

# Creating Supply Chain Flexibility in the Flattening World

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*Counter supply chain disruptions by building  
solid 'sense and respond' capabilities*

Modern day business is beset with changing governance paradigms. The recent surge in business literature has veered the way corporations are getting flatter and flatter. Flat world has emerged as the mantra by which businesses are getting redefined.

Flat world encompasses an environment where traditional barriers to trade are breaking down; hierarchies – both organizational and customer are being flattened; information and knowledge asymmetries across competition, customers and within the enterprise are being eliminated. The competitive playing field is being leveled.

## **EMERGENCE OF FLAT SUPPLY CHAINS**

The forces of globalization and the ever flattening world are exerting renewed pressure on global supply chains. Supply chain flexibility has moved beyond managing quality, cost and on-time delivery for a variety of norms and tolerances. It has come to include new product introduction cycle, partner integration and

quality of supply chain collaboration, as also the process and functional modularization of supply chains.

Cost pressures, dearth of talent pools and emerging markets were some of the reasons why supply chains assumed global dispersion. Following Thomas Friedman's expostulation of flat world, researchers at Infosys have identified four operational shifts that are driving mega transformation in the way demand is being created for products and services globally and the way it is being fulfilled [1]. We try to probe these shifts in the supply chain context and look at how flexibility can be achieved in supply chains in this flattening world.

First and foremost, companies in their journey to being the China price, are continually looking to refine their cost structures. This journey has taken many a company eastward with their sourcing strategies. However it is not only about reducing costs but also about entering new market segments by virtue of being able to sell at lower prices, while making money.

As an example, GE Medical Systems (GEMS) redesigned its product offerings to offer 80% functionalities at 50% the US price. This redesign was done at its China R&D centers. GE Medical Systems is now the market leader in China for these products and it is also selling these products in price-sensitive market segments in the US. Another example is that of Cisco which funded its investment in R&D and sales expansion by releasing over \$2bn from Selling, General and Administrative Expenses (SG&A) globalization by reducing SG&A as a percent of sales from 44.8% in FY01 to 36.3%

Change at a rudimentary level can be observed today, in that, the demand and the supply chain are so tightly linked that the product or service design concept is well integrated with the supply chain. As an example of companies leveraging global talent and co-creation models for rapid product innovation, Eli Lilly launched “InnoCentive”, an online community based business model to access global talent pool [3]. Eli Lilly and other pharmaceuticals/chemicals companies can “post” R&D problems on the portal “InnoCentive” (with associated award amounts) that can be solved by any of their

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*Companies stand to win the innovation game by exploiting their global talent pools in co-creating revenue-influencing innovation models*

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in FY05. For any new initiative, globalization is always in consideration, and Asia is always on the table [2].

A second operational shift is in the way companies are looking at the problem of customer loyalty creation and retention. It is the product and service innovation cycles today that are determinants of better customer experience.

Today’s supply chains need to have the required integration to help manage demand percolation seamlessly across supply chain partners. With customers being more and more integrated into the product and service creation process, customer experience calls for greater transparency and visibility into the entire order fulfillment cycle.

scientists around the globe. P&G’s strategy of open innovation—with customers, partners and other outside sources - now produces over 35% of the company’s innovation, thereby influencing billions of dollars in revenue. With over 35% of new products having co-creation elements from outside P&G, R&D productivity has increased by nearly 60% in 2006 and has helped launch more than 100 new products with significant outside participation in the last 2 years. Significantly, R&D costs have decreased to 3.4% of sales from 4.8% in 2006 [4].

Making money from information - the third operational shift - has always been intrinsic to supply chain management. At the core of all successful supply chains over the years, has been, excellence in information management —

both in terms of creating a robust information backbone underlying all physical and financial flows as well as monetizing this information for decision support and business intelligence. As an example, using a sophisticated demand driven supply networks (DDSN) strategy while leveraging an information architecture that marries sophisticated planning, fulfillment, event management and supply chain integration, Dell pioneered its famous direct distribution model that enabled it to grow its global PC market share from less than 3% in 1995 to over 18% in 2005 [5]. Likewise, Amazon.com embodies

example, Intel timed its asset acquisitions during business downturns to manage rapid up-scaling in the boom years. By sharply accelerating spending during the 2001 recession, Intel built up additional manufacturing capacity. During 2002-2003 recovery, Intel was able to quickly and successfully launch new products, months ahead of schedule. In 2003, Intel reported its highest rate of growth since 1996 and increase in net income by 81% [7].

