# Supply Chain Collaborations changing the face of Indian Automobile

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## Abstract

The emphasis given on improving supply chains in organizations both by companies and academia in past two decades shows the growing importance of integrating manufacturing and marketing processes of organizations. In the recent years supply networks are being recognized as strategic tools that enable companies to fight global competitive battles.

The paper studies the nature of supplier collaborations and technology's role in improving coordination across the supplier networks. The paper provides an insight into supplier networks of Indian automobile companies and presents some cases to demonstrate this.

## Keywords

*collaborations; supplier networks; technology; partnerships*

## Introduction

Supply chain has become a hot and compelling strategy that is being perused by companies. In an attempt to be competitive companies are giving importance to building relationships with their suppliers and customers.

### *Importance of Collaborations in Supply Chains*

In the business world fostered by competition, the growing concern of companies is to formulate strategies that would entail greater satisfaction at the customer's end. The importance of managing supplier-relationship as a competitive tool by companies such as Dell, Wal-Mart, Nokia, P&G, Toyota, Ford, Nissan and Honda has showed the way to industry of strategic importance of supply chains. "Supply chain management is the

systematic, strategic coordination of the traditional business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole" [Mentzer, Dewitt, Keebler, Min, Nix , Smith & Zacharia, (2001)]. "Cooperation has been defined as the joint striving towards a common objective and goal [Stern, 1971; Day & Klein, 1987] "Cooperation is the process of coalescing with others for a good, goal, or value of mutual benefit [Stern & Reve, 1980]. The concept of intra firm coordination has extended beyond the peripheries of the organization and grown to encompass the diverse business operations and objectives of varied business firms.

Companies earlier had more of adversarial relationships with their suppliers. These were sought after for personal goal fulfillment and profits but now organizations are working for greater coordination and mutual risk sharing. Ellram & Cooper (1990) emphasize that supply chain management extends the concept of organizational effectiveness in terms of integrating activities and functions between firms, as well as inter-functional coordination within a particular firm. Coordination is being perceived as beneficial to both the parties, whether it is the organization or the supplier firms. The exercise of developing the product, designing it and then manufacturing it in close cooperation with the suppliers and technology providers is not only in line with the idea of flexible manufacturing but also reduces operating costs substantially. Today's customer is looking for 'more for less' in all his purchases. It is not companies that are striving for more revenues by employing lesser resources but the web-linked customer is exercising his prerogative of choosing products that provide him with maximum value at lesser price. "Concurrent engineering involves faster product development, flexible manufacturing, tailored logistics, and time based strategies to

respond to changing markets" [Cespedes, 1996]. The efficient handling of the production process requires managing inventories and quality constraints. The external market forces compel companies to be agile in responding to the customer needs and this essentially requires managing both the upstream and downstream suppliers and vendors. "Just as concurrent engineering improves manufacturing responsiveness, companies wrestling with rapid change in today's markets adopt concurrent marketing" [Cespedes, 1996]. The different marketing functions of product development, market research, sales and service are being integrated together for streamlining the business operations and having a better reach in the market. Coordination across business functions like manufacturing, marketing and global procurement is becoming very essential.

***Changing Nature of Supplier Collaborations***

In industry collaboration occurs when companies work together for mutual profitability. In the context supply chains, partners leverage each other's operational capabilities for strategic benefit. Thus collaborations can occur at all points along the value chain-from design the product to distribution. It enables the companies to effectively handle information flows leading to cutting processing time, eliminating non-value-added activities. This leads to improving "quality, accuracy, and asset productivity- all of which are fundamental to long term success" [Bowersox, Closs, Drayer, 2005]. Increasingly supply chain collaborations are being viewed as responsible for dramatic improvements in the performance of the company. Lambe & Spekman (1997) define an alliance as a collaborative relationship among firms to achieve a common goal that each firm could not accomplish alone. The difficulty and challenge lies in converting the different business ideologies of the

collaborating companies into mutual risk and profit sharing partnerships. It requires focusing on transformation of business processes and integrating them to meet the requirements of the market. The technical and behavioral perceptions of the collaborating suppliers and companies have to be worked upon for building trust across supply chains. Thus building trust across the various constituents of the supply chain requires time, effort and managerial skills. It entails recognizing the potential of the various suppliers, vendors, distributors, logistic providers and other intermediaries and their role in building an efficient supply chain network.

