THINKING AHEAD: MANAGING RISKS IN SUPPLY CHAINS

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ABSTRACT

Risk is the greatest worry that keeps supply chain managers awake at night. The risk of failure is about a growing multitude of possibilities affecting suppliers and customers, locally and globally. This article cites examples from well-known brands. Security against disaster is the objective, through thinking ahead to put in place preventative and responsive capability to manage uncertainty. Six risk management mistakes are explored. Visibility & Responsiveness and Supplier Stability are two aspects of getting it right. An important software package for this is Enterprise Resource Planning (ERP).

บทคัดย่อ

ความเสี่ยงภัยสร้างความวิตกกังวลอย่างสูงสุดแก่ผู้จัดการโซ่อุปทานทำให้ต้องตื่นตัวอยู่ตลอดเวลา ความเสี่ยงที่จะล้มเหลวคือความเป็นไปได้ต่างๆ มากมาย ที่ส่งผลต่อซัพพลายเออร์และลูกค้าทั้งในประเทศและทั้งโลก บทความนี้อ้างอิงตัวอย่างจากยี่ห้อที่เป็นที่รู้จักดี ซึ่งมีวัตถุประสงค์เพื่อป้องกัน มหันตภัย โดยผ่านการคิดล่วงหน้าเพื่อสร้างความสามารถในการป้องกันและรับมือกับความไม่แน่นอน ทั้งนี้จะมีการวิเคราะห์หกข้อผิดพลาดในการจัดการความเสี่ยงด้วย ความสามารถในการมองเห็น-ความสามารถในการตอบสนอง และเสถียรภาพของซัพพลายเออร์ คือ สองแง่มุมของการทำให้ถูกต้อง โปรแกรมสำเร็จที่สำคัญเพื่อการนี้คือ โปรแกรมการวางแผนทรัพยากรทางธุรกิจขององค์กรโดยรวม (ERP)

INTRODUCTION

Supply Chain Management (SCM) is maturing and, accordingly, the scope of interest and accountability is expanding. This has been the case for some time in some of the more developed parts of the world and in Asia more of late. This means that the focus is no longer limited to just getting the job done but more often including some thinking ahead. This includes, in particular, paying due attention to risk. The key objectives are to cover ourselves against failures on the part of suppliers of materials and services, as well as changes in demand on the part of customers, whatever the causes. The broad topic of Ethical Supply Chain covers a good part of the supplier side of things, especially in terms of product safety and ethics. This article will address security of supply, among other aspects, as well as the demand side.

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Here in Asia, we are acutely aware of the globalisation of supply chains and how much more inherent risk there is with which companies must deal. This is not new. Remember, from several years ago, Mattel's recall of millions of lead-tainted toys from China, akin to other fears about hazardous materials in milk, toothpaste and pet food, and a recall of thousands of tires made in that country. This has executives at every global company paying more attention. Mattel is a very good company but even it got caught. The problem occurred because the Hong Kong supplier, on whom they had relied for years, subcontracted work to another company that did not use Mattel-approved paint. This is such a simple example of how the longer and more far-flung supply chains become, the more we must make certain that standards are being met through effective SCM.

Another example is how Johnson & Johnson discovered that counterfeit China-made diabetes tests bearing its name were being sold in retail stores in the U.S. How does one guard against this? It is not easy. "Supply-chain management has moved from the back room to the board room and become an ethical issue," said Adam Fein, President of Pembroke Consulting. That is "ethical" in the very broadest sense. In the global economy, executives can take nothing for granted about either suppliers or distributors.

In fact, 99% of companies responding to an Aberdeen Group survey had encountered supply chain disruptions, and more than half took a hit on the bottom line as a result. The supply chain disruptions reported most commonly were the following:

- Supplier capacity fell short of demand (56%)
- Shortages or price increases for raw materials (49%)
- Unanticipated customer demand changes (45%)
- Shipments that were delayed, damaged or misdirected (39%)
- Shortages or price hikes for fuel (35%)

In the survey, it was reported that not even one-third of supply chain operations are working to manage basic risks. A critical factor cited was organization and communication within companies. The decision makers need to know of all possible risks before making a move but this is something that does not happen enough, as we all know.

