

SUPPLY CHAIN IN INDIA “2011-2015” – A REVIEW: CHALLENGES, SOLUTION FRAMEWORK AND KEY BEST PRACTICES

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ABSTRACT

Supply chain processes and challenges in India have been so dynamic and are going through rapid changes. To understand where these changes stem from and also to determine the current status with respect to challenges in supply chain management, a two pronged approach is adopted and executed. The results of the approach are presented in this paper. The first step is to review current status based on literature review of available-published research (articles, journals, magazines, interview, etc.) between the years 2011 and 2015. The second step is to get industry perspective (interviews, surveys, meetings with business executives in India) to understand pressing issues that they face in handling their supply chain. Based on these two steps, a solution framework (supply chain challenges grouped under 15 categories), list of key best practices, and two specific action items (processes) are provided to help companies set a plan (short term, medium and long terms) and navigate through their supply chain challenges.

Key words: Supply Chain Challenges, Best Practices, Solutions, Supplier Management, Inventory Management, Supply Chain Framework.

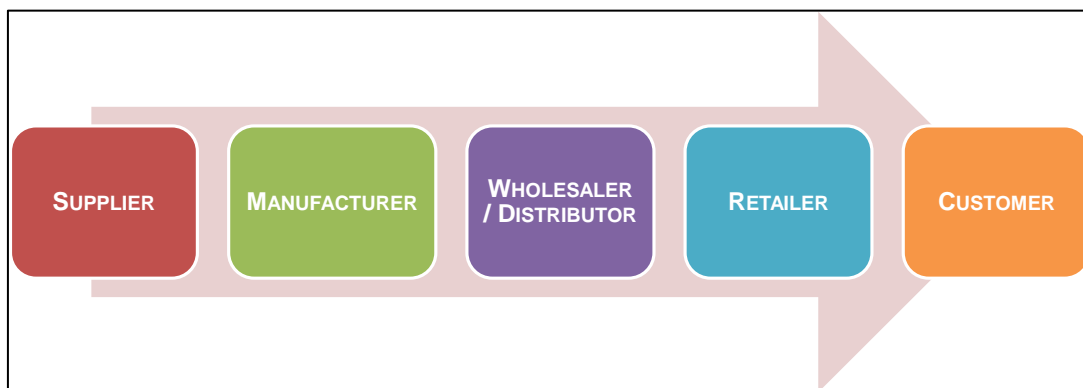
Cite this Article: Pradip Kumar Krishnadevarajan, Deepak Muthukrishnan, S. Balasubramanian and N. Kannan. Supply Chain in India “2011-2015” – A Review: Challenges, Solution Framework and Key Best Practices, *International Journal of Management*, 6(10), 2015, pp. 135-149.

<http://iaeme.com/Home/issue/IJM?Volume=6&Issue=10>

1. INTRODUCTION

A supply chain entity is comprised of suppliers, manufacturers, wholesalers / distributors, retailers and end users (customers) as shown in illustration 1. The manufacturer procures raw material from their network of suppliers to create products (items) for the end user (individual customers). Since manufacturing is more capital intensive (equipment, machinery and a high fixed cost) manufacturers limit their number of locations so that they can optimize their production line and maximize their equipment utilization. This limits their potential to be proximal to all their customer segments serviced (markets). Manufacturers are looking for “stability” of their production line. The wholesalers or distributors come into the picture as they buy in bulk (larger quantities) and sell to customers. The wholesalers act as a buffer between the manufacturer and the customers and hence have several locations and are able to get more proximal to customers than the manufacturer (in this case the wholesaler’s supplier). The distributor’s customers are not end users or individual customers but businesses. The wholesalers do only B2B (business to business). They may also supply to retailers. Since retailers also procure in larger volume and quantities they typically procure from manufacturers directly rather than through distributors. The retailers are closest to the customers and try to cater to various customer segments and demographics. The basic flow of material starts with the supplier and goes across to the end user via other entities. This is the simplest representation of a supply chain. The flow of material could vary depending on the manufacturer’s go to market strategy – they could sell through distributors or retailers and in some case go to customers directly. The goal of trying to capture market share and utilize their capacity efficiently causes different flows in the supply chain from the manufacturer’s perspective.