The partnerships in the supply chain are configured as business relationships. They are based on trust, "shared risk and shared rewards that yield a competitive advantage, resulting in business performance greater than would be achieved by firms individually" [Lambert, Emmelhainz, Gardner, 1996]. With companies operating in different parts of the globe, there is an increased pressure to build relationships with different kinds of firms for manufacturing. The close integration with the suppliers helps companies in expanding across national boundaries and catering to a whole gamut of customer needs across the globe. This requires the partners to develop mutual goals and have the objective of giving better value to the end-customers. It would therefore involve joint planning in product development, organizing the procurement and distribution processes, controlling the manufacturing, quality and inventory levels and then finally identifying the channels or networks for making the product available to the customer. Lassar & Zinn (1995) suggested that successful relationships aim to integrate supply chain policy to avoid redundancy and overlap, while seeking a level of cooperation that allows participants to be more effective at lower costs levels.

In this context the paper discusses the underlying principles of supply chain collaborations in Indian automobile companies and their impact in reducing costs and meeting customers' requirements. The emphasis is to identify factors that are making Indian companies and Indian subsidiaries competitive by global standards.

***Coordinating across Value chains for Competitive Advantage***

The coordination in supply chain requires integration of all the processes from sourcing, manufacturing and distribution – keeping this into consideration a study was conducted to look into the collaborations undertaken by Indian companies with their downstream suppliers. Many companies have understood that managing relationships across supply chain requires monitoring closely the technological and managerial expertise of the various suppliers. It requires involving suppliers with the cost control and quality initiatives of the company and ascertaining their level of commitment towards the partnership. They are constantly endeavoring to reduce the supplier base to a manageable number making it possible to build close relationships that can be developed and nurtured with time. For example Nortel Networks moved from vertical integration to 'virtual integration'. It sold fifteen of its manufacturing plants across the globe and concentrated on building its core competency of manufacturing high-performance Internet networks. The various suppliers of the company have expertise in the particular components that they supply to the company. This gives the company the flexibility to spend more time in planning for technological innovations rather than coordinating its manufacturing plants. With the help of Internet the company can post its component requirements to its various suppliers and it enables suppliers also to respond faster to the company's needs.

The benefits that any company can get from coordinating within the supply chain are immense. “Participating firms work together to resolve disputes through mechanisms that support joint problem solving” [Monczka et al. 1998; Salmond & Spekman, 1986]. Toyota with its world class manufacturing works in close coordination with its suppliers and involves them in devising techniques that would lead to cost savings and better returns. The greatest challenge for companies working together relates to organizing the operations where the parties get benefit from the relationships. Another aspect of managing supplier relationships is the role played by information technology. Increasingly information technology is being recognized as an important factor in fostering relationships. In India companies are integrating their supply chains by using technology as an enabler in capturing real time data regarding sales and inventories. The paper explores the usage level of IT in automobile sector in India and its impact in revolutionarizing supply chains.

## Information Technology fostering partnerships

***Strategic Importance of Information sharing across networks***

The competency of supply chains is based upon the capability to take strategic decisions fast and be quick to react to the changes of the demand and supply. In the dynamic business environment information is becoming an essential component that is making supply chains efficient. The inevitable demand on the ability of supply chains to adapt product manufacturing according to customer and market needs is playing a vital role in supplier relationship management. Information is thus bringing suppliers, distributors and logistics providers into the purview of organizational supplier network configurations. “Every supply chain has an information chain that parallels the flow of product” [Andel, 1997]. “Without

information relayed at the right time to the right place, there are no purchase orders, no shipment messages, no payments, no coordinated marketing and sales efforts and supply chain shuts down" [Zuckerman, 1998]. The very existence of supply chain is based upon timely exchange of accurate information. The ultimate challenge of supply networks lies in transmitting information to various parties and participants involved in supply chains. Supply Chain Management functions on information. The purpose is "the exchange of substantial amount of information among buyers, suppliers, and carriers to increase the efficiency and effectiveness of the supply chain" [Carter, Ferin, & Carter, 1995]. Organizations are moving towards the model of sharing information continuously in order to become strategically focused towards meeting the customer needs faster.

