

## **Shared Leadership in Supply Chains**

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### **Abstract**

This paper attempts to answer the question: does the interorganizational leadership style within a Supply Chain influence its competitiveness? This paper will start with an overview of Supply Chains. It will then summarize some of the key literature on Shared Leadership. A model will be proposed which provides a basis for understanding the impact of leadership style on the flow of knowledge through the Supply Chain. Several propositions will be developed about leadership in Supply Chains. This paper will then provide an analysis of the Supply Chain Leadership styles that seem to have emerged in the case of Chrysler and Toyota.

### **Educator and Practitioner Summary**

A model will be proposed which provides a basis for understanding the impact of leadership style on the flow of knowledge through a Supply Chain. This paper will then provide an analysis of the Supply Chain Leadership styles that seem to have emerged in the case of Chrysler and Toyota

### **Keywords**

Leadership, Innovation, Knowledge Management

### **Introduction**

It was only a few decades ago that manufacturing, distribution and the larger retail companies primarily competed one against the other based on their marketing, operations and financial strengths. In the most competitive companies and industries, that competition became fierce and operations found ways to squeeze out every drop of efficiency. The largest remaining opportunity to improve cost of goods sold soon became apparent: manage the Supply Chain. This drove competition to a new level: Supply Chain against Supply Chain, and there have been tremendous winners. Wal-Mart, Toyota, and Dell all have been cited numerous times as the companies that effectively manage their Supply Chain and use it to capture market share and profits (Magretta, 1998; Hines, 1998; Iansiti, 2004). The very process of managing a Supply Chain, which by its nature may be geographically and culturally dispersed and entail 10s to 1000s of supply companies, implies some form of leadership to influence the companies to work together. The primary question of this paper is to determine to what extent leadership styles has played a role in the competitiveness of the Supply Chains of two manufacturers, Toyota and Chrysler.

## **Supply Chain Overview**

The Supply Chains that organize themselves to move products and knowledge efficiently and stimulate innovation will capture market share and higher profits than those with less effective leadership. However, this transfer of knowledge up and down the chain can carry several concerns with it: control over Intellectual Property, cultural misunderstanding, loss of context in the knowledge, and corporate network security. Each player in the Supply Chain may have different and conflicting objectives that must be resolved. The leadership of the Supply Chain will directly influence the freedom and extent of knowledge flows the design of the logistic and knowledge management tools and the degree of interconnectedness.

Thomas (1999) looked into how companies perceive the competitiveness of their Supply Chain. It reports that of the North American companies surveyed, only 2% rated their Supply Chain as “World Class”. However, the same survey noted that 90% believed Supply Chain Management is critical to their success. This illustrates the awareness of areas for improvement and a desire to improve Supply Chains. The key advantage of a closely integrated Supply Chain is up-to-the-minute information flow, which allows for quicker response to changes in demand and other unexpected deviations from plan (Levary, 2000). Technologies for managing the Supply Chain are evolving rapidly to address these needs. But these are primarily Logistical in nature. In a recent study of U.S. Supply Chains (Patterson et al., 2004), the authors used a survey tool to look at what information technology companies were looking to purchase: Barcoding, Warehouse Management, Electronic Commerce, Demand Forecasting, Transportation Management, RFID (Radio Frequency Identification), Computer Aided Design, Enterprise Resource Planning, Customer Relationship Management, Supply Chain Planning, Manufacturing Execution, Product Data Management, Supply Chain Event Management, Automated Quality Control, and Geo-coded Tracking. Over 40% of the respondents indicated they planned to or were currently implementing the first four technologies cited above. Although this list is comprehensive and current, it shows an appalling lack of interest in technologies outside of Logistics. Specifically it appears there is no interest in Interorganizational Knowledge Management and the flow of non-logistical (marketing, engineering, financial) knowledge throughout the Supply Chain. The flow of knowledge and creation of relationships, may be “at times”, even more important than having solid Logistics. We will see in a following section (Aisin/Toyota Case Study) that the Toyota Supply Chain responded extremely effectively to a catastrophic fire at one of the suppliers. The established knowledge flow and relationships among Toyota’s suppliers allowed the Supply Chain to rapidly problem solve and find means to overcome the supply disruption caused by the just mentioned fire – something Logistical systems would simply not be able to help resolve. Yes, of course good Logistics are crucial to the competitiveness of a Supply Chain – but if new ideas are not effectively percolating through the chain, then valuable product ideas and cost reductions may never make it to the end customer. Thus the whole Supply Chain may lose out on opportunities that could have provided a superior competitive advantage.

