



## **Knowledge Creation in Manufacturing Firms: A Case Study**

(Sona Koyo Steering Systems Limited)

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*The key sources of wealth creation at the dawn of new millennium will lie with new enterprise formation, the renewal of incumbents, the exploitation of technological know how, intellectual property and brands and the successful development and commercialization of new products and service. -Teece.*

### **Knowledge Management**

Knowledge is the full utilization of information and data, coupled with the potential of people's skills, competencies, ideas, intuitions, commitments and motivations. In today's economy, knowledge resides in people, money, leveraging, learning, flexibility, power, and competitive advantage. Knowledge is more relevant to sustained business than capital, labour or land. Nevertheless it remains the most neglected asset. It is more than justified true belief and is essential for action, performance and adaptation. Knowledge provides an ability to respond to novel situations.

A holistic view considers knowledge to be present in ideas, judgments, talents, root causes, relationships, perspectives and concepts. Knowledge is stored in the

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individual's brain or encoded in organizational processes, documents, products, services, facilities and systems.

Knowledge is the basis for, and is the driver of our post-industrial economy. Knowledge is the result of learning, which provides only sustainable competitive advantage. Knowledge is the next paradigm shift in computing following data processing and information management. Knowledge is action focused innovation, pooled expertise, special relationship and alliance. Knowledge is value-added behaviour and activities. For knowledge to be of value it must be focused, current, tested and shared.

Knowledge Management (KM) is an interlinked business process that captures and provides access to a collective knowledge of an organization. KM is an audit of "intellectual assets" that highlights unique sources, critical functions and potential bottlenecks, which hinder knowledge flows to the points of use. It protects intellectual assets from decay; seek opportunities to enhance quality of decisions, services and products by adding intelligence, value and providing flexibility.

Knowledge management complements and establishes organizational initiatives like Total Quality Management (TQM), Business Process Re-engineering (BPR) and organizational learning by providing a new and urgent focus to sustain competitive position.

To serve customers well and remain competitive in business companies have to reduce their cycle times, operate with minimum fixed assets and overhead (people, inventory and facilities), shorten product development time, improve customer service, empower employees, innovate and deliver high quality products, enhance flexibility and adaptation to capture information, create knowledge, share knowledge and learn.

All this is possible only with continued focus on creation, updating, availability, quality and use of knowledge by all employees and teams, at work and in the market place. The top ten domains of KM taken from Xerox Corporation are listed below.

- Producing Knowledge as a product;
- Driving Knowledge Generation for Innovation;
- Instilling Responsibility for Knowledge sharing;
- Sharing Knowledge & best Practices;

- Capturing & Reusing Past Experiences;
- Understanding & measuring the value of Knowledge;
- Mapping Networks of Experts;
- Building & Mining Customer Knowledge Bases;
- Leveraging Intellectual Assets and
- Embedding Knowledge in : Products, Services and Processes.

### **Knowledge Management in manufacturing companies**

Knowledge has been a critical success factor in manufacturing for ages especially if we examine the people oriented tacit knowledge interfaces that all Japanese firms have ingrained in their quality and manufacturing processes. A glowing example is Toyota, which figured in the MAKE 2002 finalists. A need to manage company knowledge was recognized by knowledge firms such as software and consultancy and they were the first to have a formalized knowledge management approach. In the Indian context, numerous software companies have KM as an integral part of their business process. Manufacturing firms like Tata Steel and Maruti have implemented knowledge Management (KM).

Japanese firms have the people-process track of KM rather than technology track. They focus on knowledge creation and making personal knowledge available to all other workers as a central company activity. These activities while solving problems involve gaining tacit and explicit knowledge and a conversion of tacit to explicit knowledge that leads to innovation and competitive advantage (Rory L. Chase, Managing Director, Teleos (2003)).

Many Indian manufacturing companies are leveraging power of Knowledge Management. There are many knowledge companies like Infosys and Wipro which leverage KM extensively. Tata steel is one such manufacturing company which has implemented KM and was one of the finalists in the MAKE 2005 survey in Asia. Ashok Leyland is currently in the process of implementing Knowledge Management programme. Ford India had a well defined KM programme. Hyundai endeavours to create an organizational culture that simulates knowledge creation and sharing. In HMIL the dissemination of knowledge is done through formal as well as informal process. The strategy of sharing knowledge has been through effective IT-based networking, accessible to all the employees at any point of time and with a structural

feedback system. Informal process-such as meeting top management over a cup of tea – and other channels have been internalized.

Knowledge Management is perceived to be of great significance in a large cross section of the manufacturing industries in India (Soo, C., Midgley, D. and Devinney, T. (2005)).

### **Knowledge creation and Knowledge Exchange**

KM process can be grouped into two conceptual categories – Knowledge creation and Knowledge exchange. KM processes facilitating Knowledge Exchange typically leads to increased efficiency & lower costs. KM processes aimed at Knowledge Creation provide deep understanding of the business environment and leads to higher quality products.