The rules of business that worked about a decade ago no longer promise any kind of profitability. The growing internationalization of operations, outsourcing of functions, customer driven market philosophies are fast mobilizing businesses to use information technology in integrating their operations worldwide. There is the challenge to serve customers in different countries, the product life cycles becoming shorter and technologies becoming obsolete quickly. The service and quality standards are being established by the customers in different markets. " Managers have identified information substitution- the intensive use of information to achieve better control and visibility", [Perry, 1991]. "Accurate, timely information facilitates better decision making. Substituting information for inventory assets influences strategic decisions and enables significant cost reductions" [Rogers, Dawe, & Guerra, 1992]. Research shows that companies that went for collaborations and partnerships have developed capabilities in fighting competition and reducing costs substantially. "A survey conducted by Gustin et al. (1995) found that the

successful implementation of integrated logistics concept was related to high levels of information availability. More information provides greater decision-making capabilities at the strategic, tactical, and operational level. Gustin et al. (1995) also found that companies with integrated logistics functions exhibited enhanced information system performance compared with nonintegrated companies" [Mentzer,2004 ]. Partnerships amongst suppliers and the company can only be developed on the platform of information sharing. As manufacturing technologies become complex, involving suppliers in production becomes beneficial. Companies developing close relationships with suppliers have benefited from technology sharing collaborations.

***Relevance of Information Technology in supply chains***

Information systems are being developed and managed according to the information needs of the companies and the market they are catering to. Fashion industry needs vary from the automobile manufacturers; food chains needs vary from that of computer chips manufacturers. Information has to be available for the participants to take timely action. ERP systems have enabled companies to exchange information within the different functions of the organizations, leading to reduction in the time to process orders, shorten cycle times and better manage inventories. Enterprise Resource Planning (ERP) systems are allowing companies to replace their earlier information systems. It was important to create "a single, integrated system, thereby streamlining data flows throughout an organization and promising dramatic gains in a company's efficiency and bottom line" [Davenport, 1998]. Electronic Data Interchange is being increasingly used in linking the vendors, suppliers to the organization. The inter company relationships are now being developed on technology to

enable greater flexibility. “In many supply chains long term strategic relationships are replacing the short term transactional relationships of the past, and EDI is often the glue that ties long-term relationships together” [Bowersox, 1988; Williams, 1994]. The new systems such as ERP and Web-based technology are being accepted as mechanisms of business change. These systems include future planning data also apply decision-support tools which can use different kinds of databases for decision making. “With decision-support tools, a user and the system interact to support decision making in a complex environment” [Handfield & Nicholas Jr. 2002].

Companies are switching over to newer virtual electronic medium and the traditional sectors are also focusing on newer interactive technologies in developing better control over their operations. The older traditional models of decision making and not involving customers and suppliers in product development are things associated with the ‘rust-belt’ industrial sectors. “Cisco has embarked on a very ambitious project to create an e-Hub linking multiple tiers of suppliers via the Internet. It is intended to coordinate supply and demand planning across the supply chain, using intelligent planning software provided by Manugistics. The e-Hub will also help identify potential supply and demand problems early, give proper warning to appropriate parties, permitting prompt resolution, all via the Internet” [Lee & Whang, 2001].

This kind of virtual activity entails greater participation of the suppliers in product development as customers are demanding more visibility in the service performance perspective. Mahindra & Mahindra in India like Ford and GM has web-enabled forum where the customers actively participate in designing their own automobiles and tracking their

orders from the manufacturing plant to the dealer. “The extension is obvious---all items of stable or relatively standard consumption can be ordered via the Internet, with past patterns of use driving automated replenishment and home delivery. This combination suits the hectic lifestyle of many modern consumers who look to fulfill their everyday needs as conveniently as possible” [Bovet & Sheffi, 1998]. “Ford targeted several key areas for improvement, including supplier lead time, packager and throughput time, warehouse receipt and item availability time, and transportation. In addition, the company sought better visibility of its parts shipments, especially in the hand-off between links of the chain” [Bowman, 2004].

Increased customer expectation is putting pressures on supply chains calling for greater collaborations with the vendors and suppliers for timely deliveries. The Wal-Mart and P& G collaboration stands testimony to the initiatives materializing into cost and inventory reductions. Many companies in retail are designing their supply chains tailored according to Wal-Mart supply networks. EDI and ERP go a long way in building not only long term relationships amongst the channel members but also help in tracking changes in market. “Campbell Soups has shown how this new game should be played. In 1991, the company launched the continuous-replenishment program with its most progressive retailers. The program works as follows: Campbell establishes electronic data exchange (EDI) links with retailers. Every morning retailers electronically inform the company of their demand for all Campbell products and the level of inventories in their distribution centers. Campbell uses that information to forecast future demand and to determine which products require replenishment based on upper and lower inventory limits previously established with each retailer” [Fisher, 1997]. Technologies such as point-of-sales data, efficient consumer-response, automated warehousing, continuous replenishment, collaborative forecasting are

being increasingly used to make the supply chains more flexible and responsive to customer needs. And these are being used to enhance the capabilities of the suppliers and distributors in delivering their best for competitive advantage of the companies. Better information regarding the demand fluctuations in the markets enables companies to adapt their manufacturing accordingly. To track the uncertainties of demand and market requires having systems that provide access to information. This information can be easily available, if partnerships are built with distributors, dealers and retailers who have exact information about customers' preferences.