## **Supply Chains in the Automobile Industry**

Supply Chains in the automobile industry are large, complex and evolving. In the 1980s GM had 20,000 suppliers (Simchi-Levi et al., 2003). Associated with this Supply Chain structure was

overhead in personnel, a very high cost of component supply and a bottom-line impact to profit. The reasons why this structure existed are many, but it had worked successfully for years in an environment where relatively high levels of inventory were somewhat acceptable. Inventories of components were held at high levels to ensure production would not cease due to a missed shipment. Multiple suppliers were needed to ensure components would be available if one supplier failed to deliver or produced poor quality. Toyota, existing in a resource poor country and always looking for ways to minimize inventory costs, created the concepts of Just-in-Time (JIT) and then demonstrated how a business could be managed successfully with low inventories. They succeeded wonderfully: achieved significant reduction in their cost, improved quality, and captured significant market share from the big three U.S. automotive companies (GM, Ford and Chrysler). What Toyota learned, they passed onto their suppliers. This transfer of knowledge throughout the Supply Chain and the leadership that encouraged it has created the highly acclaimed Supply Chain cited frequently today.

The big three began the long struggle towards emulating the success of Toyota. It appears the big three thought the answer to competing with Toyota's efficient Supply Chain was to take advantage of the rapid rise in Internet e-Commerce marketplaces. The big three bought an online auto part E-commerce marketplace – known as Covisint (Laudon, 2003). This utilized some of the efficiency of the Internet and online bidding. The big three used Covisint to bid one supplier of components against another. Suppliers would log on to bid against one another for the supply of a given component. The winner would still have to bid for future business the next time around. It was only a short term relationship as a supplier. This short term perspective had great influence over the decisions and investments made by suppliers. Without a long term relationship, suppliers were unsure about the economics of adding new, more efficient, equipment to their factories, or training their personnel in quality. The big three just did not get Toyota's model – or believed technology could be used to leapfrog them. Eventually, the big three sold off Covisint and are now moving in the direction of Toyota's Supply Chain model, which has only a few hundred very talented, reliable, high quality suppliers which make up to 70 percent of the components in the Toyota line of cars. Suppliers are added to the Supply Chain for the long term, allowing relationships and trust to develop. Toyota invests in the suppliers by sending in teams to train the new supplier in quality, JIT, and engineering. They will also provide a capital infusion if necessary. This is not just a short term focus on the new supplier. The Toyota staff may stay two years, which in turn establishes strong relationships and a network of contacts throughout the Supply Chain.

## **Review of Shared Leadership Literature**

Team Leadership is how things get done – it exists in every aspect of our lives. Whether we are at work, out at the kid's soccer game, or in community activities, we all influence others or are influenced by them in turn. Leadership is that influence and how it is used can be effective or ineffectual. Yukl (1989) defined Leadership as, "influence processes involving determination of the group's or organization's objectives, motivating task behavior in pursuit of these objectives, and influencing group maintenance and culture" (pg. 5). Researchers have spent decades studying Leadership trying to understand its Typology, how the leadership styles arise, which are most appropriate and when, and how the followers may influence the leadership in turn. Recent research (Pearce et al., 2003) has indicated there is a leadership typology that consists of four

leadership types: Directive, Transactional, Transformational, and Empowering. The styles were found to exhibit the following behaviors (Pearce et al., 2003):

1. *Directive leadership style* (issuing instructions and commands, assigning goals, contingent reprimand)
2. *Transactional leadership style* (dispensing contingent material rewards, dispensing contingent personal rewards)
3. *Transformational leadership style* (providing a sense of vision, challenging the status quo, engaging in idealism, providing stimulation and inspiration)
4. *Empowering leadership style* (encouraging opportunity thinking, encouraging self-rewards, encouraging self-leadership, engaging in participative goal setting, encouraging teamwork)

These Leadership styles are typically thought of in terms of a top down or vertical approach where influence is seen to project from a single individual either designated or elected as the leader. However, recent research has looked into the concept of Shared Leadership which, "...relies on a dynamic exchange of lateral influence among peers rather than simply relying on vertical, downward influence by an appointed leader" (Cox et al., 2003, pg. 48). The actual leadership style expressed in a Shared Leadership team may be Directive, Transactional, Transformational, or Empowering. The prominent style may change from time to time as the team faces new challenges and changes to its environment. However, the actual demonstration of the behavior is not exhibited by a single leader – but from the team as a whole (or at least as most of a group). Cox et al. (2003) provides some examples (in italics) of how the four leadership styles may be exhibited by a team in a Shared Leadership environment. Following each statement is an example of how this might be represented in a Supply Chain:

1. *Transactional leadership may take on the form of collegial praise for contribution.* In a Supply Chain this might occur at a supplier conference whereby acknowledgement is made of specific suppliers' innovativeness in problem solving or new product designs.
2. *Transformational leadership may place emphasis on commitment, emotional engagement, or fulfillment of higher order needs.* This might be exhibited in a Supply Chain by companies encouraging each other while exchanging knowledge or working on new product designs and quality improvement.
3. *Directive leadership may occur when more experienced members of the team provide well-meaning direction to less experienced members.* This might be seen if one company in the supply chain sends its personnel into another supplier's facility to assist with training, engineering or quality expertise.
4. *Empowering leadership may include peer encouragement and support of self-goal setting, self-evaluation, self-reward, and self-development.* This would be evident in companies following the methodology of Continuous Process Improvement where a team selects a problem and then works to discover the cause and appropriate remedy.

Leadership occurs – something causes it to exist. It takes on a given style which may or may not be an effective style given the team composition or the environment where it exists. Cox et al. (2003)<sup>1,2</sup> presented a model that helps to understand what influences the development of Shared Leadership and the form it may take. In their model the authors assume that both Vertical

Leadership and the Team's Characteristics ultimately influence the existence and style of shared leadership. The vertical leadership is crucial to the early stages of team development and helps sets the stage for shared leadership. It does so by selecting who is needed on the team and what their knowledge, skills and ability should be. It also provides a role model of acceptable leadership behavior and sets the stage for future team leadership behaviors. The primary concern here is if shared leadership is to occur, then the role established by the vertical leader must be one of shared leadership. Below are the four propositions, in italics, deduced by the authors of this model to capture the impact of Vertical leadership on the formation of team Shared Leadership. Following each proposition is an example of how it might be manifested in a Supply Chain:

1. *Better team formation by the vertical leader is positively associated with the development and display of shared leadership in the team.* In the supply chain this is the action by the parent company to set expectations and provide for training in the philosophy and methodology of manufacturing planning and control, quality and problem solving. It would also encourage the development of linkages within the parent company and other suppliers by the new company.
2. *Better boundary management by the vertical leader is positively associated with the development and display of shared leadership in the team.* In a Supply Chain it is crucial to manage changes in demand. Boundary management would be where the parent member carefully communicates changes in the market environment and responds with measured coordinated responses.
3. *Judicious vertical leader support of the team is positively associated with the development and display of shared leadership in the team.* Judicious support of the Supply Chain may occur through the parent company organizing supplier conferences and facilitating the flow of knowledge and innovation.
4. *Shared leadership maintenance behaviors by the vertical leader are positively associated with the development and display of shared leadership in the team.* Shared leadership maintenance behavior in a Supply Chain may be expressed by the parent company encouraging suppliers to establish quality targets, set up and train improvement teams, develop problem solving skills and establish links with other suppliers in the chain.

The authors identify five team characteristics that influence the existence and stability of Shared Leadership: proximity, team size, ability, diversity, and maturity. Propositions associated with team characteristics are listed below in italics. Following each proposition is an example of how it might be exhibited by a Supply Chain:

1. *The proximity of team members is positively associated with the development and display of shared leadership in the team.* In a Supply Chain the members may be located nearby or on the other side of the world. Face-to-face meetings are important to build links, trust, and contextual knowledge and to overcome some of the lack of proximity. The technology of virtual meetings is improving and may help alleviate the difficulties created by lack of proximity.
2. *Team size is negatively associated with the development and display of shared leadership in the team.* Supply Chains can be thousands of members strong. The

large size has the advantage of many sources of innovation. However, there is a downside to the large number of members in a Supply Chain and the problems it creates for communication. Therefore, a Supply Chain must be effective at encouraging the flow of the innovation and knowledge throughout the chain. Supply Chains may deal with this negative impact by forming into smaller natural groupings of members by tiers. Each member in a tier has a few suppliers – those suppliers in turn have only a few suppliers. They may also form special study groups to help foster teamwork and sharing of ideas.