An optimal choice of KM system emphasizes as a function of compensation intensity and KM Technology Performance. A grid shown below indicates best options.

<b>Ability to leverage customer base</b>	Low	High
<b>Intensity of competition</b>		
Low	Knowledge Exchange	Knowledge Exchange
High	Knowledge Exchange	Knowledge Creation

For an auto component firm SKSSL, the thrust would be 60% Knowledge creation and 40% Knowledge Exchange as it faces high competition and its ability to leverage its customer base is constrained.

### **Indian Auto component industry**

The domestic auto component sector is of the order of \$4 billion, or Rs. 20,000 crores which is not a small figure. This is 1% of the global market according to ACMA. There is great potential for auto component manufacturing companies like Sona Koyo Steering Systems Limited. India has a cost advantage over Europe, U.S. & Other countries except China. Last year, the Indian domestic component sector clocked exports of Rs. 2,275 crores. The target set for 2007 by ACMA is of the order of \$1 billion and it looks achievable in the next three years. OEMS are increasingly

looking towards outsourcing components. Visteon and Delphi today source many sub-components from India.

### **Case Company Overview**

Sona Koyo Steering Systems Limited (SKSSL) is a technical and financial joint venture company of Koyo Seiko Company Japan, and the global technology leader in Steering Systems. With a Market share of 50%, the company is the largest manufacturer of steering gears in India and is the leading supplier of:

- Hydraulic Power Steering Systems
- Manual Rack & Pinion Steering Systems
- Collapsible, Tilt and Rigid steering Columns for Passenger Vans and multi utility vehicles.

SKSSL is the market leader in the drive transmission industry in the passenger car segment while its main collaborator, KSCL is the second largest player worldwide. It is the largest supplier of drive transmission products to MUL, which accounted for 71% of SKSSL's sales in 2004-05. Although SKSSL has reduced the concentration risk by diversifying its customer base to include Hyundai (Santro), TELCO (Safari, Sierra, Indica), Hindustan Motors (Lancer) and Toyota (Qualis), its dependence on MUL is likely to continue in future. Its competitive position is strong in the steering gear segment with around 30% of the market share. With a strong OEM as its dedicated client, the company finds itself well placed. The company has strong technological backing of Koyo and others in all its product segments. Through belatedly, the company has done well to diversify into the power steering segment, which will generate good demand in the near future.

The fortunes of SKSSL are linked with the fortunes of the passenger car industry in India. The passenger car industry is expected to witness sluggish growth in short term but expected to show moderate growth in the medium to long term. The growth of SKSSL is likely to reflect these trends to a lesser extent because of increasing shift to more expensive hydraulic power steering and electronic power steering systems by the car manufacturers. In the short to medium term ICRA expects SKSSL to maintain its relationships with its key OEM buyers and continue to supply a significant share of their requirements of drive transmission products. The increased competitive pressures among OEMs in the car industry are likely to exert sustained pressures on realizations of the suppliers. Profitability of the suppliers is, therefore, expected to be a function of

their ability to cut costs. SKSSL's efforts at localization of hydraulic power steering and electronic power steering systems and higher capacity utilization are critical for improvement in future profitability.

### **Current Status of Knowledge Management at SKSSL**

We have analyzed the level of Knowledge Management in SKSSL based on parameters used by MAKE survey. We have taken six factors relevant to an auto component firm like SKSSL.

1. **Developing knowledge leaders:** Whether tacit knowledge exchange with employees from Koyo, Japan is taking place and if this process ensures a flow of knowledge from Koyo Japan to SKSSL.
2. **Delivering knowledge-based products/solutions:** KM solutions have been tailored to Indian market but are slow on technology to the changing times. It is dependent on technology from Koyo and being a small company it cannot really invest heavily in R&D. However, there exists an environment and infrastructure for developing newer solutions.
3. **Creating a corporate knowledge culture:** SKSSL has a knowledge culture which favors innovation and sharing of knowledge amongst its employees.
4. **Creating a learning organization:** The Company has been able to maintain a workforce with minimum turnover. It has been able to offer learning, challenges to people and has maintained its human knowledge capital.
5. **Focusing on customer knowledge:** It is focused on its customers like Maruti and their needs and is able to churn out products with the desired quality.
6. **Transforming knowledge into shareholder value:** It has been able to increase shareholder value manifold since inception.

There is no formal knowledge management process in the company other than the ones inherent due to process like TPM & TQM. It is a transition time for the company. It has to face many challenges and opportunities. The company needed to go in for establishment of a knowledge framework.

**SAP-LAP Analysis on SKSSL:**

SAP-LAP analysis is a model of enquiry into the situation in which the firm is operating; regarding various actors on the scene considering their roles and capabilities exhibited; various domains of action and freedom of choice available; and in-depth study of processes; formulating key issues related to the situation, actors & processes and finally suggesting actions needed to improve the situation, the actors & the processes and their resultant impact on performance ( Sushil (2000)).