Way back in 1996, Peter Bernstein's magnificent book on risk warned us that "discontinuities, irregularities, and volatilities seem to be profilerating ... and even the planet Earth seems to be under attack" (Bernstein, 1996:329). Putting it all into perspective, Pari Annamalai, Tata Consulting Services executive, said, "Things like natural disasters, the milk issue, and so on, cannot be predicted. There needs to be some oversight and some overall reviews but there should be risk mitigation and quick response systems in place. Just like when demand changes quickly, a company needs to be flexible. This is another variable that needs to be managed with flexibility. No amount of money can predict some of these things and so to be able to react quickly through flexibility of the supply chain is as important or, perhaps, more important than preventative measures."

Of course, both preventative and responsive capability are required. Indeed, we would say that the overriding requirement in any organisation is to have an effective management process like Sales & Operations Planning (or whichever label you prefer) to pull it all together.

Effective SCM comes down to managing uncertainty. What can we do to minimise uncertainty (risk) and to respond in the most effective and efficient manner? Indeed, the traditional, easy and expensive way was to carry extra inventory. But people are certainly now wiser with respect to the cost of taking that approach, for the most part, at least.

As stated above, the "in" term in SCM lately seems to be Supply Chain Risk but it seems that people are unsure, even inconsistent, about what is meant. Indeed, as often as not, the scope of discussions is limited to the supplier side of the chain. Surely, we should be managing both ways across the supply chain.

To start considering the scope, there is a witty but wise definition in the Sourcing Innovation blog: "If you're counting on it, it's a risk." This includes all sorts of risks, such as the following:

- Production Risks - Machine Breakdowns, Supply Shortages, Distribution / Transportation Failures, Talent Shortages
- Communication Risks - Network Outages, Broken Channels
- Business Model Risks - Disruptive Technology, Disruptive Business Model
- Environmental Risks - Natural Disasters, Resource Shortages
- Political Risks - Trade Barriers, Civil Unrest (who would have predicted the Somali Pirates?)
- Economic Risks - Currency Fluctuations, Commodity Market Instability
- Internal Compliance Risks - Maverick Spending, Contract Adherence
- External Compliance Risks - Trade Documentation, Regulatory Requirements

In an article cited by Sourcing Innovation, six ways companies mis-manage risk were presented. These mis-steps are just as likely to occur in good economic times as they are in the rough economic times we are currently experiencing, but the effect of the mistakes will now be magnified considerably.

The six mistakes highlighted in the article are:

- Relying on historical data - Historical data is a starting point, not a destination. For example, look at how well real estate investment managers who assessed risk on the basics of statistics over the past three decades have done lately. How well could we have done in fuel hedges in early 2008 (before the price of oil dropped over 60%) or with logistics hedges in late 2007 (before global shipping volumes were cut in half). We always teach that analysing historical data is the logical first step but it must be followed with real, thoughtful insights about future activity.

- Focusing on narrow measures – For example, focusing on only on-time deliveries misses the point. It is about the perfect order: the right product of the right quality shipped using the right method with the right carrier at the right price delivered to the right customer at the right time, accompanied by the right documentation (hard or soft copy, whichever is required). If you ship the wrong product, or the quality is insufficient, or you have to expedite it and that costs three times as much, you are losing money, and using the wrong metric will never capture the lost opportunity.
- Overlooking knowable risks - Meticulous review and careful thought allows one to identify almost every possible risk, including risks in the instruments used to measure the risk. For example, if you are using an index to hedge against cost increases, and that index lags reality by three months, you could be caught off-guard by rapid cost increases or decreases due to unexpected supply or demand disruptions (caused by natural disasters, for example).
- Overlooking concealed risks - Risk takers in your organization may deliberately hide risks that they feel are unlikely and thus jeopardize an entire sourcing plan or production line. For example, if you are in a food business, and your supply manager decides to source all of your tomato crop from a vulnerable area because of volume-based cost savings, you are at risk of an immediate supply disruption every time a typhoon sweeps through.
- Failing to communicate - If you cannot clearly explain the risks in your plan, systems, and organization, the chances are that they will be ignored, or at least severely underestimated. For example, if you are assuming uninterrupted supply from a single-source supplier, and that risk goes overlooked, that could be a real problem in this economy.
- Not managing in real time - Unless you have been hiding under a rock in a cave, you have probably noticed the volatility of the global markets lately, including supply volatility (as suppliers go out of business) and demand volatility (as customers reduce their spending).