***Use of Technology in the Indian Supply Chains***

"In developing a high-performing value system, organizations are continually faced with the challenge of managing the 'people' part of the equation. Relationship management affects all areas of supply chain and has a dramatic impact on performance" [Handfield & Nicholas Jr. 2002]. "In complex relationship in which performance is difficult to measure, profit or income sharing based on incentive schemes is an important cooperation mechanism" [Grandori & Soda, 1995]. Information sharing can benefit both the parties, and can make them improve their relationships with the end customers. Many companies have the 'win-win approach' towards reward sharing. Information regarding new product launches, promotional campaigns initiated by the company, production schedules, forecasts for future purchases, and suppliers' cost data if shared with all the concerned parties can benefit the partners. "Wal-Mart is very open and willing to work with its vendors, shares point of sales data with suppliers, and has employees communicate with suppliers' employees on regular basis" [Gill & Abend, 1996]. IBM and Caterpillar have information systems that anticipate equipment

failures and send alerts to the technicians in the field about the nature of the problem with the tools and parts required to fix it. Such kind centralized databases enable companies to manage the integral part of their marketing and production function. Linking data about customer's past behaviour and purchase patterns can make targeting decisions more focused and effectively planned.

With technology promising the advantage of integration throughout the supply chain, **Oil & Natural Gas Corporation** (ONGC), has implemented technology in its operations. The procurement process has become more efficient across the supplier network, ONGC has implemented the software from SAP and the supplier relationship software enables the company to improve visibility across the supply chain. This has also gone a long way in improving its relationship with its suppliers. The e-tendering process of ONGC has improved the company's reach and also helped it to get better prices [SAP, 2006]. **Tata Steel** has done a major restructuring of its supply chain. The IT initiative is helping the company in monitoring replenishment time from the upstream manufacturing operations to the plant warehouses, regional warehouse and finally to customer. Technology is facilitating daily reporting about consumption of steel at various levels of supply chain. The use of technology has improved production and logistics planning; thus reducing waste and inventory carrying costs.

Supply and distribution planning at **Hindustan Petroleum Corporation Limited**, HPCL was a challenge. The company has a large logistics network spread across the country. The plans that were created using Microsoft Excel, could not handle the complex data of planning distribution across 500 storage points, 17 cross-country pipelines, 170 local

pipelines, 700 rail linkages and two refineries. By implementing ERP solution from Honeywell, the company not only significantly cut down on cost but also was able to better coordinate across its supply chain network. Technology adoption enabled the company in building closer relationships with its suppliers and distribution points.

**Godrej Industries** was faced with the challenge of improving internal business and to align its processes to build greater coordination across its supply chain. The company came up with an initiative called 'Sampark' that had brought all its distributors under one forum. Then it went to widen the scope to connect its retailers through an IT initiative called 'Sampurna'. Sampurna is designed with the motive to improve Godrej's relationship with its retailers while reducing retailer's inventory levels to a minimum. With the deployment of Sampurna, all supply Chain areas would be integrated. Godrej has also implemented a customized ERP suite for its distributors for daily accounting, material receipts, billing and inventory.

"Over the last half century, supply chains have moved from the domain of a single company (such as the vertically integrated Ford River Rouge plant) to a web of suppliers and their suppliers. At the same time, the type of product bought from suppliers has changed—from commodity materials and parts to highly engineered specialized systems and subassemblies, requiring close cooperation between trading partners. Outsourcing the manufacturing of complete products is only the next logical step in this progression, a step that has led to the rise of contract manufacturing companies in many industries. The result is that companies have become increasingly dependent on their supplier networks" [Sheffi, 2005]. Depending for technology and semi-finished products on suppliers requires

companies to rely on the expertise of their suppliers. Collaborations enable companies to work strongly on their core competencies while taking advantage of low labour costs and expertise of their suppliers. To have greater access to suppliers' innovations in technology enables companies to upgrade their own production and processes. In this section certain cases of Indian organizations are cited to emphasize the adoption of technology to improve supply chain efficiency.