### **Recommendations for Knowledge Management at SKSSL:**

For creating a knowledge framework at SKSSL, the following steps are necessary.

- **Corporation and Knowledge :**

Identify and Document

- Advantage of SKSSL
- Important Knowledge Assets of SKSSL
- Organizational Commitment of Knowledge in SKSSL.

- **Individuals and Knowledge**

- Outline process for Creating and utilizing Knowledge.
- Promote Contribution to Knowledge Assets and their use.
- Find out where you work and how to utilize time (employees)

- **A place/portal for creating/capturing and utilizing knowledge has to be created for effective exchange of ideas/knowledge.**

- To create Communities filled with knowledge.

- **Knowledge Creation Process to be adopted by all employees.**

- Assign priorities to things to be done for putting plan into practice.
- Avoid depending on document only communication and have face-to-face communication for conveying a new idea to people concerned.
- Use information/knowledge acquired from friends or books to solve problems.
- Prepare proposals, reports, marketing materials and other documents.
- Formulate a new idea through interactions or discussions with other people.
- Formulate a new idea through contemplating.
- Search out needs or problems through direct interactions with people.
- Formulate a new idea by referring to past examples and events.
- Teach tips or know-how to subordinates or colleagues by working with them.
- Keep record of processes through which problems were solved or new ideas were formulated.

### **Benefits from Knowledge Management implementation at SKSSL**

1. SKSSL will be operating at close to zero inventory levels.
2. Knowledge management can substantially improve process of increasing organizational intelligence through involvement & participation of organization's knowledge capital.
3. On the production side, avoiding rework could reap efficiencies for SKSSL. A typical example is Ford, which managed to save substantial costs by quickly transferring project learning from its economy car models to premium cars.
4. Knowledge management has been implemented in some of the auto companies while others are just hearing about it. Hence an implementation of KM at SKSSL will create a competitive advantage over others.
5. Duplication of work will be reduced that is bound to lead to substantial savings of man hours. KPMG has found in a study that 60% of employees spend more than an hour a day duplicating work of other employees.
6. Inefficiencies from intellectual rework, substandard performance and liability to complete work will be reduced. IDC estimates that fortune 500 companies will lose close to \$32 billion due in the next three years in view of above facts.
7. On the price front it can help design and continuously track price point and avoid any overlap. An example is Daimler Chrysler whose models never overlap.

**Concluding Remarks:**

**Conclusions from SAP-LAP Analysis:**

SKSSL may be gradually wiped out if it does not innovate and produce power steering systems for the new generation cars and also find a host of other customers. There is decrease in actual realizations on steering systems due to higher costs and consequent fall in profit margins.

The company's fortunes are tied with the Automobile sector's performance & the performance of Maruti Udyog. An improvement in technology could see the company supplying steering systems to the new Power steering segment. An improvement in the marketing initiatives could lead to new customers and more sales. An efficiency increase in cost control and manufacturing could lead to higher profits and may give the company a competitive edge over other auto component makers.



SKSSL is a company with a vision and a capability to go global. The company has to adapt to new technology like Power steering. It can become an economic manufacturing base for companies like KOYO SEIKO. There is a need to decrease costs in manufacturing and overall business process. This may be done by having knowledge management process, creating a knowledge framework as in case of companies like Fuji Xerox. SKSSL has to look forward to supply components to QEM clients worldwide like Delphi, Visteon, GM, Daimler-Chrysler who are outsourcing various components from India.

**Future Scenario Building:** A future scenario building exercise has evolved the following action plan.

**Action Plan:**

- Reduce cost by implementing knowledge management and increasing involvement of the employees to reduce the dependence on external experts.
- Transforming the industry towards a tiered structure in order to align with prevalent global practices.
- Consolidation to increase scale of operations to global levels.
- Building appropriate levels of product technology and engineering skills.
- Improving quality levels to that which is acceptable worldwide (100-200 PPM levels).
- Improving labour productivity to build on the advantage of lower labour costs.  
Another important strategy would be to generate adequate thrust on increasing exports. This will involve following steps:
- Building relationships with large foreign Tier 1 players by becoming part of the global supply chain.
- Inviting investment and technology transfer from Tier 1 supplies.

A focus on tier II and tier III products where India has a competitive advantage and gradually shift over to supplying aggregates to a pan-regional supply chain.

**Knowledge Management Framework:**

Knowledge is recognized as a single most important factor for competitive advantage. There is tremendous potential for improving effectiveness, leveraging efficiencies and developing organizational capabilities through a process of systemically capturing, sharing and enhancing knowledge in the organization. Hence it is a strong recommendation that SKSSL should leverage the power of KM to decrease costs, reduce inefficiencies and increase involvement of the employees. The dependence on the external experts will be greatly reduced with the knowledge sharing among the people handling the core of the company.

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