From the discussion above, we understand that the forces of globalization are leading to a mutation of the supply chain models

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*In today's dynamic business environment, only mutated supply chain models stand to absorb global supply chain risks*

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the use of advanced multi channel commerce capabilities to efficiently fulfill millions of multi-item orders through seamless information flow and automation — a feat that requires very sophisticated coordination and timing [6].

The operational shift on “winning in the turns” underlines the importance of being able to manage business cycles through business’ crests and troughs. These business cycles typically call for a close look at existing business models and predicate disruptive changes. Supply chain risk management has become a key theme in managing such disruptions successfully. Both operational risk as well as event risk need to be addressed squarely through predictive mechanisms as well as through business proofing for managing scale and scope flexibility. As an

in the rapidly changing world. Supply chains are becoming increasingly global and flatter. While global sourcing and targeting emerging markets has become fundamental to every corporate strategy, it is also leading to emergence of virtual supply chains with complete supply chain functions being outsourced. The bottom-line is a greater propensity of risk in terms of supply chain management globally.

**SO HOW ARE SUPPLY CHAINS REACTING TO THESE FLAT WORLD FORCES?**

Empirical evidence suggests that supply chains are morphing to help deliver to these flattening forces. Multiple supply chain structures are emerging to successfully address changes caused by flattening forces. Emergence of

loosely coupled global supply chains, redefinition of “core”, and increasing use of counter-trade in cross-country businesses are some of the key changes.

**Value chain complexity** is on the rise with supply chains becoming lengthier. As more links get added and niche players emerge, the moot question is on the need for command and control capabilities that allow companies like Cisco, a strong proponent of outsourcing, to manage a supply network that has more than 300 suppliers [8]. While companies have effected supplier consolidation and rationalization to manage the expanding supplier base, the move towards third party sourcing is making the average length of supply chains longer.

**Emergence of niche supply chain entities** - As roles within the value chain get blurred, new entities are emerging that help manage global dispersion and spread of business operations as a core competency. In the process they also expand their role in the value chain. An example in the automotive industry is that of Magna, which aims to provide complete vehicle, design, engineering and assembly services to its OEM customers [9].

**Globalized supply chains** - Supply chains are becoming more and more global with supply chain functions being physically distributed and dispersed. For example, Boeing 787 program transforms its global supply base spread across countries as dispersed as the US, Japan, Italy and Taipei into design and manufacturing partners. To beat Airbus, Boeing has deployed a radical strategy where more than 100 design partners collaborate on the design and engineering and more than 130 structural and systems suppliers synchronize their operations to achieve

final assembly in Everett, Washington [10]. A thought here is that globalization and JIT do not seem to go well together as we are gravitating towards stronger and centralized planning functions.

**Demise of “core”-** There is nothing called “core” anymore. The term “core” is relative and it’s about supply chain modularization today. There are companies that are outsourcing complete functions that used to be called core in the yesteryears.

**Emergence of intricate supply chain networks** - Companies are moving away from the integrated supply chain concept and today we see loosely coupled supply networks. SLA-based transactional relationships rule. Long term contracts between partners do not always work. Take a look at the high technology contract manufacturers who are trying to work themselves into shorter and more flexible contracts to help maintain their profitability. Another interesting aside is that companies today collaborate in one geography and compete in another. Hutch Essar and Bharti compete independently, but they both have entered into an MOU relating to a comprehensive range of infrastructure sharing options in India [11].