Illustration 1: A Simple Supply Chain Network

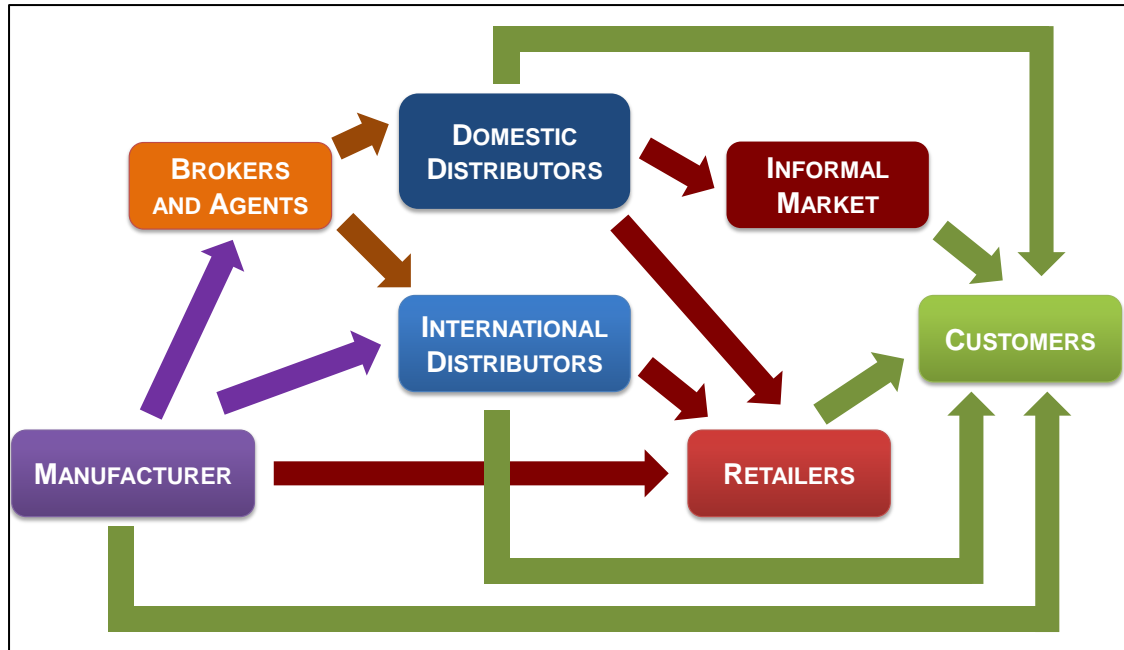


In reality, today’s supply chains are more complex and additional layers (entities) factor into the mix in order to reach every nook and corner and cater to every customer segment in a geography. The manufacturers are establishing several supply

chain partners in order to capture market share. This increases the complexity of the supply chain but is required in order to service all customers. The manufacturer’s objective is to reach as many customers as possible but the rest of the entities in the supply chain need to ensure that they not only increase their share (sales revenue or top line) but also continue to improve or maintain profitability (bottom line) with customers. This scenario presents a level of conflict at a broader level as manufacturers’ battle for market share and their downstream partners try to optimize profitability while pursuing market share. A more realistic representation of a supply chain model in India and most of Asia is shown in illustration 2 (Rodriguez-Silva, Lawrence, 2013).