The last bullet point leads us back to the discussion of preventative measures vis a vis being able to be responsive to unforeseeable events. In fact, these are not entirely separate, of course. The best example that we have seen was in an operation in Hong Kong. As part of their Business Excellence program, they had developed a template action plan to deal with a hypothetical calamity in their marketplace. There was no way that they could have known which particular event would eventuate but, if there was a catastrophe in their area, they knew what their basic approach needed to be to respond. Indeed, when the SARS epidemic hit, they dealt with it much more effectively than their competition and came out the other side in better shape than anyone else.

As mentioned above, needing to manage risk is not new but taking responsibility and accountability for such is quite new to many Supply Chain Managers. The question then becomes what one ought to actually do differently in managing. We will consider some specific actions that one could, or should, take in that regard, and will focus on two aspects: Visibility & Responsiveness and Supplier Stability.

SUPPLY CHAIN VISIBILITTY & RESPONSIVENESS

To begin with, consider an example whereby a large shipment of long lead-time items is found to be defective. A visibility system could potentially alert you that this event has happened and might even tell you the next higher assemblies that are affected by these parts. But, very typically, a supply chain visibility system would stop there. It is like the "Idiot" light on your car dashboard, telling you something bad has happened and that you are probably going to have to do something, but it does not give you enough information to resolve the problem: to solve the problem you need to go to the shop. In a supply chain, you need to go to your ERP (or more broad-scoped) system.

So, features and functions that would be needed to deal with situations such as above include the following:

Visibility – one needs to be able to see across the supply chain and needs to be able to integrate data from multiple, disparate systems inside and outside one's own corporate boundaries.

- Alerting – one needs to be able to trigger an alert when some event about which we (should) care has happened. The system, however, should not just dumbly report that some parts are scrapped but, instead, should report that event only if it matters. To do this, we need Analytics, which is the next point.
- Analytics – If one is to truly understand the effect an event will have, one needs to be able to replicate the analytics that exist in the Enterprise Resource Planning system (ERP) and demand a management system inside the tool. (More information about about ERP is given later in this article).

  The reason for this is, for example, say, that the order scrapped above is pegged to forecasted demand several periods out. Say, too, that there is enough time to generate an order and replenish the inventory before these scrapped parts are actually needed. The event is not really important. It does not affect customer orders, it is just an inconvenience in that you need to send the bad parts back and get good parts. However, what if the next order for a different part is pegged to a customer order worth several million dollars that is now going to be late. This then becomes a very urgent requirement.

- Active Spreadsheets – People are used to working in Microsoft Excel and it has become a natural feeling environment for analyzing information. Thus, if you could enter a change into this spreadsheet and see results appear in seconds – not just a simple calculation, but instead, actually see the results of full ERP analytics - would be wonderful.
- Collaboration – Often, the person alerted to a potential problem is not authorized or able to simulate all possible resolutions. For example, one would not expect a buyer to change the master schedule, nor would one expect a master scheduler to change a purchase order. For this reason, a tool is needed that allows identification to the

people most affected by the change and to facilitate collaboration among them to resolve the problem.