3. *The greater the abilities of the team members, particularly interpersonal but also technical, the greater the development and display of shared leadership in the team.* The parent company of a Supply Chain should carefully choose its suppliers not only for their existing abilities, but also for that supplier's desire to continuously improve its skills and abilities and to develop and utilize new knowledge. Skills can be further developed by interorganizational problem solving sessions.
4. *Greater diversity among the members of the team is negatively associated with the development and display of shared leadership in the team.* As a Supply Chain grows, it may involve members from many regions of the world with diverse languages, customs, desires, and expectations. A supply chain parent may intentionally select members found locally to maintain homogeneity. If they do select members outside its language and culture, it will be important for them to work closely to establish common expectations and norms for communication and coordination. This may require supplier conferences as well as exchange of personnel for periods of time.
5. *Team maturity is positively associated with the development and display of shared leadership in the team.* A Supply Chain needs to strive to choose the right members and to form long term relationships. These long term relationships will provide for the maturity necessary to develop links among the chain, engender trust, create a common context of knowledge, and establish ease of communication.

The purpose of summarizing Cox et al.'s (2003) model is to use their propositions as a key part of a larger Supply Chain leadership model. This Supply Chain leadership model will allow the evaluation and comparison of the Toyota Supply Chain with that of Chrysler's Supply Chain.

### **Supply Chain Leadership Model**

The below model, Figure 1, has been created to suggest that leadership style may impact the Supply Chain's overall effectiveness. The model may best be understood by starting at the far right and working backwards.

*Competitive Success Criteria Block:* This block provides indicators that are used to measure the success of companies in a Supply Chain. There have been numerous articles on selecting appropriate performance measures for Supply Chains (Gunasekaran, 2001; Oliver, 2002). They have a strong focus on costs (inventory, transportation), and customer satisfaction. Undoubtedly these are important measures, however, they look only at a point in time and generally serve as a means of comparison to a previous quarter or year. There seems to be little recognition of performance measures associated with the flow of innovation and knowledge throughout a Supply Chain. Oliver (2002), however, does suggest looking at supply chain structure and

context, information exchange, benefit sharing and new product development. These latent measures of success are more driven by knowledge flowing up and down the Supply Chain. That knowledge may have a significant impact on Quality, Cost, Time to Market, and Customer Satisfaction – over the long run. The measurement of knowledge creation and dissemination throughout a Supply Chain appears to be an area ripe for further study.

*Logistics Block:* The second block from the right, Logistics, is concerned with how efficiently the members of the Supply Chain move goods and services among themselves and to the customers. This generally involves the use of sophisticated information and communication technology (RFIDs, Satellites, Internet, Barcoding, and EDI) and complex logistics algorithms (linear programming). Generally, most if not all members of the Supply Chain, have interconnected systems and immediately respond to changes in demand and inventory levels.

*Non-logistical Knowledge Block:* This block refers to the knowledge outside of Logistics. It is the knowledge that members can exchange and develop among themselves to gain competitive advantage over other Supply Chains. This knowledge may be better market awareness (suppliers sometimes have access to market knowledge that their customer may not), Engineering expertise (design, material science), technology of information systems and all the innovativeness that this knowledge may drive.

*Shared Leadership Block:* This block looks at how a Supply Chain encourages self-leadership and the creation and flow of knowledge. There are two key aspects of this block: the leadership that allows for effective interdependence among Supply Chain members and the creation of knowledge. The Shared Leadership block is ultimately concerned with the creation of Knowledge. Knowledge may be either Tacit or Explicit. Tacit knowledge is that which we know, but may not be able to put into words or write down. Explicit is that knowledge which can be written: such as procedures. A key difficulty is capturing the tacit information and converting it when possible into explicit knowledge. Takeuchi and Nonaka (1995) developed a theory on this conversion process. In this theory, Tacit knowledge can be transferred as Tacit knowledge through socialization: the process of sharing experiences, creating context and mental templates. This implies that for Tacit knowledge to flow up and down the Supply Chain, there needs to be Socialization – either physically (face-to-face), virtually, or thru at least phone calls and emails. The links of conversation need to be established. Explicit knowledge is created from Tacit through the process the authors called Externalization. The authors believe this often occurs through metaphors and analogies. Again, this requires extensive communication. Regardless, creating Tacit or Explicit Knowledge requires frequent contacts, links among the members, and with this an understanding of context which comes through the development of relationships. Shared Leadership creates an environment where this can occur.

