

Key Attributes of Successful Knowledge Management through Innovations: A Study on Indian Automobile Industries

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Abstract

This paper critically examines the effect of knowledge management on innovation in the automobile industries in India. While there is an extensive literature on knowledge management and its value to firm's competitiveness, there is little research and not much evidence addressing the relationship between knowledge management and innovation with respect to the automobile industries. It seems that even though in theory knowledge management studies knowledge creation and sharing, in practice knowledge and innovation literatures do not communicate. In this paper, through empirical analysis, this relationship is examined and discussed. Recommendations are also made as knowledge management is considered as one of the main determinants of innovation in the automobile industries in India. This paper seeks to provide the basis for a theoretical framework that enables a link to be drawn between management, innovation, workplace relations and organizational practices.

Introduction

"People do not manage knowledge; knowledge manages people."

Alvin Toffler

Knowledge management practices are seen as a crucial element of the global business process within organizations and a major source of competitive advantage. It enables systematic access to business data, competitive information and market demographics that support the decision making process. Knowledge management practice can be broadly defined as "the acquisition, sharing and use of knowledge within organizations, including learning processes and management information systems." It helps to transform an individual's tacit knowledge and experience into explicit knowledge that is readily accessible by others, which thereby increases the structural capital. Gone are the days when companies were seen only as physical entities that converted raw materials into tangible products. Today, physical capital is of less relative importance for creating and sustaining competitive advantages than intellectual capital. For many companies the market value of intellectual capital is now too large to be categorized as goodwill. The emerging recognition of knowledge and intellectual capital has laid the groundwork for new knowledge-based concepts, theories and practices of management.

Literature Review

Knowledge management is the systematic process of finding, selecting, organizing, distilling and presenting information in a way that improves an employee's comprehension in a specific area of interest. In the present era, knowledge management is focusing attention from "Information Value Chain" to "Knowledge Value Chain." Knowledge management is a nascent but rapidly growing practice that seeks to maximize the value of an organization by helping its people to innovate and adapt in the face of change. It has been identified as a key to maintaining the competitiveness of organizations. It also helps an organization to gain insight and understanding from its own experience. Specific knowledge management activities help the organizations in acquiring, storing

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and utilizing knowledge for such things as problem solving. It also protects intellectual assets from decay, adds to firm intelligence and provides increased flexibility. The various relationships among data, information, knowledge and wisdom are explained by taking into account the understanding relations, understanding pattern and understanding principles.

Knowledge management is dedicated to more deliberate means of people creating and sharing knowledge-data, information, and understanding in a social context to make the right decisions and take the right actions. Knowledge management has become a recognized hallmark of successfully integrated enterprises. The challenge to government organisations parallels that of their commercial counterparts-how to foster peer-to-peer collaboration and knowledge sharing while controlling the traditional tendency towards stove-piped data collection and reporting. The knowledge management synergy is achieved by effectively integrating the people, processes and technology.

Innovation management includes the management of processes to strive for novel assignments through the combination and integration of different knowledge components. Besides, next to explicit knowledge, tacit knowledge has a crucial influence on the success of innovation processes in companies. The sole application of tacit knowledge cannot guarantee an effective innovation process as organizational knowledge for innovation is created through a continuous dialogue between tacit and explicit knowledge, where four different modes of knowledge conversion can be postulated. Tacit knowledge is mobilized through a dynamic combination of the different modes of knowledge conversion in a process, which can be called a "spiral model" of knowledge creation. Tacit knowledge is an important driver in the innovation process and its application has significant impact on the innovation process and, therefore, plays a prominent role as a company resource and success factor. Compared to the work on explicit knowledge, the management of tacit knowledge is relatively unexplored. The authors of this paper want to assess the significance and implications of tacit knowledge in the innovation process. (Ragna Seidler, 2004).

Four Modes of Knowledge Conversion

The "Four modes of knowledge conversion" model is described by Nonaka and Takeuchi (Nonaka and Takeuchi, 1995). The model is based on the assumption that knowledge is created through the interaction between tacit and explicit knowledge. This means that human knowledge is created and expanded through social interaction between individuals. According to this model knowledge, transformation is interactive. In the next few paragraphs, the matrix is explained Table I.

Socialisation: From tacit knowledge to tacit knowledge. Socialisation is connected with the theories of group processes and organisational culture. Socialisation is a process of sharing experiences and so creating knowledge such as shared mental models and shared skills (Cannon-Bowers et al., 1993). In other words, team members share their personal understanding in order to plan what to improve next time they perform the task. In turn, this process helps them coordinate their actions.