**Technology is no longer the bottleneck** - The single biggest disruptive influence on business has been technology. As communication costs go down to virtually nothing, processing power keeps following Moore’s Law and use of technology becomes ubiquitous, many companies and economies are doing leapfrogs skipping many an evolutionary step. Retailers used to models such as re-order point based supply chain planning (primarily as a

consequence of the number of stock keeping units as well as the shorter planning buckets) are switching to time-phased planning techniques, as earlier constraints around processing power and processor costs have been sorted out. Technology has also made possible the concept of work modularization in the connected world where work packets can be delivered virtually out of anywhere and at any time.

**The G Factor** - As global trade barriers keep falling down, governments everywhere are putting in counter trade agreements to stimulate local industry further fuelling globalization of trade. Another aspect of the governmental factor is the regulatory norms that governments prescribe and the impact that it has on the way businesses operate. Protocols and regulations such as the Kyoto protocol and the ROHS (Reduction of Hazardous Substances) significantly impact certain businesses in certain regions.

#### HOW DO WE QUALIFY THE NATURE OF SUPPLY CHAIN RISK?

The forces that are flattening the world have created many supply chain risks in addition to the oft spoken benefits. With supply chains literally disintegrating, product designers, marketers and manufacturers that were previously housed in a single facility are now spread over several continents in organizations with different cultures, languages and business objectives. These changes have brought new risks and challenges. Long-standing challenges, such as short product lives and uncertain demand, have become even more vexing.

When it comes to global supply chains, the potential for disruption comes in many forms, from large-scale natural disasters and terrorist attacks to plant manufacturing

fires, wide-spread electrical blackouts and operational challenges such as shipping ports too small to handle the flow of goods coming into a country. Today's leaner, just-in-time globalized supply chains are more vulnerable than ever before to natural and man-made disasters — a reality that creates greater demands on companies to keep supply chains flexible and integrate disruption risk management into every facet of supply chain operations. The reason is undoubtedly that, with longer paths and shorter clock speeds, there are more opportunities for disruption and a smaller margin for error if a disruption takes place.

We identify two main sources of supply chain disruption risk:

- **Operational supply chain risk** : Abrupt discontinuity of supply (when a main supplier goes out of business), people (labor strikes, talent shortages), process (internal process changes initiated through external factors or through internal process improvement measures), systems (system failures, data security) and procedures fraud
- **Business risk**: Macro business risks such as market risks, financial risks, regulatory risks (stringent emission norms driving new engine/ manufacturing process technology), socio-political environmental risks, natural hazards such as earthquakes, hurricanes, storms and risks emerging from terrorism and political insurgencies.

The essence of risk management boils down to adequately appreciating the risks that a company is exposed to for different areas of business; identifying the 'choke points' along the supply

chain that would completely harm a business if disruption occurred; and then taking the right set of preventive measures to allow for some protection, remembering to periodically review your supply chain plans and risk assessment priorities.

### **ARE COMPANIES BUILDING THE FLEXIBILITY TO MANAGE FLAT WORLD SUPPLY CHAIN RISKS?**

We define supply chain flexibility as the ability to reconfigure the supply chain, altering the supply of product in line with customer demand. Flat world forces are changing the face of the global supply chain along with the flexibility that is needed to reap the benefit from globalization.

gains flexibility to quickly realign the supply/demand mix to satisfy the changing global demand.

However, early detection of changes, demands a well structured global planning and event monitoring mechanism for global coordination across functions and partners. Globally integrated information systems are critical to reduce the cost of communications and to make relevant information readily accessible.

Global supply chain flexibility is then all about connectivity and global business optimality – source resources and manufacture/deliver from where it is most cost optimal and sell where it is most profitable. Downside of this is increasing interdependency and much more

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*In the flat world, companies that have solid ‘sense and respond’ capabilities tend to amass flexibility in their supply chains*

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Companies’ contingency planning to deal with eventualities and ability to reconfigure the supply network and product design at low cost to meet newer market needs are having larger impact than ever before on the supply chain flexibility.