Manufacturers establish alliances or partnerships with distributors (international and domestic), retailers and brokers (agents). The agents introduce the manufacturers to domestic distributors and get paid a commission on the sale. Agents are also known as manufacturer representatives or reps. Agents exist due to the fragmented nature of domestic distributors in India. Any individual can set up a firm that buys inventory from several manufacturers, stock and sell to customers (businesses or individual) since the barriers to entry are minimal. There are several domestic distributors that are not visible to the manufacturers but they have a market they sell into and service. The agents help formalize the selling channel between manufacturer and the domestic distributors. Once the distributors get large enough in size they begin to work with manufacturers directly and do not go through agents. International distributors also establish presence in India as they begin to source and manufacture in India. As these companies invest in manufacturing they try to set up a model where they not only move products back to USA, Europe, etc., but also sell to the local market. The number of international distributors is fewer when compared to domestic and much larger in size (revenue and product mix). Hence, they work with manufacturers directly. The retailers work with manufacturers directly but sometimes access products (for the purpose of variety and more diverse product mix) from domestic and international distributors. The inventory levels at the distributor are much higher and the availability is better which also motivates the retailers to do more business with distributors (domestic and international).

Illustration 2: Representation of Today’s Supply Chain (India and Rest of Asia)



The domestic distributors are formal entities but there also exists an informal market. The informal market is an individual or a group of individuals that buy in smaller quantities and sell to customers. This group goes to the customer to make the sale rather than have the customers come to them. They could sell door-to-door or in traffic signals or any place that has foot traffic. This is a significant part of the supply chain in India where the demand (forecasting is a challenge) is difficult to track, pricing is all over the place (customer negotiation), and controlling the product mix is impossible. The challenges in the supply chain model (the way the entities interact) arise with material flow, information flow, process improvement, human resource development, technology adoption and implementation, network (number of locations) optimization, infrastructure, environmental, political, etc.

The objective of the subsequent sections is to understand the supply chain challenges in India between the years of 2011-2015 based on published research (Step I) and then combine the literature review with industry feedback (Step II) in order to present framework that categorizes the challenges (15 categories), lists key best practices to implement and provide two action items (processes) for companies to work on immediately.

2. LITERATURE REVIEW – STEP I

This section covers review of articles and several published research work from 2011-2015.

| Source | Challenges |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| India Transport Portal (2015) | Supply chain capability, suppliers with technology and ability to invest adequately are less, frequent power outage, high cost of transportation development process, government process – lengthy & bureaucratic. |
| Kumar, Liu, Scutella (2015) | Supply chain structure, characteristics, and applicable policies differ between developing and developed countries. Lack of effective supply chain management practices and supply chain disruptions. |
| Negi, Anand (2015) | Inadequate storage, transportation facilities, fragmented-long supply chains, high cost of packaging, poor distribution and power shortage. |