Externalisation: From tacit knowledge to explicit knowledge. Externalisation is a process where tacit knowledge takes form and becomes explicit through the use of hypothesis, concepts, models or analogies. Externalisation is triggered through discussion and reflection among the team members. Members by using analogy, metaphors, drawings, and models can express their knowledge through discussions, which can lead to the design of a new product, method or a new idea for further exploration. According to Nonaka and Takeuchi, externalisation is the key to knowledge creation because it creates new and explicit concepts from tacit knowledge. Tacit knowledge many times is hard to communicate. Through the use of analogies, metaphors and other similar tools, abstract ideas can be communicated and even create new ones. These new ideas or concepts can be modelled for further development. Without discussions and contradictions, this process cannot take place. Thus, it is important that the organisational structure and culture can allow these discussions to take place. Explicit knowledge that is protected by patents and trademarks represents a property-based resource (Miller and Shamsie, 1996).

Combination: From explicit knowledge to explicit knowledge. Combination is the process of systematising concepts into a knowledge system. Individuals exchange information and combine knowledge through documents, telephone conversations, though systems such as intranet, extranet or internet.

Internalisation: From explicit knowledge to tacit knowledge. Internalisation is the process through which documented knowledge gets internalised by an individual. In other words is “learning-by-doing”. When experiences through socialisation, externalisation, and combination are internalised by individuals in the form of shared mental models and technical know-how, they become valuable assets (Nonaka and Takeuchi, 1995). Competitors cannot obtain or imitate these resources for two reasons. First, due to causal ambiguity, which means that the required inputs are unknown? Second, the social complexity of the firm is difficult to replicate. (Cardinal et al. 2001).

The Knowledge Life Cycle (Figure I)

Types of Knowledge Management

The core issue of knowledge management is to place knowledge under management remit to get value from it-to realize intellectual capital. That intellectual capital can be regarded as a major determiner of the difference between a company’s book price and the total value of its stock. For a successful company, this difference can be considerable, representing the difference between the way the company is seen by accountants and by the market. For example, we can distinguish between at least four different types of knowledge management.

- **Valuing Knowledge:** Knowledge is viewed as ‘intellectual capital’, and the focus is on quantifying and recognizing the value of the organization’s knowledge base.
- **Exploiting Intellectual Property:** This appeal to firms, which are looking beyond the conventional approach based on patents etc. to more effective ways of tapping into the

commercial value of their existing knowledge base.

- **Capturing Project-Based Learning:** As firms increasingly move towards innovation and project-based organization, many are recognizing the need to capture the learning from individual projects and make it available throughout the organization.
- **Managing Knowledge Workers:** The shift towards knowledge work in many sectors creates problems for traditional ways of managing and motivating employees. In many firms knowledge management reflects manager’s desire to increase the productivity of knowledge workers, breaking down some of the barriers to knowledge sharing which are associated with “professionalism”.

HR Aspects of Knowledge Management:

Knowledge is high value information, which at some point resided in someone’s brain. Every employee is the most important resource in effective knowledge management. Every organization should create an environment and culture so that knowledge creation and sharing will be encouraged. Systems have to be put in place to extract knowledge from employees, transfer it to new brains if required and apply to business problems and decisions. In the present situation as the computers are storing data and information, knowledge requires a human to take action on it. From this it is evident that every organization has to pursue such HR policies which create a culture so as to encourage knowledge generation and dissemination. The relationship among the people, process and innovation is mentioned Figure II.

In today’s post-industrial economy, knowledge management seems to be a critical success factor for any organization. It is a challenging task before every CEO, how to capitalise the knowledge. The organization should develop links between the knowledge management and general organizational design areas, such as business processes, leadership, information systems, corporate culture, human resource management and controlling. Figure III.

