
The Toyota way of global knowledge creation the 'learn local, act global' strategy

Kazuo Ichijo

IMD, Chemin de Bellerive 23,
CH-1001 Lausanne, Switzerland
E-mail: kazuo.ichijo@imd.ch

Florian Kohlbacher*

German Institute for Japanese Studies,
Jochi Kioizaka Bldg. 2F,
7-1 Kioicho, Chiyoda-ku, Tokyo 102-0094, Japan
E-mail: kohlbacher@diptokyo.org

*Corresponding author

Abstract: This paper presents insights from two case studies of Toyota Motor Corporation and its way of strategic global knowledge creation. We will show how Toyota's knowledge creation has moved from merely transferring knowledge from Japan to subsidiaries abroad to a focus of creating knowledge in foreign markets by local staff. Toyota's new strategy of 'learn local, act global' for international business development proved successful for tapping rich local knowledge bases, thus ensuring competitive edge. In fact, this strategy finally turned Toyota from simply being a global projector to a truly metanational company.

Keywords: automotive industry; emerging economies; international joint venture; knowledge management; organisational learning.

Reference to this paper should be made as follows: Ichijo, K. and Kohlbacher, F. (2007) 'The Toyota way of global knowledge creation the 'learn local, act global' strategy', *Int. J. Automotive Technology and Management*, Vol. 7, Nos. 2/3, pp.116–134.

Biographical notes: Kazuo Ichijo is a Professor at the Graduate School of International Corporate Strategy at Hitotsubashi University in Tokyo. He also is a Professor of Organisational Behaviour and Management at IMD, International Institute for Management Development in Lausanne, Switzerland. With co-authors Georg von Krogh and Ikujiro Nonaka, he wrote *Enabling Knowledge Creation: How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation*, published by Oxford University Press.

Florian Kohlbacher is a research fellow at the German Institute for Japanese Studies in Tokyo. From April 2005 to March 2007 he was a visiting researcher at Hitotsubashi University, Tokyo, where he conducted research in the fields of knowledge management, international business and marketing.

1 Introduction

In 2003, Toyota Motor Corporation's profits exceeded the combined earnings of its three largest competitors (Dyer and Hatch, 2004; Liker, 2004; Spear, 2004). Its announcement in December 2005 that it planned to make 9.06 million cars worldwide in 2006 is an ambitious goal that could help Toyota surpass General Motors (GM) and become the largest carmaker in the world. In fact, the Toyota Motor Corporation has built a strong reputation for the high quality, durability and reliability of its cars, and these are only some of the reasons for its outstanding global success. As a result, research and academic writing on Toyota are proliferating (e.g., Dyer and Nobeoka, 2000; Liker, 2004; Sobek et al., 1999; Spear and Bowen, 1999; Womack et al., 1991, to name just a few), and Toyota frequently serves as a role model for both academics and business practitioners. Indeed, the teachings of the so-called 'Toyota way' and the legendary Toyota Production System (TPS) – together with its popularised versions lean management and lean manufacturing – have not only been applied to manufacturing and production but also to other areas as far as healthcare, postal services and the service industry in general (Liker, 2004; Spear, 2004, 2005; Womack and Jones, 1996, 2005).

Yet, with few exceptions (e.g., Dyer and Hatch, 2004; Dyer and Nobeoka, 2000; Dyer and Ouchi, 1993; Evans and Wolf, 2005; Liker, 2004; Liker and Choi, 2004), the mainstream of the Toyota literature has hardly touched the fundamental issues of knowledge sharing or organisational learning as key drivers behind Toyota's remarkable success. Especially regarding the process of knowledge creation at Toyota, the extant literature is surprisingly silent. However, Ichijo and Nonaka are surely correct when they note that

“the success of a company in the 21st century will be determined by the extent to which its leaders can develop intellectual capital through knowledge creation and sharing on a global basis,” (Ichijo and Nonaka, 2006)

as knowledge constitutes a competitive advantage in this age. Therefore, this paper aims at contributing to close this disconcerting gap by presenting and discussing cases of a recent innovation project and an International Joint Venture (IJV), which reveal Toyota's strength and ability at creating and leveraging knowledge both locally and globally. The purpose is to highlight Toyota's strategic way of global knowledge creation, and our analysis will therefore focus on the macro-level.

2 Theoretical background

2.1 Knowledge Management (KM) and knowledge creation

Knowledge Management (KM) seems to have become a ubiquitous phenomenon both in the academic and in the corporate world. In fact, it has turned into one of the most prominent and widely discussed management concepts of the post-modern era. Publications on KM are legion, and business practitioners do not fail to stress its importance for the competitiveness of their corporations. Emerging from Japan, Ikujiro Nonaka's publications and his theory of knowledge creation (e.g., Nonaka, 1994; Nonaka and Takeuchi, 1995) have drawn the attention to Japanese firms as knowledge-creating companies, a feature that supposedly has helped them to create the dynamics of

innovation and to become world leaders in the automotive and electronics industries, among others, in the 1980s and the beginning of the 1990s. The difference, it was argued, between Japanese and Western firms, lies in the focus on tacit knowledge of the former and explicit knowledge of the latter (Hedlund and Nonaka, 1993; Nonaka and Takeuchi, 1995), and this Japanese firms' particular ability to create knowledge has also been received and acknowledged by Western scholars. Note that by organisational knowledge creation, Nonaka and Takeuchi mean

“the capability of a company as a whole to create new knowledge, disseminate it throughout the organisation, and embody it in products, services, and systems.” (Nonaka and Takeuchi, 1995, p.3)

2.2 *Knowledge creation and strategy*

According to Porter (1991), the reason why firms succeed or fail is a central question in strategy. As for Japanese firms, it is often argued that differences in operational effectiveness – instead of the development of distinct strategic positions – were at the heart of the Japanese challenge to Western companies in the 1980s, since they were so far ahead of rivals in operational effectiveness that they could offer lower cost and superior quality at the same time (Porter, 1996; Porter et al., 2000). Indeed, the unique Toyota Production System (TPS) could be seen as a good example of operational effectiveness in action. Nevertheless, while TPS and the resulting operational effectiveness make up a competitive advantage for Toyota, it is important to note that this is certainly not the only essential determinant of the firm's success, but just one – albeit important – element of the Toyota way (Liker, 2004). In the end, it is only the combination and dynamic interaction of all the elements of the Toyota way that result in sustainable competitive advantage for Toyota. As a matter of fact, knowledge sharing and organisational learning play a crucial role in fostering and harnessing the power of the unique Toyota way.