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| Source | Challenges |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bhanot, Lockman (2015) | Distribution center (DC) networks – Decentralized and every major state has separate inventory, roadways, lack of sufficient tollways, railways congestion, bottlenecks and service volatility). |
| Rogers, Srivastava, Pawar, Shah (2015) | Lack of alignment between supply chain strategy and business strategy among Indian companies. <ol style="list-style-type: none"> <u>Operational</u>: Business practices, forgery, bribery, antitrust, security, impact on the environment. <u>Infrastructure</u>: Water, electricity supply, access to remote areas, technology, port delay, customs clearance. <u>Legal</u>: Legal proceedings, delayed legal settlement, vague contracts, enforcement of laws. <u>Economic</u>: Exchange rate risk, hike in price of raw material, commodity prices, interstate taxes, fee and regulatory charges. <u>Suppliers</u>: Supplier location, single sourcing or multiple sourcing, lead times, quality and price of raw material, supplier incentives. <u>Transportation</u>: Breakdown, roads, taxes, fleet utilization. |
| Rais, Sheoran (2015) | <u>Efficiency of supply chain flow</u> : Product, information and finances. <u>Factors affecting India's supply chain</u> : Availability of storage, government policies, connectivity, sorting and grading technology, handling and packaging, skilled labor, linkage in marketing channel. |
| Staff Writer (2015) | Local pricing, inflation, currency fluctuation, temperature controlled facilities. |
| Kumar, Singh, Shankar (2015) | Information sharing among supply chain members, development of reliable suppliers, dedicated resources for supply chain, logistics synchronization, and investment in technology. |
| Kumar, Singh, Shankar (2015) | Inefficient perishable and cold supply chains, frequent power outages, bureaucracy and poor supply base. |
| cgn global (2015) | Supply chain visibility and risk, customer intimacy, cost containment and globalization (commoditization). |
| Rinoj (2014). | Managing availability in a complex distribution set up, multiple layers of various small retailers before reaching end users across a vast geography. <ol style="list-style-type: none"> <u>SKU proliferation</u>: Number of stock keeping units (SKU) are increasing exponentially to get to each and every market (customers) makes it difficult to have product availability at the point of sale. <u>Smaller pack sizes</u>: As companies try to reach customers in every economic segment, they are forced to deal with smaller packs which make transportation and handling more expensive. A balance needs to be achieved between market penetration and logistics costs. |
| Ahamad, Abhishek, Shastri (2014). | <u>Co-makeship</u> : Limited relationship with a select number of suppliers, use of 3PL – outsourcing, principle of procurement (postponement), need or lack of market segmentation – identify needs by customer base. |
| Bala (2014). | <u>Supply chain integration and information sharing</u> : Aligning incentives of different partners, partners seldom share information. <u>Supply chain network</u> : How to design a model that is more dynamic? |
| A.T. Kearney, CSCMP (2014). | More mega cities, proliferation of segments, SC infrastructure, regulatory climate, stronger global connect, affordable/accessible technologies. |
| Bhattacharya, Mukhopadhyay, Giri (2014). | <u>Demand side trends</u> : Uneven growth, fragmentation, accelerated volatility, importance of aftermarket. <u>Supply side trends</u> : Differentiated outsourcing, low-cost-country sourcing, risk |

| Source | Challenges |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | management and transparency / accountability. |
| Hosmani (2014). | <p>All challenges relate to: location, production, inventory or transportation.</p> <ol style="list-style-type: none"> 1. <u>Procurement</u>: Supplier selection, optimal procurement policies. 2. <u>Manufacturing</u>: Plant location, product line selection, capacity planning, production scheduling. 3. <u>Distribution</u>: Warehouse location, customer allocation, demand forecasting, inventory management. 4. <u>Logistics</u>: Selection of logistics mode, selection of ports, direct delivery, vehicle scheduling. 5. <u>Global Decisions</u>: Product and process selection, planning under uncertainty, real-time monitoring and control, integrated scheduling. |
| Rao, Konteti, Janardhan (2014). | Effective rescheduling strategy to manage supply chain disruption by updating schedules. Disruptions are categorized based on flows: Supplier-customer-manufacturer, supplier-customer, customer-manufacturer, supplier-manufacturer, & manufacturer-customer-supplier. |
| Verma, Raghavendra, Aroq (2014). | Poor road network, lack of investment in cold chain infrastructure, complex distribution network / market, cold chain technologies, mass track moving technologies, failure to adopt global best practices (common identification of products, services and processes), non-sharing of information, and 3PL (third party logistics) is not utilized much. |
| Jayaram, Dixit, Motwani (2014). | <p><u>Poor information system capability</u>: Homegrown application with basic functionality, IT investment required in all functions.</p> <p><u>Supply chain management capability</u>: Weak strategic vendor partnership, information sharing, trust among partners, delivery lead times (coordinated supply chain, supplier performance management).</p> <p><u>High cost of customer service</u>: Poor forecast, planning of schedules.</p> |
| SupplyChainBrain (2013). | <ol style="list-style-type: none"> 1. <u>Poor infrastructure</u>: Second largest road-network but lack of quality. 2. <u>Complex tax infrastructure</u>: Impacts the cost of goods sold. 3. <u>Weak distributor network or distribution system</u>: Results in companies maintaining higher inventory. 4. <u>Trucking industry</u>: Highly fragmented logistics, multiple handoffs before products reach destination, very few organized 3PL's. 5. <u>Technology</u>: Supply chain software presence is growing but companies are not willing to invest in technology right away and technology investment is a key supply chain enabler. |
| CSCMP, A. T. Kearney (2013). | <ol style="list-style-type: none"> 1. <u>Changing business context</u>: Demanding customers (consumer complaints increased 9% in 2 years), higher B2B service level expectations, rising costs (crude oil prices – 9 % increase in 5 years, manpower – 12% increase in 2 years), diverse consumer base, increasing demand & supply volatility, & enhanced global connectivity. 2. <u>Evolving policies & regulations</u>: Changes do happen but slowly (A facility commissioning requires 20 approvals; national level service tax is not available). 3. <u>Ecosystem limitation</u>: Shortage of talent (only 2% of working population receives formal vocal training), fragmented service providers (3PL is used less; 9% in India), infrastructure constraints (World rank – 95th in road |