*Vertical Leadership and Team Characteristics Blocks:* These blocks represent the propositions formulated by Cox et al. (2003) and discussed above in the section on Shared Leadership. These propositions are what Cox et al. (2003) believe influence the development and stability of Shared Leadership.

*Directive/Transactional Leadership Block:* This block contains the behaviors which typify either a Directive leadership style (first 3 bullets) or a Transactional leadership style (last 2 bullets).

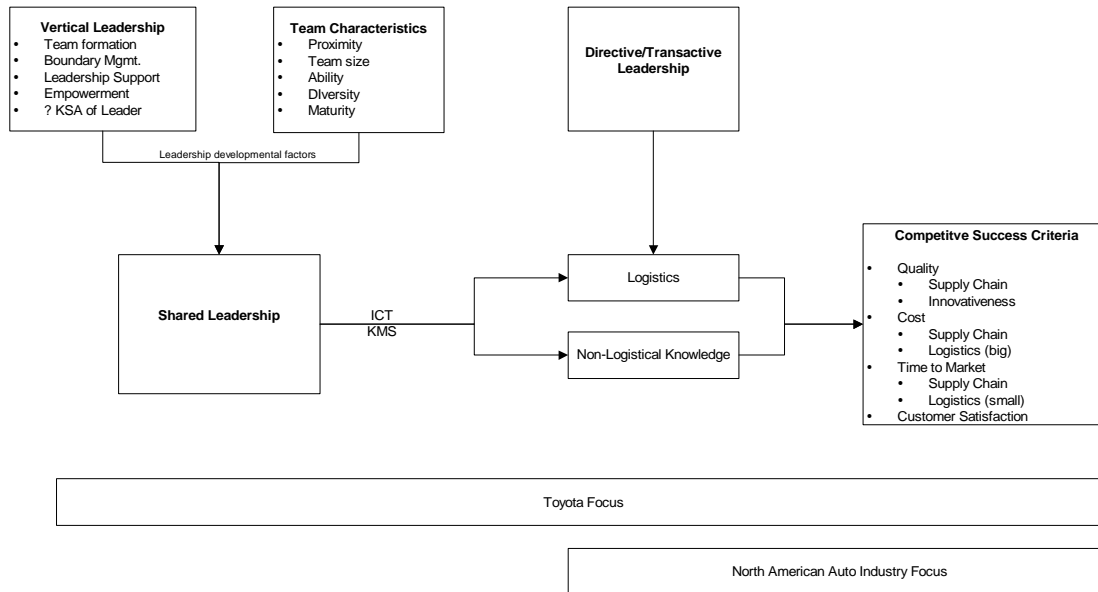
Both these styles of leadership tend to be indicative of a vertical leadership arrangement whereby a parent company would tend to have dominant influence over the Supply Chain members. In the North American Auto Industry that would be Ford, GM, and Chrysler. This might be related to how these companies focus on Supply Chain Logistics.

The purpose of this model, moving from left to right this time, is to suggest that Shared Leadership is valuable in a Supply Chain in order to foster relationships, communications, innovation and the creation of new knowledge. This knowledge may be new ways to respond to logistical problems, but another benefit is in development and transfer of knowledge in the mostly untapped areas of new designs, materials, interfaces, products, and responses to devastating unexpected events. This knowledge may be assisted and managed by a Knowledge Management System (KMS) to proliferate that knowledge appropriately among members of the Supply Chain. This proliferated knowledge is then in place to provide for bottom-line improvements in Quality, Cost, Time to Market, Customer Satisfaction and ultimately greater competitive success against other Supply Chains.

#### **Model Propositions:**

1. Shared Leadership will be more effective than Vertical Leadership in creating an environment conducive to knowledge creation and transfer among members of Supply Chain.
2. Non-logistical Knowledge created and transferred among members of the Supply Chain influences its competitiveness and in particular the quality, cost, time to market, and service of products.
3. Vertical Directive or Transactional leadership is the primary means of leadership found in Supply Chains where the focus is on Logistics.
4. Toyota Motor Corporation's Supply Chain will exhibit Shared Leadership
5. North American Automobile manufacturers (Ford, GM, and Daimler-Chrysler) will exhibit Vertical Leadership.