During the last decade, knowledge has been identified as a crucial strategic resource and asset (Earl, 1997; Lyles and Schwenk, 1992; Probst et al., 1998), KM and transfer have been analysed within strategic frameworks (Szulanski, 1996, 2003; von Krogh et al., 2001) and strategies for knowledge creation and management have been set forth (Hansen et al., 1999; Teece, 2000; Un and Cuervo-Cazurra, 2004; Zack, 1999). Put in a nutshell: “Creating knowledge [...] has now become a core element of business strategy” (Ichijo, 2006b). As such, KM has become a dominant area in strategic management, and it has increasingly been adapted to the global context. Indeed, the capability of Multinational Corporations (MNCs) to create and efficiently transfer and combine knowledge from different locations around the world is becoming more and more important as a determinant of competitive advantage and has become critical to their success and survival (cf. e.g., Asakawa and Lehrer, 2003; Bartlett and Ghoshal, 2002; Doz et al., 2001; Gupta and Govindarajan, 2000; Schulz and Jobe, 2001). Nonaka (1990, p.82) terms the cross-border synergistic process of joint knowledge creation as ‘global knowledge creation’ and sees it as the key process of globalisation. Here again:

“Tacit knowledge, embodied in individual, group and organisational routines, is of critical strategic importance because, unlike explicit knowledge, it is both inimitable and appropriable.” (Al-Laham and Amburgey, 2005, p.251; cf. also Spender, 1996a)

2.3 *Strategies for knowledge creation and transfer in the Japanese automotive industry*

According to Ahmadjian (2004, p.227): “Knowledge creation occurs not only within firms, but also through relationships between firms”. In fact, notably the strong supplier networks in Japan – and here again especially the ones in the automotive, but also the electronics sector – have frequently been put forth in this context (cf. e.g., Ahmadjian and Lincoln, 2001; Cusumano and Takeishi, 1991; Dyer, 1996a, 1996b; Dyer and Chu, 2003; Dyer and Hatch, 2004; Dyer and Nobeoka, 2000; Dyer and Ouchi, 1993; Evans and Wolf, 2005; Kotabe et al., 2003; Liker, 2004; Liker and Choi, 2004; Lincoln et al., 1998; Takeishi, 2001, 2002). According to Cusumano and Takeishi:

“Supplier relations and management are crucial areas for any firm that subcontracts portions of components design and production because of the dependence this creates on the skills of outside organisations.” (Cusumano and Takeishi, 1991, p.563)

These networks or strong relationships between firms in Japan have frequently been termed and analysed as the so-called *keiretsu* (conglomerates), described as “the webs of relations that envelop many Japanese companies” (Lincoln et al., 1996, p.67) or as “clusters of interlinked Japanese firms and the specific ties that bind them” and their “long-term, personal and reciprocal character” (Lincoln et al., 1992, p.561). Furthermore, “the openness and richness of networks are believed to foster a fertile environment for the creation of entirely new knowledge” (Lincoln et al., 1998, p.241). In the automotive sector, for example, this *keiretsu* structuring of supplier relations

“historically enabled Japanese auto assemblers to remain lean and flexible while enjoying a level of control over supply akin to that of vertical integration,”

and

“high trust, long-term cooperation between assemblers and their suppliers has made possible reductions in new model development time in the Japanese auto industry.” (Ahmadjian and Lincoln, 2001, p.683)

According to Lincoln et al.:

“*Keiretsu*-style interorganisational relations foster knowledge creation and transfer by enabling one company to gain an intimate familiarity with one or more others.” (Lincoln et al., 1998, p.243, original emphasis)

Dyer and Nobeoka confirm this phenomenon for the automotive industry stating that

“[...] Toyota and other leading Japanese automakers (notably Honda) have developed bilateral and multilateral knowledge-sharing routines with suppliers that result in superior interorganisational or network-level learning.” (Dyer and Nobeoka, 2000, p.346)

This seems to be consistent with Fujimoto’s (1999) view that Toyota’s competitive edge comes in part from its ability to work with a set of independent suppliers to create knowledge.

Furthermore, the benefits of cross-border alliances, foreign partnerships, and Joint Ventures (JVs) – even between competitors – have frequently been discussed in the extant literature (cf. e.g., Dhanaraj et al., 2004; Inkpen, 2000; Inkpen and Currall, 2004; Inkpen and Tsang, 2005; Lane et al., 2001; Steensma et al., 2005), often also with a focus

on (inter-)organisational learning and knowledge creation through these collaborations. IJVs are viewed as effective conduits that enable MNCs to exploit their knowledge in multiple markets (Dhanaraj et al., 2004), and learning – together with trust and control – has become one of the most important and studied concepts in the alliance and JV literatures (Inkpen and Currall, 2004). Indeed,

“since not all critical knowledge resides inside firm boundaries, firms have to tap into external resources of knowledge to develop competitive advantage.”
(Al-Laham and Amburgey, 2005, p.251)

Obviously, IJVs and other kinds of alliances are a case in point here as they have often been considered a central source of new knowledge (Gulati et al., 2000; Hamel, 1991; Khanna et al., 1998; Lyles, 1994), and access to the capabilities of the partners has been emphasised as a central motive for such ‘learning alliances’ (Badaracco, 1991; Child et al., 2005; Lane et al., 2001; Mowery et al., 1996).

In the automotive industry, the JV between Toyota and General Motors (GM) – New United Motor Manufacturing, NUMMI – has already become legendary and has repeatedly been discussed (cf. e.g., Badaracco, 1991; Inkpen, 2005). Ahmadjian and Lincoln (2001, p.684) mention that research on interfirm alliances has blossomed over the last decade, with there being “an intellectual tension between two dominant approaches to alliance – governance and learning”. This paper focuses on the organisational learning and knowledge creation approach.

3 Research methodology

According to Spender (1996b, p.72): “The objective of positivist research is the development of a coherent abstract representation of the world out there”, while the focus of interpretive research is “on the ways in which we attach meaning to our experience”. Cassell and Symon (1994) contend that qualitative methods are more appropriate than quantitative methods to research questions focusing on organisational processes, as well as outcomes. One reason for this is that quantitative studies focus on the measurement and analysis of causal relationships between variables, not processes. Many scholars distinguish between explicit and tacit knowledge, and Nonaka and Takeuchi’s (1995) spiral of knowledge illustrates the process of creating knowledge in organisations through the interaction between tacit and explicit knowledge. Spender (1996b) emphasises the contrast between research methods appropriate to explicit types of knowledge and those appropriate to implicit types, which according to him is also the contrast between the positivist and interpretive methods. Therefore, in order to analyse the process of knowledge creation – focusing on tacit knowledge – at Toyota Motor Corporation, we primarily chose a qualitative research approach.