***Supply Chain Integration in Indian Automobile Sector***

**Mahindra & Mahindra:** Mahindra & Mahindra has been one of the first Indian companies to implement the new business model to cut down its operating cost and provide better visibility to all its partners and customers. The reengineering promises to bring the stakeholders, supply chain partners and customers under the purview of information accessibility. The technological initiatives in the area of SCM and CRM would not only enable the company to provide increased connectivity but also create greater loyalty amongst company's stakeholders. The company's IT initiative called PACE (Performance At Customer Elation) is designed to create greater satisfaction for the customer through improved service levels and electronic payment and clearance facilities (Sap AG, 2002). The Company's tie-up with different banks would enable it extend the online payment facility to its vast network of dealers and customers across the country. The dealers are now considered company's partners and are equipped with more information regarding the products of the company. "The Quality Leadership" programs at the dealer level are designed to cater to the growing need of the company to create value in their relationships. "Sometimes the relationship with supplier goes beyond products to reach at the human level that surpass all

commercial considerations. To illustrate, a supplier of castings located at Kolhapur suddenly expired. M&M instead of terminating the contract and finding some other supplier, supported his wife and helped her to run the unit till she became confident of doing it on her own" [Kulkarni & Sharma, 2004]

**Maruti Suzuki:** Since competition increased after liberalization in the Indian car market, Maruti Udyog Ltd (MUL), India's largest passenger car manufacturer, was forced to not only improve its quality of products that it offered to the customer but also reorganize its supply chain. Foreign car manufacturers' entry into the Indian market had meant not only bringing down the price of the vehicle but also to look at ways that could improve the performance of the company. Supply chain was understood as a key area that would enable the company to streamline its operations strategically to attain substantial cost reduction from production to distribution. The company is dependent on over 300 suppliers for some 7,000 components to be used in manufacturing its different models of cars [Varadarajan, 2002]. Reengineering efforts thus were focused towards bringing about a close coordination with the company's varied vendors. This enabled the company to achieve not only cost rationalization but also helped it keeping a check on quality of the components. The benefits could be passed on to the vendors. The company implemented innovative techniques for materials handling and thus reduced wastages; localizing the manufacture of certain components also reduced problems in materials handling and cut down logistics cost. The company created manufacturing schedules that were issued every fortnight and it was aligned with the online inventory replenishment system. The company could reduce inventory levels and the vendors had to only produce what was indented. MUL is slowly extending its inventory management system of electronic card system across its entire network of suppliers. Their cost control

effort has benefited MUL's major suppliers like JK Industries, Lucas TVS and Kalyani Brakes.

**Baja Auto:** With the entry of Japanese manufacturers in the Indian two-wheeler market in the 1990s, Bajaj Auto, which was the market leader, awoke to the realization that its well entrenched position was under threat. The Indian customer was looking for sleeker and smarter vehicles to suit his changing lifestyle and aspirations. Even though the company's vehicles gave the customer a cost advantage, he was no longer interested in the old outdated designs when there were other manufacturers providing more variety. The market share of the company dropped to 39.8 percent in 1998 from 49.3 percent in 1994 and its share in the scooter market fell to 64.8 from 74.8 percent. To counter react to the challenge Bajaj Auto went for technological tie-ups with Austria's AVL for technology to improve vehicle emissions and fuel economy; Australia's Orbital engine company for combustion systems; and Tokyo R& D for engine design. In the Auto Fair held in New Delhi in 1998, the company launched seventeen new models of vehicles [Ghoshal, Bartlett & Piramal, 2000]. The marketing strategy was revised by doubling the advertising budget; the company launched dealer development programs, standardization and modernization of the dealer network, organizing regular dealer conferences. Bajaj mySap Enterprise portal was created to cover the sales force and the dealers of the company. It provided access to all kinds of information about the company like latest news, new product launches and internal marketplace developments. This has enabled the company in reducing inventory levels, developing better coordination across its supply chain partners by cutting the non-value-adding activities.

**Ford India:** "Ford Motor Company India was established with an investment of US$ 351.1 million under single window policy at Maraimalai Nagar, near Chennai in 1995. With a total workforce of 900, the company is currently manufacturing three models with a number of variants and is one of the key players in the Indian automotive industry. Ford Endeavour captured over 40 per cent of the emerging SUV market within six months of its launch. The company plans to export vehicles from the Chennai plant to various destinations, owing to the incentives offered by the State Government. The Ford Ikon is India's largest exported car in the mid-size car segment" [GOI, 2006]Ford announced its e-business strategy in 1999, Ford was set to revolutionarize the auto industry, by using the Internet. Ford announced 'Build to order' model for manufacturing so as to provide customized benefit to the customers.