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| Source | Challenges |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | quality, 82nd in port infrastructure; lower average truck speed and turnaround time in ports are higher). |
| Blasgen (2013). | Poor infrastructure and access to remote areas, logistic bottlenecks, need for larger distribution centers and cost of movement in larger routes are higher, and need to develop inland waterways. |
| Renuka (2013). | Infrastructure, size and fragmentation of market, lack of uniformity in customer profile (demand and needs), local players (more players in the market, regional, less barriers to entry), low brand awareness and grey market fake brands, lack of distribution sophistication. |
| Symbiosis Centre for Management (2013). | <u>Technology to combat existing challenges:</u> Supplier Relationship Management, CRM, E-Commerce, customer loyalty cards, data mining and analytics. |
| Bhushan, Tirupati, Suresh (2013). | Supply chain visibility, increasing customer demands, risk management, globalization, and cost containment. |
| Nagarajan, Savitskie, Ranganathan, Sen, Alexandrov (2013). | <u>Environmental Uncertainty:</u> It can be improved by information sharing between supply chain partners. <u>Information Quality:</u> Increased transparency, sharing high quality information in the context of establishing a collaborative supply chain. |
| More, Basu (2013). | Top 3 challenges in 6 areas of supply chain focus: 1. <u>Human resources (HR):</u> Lack of knowledge and information about supply chain finance, training, IT experts not available to support automation of transactions. 2. <u>Information technology (IT):</u> Slow processing of payment, poor visibility into movement of goods, lack of ability to access supply chain finance at various stages of the supply chain. 3. <u>Finance:</u> Unreliable and unpredictable cash flows, high DSO, weak suppliers and lack of financial management tools. 4. <u>Inter as well as intra-firm coordination, collaboration and alliance:</u> Non effective inventory management techniques, lack of process for supplier selection, reducing COGS (cost of goods sold), and pressure from management to improve financial ratios. 5. <u>Organizational policy, strategies, practices:</u> Lack of communication, collaboration, coordination between supply chain partners. 6. <u>Macro-institutional:</u> Cultural, government laws and regulations, geographical challenges. |
| Parthiban, Zubar, Katarar (2013). | Vendor selection and sourcing processes enable companies to reduce costs and improve profit figures. Shortened product life cycle, just-in-time environment, and the importance of strategic partnerships influence companies to focus on vendor selection. |
| Srinivas (2013). | Replicating successful supply chain practices, infrastructure development (transportation, warehousing, and information technology), supplier clusters and less managerial skills. Availability of land, bureaucracy, high electricity cost, % |