3.1 Case study research

According to Yin (2003, p.2): “The distinctive need for case studies arises out of the desire to understand complex social phenomena” because “the case study method allows investigators to retain the holistic and meaningful characteristics of real-life events”, such as organisational and managerial processes, for example. In fact, case studies seem to be the preferred strategy when ‘how’ or ‘why’ questions are being posed, when the

investigator has little control over events and when the focus is on a contemporary phenomenon within some real-life context. In such a setting, case studies are explanatory ones, i.e., they present data on cause–effect relationships, explain how events happened and extend theoretical understandings (Yin, 2003). The two explanatory case studies presented in this paper are meant to illustrate and analyse the essence of Toyota’s way of global knowledge creation. Hartley (2004, p.323) states that case study research “consists of a detailed investigation, often with data collected over a period of time, of phenomena, within their context”, with the aim being “to provide an analysis of the context and processes which illuminate the theoretical issues being studied”. This is why case studies have an important function in generating hypotheses and building theory (cf. e.g., Eisenhardt, 1989; Hartley, 2004). Since our research endeavour aims at developing new hypotheses and at amending the theory of knowledge creation in an international inter-organisational context, we opted for a case study research strategy.

3.2 Data and methods

Our research methodology involved triangulation among a variety of different sources of data (cf. e.g., Parkhe, 1993; Wolfram Cox and Hassard, 2005), including the conducting of both formal and informal on- and offsite interviews with managers as well as scholars and other experts in the field, analysis of archival materials such as company internal documents as well as papers in the business media and an evaluation of existing case studies and other relevant literature (Yin, 2003). For the first case, interviews were conducted in 2005 in Japan. Senior executives at the Toyota headquarters and middle managers directly involved in the IMV project were interviewed. For the second case, interviews with the top executives of TPCA, senior managers of Toyota and PSA as well as TPCA project managers were conducted in 2006, both at Toyota headquarters and in the Czech Republic. In addition, we also conducted interviews with Toyota key account managers at Bosch Japan (parts supplier) and key account managers and project leaders at Siemens Japan (supplier of factory automation equipment). In the course of the qualitative interviews, semi-structured questions in accordance with the theory of organisational knowledge creation within firms were employed. The interview partner could nevertheless answer openly and lead the interview mostly. In fact, as Osland and Cavusgil have noted:

“In depth field research methods enable researchers to gain a rich understanding of respondents’ perspectives, often providing insights that the researcher would not have uncovered from structured questionnaires used in traditional surveys.” (Osland and Cavusgil, 1998, pp.200, 201)

4 The Toyota way of strategic knowledge creation in emerging markets

Toyota has production facilities on every continent and is insistently increasing their number and capabilities. This is in line with Toyota’s policy of global balance and local adaptation, which is also reflected in sales: a third of global sales are each from Japan, North America and Europe and other regions, respectively. The first years of this century have already seen several significant steps towards further globalisation, particularly on the production front. In this section, we will present two ground-breaking steps in Toyota’s global production expansion and its way of strategically leveraging and creating

local knowledge. The case studies here are presented in the form of abbreviated vignettes, illustrating the essence of Toyota's way of strategic knowledge creation in emerging markets. In fact, as they were conducted as explanatory case studies, the case studies are meant to highlight why and how Toyota adopted and implemented its new approach. Note that the focus of the case studies and the analysis here is on the strategic, macro-level.

4.1 Case 1: Innovative International Multi-purpose Vehicles (IMV) project

Initially, Toyota developed and produced cars only in Japan and exported them abroad in order to ensure high quality and to maintain customer trust in the brand. Having steadily been developing its business globally afterwards and because of increasing overseas demand, the need to tailor production to local needs, the opportunity of tax breaks and in order to save shipping costs, Toyota evolved to the second stage of its manufacturing model: it started to produce vehicles where the market is. This model has been working well in established mass markets such as North America and Western Europe, because the high sales volume justifies the production overhead. Recently, Toyota has identified attractive business opportunities in other developing markets such as BRICs (Brazil, Russia, India, and China), and each has huge growth potential. The strategic challenge to Toyota was whether the previous manufacturing model used in the North American and European markets will apply equally well in emerging markets. In these emerging markets, local demand sometimes fluctuates widely or may vary greatly from that in Japan, Western Europe and the USA. Equally, demand is usually not high enough to achieve optimal production, as shown in Exhibit 1.

Exhibit 1 Production and demand

	<i>Number of plants</i>	<i>Number of vehicles produced in 2004 ('000 units)</i>	<i>Percentage of vehicles produced in 2004 (%)</i>	<i>Number of vehicles sold in 2004 ('000 units)</i>	<i>To bridge the gap</i>
Japan	12	4,284	65.8	2,303	Export
North America	11	1,034	15.9	2,103	Import
Europe	6	515	7.9	898	Import
Other Regions	34	680	10.4	1,415	Import
Total	63	6,513	100.0	6,719	

Source: Company information

The solution for globally operating companies – including Toyota – has, in the past, tended to be to build manufacturing facilities in developing markets (such as Asian regions) mainly owing to their cheap labour costs. However, in developing and producing cars for these regions, Toyota used to stay reliant on Japanese designers and engineers, rather than exploiting local talent. The problem is obvious. People who are not familiar with local tastes and local unique customer needs are probably not the best to develop and produce cars that will satisfy unique local customer needs. Growth rates in emerging markets are significant, and a growing number of companies are trying to gain and sustain competitive advantage. The victors in this tough competition are likely to be those companies able to satisfy unique customer needs efficiently and effectively – and to

achieve this, a new way of developing business in emerging markets might be necessary. Innovation in the business model for such emerging markets has surfaced as an important agenda point for Toyota.

Finally, the materialisation of free trade agreements in different parts of the world has presented tremendous opportunities for Toyota to allow its manufacturing model to evolve to its third stage: a global production and supply network that will solve, efficiently and effectively, the problems of local production in emerging markets. In 2004, Toyota announced a break-through initiative called the “Innovative International Multi-purpose Vehicles (IMV) Project”, which aims at increasing the self-reliance of overseas manufacturing facilities in such a way as to optimise overall worldwide production, especially in emerging markets, by both understanding common needs and paying sufficient attention to unique local needs. The initiative is led by Toyota’s subsidiaries, and, in this business model, Toyota upgraded and expanded plants in Thailand, Indonesia, South Africa and Argentina. These four main IMV production and export bases will supply Asia, Europe, Africa, Oceania, Latin America and the Middle East with a total of five all-new IMV vehicles (pickup trucks and multipurpose vehicles). This project is now dependent upon close collaboration between Toyota in Japan and its subsidiaries in emerging markets.

Toyota’s aim is to increase the ratio of parts imported from these Asian and Latin American countries from 60% to 70% to as close as possible to 100%, in order to enhance the self-reliance of local Toyota subsidiaries and to accomplish lower procurement costs. The plants for the IMV project were chosen as assembly and export bases, because they have both sufficient manufacturing experiences and skilled and experienced managers and labour force. The focus of new IMV car development is not on passenger cars for developed markets, in which much more varied consumer preference demands differing levels of comfort, styling and handling. These IMV cars are specifically created for emerging markets with their particular needs and demand for more competitive pricing. Indeed, IMV cars are only for emerging markets and will not be sold in other regions such as Japan, the USA and Western Europe.