**Hyundai Motor India Ltd:** "Hyundai Motor India Ltd is a subsidiary of Hyundai Motor Company, South Korea and was established at Irrunattukottia, near Chennai, in 1997 with an initial investment of US$ 614 million. The plant presently is the largest manufacturing facility of Hyundai Motor Company outside Korea. Hyundai is the second largest and the fastest growing car manufacturer in the country. Hyundai presently markets over 18 variants of passenger cars across four models. The company emerged as the second largest exporter of passenger cars from the country" [GOI, 2006].

The importance of collaborations is being increasingly recognized in the Indian companies. Collaborations and partnership are giving the benefit of expanding into global markets for the Indian entrepreneurs. As more technological dependency grows on the supplier networks, the engineering and technical prowess of companies is being developed.

# The Dealer/Distributor Collaborations in Automobile Sector

***Methodology***

The study was undertaken of dealers of Mahindra & Mahindra, General Motors, Ford, Maruti Suzuki and Hyundai catering to the Indian customers. The objective was to decipher the ramifications of technology and its usage in cutting down inventory levels at the dealer outlets. The research attempted to understand the cost savings and improved accessibility of information due to integration in the supply chain through information technology. The industrial sector selected was automobiles in order to make comparisons across the different car manufacturers.

The research was administered through a questionnaire. Total dealers surveyed were 50 in different cities of the automobile companies like Ford India, Hyundai India, Maruti Suzuki, Mahindra & Mahindra and General Motors. The research focused upon understanding the exact usage pattern of technology at dealer levels and how it is instrumental in cutting down inventory levels. The survey was conducted at various outlets of 6 cities in Northern India and results were consistent regarding the technology usage at various automobile dealers and manufacturers.

| Company | Total Number Dealers across India | Lead time | Forecasting Techniques | IT tool used in SRM |
|---|---|---|---|---|
| Ford India Ltd. | 49 | 7 days | Intuitive/ Past Sales | AUTODEAL |
| Hyundai India | 183 | 12-14 days | Intuitive/ Past Sales | GDMS (Global Dealers Management Systems) |

| | | | | |
|---|---|---|---|---|
| Maruti Suzuki India | 200 | 4-5 days | Intuitive/ Past Sales | DMS (Dealer Management system) |
| Mahindra & Mahindra | 400 | 5-7 days | Intuitive/ Past Sales | MySAP SRM |
| General Motors | 45 | 7 days | Intuitive/ Past Sales | SUPPLY POWER |

**Table: 3:1: Use of Technology to build Supplier Relationships**

**The study highlighted three important aspects:**

1. Technology has found wide acceptance in the manufacturing companies' supply chains. More and more collaborations are being built on platforms which facilitate information sharing.
2. Using software is helping dealers/retailers/distributors in cutting down inventory levels and stocking only those vehicles which are required by the customers. As the lead time has also been substantially reduced, the orders placed by customers can be efficiently met with minimum delay.
3. Most of the supply chain partners surveyed told that deployment of technology is at the rudimentary stage. More benefits would be achieved once technology totally takes up all the partners in the company fold. They were happy with the cost advantages these partnerships have given them.

The purpose of this research was to find the extent of supplier collaborations taking place in the Indian automobile sector. The results showed that there is an increased concern towards cementing collaborations with the downstream suppliers by companies. Automobile companies, those that were surveyed, demonstrated technological adaptation for better control over their markets and production processes.

"The most successful relationships are those where customers and suppliers develop trust and an understanding of their respective requirements and interests, accompanied by a concern for both learning from and providing assistance to each other. Where such conditions exist, the ultimate outcome should be the creation of established and dependable purchasing—supplier relationships. Such relationships are the basis of networks and provide competitive advantage for both parties" [Lysons & Farrington, 2006]. Working in close coordination has proved be beneficial for companies. Sharing information regarding company policies, new product launches and technological changes leads to better understanding amongst the company and its suppliers.