In this context of flat world forces, supply chain flexibility is about having the “sense and respond” capabilities to detect the changes early on and having the right supply chain structure, processes and product design in place to respond in a timely and efficient manner to the changes. By making it easier and less expensive to change the source of supply, firm

risk. Managers of global supply chains should realize that they are coordinating three types of flows — material, information and cash flows. Political, technological or natural events could leave organizations isolated and exposed to shortages of material. Companies that sell in the United States, but have substantial portions of their supply chains in China or in other countries with currencies likely to appreciate against the dollar, face a significant risk of mismatch in their expected U.S. revenues and non-U.S. costs. Bankruptcy of a key supplier without any prior notification can stop assembly lines of an OEM.

Problems can range from dock strike in California, a tsunami in Asia, hurricane in New Orleans to physical damage at a supplier that can result in catastrophic impact for a company. One example is a fire at a single-source supplier for Ericsson, which led to lost sales of \$400 million dollars accompanied by a drop in the stock price by 1%, culminating in Ericsson's exit from that part of the business [11]. Even political problems can bring about supply chain disruptions. Take the case where new agreement between the European Union and China caused a limit on annual imports. This in turn caused 80mn packs of clothing impounded at EU ports and borders even though retailers had ordered their autumn stock well before this agreement was enforced.

detrimental to functioning of supply chain connections. Companies should act on two overarching strategies of (i) building supply chain responsiveness, and (ii) building visibility to supply chain information.

**Action 1: Build Supply Chain Responsiveness** through design for desired flexibility in the supply chain structure, supply chain processes and product design.

I) **Supply chain structure:**

Supply chain structure is the network of organizations that manufacture and deliver products or services from the source to the customers. It deals with

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*Flexibility coupled with visibility to information helps companies negotiate supply chain issues with utmost ease*

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The leverage on globalization is tempered by the management overheads of supply chain connections. It is important to ensure that all the connections are working uninterrupted to eliminate any risk to the stable functioning of the supply chain. However, companies need to do much more as Aberdeen Global supply chain benchmark report in 2006 found that only 11% are actively managing the supply chain disruption risk [12].

Availability of information at right time in combination with flexibility can enable organizations to respond to changes

supply network structure, the human resource practices and workforce capabilities.

1) Supply network should have the ability to add and remove suppliers, select suppliers who can add new products quickly, vary supplier relationships and have suppliers make volume changes. Also supply network should be flexible to adapt to new security requirements and provide guidance to its partners in order to comply with new regulations.

- 2) Supply network should provide the ability to companies in transferring production from one plant to another when capacity is constrained.
- 3) Companies' culture should allow building integral cross functional teams to prevent decisions based on local optimization. Hewlett Packard has adopted this concept for many of its products such as the Desk Jet printer, even going to the lengths of re-designing it so that a generic semi-finished global version could be built centrally with localization being performed by regional partners[13].
- 4) Workforce capabilities should be looked from a holistic perspective to encourage involvement of specialists. By working closely with specialist providers, greater levels of customer value can often be achieved at lesser cost. Auto makers use 3PL specialist logistics providers, where a 3PL runs the warehouse and OEM takes ownership of inventory only when a production line calls for it.

## II) Supply Chain Processes

Supply chain practices should have contingency plans to deal with all kinds of eventualities. It is almost impossible to predict all the eventualities in a global business environment. Elements of supply chain should have flexibility to quickly respond to unexpected changes.

- 1) **Systems and process design for flexibility:** Operations systems should have the ability to reconfigure assets in line with customer needs;

the ability to change processes as demand changes, and also the ability to adjust capacity.

- 2) **Distribution flexibility:** Logistics processes should have the ability to adjust to global requirements, serve distinct customer shipping requirements, vary warehouse space, vary transportation carriers, and introduce product postponement.
- 3) **Ensure alternate sourcing strategies:** Alternate suppliers should be truly divorced from the risks borne by the preferred counterparts. This portfolio of suppliers should also include transportation providers. During the launch of the highly anticipated Fusion, Ford manufacturing in Mexico was hamstrung by the bankruptcy of Collins & Aikman, a primary parts supplier. Ford, along with other automobile manufacturers, was compelled to provide financial backing to the floundering parts supplier to ensure continuity in manufacturing operations [13]. Companies such as Dell and Cisco have suppliers in different continents for added flexibility.
- 4) **Combine operational and financial hedging:** BMW after frequently suffering from strong Euro appreciation in its heavily European based production operations, has employed a combined hedging strategy[14]. It has announced expansion of production and sourcing facilities in the North American and Asian continents in an effort to create a more globally diversified supply chain, thus adopting more integrated

risk management approach in its handling of global risks.