For the first time in its history, Toyota is producing and selling cars that are not produced and sold in Japan. In this respect, the IMV initiative is a very innovative strategy for Toyota. Within these emerging markets, the study of the unique local needs and then the developing, manufacturing and supplying of cars, which closely meet them promises competitive advantage. ‘Learn local’ is the key to local success. But there is a global dimension, too. IMV cars assembled in Thailand and Indonesia are both used for local consumption and exported to different countries, particularly emerging markets. Surplus IMV cars assembled in Argentina are exported to Central and South America, and those assembled in South Africa are shipped to Africa. This global, cross-country collaboration is another key to the success of the IMV project. While paying attention to local unique needs in each region, Toyota tries to accomplish effective use of resources worldwide to provide high-quality cars with cheaper cost. ‘Act global, learn local’ is thus another winning formula for the IMV project. As a result, IMV-series vehicle production including that in countries other than the four main production bases is projected to exceed 500,000 units in 2006.

The success of IMV is dependent upon the leadership of local engineers. Historically, Toyota used to recruit only Japanese nationals to be designers and engineers, first assign them to work in mother plants in Japan to gain knowledge and skills and then transfer them to overseas factories. Product development stayed within Japan. Toyota realised,

though, that it did not have sufficient Japanese designers and engineers to be sent to the growing number of overseas plants and, moreover, that local talent was available, which would be helpful for identifying common customer needs in emerging markets. Therefore, in the planning and development stages, this meant listening to dealers and customers in Asia, Africa and South America and repeatedly debating the issues among members of the design and engineering teams. Nowadays, Toyota never underestimates the importance of local knowledge. The success of the IMV is dependent upon human resource development in Asia, and more efforts are being made in this area. The advanced digital technology of the Global Production Centre, established in 2003, is being used to train its managers and workers in the IMV project factories. The merit of this technology is that visual training materials can be accessed by every overseas factory at the same time, thus allowing a large number of employees to be trained rapidly and consistently. Toyota estimates that the Centre can increase the efficiency of workforce instruction by a factor of 6–10. Therefore, in addition to improving production efficiency and quality, the Global Production Centre can speed up the preparations for model changes at overseas factories, as they respond to changes in customer needs.

4.2 Case 2: Toyota Peugeot Citroën Automobile (TPCA)

Toyota Peugeot Citroën Automobile Czech (TPCA) is an IJV between Toyota Motor Corporation and PSA Peugeot Citroën in Kolín, Czech Republic. Both companies own exactly half of the shares (50/50 joint venture). The TPCA plant is the result of a joint memorandum and agreement signed on 12 July 2001, by then Toyota Motor Corporation President Fujio Cho and PSA Peugeot Citroën CEO Jean-Martin Folz, outlining the joint development and production of small, entry-level passenger vehicles primarily targeting European markets. After this agreement in July 2001, the two automakers announced on 9 January 2002, the signing of an official JV agreement to establish TPCA. The selection of the central Czech town Kolín – among many areas within Europe that were considered – was due to several advantages: favourable location in the heart of Europe, proximity of important markets and connection to the main transport arteries. Indeed, located near Prague, Kolín is conveniently close to major European markets and is well served by transportation. Another key criterion was the rich industrial history of the Czech Republic connected to the automobile industry, which created expectations for qualified work force. In fact, the TPCA factory alone employ about 3000 Czech employees and indirectly ensures an additional 7000 jobs in all areas from the production of automobile components to cleaning services.

With this unique automobile partnership and its joint plan for the development and production of small compact vehicles and the construction of a new manufacturing factory, Toyota and PSA decided to react to the changing European customer market and to found a whole new category of small modern and technologically advanced vehicles. In fact, both companies see growing demand for such cars in Europe, and the new-platform vehicles to be built in the Czech Republic will be marketed under the Toyota, Peugeot and Citroën brands. The total investment into the project on the grass field – including R&D and business startup costs – has surmounted 50 billion crowns (approximately 1.5 billion Euros) and finally started manufacturing on 28 February 2005. The plant manufactures 300,000 small gasoline and diesel cars annually to be sold in Europe under both automakers' brands, i.e., 200,000 units for Peugeot and Citroën and 100,000 for Toyota. The three, all-new small cars produced on a common platform are

the Citroën C1, the Peugeot 107 and the Toyota Aygo. The cars built on this new platform have jointly been developed by the two companies. They are a modern, four-seat model boasting the most sophisticated technologies in terms of safety, reliability, environmental protection and urban mobility. Equipped with the latest generation of 1.0 l gasoline engines and 1.4 l diesel engines, they are especially fuel-efficient. The project offers clearly differentiated models and specific styles for the vehicles of the two groups, while guaranteeing strong commonality for the car structure and components. In launching this new vehicle concept, Toyota and PSA have introduced a brand new offer of small-size cars, which will complement their product lines. This decision to jointly introduce a new class of cars, positioned below current entry-level models, is in order to respond to the changing needs in Europe, a market where demand for compact vehicles remains as strong as ever and is forecast to increase in the years ahead. Therefore, TPCA paves the way for a new market of vehicles, which thoroughly retain all the essential features of a real car and offer, at attractive prices, efficient solutions to environmental and urban mobility-related requirements. Target customers also include current buyers of used or outdated cars. In fact, primarily designed for – and uniquely sold in – European markets, this new car concept has been conceived to meet the changing needs of local customers. Cars produced using this common platform have a three-fold advantage: they have prices lower than those in the current small-car segment, feature a high-level of standard safety performance and offer excellent environmental achievements.

The joint production at TPCA not only allows for a reduced cost but also a connection of the best of both automobile factories: the untouched production system of Toyota with the excellent knowledge of the European market of PSA. Therefore, Toyota is in charge of development and production, while PSA is responsible for procurement. Toyota's polish plant – Toyota Motor Manufacturing Poland Sp. (TMMP) in Walbrzych, Poland, established on 7 June 2002, as Toyota's first European transmission plant – will expand to supply manual transmissions and 1.0 l gasoline engines for the Czech plant. PSA Peugeot Citroën will supply 1.4 l diesel engines. Nearly all other components will be sourced locally. In fact, since the establishment of the joint venture, many Toyota-affiliated parts makers have set up shop in Central and Eastern Europe, and about 20 have signed supplier agreements with TPCA. The plant is the fruit of a successful cooperation project that allowed the two global carmakers to combine their knowledge of product design, styling, production and supplier relationships, while learning from each other's corporate cultures, technologies and processes. This led to an exchange of a wealth of specific know-how: PSA's knowledge of small cars in Europe and its expertise in purchasing activities and Toyota's skill in development, manufacturing and production processes. Therefore, PSA views this cooperation between two independent companies as a further materialisation of the PSA Group's strategy aimed at reaching agreements on the joint development and production of mechanical components and platform elements, with the objective of obtaining economies of scale.