## Supply Chain Leadership Model



**Figure 1.**

### Aisin/Toyota Case Study – Interorganizational Shared Leadership in action

The following background on how Toyota's Supply Chain responded to a serious Supply Chain crisis is derived from a case study by Nishiguch and Beudet (1998) and an article by Kakihara and Sorensen, (2002). I believe these case studies and the selected reference provide a strong indication of Toyota's use of Shared Leadership in collaboration with its Supply Chain partners. In the following paraphrased summary of the incident, indications of Shared Leadership will be presented and numbered in brackets. The bracketed numbers are found in Table 1 and tie the discussion in the following paragraphs to important indicators of Shared Leadership as per Cox et al. (2003). The assignments of bracketed numbers are subjective and certainly questionable – some more so than others. However, the preponderance of brackets cited below is indicative of Shared Leadership as the Toyota Leadership style for its Supply Chain. Elimination of even several would not in itself invalidate this as an avenue of further research.

Toyota provides extensive training and support to all Supply Chain Partners. It trains suppliers on Just-in-Time (JIT) and continuous improvement and promotes problem solving, strong linkages among partners and Toyota personnel, benchmarking studies and problem study groups [6] in the supplier network, and a flow of employees among firms promoting a rapid dissemination of best practices [1,7]. Toyota's encouragement of face-to-face meetings fosters organizational learning, teamwork and common terminology and context throughout its supply chain [1, 4, 8]. The Supply Chain partners are encouraged to make decisions and take action immediately without necessarily following normal procedures or obtaining permission from superiors [1]. Toyota communicates and discusses delivery requirements and expectations well in advance of deliveries and works closely with suppliers to ensure perturbations in the schedule are kept to a minimum [2, 4]. Since many suppliers support Toyota with JIT deliveries, they tend

to be located nearby the Toyota plant which facilitates the flow of personnel among suppliers and Toyota [5].

Toyota and its Supply Chain were severely tested in February 1997. Toyota developed the philosophy and methodologies associated with JIT and as such maintains very little inventory (sometimes only hours worth) in their factory at any time. Aisin is one of their key suppliers and in February 1997 was the sole source supplier of certain brake components (p-valves) to every car made by Toyota. On February 1, 1997 Aisin's factory responsible for these p-valves burned to the ground and with it all the highly specialized manufacturing and inspection equipment used to manufacture the p-valves. Toyota had no choice other than to shut down their assembly line until more deliveries of p-valves could be made. This was a time of high stress for the entire supply chain. All members of the supply chain were on delivery hold until more shipments of the p-valves could be made. It could take months to build a new factory to produce p-valves.

Toyota works very hard to develop relationships directly with its suppliers and to develop relationships among its suppliers. The suppliers had a common interest in seeing Toyota back online as soon as possible. Instead of months it took only three days before the first brake components began to be delivered to Toyota. In one week, the Toyota line was back to over 13,000 vehicles per day and in two weeks was back to full production. Only 10% of the brake components were being made by other Aisin factories, the rest by other members of the supply chain. The effort to accomplish this was largely independent of Toyota's direction [3, 13] – it was through self-organized efforts by the supply chain. Kakhara and Sorensen (2002), noted that the Toyota Supply Chain, “demonstrated significant self-organizing, emergent behavior around organizational knowledge that effectively coordinated various resources and tacit know-how in a particularly disastrous situation almost entirely without centralized top-down direction” (pg. 49). This effort involved 62 firms and “... was directly orchestrated with very limited direct control from Toyota [3] and with no haggling over technical proprietary rights or financial compensation” (pg. 58) [11]. The authors of this case study believed that it was Toyota's focus on institutionalized problem-solving activities within the Supply Chain that ensured the effectiveness and rapidity of the suppliers' collaborative effort [13].

The companies that undertook the manufacturing of these p-valves did not have the specialized tooling that Aisin had developed and lost in the fire. Thus these companies had to review the engineering specifications and develop a new process using more generalized machining equipment. Because of the number of companies involved, Aisin was unable to work directly with all involved, and they were also unfamiliar with using generalized machining tools. Another supplier, Denso, stepped up to provide the necessary leadership and knowledge to assist others with engineering and equipment setup questions [12]. After the supply chain was back to normal, Aisin published a booklet on how to organize the rapid recovery of production following a disaster and distributed it to the supply chain [10]. Toyota provided close to 15 billion yen, as much to reward, as to compensate, the supply team for working effectively together [4, 10].

