networks, ports, and country specific issues.

Inventory management prioritization reflects the realization that the rule of thumb is no longer sufficient and tools are required to properly right size the inventory in conjunction with service level requirements and risk concerns. The challenge increases when considering a multi-echelon supply chain across an extended network compared to a traditional four walls approach.

Although Sales and Operations Planning (S&OP) may be in place, the recognition that the process must be formalized and tie into all of the other systems, to enable a holistic view of the supply chain, is one of the key drivers behind the investment ranking.

Figure 5: Targeted Technology Investment



Source: Aberdeen Group, Month 2012

Key Takeaways

Having recently endured the environmental disasters with varying degrees of success, the need to have a resilient supply chain is a requirement felt by the majority of companies. The level of resiliency can be found in the capabilities that organizations have in place. To move forward toward a resilient supply chain companies should seek to establish the required capabilities based on where their individual gaps exists. The priorities should be as follows:

- Visibility is essential and must be put in place.
- Having and maintaining a plan of record is a minimum requirement in order to compare against and provide exception management.
- Improve the speed of execution through collaborative solutions with partners and suppliers.
- Review and upgrade any single points of failure in the supply base.
- Right size the inventories to buffer, sole source or regional risks.
- Incorporate risk strategies into the S&OP process for management review.

All companies are susceptible to man-made disasters and catastrophic events. The ability to react in a timely manner is dependent upon the responsiveness of their supply chain. In order to create the most resilient supply chain possible, take action now and realize that the challenge is never over. It will evolve as conditions change. Adopting an attitude of vigilance and continuous improvement toward the four pillars will provide the necessary direction to eliminating risks and having the most resilient supply chain possible.

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