Indian Automobile Industries: Achievements, Prospects and Challenges

The Indian automotive sector has the potential to emerge as a leader of a new wave of emerging economy automotive innovators. India's innovation potential can only be understood in the context of the global automotive industry. Auto manufacturing is at a crossroads. The relentless rise in innovation costs, falling returns from those investments, and changes in customer preferences, have all led to a turning point in the innovation cycle. And India can potentially benefit from these changes. The automotive industry is innovation driven. Over the last 20 years, this innovation has been product-focused. According to a study of the Asian automotive industry from the Asian Development Bank, a vehicle manufactured in 2000 had, on average, approximately double the number of electronic functions of a vehicle manufactured in 1990. Yet while innovation has intensified, the sales volume to support the costs of this product innovation has failed to materialize. In the U.S., for example, average annual sales per vehicle fell by one quarter between 1980 and 1991. Price and income trends suggest that these sales volumes are unlikely to be rebuilt in the developed industrial markets – on the contrary, they are likely to fall further. In these markets, the average price of a new car has doubled over the last 20 years, but average incomes have only risen by 50 percent – and this price-income gap continues to widen, implying further falls in sales volumes will occur if costs cannot be cut. Automotive assemblers have responded by globalizing model platforms and increasing the proportion of shared-use components and functions in order to cut costs. Yet for many of the largest OEMs this has only stemmed losses rather than securing profits. In the words of Fiat CEO Sergio Marchionne at a recent event hosted by KPMG International: “over the last 25 years, the auto industry has simply failed to cover its cost of capital”.

Starting its journey from the day when the first car rolled on the streets of Mumbai in 1898, the Indian automobile industry has demonstrated a phenomenal growth to this day. Today, the Indian automobile industry presents a galaxy of varieties and models meeting all possible expectations and globally established industry standards. Some of the leading

names echoing in the Indian automobile industry include Maruti Suzuki, Tata Motors, Mahindra and Mahindra, Hyundai Motors, Hero Honda and Hindustan Motors in addition to a number of others. During the early stages of its development, Indian automobile industry heavily depended on foreign technologies. However, over the years, the manufacturers in India have started using their own technology evolved in the native soil. The thriving market place in the country has attracted a number of automobile manufacturers including some of the reputed global leaders to set their foot in the soil looking forward to enhance their profile and prospects to new heights. Following a temporary setback on account of the global economic recession, the Indian automobile market has once again picked up a remarkable momentum witnessing a buoyant sale for the first time in its history in the month of September 2009.

The automobile sector of India is the seventh largest in the world. In a year, the country manufactures about 2.6 million cars making up an identifiable chunk in the world's annual production of about 73 million cars in a year. The country is the largest manufacturer of motorcycles and the fifth largest producer of commercial vehicles. Industry experts have visualized an unbelievably huge increase in these figures over the immediate future. The figures published by the Asia Economic Institute indicate that the Indian automobile sector is set to emerge as the global leader by 2012. In the year 2009, India rose to be the fourth largest exporter of automobiles following Japan, South Korea and Thailand. Experts state that in the year 2050, India will top the car volumes of all the nations of the world with about 611 million cars running on its roads. At present, about 75 percent of India's automobile industry is made up by small cars, with the figure ranking the nation on top of any other country on the globe. Over the next two or three years, the country is expecting the arrival of more than a dozen new brands making compact car models.

India is on every global automobile player's roadmap, and it isn't hard to see why India is the 2nd largest two-wheeler market in the world, 4th largest commercial vehicle in the world, and 11th largest passenger car market in the world and is expected to become the 7th largest by 2016. The last few years

have witnessed revolutionary changes in the management systems and manufacturing innovations of the worldwide automotive industry. The focus has tilted away from volumes to a lower cost model as espoused by the emerging markets. Of these emerging markets, India stakes a major claim with its role in shaping and leading the outsourcing market. India has been hailed by market analysts as an emerging hub for the manufacturing industry with its focus on engineering, innovation, and overall growth leading it to the bastions of market leaders. Recently, a United Nations Development Program (UNDP) report hailed India as a powerful force in the global automobile industry, and recognized that it has the strength to sustain leadership and growth in the face of the global trading order. The growth curve of India Auto Inc. has been on an upswing for the past few years. According to the Society of Indian Automobile Manufacturers (SIAM), the Indian automobile industry has maintained a steady growth of 20 percent till May 2005, with passenger cars and utility vehicles growing around 13 percent and 16 percent respectively.

Consequent to liberalization, the arrival of new and contemporary models, the availability of financing at relatively low interest rates, and price discounts offered by the dealers and manufacturers appear to have stimulated vehicle demand and a strong industry growth. According to SIAM's projections, domestic sales of passenger vehicles (cars and utility vehicles) are set to grow at 20 percent over the next two years given the current GDP growth and exports are expected to grow at 40 percent.

India has become a preferred destination for American, European and Japanese automotive companies because they realize that in the future, auto manufacturing will require world-class, cost effective IT and engineering expertise and India has an abundance of both. Furthermore, the low cost of manufacturing and a supportive government have been the key drivers for companies shifting focus to India. Emerging economies, but India does not receive the same global attention as compared to China, yet. This fact reflects itself in the automotive industry where China has been losing ground in terms of its markets; but still continues to attract the major percentage of global investments.