The authors point out that, “...emulating Toyota's model is not easy: it is the product of decades of investments in supplier capabilities and in trust and commitment [9].

Toyota is well known worldwide for its quality. It is a previous winner of the Deming Award and contributor to the TQM philosophy [15], Timeliness (time to market less than 12 months for new vehicle designs) [16], and as the inventor of JIT philosophy (right quantity at the right time) [14, 17]. Their continuous growth in market share worldwide speaks to the success of their leadership and Supply Chain development (Table 3).

### **How Chrysler Leverages its Suppliers**

Hartley et al. (2002) wrote a paper on how Chrysler manages its suppliers to encourage suggestions for improvement. Most of the following information has been extracted from this article. The article provides a strong indication of Chrysler's use of Vertical (Directive and Transactive) Leadership among its Supply Chain partners. In the following summary of the incident, indications of Directive or Transactive Leadership will be presented and numbered in brackets. The bracketed numbers are found in Table 2 and tie the discussion in the following paragraph to important indicators of Leadership as per Pearce et al. (2003). As in the above section on Toyota, the assignments of bracketed numbers are subjective and certainly questionable – some more so than others. However, the preponderance of brackets cited below is indicative of Vertical (Directive and Transactive) Leadership as the Chrysler leadership style for its Supply Chain. Elimination of even several would not in itself invalidate this as an avenue of further research. Further support comes from the fact that none of the factors in Table 1 were strongly evident in the following Chrysler summary, and none of the factors in Table 2 were strongly evident in the above Toyota summary.

In 1998, Chrysler removed over \$2 billion in costs from their Supply Chain. Chrysler used a system they named SCORE which had the purpose to "...solicit, track, analyze, evaluate and provide feedback on suppliers' proposals for making improvements" (pg. 20) [18]. Chrysler wanted to move away from the traditional adversarial model of the buyer using excessive influence to extract price concessions. They wanted to develop a model where the supplier could benefit as well [21]. Each year Chrysler would set a goal for SCORE (in 1998 that was 5%) [19]. Chrysler's purchasing department incorporated the SCORE performance as part of the overall rating for that supplier [20, 21]. If a supplier opted to not participate in SCORE, the best they could possibly achieve in overall performance was 85% [20, 21]. If they participated in SCORE, achieved the goal and were perfect in all other regards, they could hit 100%. Chrysler awarded new business to suppliers with overall scores over 95% [21]. Over 90% of first tier suppliers participated. Once a supplier identified an opportunity to reduce cost, it would submit it electronically to the SCORE system. Unfortunately, the average time for Chrysler to review and approve a change was 88 days – longer if it required an engineering review of a material or process change. Some of the interviewed suppliers, "...believed that Chrysler's frequent changes in personnel sometimes made communication about SCORE proposals difficult" (pg. 25). Chrysler "motivated" their suppliers by immediately accounting for the price savings as soon as it was approved [18]. Thus suppliers were highly encouraged to implement the improvements as fast as possible. Chrysler would also share 50% of any savings from an improvement that exceeded the SCORE goal (5%) [21]. Some of the tier 1 suppliers involved with SCORE relied on their suppliers in turn for cost improvements. Several of these tier 1 suppliers implemented a similar system to SCORE and followed the leadership style established by Chrysler. Chrysler motivated its SCORE employees by recognition: use of new cars and luncheons [22].

## Shared Leadership Matrix

Factors/components	Toyota
<b>Vertical Leadership</b> (Cox. et al., 2003)	
Displays shared leadership during team formation	1
Good boundary management	2
Judicious vertical leader support of team	3
Shared leadership maintenance behaviors	4
<b>Characteristics that influence existence and stability of Shared Leadership</b> (Cox. et al., 2003)	
Proximity of team members	5
Team size	6
High interpersonal and technical abilities	7
Low diversity	8
Team maturity	9
<b>Examples of Shared Leadership</b> (Cox. et al., 2003)	
Collegial Praise for contribution (Transactional)	10
Commitment (Transformational)	11
One experienced member provides well-meaning direction	12
Default decision making is in the hands of the followers	13
<b>Team Effectiveness</b>	
Quantity	14
Quality	15
Timeliness	16
Cost	17

Table 1.

## Vertical (Directive and Transactive) Leadership Matrix

Factors/components	Daimler-Chrysler
<b>Directive Leadership</b>	
Issuing directives	18
Assigning goal	19
Contingent reprimand	20
<b>Transactive Leadership</b>	
Dispensing contingent material rewards	21
Dispensing contingent personal rewards	22

Table 2.