Supported by their spirit of teamwork and reinforced by a favourable national environment in terms of solid industrial experience and a quality education system, TPCA completed all stages of the cooperation successfully in terms of deadlines and results. This cooperation between independent carmakers has provided a fast, cost-efficient response to market demand through the sharing of expertise and experience. As a matter of fact, leveraging synergies and fostering mutual knowledge sharing and creation between the two partners is one of the most important goals and merits of this

strategic alliance. Here again, Toyota consistently follows its ‘learn local, act global’ strategy by feeding back the newly created and acquired knowledge to its headquarters and spreading it also to other subunits.

Finally, Toyota currently seems to be the most aggressive among the Japanese carmakers in expanding its facilities in Europe, as it also established its own transmission and engine plant (TMMP), and a JV plant for diesel engines with Toyota Industries Corporation in Poland. In Central Europe, which includes Poland, Slovenia and three other countries, Toyota sold 57,000 cars in 2003, about 7% of its total sales in Europe. Unlike the mature market of Western Europe, the region’s automobile market offers much room to grow, with an automobile diffusion rate about half that of countries belonging to the European Union (EU). On joining the EU in May 2005, the five Central European nations have become subject to the bloc’s tighter environmental regulations, so new car demand will likely increase as older cars are scrapped. As a result, Central and Eastern Europe will be vital for Toyota if it wants to achieve its goal of selling 1.2 million units a year in Europe by 2010. TPCA will help to build a strong production base and will serve Toyota as a springboard for expanding its presence in Europe.

5 Discussion

5.1 Strategic knowledge creation and enabling at Toyota

The cases have shown how Toyota’s knowledge creation in the automotive development has changed from creating new knowledge in Japan and transferring it from the headquarters to subsidiaries and affiliations around the globe to a focus of creating knowledge in foreign markets by local staff and together with local partners. With its new strategy of ‘learn local, act global’ for international business development, Toyota proved successful in tapping rich local knowledge bases, thus ensuring its competitive edge and global lead in the automotive industry. Indeed, this is the first time in its history that Toyota is producing and selling cars that are not produced and sold in Japan. In this respect, the IMV initiative and TPCA were very innovative strategic decisions for Toyota.

5.1.1 Environmental changes

However, it is also important to note and understand the reasons and causes that induced this change in Toyota’s knowledge creation and car development strategy. Different reasons can be identified and traced back to different variables and changes in environment as their trigger. These reasons can basically be divided into two main trends in the automotive industry:

- First of all, the maturity of the Japanese automobile market made Toyota look more intensively for new opportunities abroad. As explained above, it originally found these in North America and Europe. But due to fierce competition and beginning stagnation in some of these markets, Toyota – following other major carmakers – turned to developing markets such as BRICs and Eastern Europe. In fact, this phenomenon that MNCs are increasingly viewing emerging markets as potential sources of future growth is not limited to the automotive industry and has become a more and more important issue recently (Hoskisson et al., 2000; London

and Hart, 2004). Historically, JVs – as well exporting through a local agent – were the preferred entry modes for Japanese MNCs into European markets, with financial costs and the costs concerning uncertainties and risks deterring them from full ownership entry modes such as acquisitions and greenfield investments. However, especially with the development of the European integration, JVs have become less attractive (Ando, 2005). But, the case of TPCA – as well as the other JV in Poland – is different. In contrast to West European countries, emerging economies like Poland and the Czech Republic are new and less known ground for Toyota (and Japanese MNCs in general), thus possibly entailing higher uncertainty costs. Additionally, the collaboration with PSA is expected to result in mutual learning and other advantages for Toyota's European operation and its strategy of using external, local resources (Ando, 2005). This attempt by organisations to realise their objectives through cooperation with other organisations rather than in competition with them is called 'cooperative strategy' (Child et al., 2005). As for the TPCA case, Toyota considers this collaboration as one of its efforts to meet consumer demand for low-cost, fuel-efficient and environment-friendly vehicles and believes that cooperating with PSA will provide a capable response to the expanding small passenger car market.

- Second, with all major global players penetrating into the emerging markets, competition intensified quickly and severely. The high price sensitiveness of the consumers in the new markets and differences in taste and buying behaviour called for a change in strategy. Finally, Toyota came up with a new strategy for global business development – 'learn local, act global' – which meant learning about unique local needs and requirements and adapt to them while doing global coordination for the operational excellence. As a consequence, it is probably safe to say that Toyota has made the leap from simply being a global projector to a truly metanational company. Indeed, the need to unlock the potential of globally dispersed knowledge has been called 'the metanational imperative' (Doz et al., 2001), and this going beyond transnational strategy has been identified as especially crucial for entering emerging markets (London and Hart, 2004). Besides, the term 'front-line management' has been used to describe a form of management, where

"the workplace is recognised and valued as the center of knowledge creation and in which knowledge-creation resources [...] and processes [...] are concentrated at the front line of the company." (Yasumuro and Westney, 2001, p.178)

5.1.2 Knowledge enabling

The fact that, in basically any company,

"critically important knowledge resides in the workplace – on the factory floor, within sales and service organisations that deal directly with customers, at the 'bench' in the R&D lab,"

in short at the 'front lines' of the company (Yasumuro and Westney, 2001, p.178), underscores the importance of tacit knowledge and its strategic creation and management (Ichijo, 2006b). However, "the creation of knowledge is not simply a compilation of facts but a uniquely human process, one that cannot be reduced or easily replicated", which among other reasons is why "effective management of knowledge, that is,

knowledge creation, sharing, protection, and discarding depend on an enabling context” (Ichijo, 2006a). Companies can generate such an enabling context for KM and creation by using five knowledge enablers:

- instilling a knowledge vision
- managing conversations
- mobilising knowledge activists
- creating the right context
- globalising local knowledge (Ichijo, 2004; von Krogh et al., 2000).

As a matter of fact, Toyota has basically introduced all five knowledge enablers into its organisation, a *sine qua non* for successful (inter-)organisational knowledge creation.

- According to Ichijo:

“Instilling a knowledge vision emphasises the necessity for moving the mechanics of business strategy to the importance of creating an overall vision of knowledge in any organisation.” (Ichijo, 2006a)

Toyota has clearly achieved this goal by implementing its ‘learn local, act global’ strategy, which serves as a knowledge vision at the same time. Indeed, for Liker (2004, pp.13, xv), “Toyota is a true learning organisation that has been evolving and learning for most of a century” and thus created “one of the few examples of a genuine learning enterprise in human history”. Dyer and Nobeoka (2000, p.346) seem to agree when they contend that “Toyota, in particular, is widely recognised as a leader in continuous learning and improvement”.