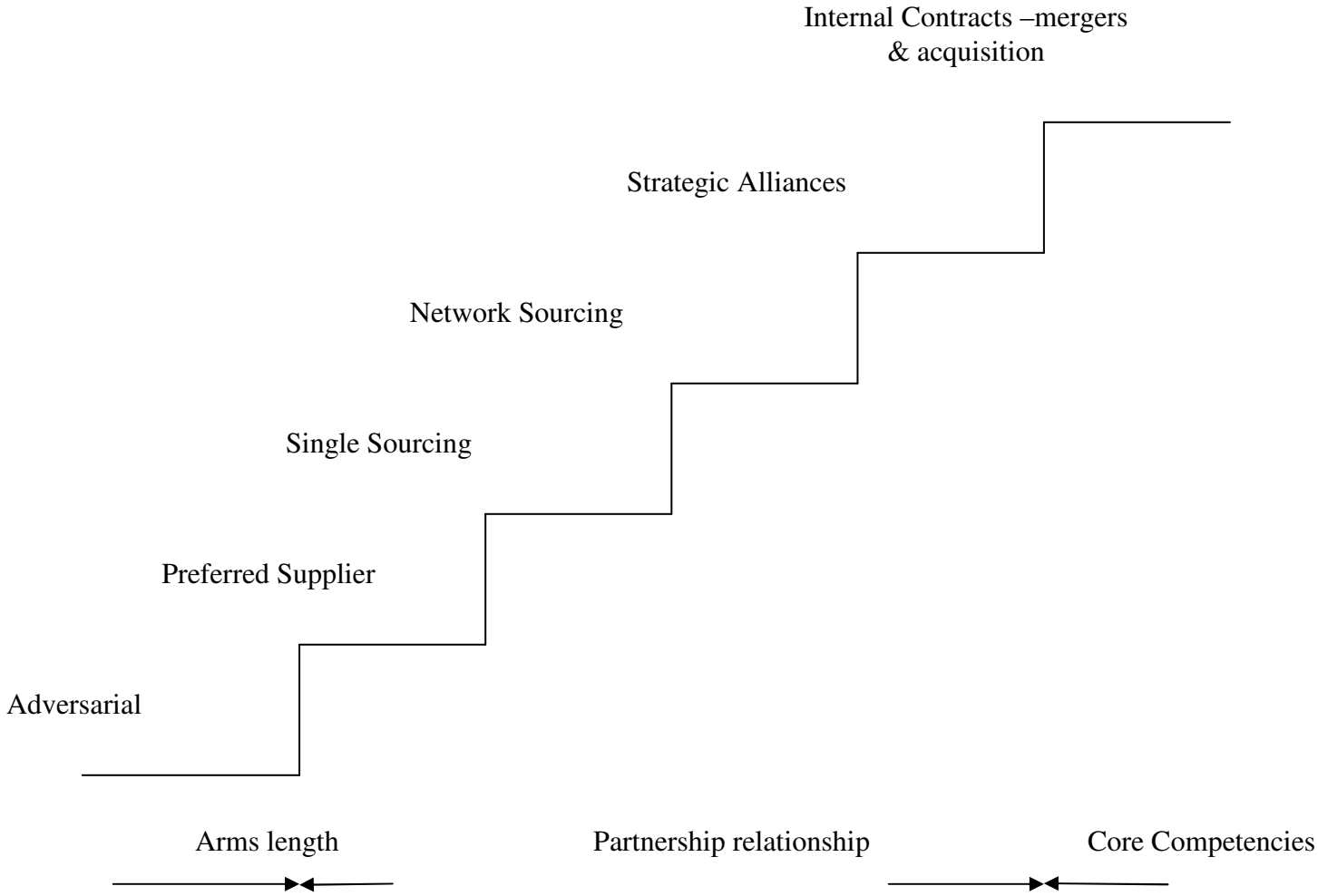
"Interaction for information sharing requires establishing information systems or procedures that involve sharing of information between two functions. The system supports the use of common database and the sharing of information across functions and divisions. It supports more effective (cross-functional) team performance and is likely to lead to the elimination of gaps" [Cohen, Eliashberg & Ho, 1997]. "The role of cross-functional teams for product development has long been recognized as an important factor of best practice" [Cohen, Eliashberg & Ho, 1997]. Dwyer and Tanner (1999) propose internal partnering among functions as marketing, purchasing, manufacturing, engineering (R&D), and finance. Lambert, Stock & Ellram (1998) have proposed that the key processes of the supply chain should be integrated: selling, customer order fulfillment, manufacturing flow, procurement, and product management. The implications of these research work is immense, companies are focusing on developing long term relationships within their processes to maximize profits. As is apparent from the study undertaken in the automobile sector, the Indian supply chain networks are undergoing a major upheaval. The importance of forging supplier/

distributor relationships is being widely acknowledged and adapted in organizations. The Indian companies are changing their organizational structures to build cross functional teams for integrating their supply chains to make the most of technological changes.