Indian automobile industry has come a long way to from the era of the Ambassador car to MARUTI 800 to latest M&M XYLO. An industry is highly competitive with a number of global and Indian companies present today. It is growing at a pace of around 18% per annum for the last five years and is projected to be the third largest auto industry by 2030 and just behind to US & China, according to a report. The industry is estimated to be a US\$ 34 billion industry. Indian Automobile industry can be divided into three segments i.e. two wheeler, three wheeler & four wheeler segment. Two wheeler segments enjoys 75% market share of automobile industry, followed by passenger vehicles with the 16% share of market. Three wheeler segments have merely 4% share in domestic market. The domestic two-wheeler market is dominated by Indian as well as foreign players such as Hero Honda, Bajaj Auto, Honda Motors, TVS Motors, and Suzuki etc. Maruti Udyog and Tata Motors are the leading passenger car manufacturers in the country. And India is considered as strategic market by Suzuki, Yamaha, etc. The major players have not left any stone unturned to be global. Major of the players have got into the merger activities with their foreign counterparts.

Proposition

In the post information era, every organisation adopts different strategies to survive and flourish. In order to survive, every organisation must train the employees and managers to adopt the new method which will help them to acquire new skills in order to introduce knowledge creation and sharing. Knowledge management is available everywhere but the challenge lies in how to spot them and make their best use. In the development of a sustainable knowledge base, information should be reliable and easily accessible. From the above topic it is understood that every business must focus their attention in the following key issues in order to expect a better environment in the business. Those areas are:

- Ability of the business to get the right information at the right time.
- Convert right information into effective communication

- Communication becoming a way of learning for the entities in the business system.
- To convert learning into an organizational knowledge base that is accessible across the organization, converting information into knowledge and putting it to productive use.

Critical Issues

Innovation is imperative today as a key tool for creating winning organisations globally. With many global auto players setting up operations in India in the last ten years, Indian companies are now exposed to manufacturing excellence techniques used globally. Quality and innovation is not the same thing; but they are closely related. Suppliers need to achieve global quality standards in order to become innovation partners and innovation drivers. Are Indian suppliers good enough? When global OEMs arrived in India in force in the early 1990s, they entered a market where local content requirements forced them to use Indian suppliers for up to 70 percent of content. After India's entry to the World Trade Organization, and the consequent relaxation of local content requirements, it was widely expected that OEMs would revert to using established foreign suppliers. That this did not happen is tribute to the rapid quality improvement that Indian auto suppliers have achieved.

These results suggest a double challenge for Indian suppliers with ambitions to ascend the innovation curve. Lower-tier suppliers who are typically small single-component specialists need to improve performance through collaboration, and very likely through new technology either by acquisition or by being acquired (see overleaf for more on the growth and acquisition challenge). Meanwhile upper-tier suppliers should be more ready to de-select under-performing partners.

Findings: Suggestions for Successful Knowledge Management

- Every organisation should continuously maintain the flexibility in order to cope with the ever-changing environment.

- The employees of the organisation should be trained to identify the realistic goals and time frames keeping in mind the constant change.
- The success of the knowledge management project would definitely improving only when there is a possibility of changing the organizational infrastructure like Chief Knowledge Officer, and overall Knowledge facilitator.
- Knowledge management project requires investment. The return on investment should be comparable with the expected benefit derived out of the investment.
- Every organisation must upgrade the knowledge base for strengthening the knowledge management project.

Conclusion

Creativity and innovation are at the cutting edge of knowledge management. We have a long way to go to release our creative energy both at the personal and organisational level, as there are many blocks. One emerging powerful tool to help overcome these blocks is the concept of dialogue. Groupware technology is also evolving into knowledge management technology and playing a major and increasing role. Our challenge today is to build effective technology-based systems that support us in 'making knowledge productive' and take into account the ways in which we think and behave. Knowledge management can be very useful for organizations to survive in competitive environment. On one side it helps in improving in potential of employees, on the other side it helps in improves capability of the organization to survive and grow. Knowledge Management is the management of knowledge in the best possible ways whether in the mind of human capital or as intellectual assets. It can be a strategic strength wen practiced and could be a fatal weakness, if not pursued. Application of knowledge is the most essential task of knowledge management. The success of this system lies in the

following three factors: (i) autonomous interdisciplinary teams (ii) promoting innovators and initiative takers and (iii) measuring the result. The knowledge-required can either be present in the organization and needs to be shared, distributed and applied or it needs to be created.