- The second enabler, managing conversations, facilitates communication among members, a very important task since conversations are an ‘arena’ for creating and sharing social knowledge (Ichijo, 2006a). Osono’s (2004, p.281) pronouncements to the effect that Toyota is a master of dialogue and that “Toyota also has a strong culture of nurturing a listening attitude and building its listening capabilities” clearly show that Toyota also masters the second knowledge enabler.
- The third enabler is about mobilising knowledge activists. Knowledge activists are the knowledge proselytisers of the company, spreading the message to everyone and as such being essential for cross-levelling of knowledge, since they are the people responsible for energising and connecting knowledge-creation efforts throughout a company (Ichijo, 2006a). In the case of Toyota, knowledge activists are called ‘coordinators’ – Japanese employees from the headquarters who were sent to overseas operations to teach their counterparts of Toyota’s way of doing business face-to-face (Ichijo, 2006a; Liker, 2004).
- The fourth enabler, creating the right context, examines the close connections among organisational structure, strategy and knowledge enabling and “involves organisational structures that foster solid relationships and effective collaboration” (Ichijo, 2004, pp.142, 143). The Toyota way of creating the right context becomes particularly obvious when looking at its interaction with and between supplier networks (cf. e.g., Dyer and Hatch, 2004; Dyer and Nobeoka, 2000; Evans and Wolf, 2005; Liker, 2004; Liker and Choi, 2004). Indeed, Dyer and Hatch found that

“the company has developed an infrastructure and a variety of interorganisational processes that facilitate the transfer of both explicit and tacit knowledge within its supplier network,” (Dyer and Hatch, 2004, p.58, original emphasis)

and Evans and Wolf (2005, pp.100, 101) argue that “the Toyota philosophy of continuous improvement likewise comprises a thousand small collaborations” and that “this collaboration also relies on two infrastructure components: a shared pool of knowledge and universally available tools for moving knowledge around”. These collaborations as well as the two infrastructure components can be seen as the constituting elements of the right context at Toyota.

- Last but not the least, the fifth enabler, globalising local knowledge, considers the complicated issue of knowledge dissemination globally (von Krogh et al., 2000). Ichijo notes that

“it is crucial for the competitive advantage of a corporation operating globally that knowledge created in a certain local unit is disseminated to other local units effectively, efficiently, and fast,” (Ichijo, 2006a)

since “sharing knowledge globally constitutes competitive advantage of a corporation”. Toyota achieves this by feeding back local knowledge and best practices to its headquarters and by circulating these further to other global units through its global production centres as well as by job and country rotation of its staff.

However, “this fifth enabler does not work effectively without the other four enablers”, and

“social networks, mobility, shared experiences among people working in different regions will be able to overcome the tensions accompanying globalising local knowledge.” (Ichijo, 2006a)

Therefore, the development of leadership plays a crucial role in having all of the enablers work together effectively, which is why the concept of action learning has caught on at many companies (Ichijo, 2006a). In fact, excellent firms such as General Electric (GE), Toyota and Nokia have been using action learning for developing leaders with high relation-building competencies (Tichy and Cardwell, 2002). According to Ichijo,

“action learning is the best way to establish enabling context for knowledge creation and sharing, and good social relationships among business leaders.” (Ichijo, 2006a)

Hence,

“Toyota leaders, by having a combination of in-depth understanding of the work and the ability to develop, mentor, and lead people, are respected for their technical knowledge as well as followed for their leadership abilities.” (Liker, 2004, p.182; cf. also Spear, 2004)

5.2 Conclusion and managerial implications

Finally, it is probably safe to say that Toyota has brought the concepts of front-line management, strategic knowledge creation and enabling to perfection through the

implementation of its ‘learn local, act global’ strategy and, thus, has mastered “the challenge of identifying, nurturing, and re-deploying knowledge resources within the MNC’s global operations” (Asakawa and Lehrer, 2003, p.32) and of unleashing the power of tacit knowledge. As Hansen and Nohria correctly note, the ways for MNCs to compete successfully by exploiting scale and scope economies or by taking advantage of imperfections in the world’s goods, labour and capital markets are no longer profitable as they once were, and, as a result,

“the new economies of scope are based on the ability of business units, subsidiaries and functional departments within the company to collaborate successfully by sharing knowledge and jointly developing new products and services.” (Hansen and Nohria, 2004, p.22)

Besides, Ghemawat (2005) has shown that it is often a mistake to set out to create a worldwide strategy and that better results come from strong regional strategies brought together into a global whole. In fact, these statements strongly support the need for a global knowledge creation strategy as implemented by Toyota. However, even though Toyota has been identified to “have gone furthest in exploiting the power of regionalised thinking” (Ghemawat, 2005, p.100), the application of a ‘learn local, act global’ strategy is by no means restricted to Toyota or the automotive industry. Of course, Toyota is a pioneer and still one of very few truly metanational companies – for other examples, see e.g., Doz et al. (2001) and Ghemawat (2005) – but their success seems to prove them right, and the Toyota way could serve as an excellent role model for other firms. Note that this does not imply a mere copying of Toyota’s strategy and processes but a carefully deployed adaptation to the specific context and needs of each individual firm and industry. Besides, the Toyota way never stands still but is constantly evolving and refined through *kaizen* processes. Grasping this need for continuous learning and improvement will be a crucial criterion for competitive advantage and corporate success and survival in the knowledge economy.

5.3 *Limitations and need for further research*

Although carefully researched, documented and analysed, our study is subject to some limitations. First of all, the insights gained were derived and concluded from two single – probably rather unique – cases, even if this is exactly what case study research is basically about (Stake, 2000). Indeed, the common limitations of generalisability of such field research are well documented (cf. e.g., Eisenhardt, 1989; Hartley, 2004; Yin, 2003), though analytic generalisation – in contrast to statistical generalisation – is possible (Hartley, 2004; Yin, 2003). Therefore, it would prove helpful to conduct further case studies of Toyota, but also of other global players, in order to analyse the process of inter-organisational knowledge creation in different environments and under different conditions.

Moreover, Dyer and Nobeoka (2000, p.347) contend that “Toyota’s ‘network’ appears to be highly effective at facilitating interfirm knowledge transfers and may be a model for the future” but have to admit that “at present the collaborative process used by Toyota to facilitate these transfers is somewhat of a black box”. Indeed, in this paper, we have focused on the strategic, macro-level of Toyota’s approach and touched the micro-level of knowledge creation processes only slightly. As a result, further in-depth studies as well as longitudinal case studies will be necessary.