| Source | Challenges |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | of logistics cost is higher, less global supplier base. |
| Babu (2012). | Fluctuating market demand and rise in customer requirements, long demand planning cycles, lack of supply chain visibility (supplier, material, and production constraints), increased inventory, and limited information sharing. |
| Reddy (2012). | High cost of supply chain, inadequate infrastructure for efficient supply chain, inadequate investments in IT, lack of logistics infrastructure. |
| Ketkara, Vaidya (2012). | Low fill rates, forecast accuracy, constant vendor follow up is required to procure raw material, complacency of the sales team, large number of SKUs, slow or non-moving products, and sourcing challenges. |
| Jayaram, Avittathu (2012). | High levels of inventory, fragmentation of logistics, demand side (market penetration, customer reach, sophistication of product features), supply side (infrastructure, information technology, availability of competent suppliers, managerial skills), limited information sharing and integration with partners, high process complexity (different types of raw materials and processes, and large supply base). |
| Kumar (2012). | Key challenges faced in the automotive industry are – managing vendors, tracking products, visibility and coordination. |
| Kumar, Pugazhendhi (2012). | Supply chain information sharing – Information security, lack of technology and poor IT infrastructure, lack of trust in the supply chain, poor strategic planning, financial constraints, lack of supply chain vision and understanding, unwilling to share risk and reward. |
| Raj (2012). | Margins (profitability and pricing control), availability of products (online customers), logistics and supply constraints (access to interior markets), dependence on Third Party Service Providers (TPSP). |
| Mangal, Gupta (2012). | Demand, lead-time, supplier problems, internal conflicts, market trends, product life cycle, information flow, government policies. |
| Charan (2012). | Vendor managed inventory and dealer management system – vendor’s performance on criteria which have supply chain orientation, forecasting, order taking and production planning, vendor management and inventory replenishment, IT infrastructure and application, E-business, supply chain performance measurement, logistics and sales distribution. |
| Cottrill, Singh (2011). | Road infrastructure, rail road infrastructure, uneven port development, air shortfalls (transportation), lack of trained and capable human capital, logistics network and reliability |
| Thakkar, Kanda, Deshmukh (2011). | Lack in technology based planning, poor trust and transparency in buyer-supplier relationship, sub-optimal scale of operation and technological obsolescence, unawareness of potential suppliers, fluctuating prices, raw materials price, poor quality and support in terms of timely delivery, ability to cater in emergency and readiness to improve technology. |
| Zahedirad, Shivaraj (2011). | Lack of supply chain management teams, clear alliance guidelines, SCM training, top management support, willingness to share information, joint learning attitude, incompatible SCM plan, poor financial support, shared risks and rewards, lack of trust, inconsistent logistics and transportation, inadequate information system, organization boundaries. |
| Jain and Tiwari (2011). | Raw material price fluctuations, distribution (lack of space), warehouse utilization, seasonality, payment delays (cash flows and long DSO-days sales outstanding). |

| Source | Challenges |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frenzel (2011). | Fragmented distribution, decentralized, companies operating a warehouse in every major Indian state due to a cumbersome Central Sales Tax that requires companies to pay taxes on inventory each time that inventory crosses state lines, lack of distribution centers (large, some level of automation), skilled labor, infrastructure and equipment. |
| Chadha (2011). | Complex distribution network, multiple distribution points before reaching end user, decentralized transportation carrier providers (every time the mode of transportation changes, there is handling, sorting, and storage involved –makes the supply chain very complex and decreases reliability), visibility in supply chain, collaboration with partners, process simplification, flexibility of the solution, and technology. |
| Hochfelder ¹ (2011). | Traditional methods of supply chain design and management do not always apply, roads, rails and ports are all a challenge to economic growth, and complex taxation system. |
| Hochfelder ² (2011). | <ol style="list-style-type: none"> 1. <u>Operational</u>: Supply disruptions, demand uncertainty, machine failures, improper planning, information & security risks. 2. <u>Market</u>: Price variability, customer behavior and expectations, competitor moves, exchange rates, environmental risks and disasters. 3. <u>Business/strategic</u>: Adverse effects of strategies such as outsourcing, single sourcing, lean manufacturing, improper supply network design, forecasting errors, lack of coordination and information sharing. 4. <u>Product</u>: Short product life cycles, complexity in product design and manufacturing, desire for variety of products, need for multifunctional products. 5. <u>Miscellaneous</u>: Political risks, credibility risks, brand image risk, social risks, ecological risks etc. |
| Kaur, Kanda, Deshmukh (2011). | Supply chain coordination at multiple levels – Production, distribution, procurement, and inventory. |
| Mahendran, Narasimhan, Nagarajan, Gopinath (2011). | <ol style="list-style-type: none"> 1. <u>Supply</u>: Imports, inferior quality of supply, non-availability of resources, natural disasters, man-made disasters, supplier selection, and costs. 2. <u>Production</u>: Machinery malfunction, human risks, wrong packaging, power and electricity. 3. <u>Demand</u>: Forecasting errors. 4. <u>Miscellaneous</u>: Transportation, quality, storage, information sharing, safety & regulations. |