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Table I : Tacit and Explicit (Nonaka and Takeuchi, 1995.)

	Tacit Knowledge to Explicit Knowledge	
Tacit Knowledge from Explicit Knowledge	Socialisation	Externalisation
	Internalisation	Combination

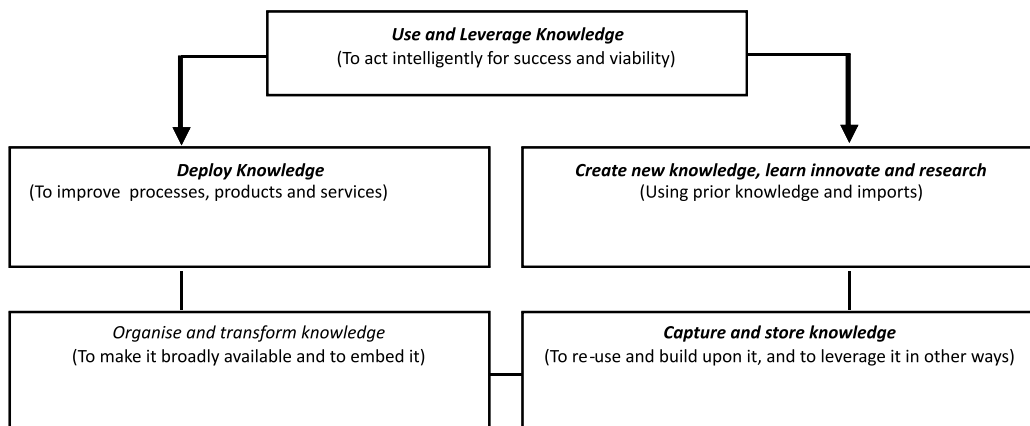


Figure I : The Knowledge Life Cycle

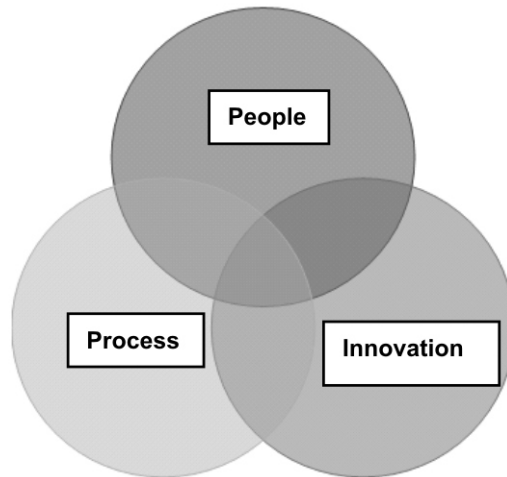


Figure II : Relationship among the People, Process and Innovation is Mentioned

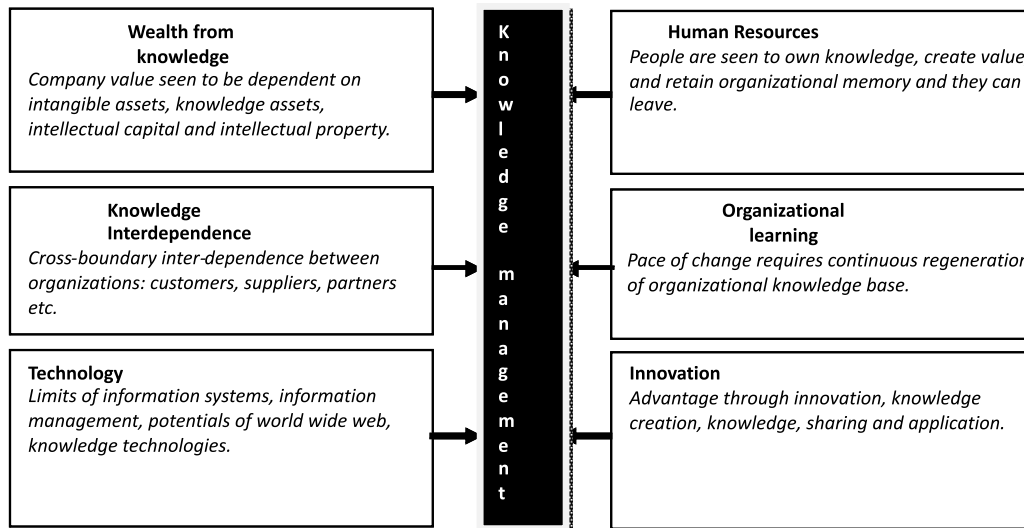


Table III : Relationship between Knowledge and other Areas