References

- Ahmadjian, C.L. (2004) 'Inter-organizational knowledge creation: knowledge and networks', in Takeuchi, H. and Nonaka, I. (Eds.): *Hitotsubashi on Knowledge Management*, John Wiley & Sons (Asia), Singapore, pp.227–245.
- Ahmadjian, C.L. and Lincoln, J.R. (2001) 'Keiretsu, governance and learning: case studies in change from the Japanese automotive industry', *Organization Science*, Vol. 12, No. 6, pp.683–701.
- Al-Laham, A. and Amburgey, T.L. (2005) 'Knowledge sourcing in foreign direct investments: an empirical examination of target profiles', *Management International Review*, Vol. 45, No. 3, pp.247–275.
- Ando, K-i. (2005) *Japanese Multinationals in Europe: A Comparison of the Automobile and Pharmaceutical Industries*, Edward Elgar, Cheltenham.
- Asakawa, K. and Lehrer, M. (2003) 'Managing local knowledge assets globally: the role of regional innovation relays', *Journal of World Business*, Vol. 38, No. 1, pp.31–42.
- Badaracco, J.L. (1991) *The Knowledge Link: How Firms Compete Through Strategic Alliances*, Harvard Business School Press, Boston.
- Bartlett, C.A. and Ghoshal, S. (2002) *Managing Across Borders: The Transnational Solution*, 2nd ed., Harvard Business School Press, Boston.
- Cassell, C. and Symon, G. (1994) 'Qualitative research in work contexts', in Cassell, C. and Symon, G. (Eds.): *Qualitative Methods in Organizational Research, A Practical Guide*, Sage, London, pp.1–13.
- Child, J., Faulkner, D. and Tallman, S.B. (2005) *Cooperative Strategy: Managing Alliances, Networks, and Joint Ventures*, 2nd ed., Oxford University Press, New York.
- Cusumano, M.A. and Takeishi, A. (1991) 'Supplier relations and management: a survey of Japanese, Japanese transplants, and US auto plants', *Strategic Management Journal*, Vol. 12, No. 8, pp.563–588.
- Dhanaraj, C., Lyles, M.A., Steensma, H.K. and Tihanyi, L. (2004) 'Managing tacit and explicit knowledge transfer in IJVs: the role of relational embeddedness and the impact on performance', *Journal of International Business Studies*, Vol. 35, No. 5, pp.428–442.
- Doz, Y., Santos, J. and Williamson, P. (2001) *From Global to Metanational: How Companies Win in the Knowledge Economy*, Harvard Business School Press, Boston.
- Dyer, J.H. (1996a) 'Does governance matter? Keiretsu alliances and asset specificity as sources of Japanese competitive advantage', *Organization Science*, Vol. 7, No. 6, pp.649–666.
- Dyer, J.H. (1996b) 'Specialized supplier networks as a source of competitive advantage: evidence from the auto industry', *Strategic Management Journal*, Vol. 17, No. 4, pp.271–291.
- Dyer, J.H. and Chu, W. (2003) 'The role of trustworthiness in reducing transaction costs and improving performance: empirical evidence from the United States, Japan, and Korea', *Organization Science*, Vol. 14, No. 1, pp.57–68.
- Dyer, J.H. and Hatch, N.W. (2004) 'Using supplier networks to learn faster', *MIT Sloan Management Review*, Vol. 45, No. 3, pp.57–63.
- Dyer, J.H. and Nobeoka, K. (2000) 'Creating and managing a high-performance knowledge-sharing network: the Toyota case', *Strategic Management Journal*, Vol. 21, No. 3, pp.345–367.
- Dyer, J.H. and Ouchi, W.G. (1993) 'Japanese-style partnerships: giving companies a competitive edge', *Sloan Management Review*, Vol. 35, No. 1, pp.51–63.
- Earl, M.J. (1997) 'Knowledge as strategy: reflections on Skandia international and Shorko films', in Prusak, L. (Ed.): *Knowledge in Organizations*, Butterworth-Heinemann, Boston, pp.1–15.
- Eisenhardt, K.M. (1989) 'Building theories from case study research', *Academy of Management Review*, Vol. 14, No. 4, pp.532–550.
- Evans, P. and Wolf, B. (2005) 'Collaboration rules', *Harvard Business Review*, Vol. 83, Nos. 7–8, pp.96–104.

- Fujimoto, T. (1999) *The Evolution of a Manufacturing System at Toyota*, Oxford University Press, New York.
- Ghemawat, P. (2005) 'Regional strategies for global leadership', *Harvard Business Review*, Vol. 83, No. 12, pp.98–108.
- Gulati, R., Nohria, N. and Zaheer, A. (2000) 'Strategic networks', *Strategic Management Journal*, Vol. 21, No. 3, Special Issue, pp.203–215.
- Gupta, A.K. and Govindarajan, V. (2000) 'Knowledge flows within multinational corporations', *Strategic Management Journal*, Vol. 21, No. 4, pp.473–496.
- Hamel, G. (1991) 'Competition for competence and interpartner learning within multinational corporations', *Strategic Management Journal*, Vol. 12, No. 1, pp.83–103.
- Hansen, M.T. and Nohria, N. (2004) 'How to build collaborative advantage', *MIT Sloan Management Review*, Vol. 46, No. 1, pp.22–30.
- Hansen, M.T., Nohria, N. and Tierney, T. (1999) 'What's your strategy for managing knowledge?', *Harvard Business Review*, Vol. 77, No. 2, pp.106–116.
- Hartley, J. (2004) 'Case study research', in Cassell, C. and Symon, G. (Eds.): *Essential Guide to Qualitative Methods in Organizational Research*, Sage Publications, London, Thousand Oaks, New Delhi, pp.323–333.
- Hedlund, G. and Nonaka, I. (1993) 'Models of knowledge management in the west and Japan', in Lorange, P., Chakravarthy, B., Roos, J. and van de Ven, A. (Eds.): *Implementing Strategic Processes: Change, Learning and Co-operation*, Basil Blackwell, Oxford, pp.117–144.
- Hoskisson, R.E., Eden, L., Lau, C.M. and Wright, M. (2000) 'Strategy in emerging economies', *Academy of Management Journal*, Vol. 43, No. 3, pp.249–267.
- Ichijo, K. (2004) 'From managing to enabling knowledge', in Takeuchi, H. and Nonaka, I. (Eds.): *Hitotsubashi on Knowledge Management*, John Wiley & Sons (Asia) Pte Ltd., Singapore, pp.125–152.
- Ichijo, K. (2006a) 'Enabling knowledge-based competence of a corporation', in Ichijo, K. and Nonaka, I. (Eds.): *Knowledge Creation and Management: New Challenges for Managers*, Oxford University Press, New York, pp.83–96.
- Ichijo, K. (2006b) 'The strategic management of knowledge', in Ichijo, K. and Nonaka, I. (Eds.): *Knowledge Creation and Management: New Challenges for Managers*, Oxford University Press, New York, pp.121–145.
- Ichijo, K. and Nonaka, I. (2006) 'Knowledge as competitive advantage in the age of increasing globalization', in Ichijo, K. and Nonaka, I. (Eds.): *Knowledge Creation and Management: New Challenges for Managers*, Oxford University Press, New York, pp.3–10.
- Inkpen, A.C. (2000) 'Learning through joint ventures: a framework of knowledge acquisition', *Journal of Management Studies*, Vol. 37, No. 7, pp.1019–1043.
- Inkpen, A.C. (2005) 'Learning through alliances: general motors and NUMMI', *California Management Review*, Vol. 47, No. 4, pp.114–136.
- Inkpen, A.C. and Currall, S.C. (2004) 'The coevolution of trust, control, and learning in joint ventures', *Organization Science*, Vol. 15, No. 5, pp.586–599.
- Inkpen, A.C. and Tsang, E.W.K. (2005) 'Social capital, networks, and knowledge transfer', *Academy of Management Review*, Vol. 30, No. 1, pp.146–165.
- Khanna, T., Gulati, R. and Nohria, N. (1998) 'The dynamics of learning alliances: competition, cooperation and relative scope', *Strategic Management Journal*, Vol. 19, No. 3, pp.193–210.
- Kotabe, M., Martin, X. and Domoto, H. (2003) 'Gaining from vertical partnerships: knowledge transfer, relationship duration, and supplier performance improvement in the US and Japanese automotive industries', *Strategic Management Journal*, Vol. 24, No. 4, pp.293–316.
- Lane, P.J., Salk, J.E. and Lyles, M.A. (2001) 'Absorptive capacity, learning, and performance in international joint ventures', *Strategic Management Journal*, Vol. 22, No. 12, pp.1139–1161.
- Liker, J.K. (2004) *The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer*, McGraw-Hill, New York.