3. INDUSTRY FEEDBACK – STEP II

Interaction with companies is performed through surveys, interviews and focus groups with several industry owners, supplier (vendor or manufacturer or brand) managers and business managers. The business executives and companies comprised both domestic and the international companies that had footprint in India. The objective of step II is to get an understanding of the challenges that are faced on a day-to-day basis as they try to fulfill their supply chain goals. The interaction with industry was done using the business framework (Lawrence, Gunasekaran, Pradip Kumar Krishnadevarajan, 2009) that categorizes business processes (B2B environment) into seven groups collectively known as the “7S” process groups.

- **Source:** Processes related to the resource category vendors/suppliers and manufacturers. This group also refers to any manufacturing that is performed by the firm.
- **Stock (inventory):** Addresses one of the largest assets of any business.
- **Store (warehouse/facility):** Deals with facilities and material handling supporting assets.
- **Sell:** Focuses on customers and cash (accounts receivable – money that the customers owe the company after buying a products and/or services, another of the two largest assets). The processes in this group are marketing, pricing and sales.
- **Ship:** Processes that deal with delivering products to customers; it involves facilities and transportation (to customers and returns from customers)
- **Supply Chain Planning:** Addresses the network assets (locations), which include facility, transportation, suppliers/manufacturers, customers, and inventory. This process is performed by companies once every 3-10 years as companies have to look at all assets in the company and reconfigure their entire distribution network – facilities, trucking requirements, transportation schedules, sourcing, etc.
- **Support Services:** HR (human resources), finance, and IT are resources that interact with all the other groups and are vital to the survival of any business.

The seven process groups comprise of various processes. For instance, source group includes supplier selection, supplier performance management, supplier relationship strategy, etc. Stock group include inventory prioritization, forecasting and replenishment. The seven groups include a total of 47 business processes. The discussion primarily focused on 5 of the 7 groups – source, stock, store, sell and ship were the categories addressed in detail.

Illustration 3: Supply Chain Challenges – Faced by Businesses

| PROCESS CATEGORY | CHALLENGES |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SOURCE (Supplier Management) | <ul style="list-style-type: none"> • Long lead times and variability in lead times – supplier reliability • Lack of product diversification • Too Many Suppliers (What is the right number of suppliers?) • Lack of a Supplier Management Process and reporting • Supplier Relationship Accountability • Metrics not established or even if it is available it is not comprehensive • Having to accept the supplier's way of doing business (while working with very large suppliers) • Suppliers goals do not align with company goals • Lack of supplier innovation / new product introduction • Low level of technical or after sales support from suppliers • Supplier taking business direct when customers become large (high volume and spend) • Lack of investment in technology (online ordering, tracking, invoicing) • Less agile in responding to changing market / customer needs-demand |