Specific examples of interaction activities include committee meeting, teleconferencing, conference calls, hall talk, memoranda, and the exchange of standard documents [Galbraith, 1977; Jaworski & Kohli, 1993; Van de Ven & Ferry, 1980]. Information technology has added another dimension towards information sharing and building teams across supply chains. The basic function of supply chains is to focus on customer satisfaction and retention. And collaborating with suppliers is an effort towards achieving these goals of supply chains. Kohli & Jaworski (1990) posit that the marketing concept consists of three pillars: customer focus, coordinated marketing, and profitability. The idea behind coordination is to instill in the supply chain partners a philosophy towards goal-oriented marketing which solely focuses on greater customer satisfaction. The culture of cooperation enables companies to not only attain competitive advantage but also to achieve inter-organizational cooperation. As virtual organizations are becoming more popular and technology is being extensively used to create platforms of coordination, supply chains face greater challenge. “Virtual organizations are collaborative network of employees, linked by integrated computer and information technologies that allow organizations to create more flexible structures designed to maximize the experience and expertise of their employees and make it available wherever needed” [Anderson & Vincze, 2000].

For analyzing the supplier relationships in India; **‘The Cox Model’ (1996)** has been used which looks into the nature of supplier relationships and how it promises competitive advantage to Indian companies. The model shows the different stages of evolution of

partnerships with the suppliers. As companies realize the inevitability of supplier collaborations, their objective shifts towards more focused approach. The companies work with their suppliers in developing better understanding. This enables even the suppliers to improve upon their core competencies.




**A Stepladder of External & Internal contractual relationship**

- Adversarial Leverage: Supplier relationships entered by companies' before 1980s focused on short term contracts. Companies treated their suppliers not as their partners but with mistrust as a result there was secrecy regarding their sharing information on product development and manufacturing.
- Preferred Suppliers: The earlier concept of adversarial leverage was replaced by developing relationships with specific suppliers who matched their product quality and service requirements. This was based on vendor rating and quality specifications.
- Single Sourcing: Companies started focusing on reducing large supplier base to purchasing and building collaborations with single suppliers. This enabled them to nurture and develop strategic relationship which gave them cost advantage." "Dell buys its processor chips and mother boards only from Intel and its operating system only from Microsoft, both of whom are very resilient" [Sheffi 2005].
- Network Sourcing: According to Cox (1996), network sourcing "is the idea that it is possible to create a virtual company at all levels of the supply chain by engineering multiple tiered partnerships at each stage, but without moving to vertical integration".
- Strategic Supplier Alliances: These kinds of collaborations were built where companies merged their identities to create a new distinct alliance that was an outcome of trust and mutual equivalence. The future of supply chain collaboration lies in these kinds of supplier/company alliances. The benefit of information technology can be best utilized by the companies where they work together for customer need fulfillment.

Information technology usage in the automobile sector in India has reduced inventory carrying costs amongst the dealers and has made them more informed regarding company policies and product modifications. Full integration at all levels and tiers should eventually lead to cross-functional teams as suggested by Cohen, Eliashberg & Ho, (1997). The nature of collaborations is in the single sourcing and network sourcing bracket. The competitive advantage would be only attained when relationships move towards strategic alliances.

Technology is enabling organizations to dissolve functional silos, making decision making and information accessibility easier and cheaper. Partnerships with distributors and dealers require support from top management in bring all the participants in the fold of company's supply network. "Slow decision making by overloaded management, however, is not appropriate for successful supply chain that requires coordination of expertise of different functions and time-and-quality-based competition. Instead, integrating mangers—essentially liaison personnel with formal authority—provide stronger coordination" [Mintzberg, 1996]. By involving the members of supply chain much can be learnt and improved upon. This knowledge can be used in creating better quality product and customer focused marketing. "The creation of superior customer value entails an organization-wide commitment to continuous information gathering and coordination of customers' needs, competitors' capabilities, and the provisions of other significant market agents and authorities as well as different functional areas within the firm" [Slater & Narver, 1994 ; Kohli & Jaworski, 1990]

## Conclusion

The paper had used both the secondary and primary data to demonstrate the effect of technological tools in creating more visibility across supplier networks in India. The survey highlights the fact that Indian corporate sector is adapting innovative imperatives that promise it improved productivity. The increased usage of IT at different tiers of the supply chain is on the increase in all the companies in India. An important finding that emerged from the findings was that the integration of supply chain is being done at all the cities in the country irrespective of the market share.

The impact of collaborations is immense and it promises to eliminate excessive cost across the supply chain networks. It also promises to create organizational structures that use and process information for attaining their marketing goals and delivering best services to their customers. As in global companies, technology plays a vital role in reducing the delays in decision making and sharing information; the same kind of phenomena is visible in Indian supply chains. The opportunities promise benefits to collaborating partners. The future promises cost advantage to customers and reduced operating costs to companies. With supply chains becoming more dependent on technology, supplier-company partnerships would use more technology to strengthen relationships.

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