## Future Research

There is a need for quantitative and qualitative analysis of Supply Chains to determine whether distinct leadership styles do exist? Some questions to be asked are:

1. Does the style vary based on:
  - a. Stability over time?
  - b. Product/technology?
  - c. Geographical distribution?
  - d. Culture?
  - e. Etc.?
2. Is one leadership style more successful than another?
3. Does leadership style in a Supply Chain influence the flow of knowledge?
4. How does leadership style best influence effective KMS?

## **Conclusion**

This is a review of two supply chains and how different leadership styles influenced the creation and the flow of knowledge through them. The Shared Leadership style is more conducive to the creation and exchange of knowledge – vertically and laterally among Supply Chain members. This exchange of knowledge allows innovation to permeate the chain and results in a more competitive supply chain. The Aisin case summary demonstrates much of what we would expect to see in a Shared Leadership environment. Every item in Table 1 is evident in the summary, indicating strong support that Shared Leadership does exist in the Toyota Supply Chain. The summary of the Chrysler SCORE study exhibits much of what we would expect from a Vertical style of leadership as found in Table 2. The evaluation of the two companies and the supporting cases showed distinct leadership styles. It appears quite clear that these two Supply Chains do exhibit very different leadership styles and that this contributes to a different level of knowledge flow among members and ultimately perhaps to an impact in market share and profitability.

The Chrysler “SCORE” program is indicative of how North American Automakers manage their supply chain. This SCORE system has only cost as its focus. It does not encourage: Time to Market, Customer Satisfaction, or Quality. It does not drive innovativeness through the Supply chain vertically “and” laterally. This program is entirely derived from Vertical leadership (Directive and Transactive) where targets are set and rewards and penalties are dispensed. There is only minimum indication of face-to-face communication occurring and that is limited to Chrysler employees meeting with a given supplier. There does not appear to be face-to-face meetings among supplier groups for sharing of knowledge and joint problem solving. \$2 billion sounds like quite a large sum. However, if this is such a successful program one would expect improvement in profits and market share. During the years 2001 – 2004, Toyota’s North American market share increased 22% whereas Chrysler’s stayed the same (Table 3). Toyota’s gross profit increased 48% compared to Chrysler’s 14% for the same period (Table 3). I believe this is because Chrysler used a Vertically Directive and Transactive leadership style, which focused on systems and processes to remove cost from their Supply Chain – but critically missed the opportunity to be truly collaborative with its suppliers: to share leadership and knowledge.

## **Company bottom-line comparisons**

Company	Gross Profit			Market Share (U.S.) <sup>3</sup>		
	2001	2004	% Chg	2001	2004	% Chg
<b>Toyota</b>	\$ 20,782	\$ 30,815	48.3	10 %	12.2 %	22 %
<b>Daimler-Chrysler</b>	\$ 29,320	\$ 33,393	13.9	13 %	13 %	0 %

Table 3.

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## Endnotes:

1. The Cox et al. (2003) paper develops its thoughts and postulates in relation to New Product Development (NPD) teams. NPD teams are defined as, "... cross-functional work groups organized around interdependent tasks to create or extend a product, process, or service. They provide a forum for members with complementary skills to collaborate in a creative enterprise involving a degree of deliberation, problem solving, mutual adjustment, and coordinated performance". This paper is directed towards leadership in supply chains, not NPD. However, I believe the concepts and their model are appropriate to use in understanding leadership in Supply Chains. Supply Chains exhibit many of the same features just mentioned above. Members of the Supply Chain are organized around interdependent tasks (making components for one another). They collaborate on product designs, the process to deliver, and how to service the products. This may be very complex as the end product provided to customers may have components produced by numerous widely dispersed members of the Supply Chain. These Supply Chains must work closely to problem solve (design, quality, deliveries), adapt to changing market and economic environments, and coordinate the efficient flow of materials.
2. The Cox et al. (2003) paper, although written by the leaders in the field of shared leadership and extremely well organized and insightful, is too new to have empirical research in support. This author relies heavily on it as fact although as just stated it may be found to be premature. However, I feel the value of building on this paper is useful in providing a structure for future research in the area of supply chain leadership styles.
3. Percent market share estimated from chart in <http://www.detnews.com/2005/autosinsider/0501/06/A01-50668.htm>