- 5) **Ensuring business continuity:** Business continuity plan should include a wide range of contingencies, disaster recovery, the safety of employees, the retrieval of backup business data emergency communication, possible relocation of business operations and the sourcing of goods from alternate suppliers.

### III) Product Design

Product design should be modular so as to reconfigure the products to minimize the risks in meeting market demands at lowest cost. This can be achieved by product design that enables component commonality across products and postponement of final product configuration.

- 1) Commonality is a big focus in Ford. Commonality of parts across existing and proposed vehicle lines reduces costs and leverages economics of scale. This allows aggregation of demand and minimizes the inventory buffer to address a particular risk level.
- 2) Postponement is about delaying final configuration of an item for as much duration as possible. The aim of the global supply chain should be to carry inventory in a generic form, i.e., standard semi-finished products that are awaiting final assembly or localization for enhanced responsiveness. For example, Dell assembles different computer configurations based on market demands. HP also uses the same concept for its Desk Jet printers [15].

**Action 2: Build Visibility to supply chain information** as this is the key to detect and manage change. The company and its trading partners and their partners need to be very much a part of the risk-management process. Visibility helps in getting a pulse of the environment in which supply chain is functioning. This way it not only helps in early detection of changes but also enables collaboration amongst partners.

- 1) **Ensure visibility to manage change:** Integrated systems to coordinate activities throughout the entire supply chain from raw materials and components to the end-consumer.
  - 1) **Improve visibility of in-transit activity:** Incorporate visibility tools to both track product movements and also obtain information with which to make financial decisions, serve customers, respond quickly to competitive threats, cut costs and speed delivery.
  - 2) **Improve visibility of supplier activity:** Global supply chains are characterized by interdependencies. It is important to be signaled about partners' delivery performance and their compliance with regulations. Lead indicators should be agreed upon and monitored to have visibility into supplier activities.
  - 3) **Improve end-to-end automation:** Provide enhanced insight into current and time-phased end-to-end inventory positions - in motion and at rest, including vendor managed inventory - as well as mobile assets such as containers and equipment. A key future enabler for this is RFID technology.

- 4) **Create visibility into lead indicators:** Business intelligence (BI) and affiliated data warehouses and event-management tools track events and exceptions in supply chain performance by constantly monitoring leading indicators to supply chain problems before they occur. BI has the sifting and sorting capability to identify suppliers, routes, carriers and ports that threaten business continuity.
  - 5) **Improve visibility of trade agreements for origin management:** Companies can bring down the cost of their products by better automation of origin management programs and understanding on how to use preferential trade agreements in their product design, sourcing and distribution decisions. Renault has used origin management information housed in its centralized trade compliance database to drive a whole new low-cost car.
  - 6) **Improve visibility of regulation compliance:** Globally spread supply chain is highly vulnerable to penalties caused by violation of country specific regulations regarding environment, safety, labor etc. SOX compliance is one way that can help top management in managing this risk.
- II) **Ensure collaboration to manage changes**  
 Automakers try to give supplier advance notification of production changes. GM uses its portal “GMP SupplyPower” web site to post updates for its 360° global suppliers. It is also important to achieve cultural alignment especially

in an outsourced business model. This cultural buy-in and visibility on both sides must be demonstrated in day-to-day behavior at all levels, or there will be cultural polarization between the business and the outsourced delivery function.

Toyota was able to manage the risk caused by bankruptcy of one of its key supplier. It applies weekly get-together for managers over videoconference to discuss any new rumors and potential risks to work out a recovery plan just in case.