- Simulation – This is critical to responding to an event. One needs to be able to try out different alternatives (splitting orders, expediting, finding alternate sources, and so on) which can only be effectively done in a simulation environment. One needs to be able to share these simulations with others to get their input. Furthermore, there is a need to be able to compare these different simulations side by side. Something is clearly required that clearly shows which potential solutions best meet the corporate goals and objectives.
- Scorecards – Going back to the scrapped part example, there may be, say, three different solutions that could potentially resolve the problem. One can see that for each of the solutions, the customer orders that were going to be late can now be on-time. That is good, except, say, one solution calls for a much more expensive replacement part, another solution calls for expediting a shipment that increases transportation cost, and the third solution borrows parts from other orders. How can one see the impact of these three choices? Which should one choose? A multi-scenario scorecard could take the three solutions and compare them side by side, measuring the effect of the potential resolution on key metrics. In the example, the first two metrics would result in an increase in cost of goods sold and a corresponding decrease in profit margin. The third solution would show as a decrease in on-time delivery and potentially a decrease in revenue for the quarter. These results, compared against a given target and appropriately weighted would provide an overall score for each solution that an analyst could then use to decide which scenario is best to use.

These are the features and functions that one needs to get beyond even good supply chain visibility, and being able to respond to events when they occur. This, then, achieves more effective Response Management.

SUPPLIER STABILITY

Turning our attention to the second aspect that was mentioned at the outset, Supplier Stability, relationships are important. As should always be the case, but particularly now during this unique economic climate, relationships should be a truly collaborative process, with the supplier communicating well in advance of any anticipated failure or disruption.

Closely monitoring the financial health of suppliers has become an important part of the job for anyone involved in a company's sourcing efforts. Unfortunately, according to AMR Research, such ideal circumstances do not always occur. Instead, the firm says that companies (especially those that frequently buy from smaller, and potentially more vulnerable organizations) should be on the lookout for symptoms that a supplier might be unable to weather the current financial storm. AMR suggests keeping an eye out for the following 10 warning signs:

1. The supplier has a large part of its businesses in depressed industries.

2. It has raw material shortages or cannot meet the agreed lead times because of late purchase order placements.
3. It has heavily cut investments in R&D, IT, equipment or resources.
4. The quality of supply is deteriorating.
5. The supplier has entered into significant contracts with new customers.
6. Staff is being laid off, with your salesperson nowhere to be found.
7. Additional discounts are offered for early payment or require cash in advance.
8. The supplier is restating earnings and outlooks.
9. It has high-labor content that requires a large weekly payroll.
10. The supplier has absorbed heavy, upfront R&D and manufacturing tooling investments on new products that are delayed -- therefore extending the time to break even.

ENTERPRISE RESOUCE PLANNING (ERP)

ERP was mentioned in the Visibility & Responsiveness section above. ERP software has many modules, including Supply Chain Management, Material Requirements, Procurement Analysis, Capacity Scheduling, Production Operations Control, Inventory Management, and Machine Maintenance. The ERP system is a powerful software package that enables businesses to integrate a variety of functions, and has changed the planning and management of manufacturing, sales, and accounting, through its user-friendly design (O'Leary, 2000).

To manage risk, significant updated integrated information is essential. ERP offers this, by integrating business processes and producing a smooth flow of information. Measurable benefits include reduced lead times, increased turnover of inventory, accurate data, flexibility, improved use of resources, better decision-making, and satisfied customers. It is also a solution generator (Garg & Venkitakrishnan,2003). ERP is a system which integrates all functional units into a single computer system to meet a variety of needs, but another strength is that it has to be adapted to fit the specific characteristics and needs of each firm (Rothlin, 2010). ERP has strengthened relationships between departments and increased the number of cross-function opportunities (O'Leary, 2000)

Panthratanamongkol (2013) explored the merits and shortcomings of implanting an ERP system in a Thai manufacturing firm. ERP eliminated many unnecessary processes and complicated procedures, and reduced time and errors, but there were some implementation problems connected with management and staff commitment. Grant (2014) surveyed the published research for trends and issues, and synthesized the risk and disruption elements, because he saw how risk (besides cost) underlies and/or affects almost every other trend.

SUMMARY

We have introduced some basic considerations for this topic of Supply Chain Risk Management. As we often do, we reflect on this area and are very conscious that it is simply good common-sense management. "Not rocket science", so to speak.

Remember the definition of risk we quoted from the Sourcing Innovation blog: "If you're counting on it, it's a risk." It behooves one to manage it, by a combination of preventative measures as well as being able to be responsive to unforeseeable events.

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