| PROCESS CATEGORY | CHALLENGES |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STOCK (Inventory Management) | <p>Balancing inventory and customer service</p> <ul style="list-style-type: none"> • Tracking lost sales and inventory performance • Excess inventory or safety stock – Too many items on shelf • Less inventory leading to stock-outs • Product rationalization (number of products / items to stock) • No inventory classification and even if it exists it is not comprehensive • Better way to understand how much inventory to carry for new items • Better ways to clear slow moving inventory (improve turns) • Methods to identify product dependencies and relationships • Measuring and tracking customer service metrics • Difficult to forecast slow move items • Lack of forecast metrics or forecast accuracy • Do not have a clearly defined forecasting framework • Lack of clear guidelines on when to buy and how much to buy |
| STORE (Warehouse Management) | <ul style="list-style-type: none"> • Utilization of warehouse space – storage and product placement • Tracking personnel productivity • Inventory tracking and accuracy of warehouse processes • Improve product planning • Warehouse layout design |
| SELL | <ul style="list-style-type: none"> • Lack of customer differentiation or segmentation • Handling unprofitable customers • Value based selling and pricing • Inefficient sales process and metrics • Marketing process not well defined • Developing sales capability and personnel • Compensation for sales force • Growing revenue and profitability |
| SHIP | <ul style="list-style-type: none"> • On-time delivery to customers • Lack of reliable logistics across a bigger geography • Tracking and visibility of shipments not available • Increasing transportation costs |

It can be observed that most of the challenges these companies faced were primarily in the source and stock category. Managing suppliers and inventory are the biggest process challenges.

4. SOLUTIONS AND BEST PRACTICES FRAMEWORK

The two step approach laid out several supply chain challenges in India. These challenges can be grouped under 15 different categories as shown in illustration 4. These challenges are assigned to three levels to help companies identify the ones that

are short term, medium term and long term based on the priority to address them. Level 1 focuses on “Process”, level 2 on “Information and Resources” and level 3 on “Multiple Entities”. Implementation of Level 1 recommendations will help companies determine action items for levels 2 and 3. The recommendations for level 1 are as follows:

- **Process Framework:** All business functions should be grouped under the 7S framework (Lawrence, Gunasekaran, Pradip Kumar Krishnadevarajan, 2009) for ease of understanding and management.
- **Focus:** Businesses cannot be everything to all customers; they need to work on complexity management (Pradip Kumar Krishnadevarajan, Balasubramanian, Kannan, 2015).
- **Best Practices:** Key best practices are: Inventory (inventory stratification, demand pattern classification – to assist with forecasting), suppliers (supplier stratification, supplier selection framework, supplier performance management and relationship strategy), customers and market (customer stratification, market segmentation, value proposition by market/customer segment, sales force stratification, sales force analytics, and compensation). Training is an ongoing process and should take place continuously as best practices are adopted.

Illustration 4: Solution Framework

| PRIORITY | Level 1 | Level 2 | Level 3 |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective | PROCESS | INFORMATION AND RESOURCES | MULTIPLE ENTITIES |
| Description | These challenges can and must be addressed immediately by firms. They can be accomplished in the short term (with minimal resources) and best practices related to these challenges already exist. Supply chain challenges in these categories can be influenced and controlled by individual businesses but management and senior leadership must make this a priority. | These challenges can be addressed only after a process (best practice) is in place and some level of training is provided. They are medium term but still can be influenced or controlled by companies but requires coordination, focus (you cannot be everything to all customers and suppliers – Identify a core group to work with), and resource commitment. For instance a technology solution cannot be made with a relevant process in place. | These challenges are on-going, highly dynamic (change constantly and will exist in some form or fashion as supply chain practices mature), and more long term. Several entities need to come together to address these challenges. They are uncontrollable (immediately) in nature. |

| | | | |
|--------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Category (Challenges) | 1) Suppliers 2) Inventory 3) Customers and Market 4) Strategy 5) People and Training | 1) Financial 2) Technology 3) Facilities 4) Information Sharing & Coordination 5) Production & Manufacturing | 1) Transportation & Logistics 2) Business Practices 3) Infrastructure 4) Economic 5) Legal, Government, Safety & Regulations |
|--------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|

5. CONCLUSION

Two key areas that companies should address immediately are “Supplier Performance Management” and “Inventory Management”. These two areas will make companies more efficient and address their supply chain challenges right away.

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