Enterprise solution providers such as SAP have a number of products in the market that are helping companies in developing sense and respond capabilities – in automatic data acquisition and transaction processing for supply chain automation through Auto-id infrastructure (AII); in setting and monitoring lead indicators through Event management (EM); in identifying links, products, partners in the supply chain that are prone to higher risk through BI/BW; in having a flexible IT architecture to have plug and play capabilities and seamless data exchange with partners through service oriented architecture. These application scenarios are supported by having a “single version of truth” achieved through common data definition across the supply chain enabled by master data management (MDM).

## CONCLUSION

Globalization and the forces of the flattening world are creating huge supply chain risks and it is unlikely that these would fade in the near future. Cost considerations are driving companies to explore innovative sourcing strategies for physical goods as well as services. The pressure on refining costs of doing business

and the consequent move to tap resources globally is exposing companies to greater supply chain risk. An effective risk management framework ensures that companies not only manage their supply chain disruptions better in these scenarios but also put in early warning systems that help identify these upfront.

There will always be natural disasters, as well as corporate mistakes. In order to insulate themselves from the consequences, companies may have to spread their risks more widely. The cost quantification of supply chain disruption risk could potentially change the significance of the cost arbitrage considerations that drive most global sourcing decisions.


That does not necessarily mean fewer aircrafts will be queuing up to land at Louisville and Memphis, or that fewer container ships will set sail from Asia's bustling ports. But it could mean that in future companies may spend much more to maintain a number of different supply chains based on the risk assessment and some of those may be closer to home.

Information driven command and control capabilities will assume critical significance to help manage integrated but modularized supply chains. A formal risk assessment mechanism is needed to identify key processes that are likely to be affected by disruptions and characterize the facilities, assets and human populations that may be affected. Traditional risk management approaches should then be undertaken for each key process to identify vulnerabilities, triggers for these vulnerabilities, likelihood of occurrence and mitigation and risk transfer activities. Reporting, periodic auditing, management and legal reviews of implementation plans and on-going results (e.g., of near-miss management and other disruption risks) complete the business process for disruption risk management. The

audit process is essential to providing on-going feedback to management and supply chain participants on the performance of their facilities and their compliance with agreed, supply-chain wide standards. Organizations can build a solid sense and respond capabilities in their global supply chain using enterprise products. How organizations manage their enterprise risk will predicate success and failure and determine whether they are able to win in the turns when supply chain disruptions occur.

## REFERENCES

1. [www.thinkflat.com](http://www.thinkflat.com).
2. Jeff Sanford, *Beat China on Cost*, Canadian Business, November 2005.
3. [www.innocentive.com](http://www.innocentive.com).
4. P&G's New Innovation Model, Harvard Business Review, Vol. 84, No. 3, March 2006.
5. Tony Friscia, Kevin O'Marah and Joe Souza, *The AMR Research Supply Chain Top 25 for 2005*, Nov. 8, 2005.
6. Filling Amazon's Tall Orders, Business Week, December 2005.
7. Peter Navarro, *The Well Timed Strategy: Managing the Business Cycle for Competitive Advantage*, Wharton School Publishing, Mar 2006; and Darrel Rigby, *Moving Upward in a Downturn*, Harvard Business Review, Jun 2001.
8. Stephen Hochman, *Value Chain Complexity, Part 1: What It Is, Why It Matters*, AMR Research, Mar 1, 2007.
9. Annual Information Form, 2005, Magna International (<http://www.magna.com/magna/en/investors/governance/documents/pdf/AIF.pdf>).
10. Lora Cecere, *The Boeing 787: Demand-Driven Strategies Take Flight*, AMR Research, May 4, 2006.

11. What Vodafone will collect from the Hutch call, The Hindu Business Line, Feb. 18, 2007.
  12. Global Supply Chain Benchmark Report, Aberdeen Group, 2006.
  13. The Detroit News (<http://www.detnews.com/2005/autosinsider/0510/20/C01-355079.htm>).
  14. <http://news-info.wustl.edu/news/page/normal/5446.html>.
  15. Ting Shen, A framework for developing postponement strategies, MIT Research Paper, February 2005. 
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