- Liker, J.K. and Choi, T.Y. (2004) 'Building deep supplier relationships', *Harvard Business Review*, Vol. 82, No. 12, pp.104–113.
- Lincoln, J.R., Ahmadjian, C.L. and Mason, E. (1998) 'Organizational learning and purchase-supply relations in Japan: Hitachi, Matsushita, and Toyota compared', *California Management Review*, Vol. 40, No. 3, pp.241–264.
- Lincoln, J.R., Gerlach, M.L. and Ahmadjian, C.L. (1996) 'Keiretsu networks and corporate performance in Japan', *American Sociological Review*, Vol. 61, No. 1, pp.67–88.
- Lincoln, J.R., Gerlach, M.L. and Takahashi, P. (1992) 'Keiretsu networks in the Japanese Economy: a dyad analysis of intercorporate ties', *American Sociological Review*, Vol. 57, No. 5, pp.561–585.
- London, T. and Hart, S.L. (2004) 'Reinventing strategies for emerging markets: beyond the transnational model', *Journal of International Business Studies*, Vol. 35, No. 5, pp.350–370.
- Lyles, M.A. (1994) 'The impact of organizational learning and joint venture formation', *International Business Review*, Vol. 3, No. 4, pp.459–468.
- Lyles, M.A. and Schwenk, C.R. (1992) 'Top management, strategy and organizational knowledge structures', *Journal of Management Studies*, Vol. 29, No. 2, pp.155–174.
- Mowery, D.C., Oxley, J.E. and Silverman, B.S. (1996) 'Strategic alliances and interfirm knowledge transfer', *Strategic Management Journal*, Vol. 17, Winter Special Issue, pp.77–91.
- Nonaka, I. (1990) 'Managing globalization as a self-renewing process: experiences of Japanese MNEs', in Bartlett, C.A., Doz, Y. and Hedlund, G. (Eds.): *Managing the Global Firm*, Routledge, London, pp.69–94.
- Nonaka, I. (1994) 'A dynamic theory of organizational knowledge creation', *Organization Science*, Vol. 5, No. 1, pp.14–34.
- Nonaka, I. and Takeuchi, H. (1995) *The Knowledge-Creating Company, How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York.
- Osland, G.E. and Cavusgil, S.T. (1998) 'The use of multiple-party perspectives in international joint venture research', *Management International Review*, Vol. 38, No. 3, pp.191–202.
- Osono, E. (2004) 'The strategy-making process as dialogue', in Takeuchi, H. and Nonaka, I. (Eds.): *Hitotsubashi on Knowledge Management*, John Wiley & Sons (Asia), Singapore, pp.247–286.
- Parkhe, A. (1993) 'Messy' research, methodological predispositions, and theory development in international joint ventures', *Academy of Management Review*, Vol. 18, No. 2, pp.227–268.
- Porter, M.E. (1991) 'Towards a dynamic theory of strategy', *Strategic Management Journal*, Vol. 12, Winter Special Issue, pp.95–117.
- Porter, M.E. (1996) 'What is strategy?', *Harvard Business Review*, Vol. 74, No. 6, pp.61–78.
- Porter, M.E., Takeuchi, H. and Sakakibara, M. (2000) *Can Japan Compete?*, Macmillan, Basingstoke.
- Probst, G., Büchel, B. and Raub, S. (1998) 'Knowledge as a strategic resource', in von Krogh, G., Roos, J. and Kleine, D. (Eds.): *Knowing in Firms: Understanding, Managing and Measuring Knowledge*, Sage, London, pp.240–252.
- Schulz, M. and Jobe, L.A. (2001) 'Codification and tacitness as knowledge management strategies: an empirical exploration', *Journal of High Technology Management Research*, Vol. 12, No. 1, pp.139–165.
- Sobek, D.K., Ward, A.C. and Liker, J.K. (1999) 'Toyota's principles of set-based concurrent engineering', *Sloan Management Review*, Vol. 40, No. 2, pp.67–83.
- Spear, S. (2004) 'Learning to lead at Toyota', *Harvard Business Review*, Vol. 82, No. 5, pp.78–86.
- Spear, S. (2005) 'Fixing health care from the inside, today', *Harvard Business Review*, Vol. 83, No. 9, pp.78–91.
- Spear, S. and Bowen, H.K. (1999) 'Decoding the DNA of the Toyota production system', *Harvard Business Review*, Vol. 77, No. 5, pp.96–106.

- Spender, J.C. (1996a) 'Making knowledge the basis of a dynamic theory of the firm', *Strategic Management Journal*, Vol. 17, Winter Special Issue, pp.45–62.
- Spender, J.C. (1996b) 'Organizational knowledge, learning and memory: three concepts in search of a theory', *Journal of Organizational Change Management*, Vol. 9, No. 1, pp.63–78.
- Stake, R.E. (2000) 'Case studies', in Denzin, N.K. and Lincoln, Y.S. (Eds.): *Handbook of Qualitative Research*, Sage, Thousand Oaks, pp.435–453.
- Steensma, H.K., Tihanyi, L., Lyles, M.A. and Dhanaraj, C. (2005) 'The evolving value of foreign partnerships in transitioning economies', *Academy of Management Journal*, Vol. 48, No. 2, pp.213–235.
- Szulanski, G. (1996) 'Exploring internal stickiness: impediments to the transfer of best practice within the firm', *Strategic Management Journal*, Vol. 17, Winter Special Issue, pp.27–43.
- Szulanski, G. (2003) *Sticky Knowledge: Barriers to Knowing in the Firm*, Sage, London.
- Takeishi, A. (2001) 'Bridging inter- and intra-firm boundaries: management of supplier involvement in automobile product development', *Strategic Management Journal*, Vol. 22, No. 5, pp.403–433.
- Takeishi, A. (2002) 'Knowledge partitioning in the interfirm division of labor: the case of automotive product development', *Organization Science*, Vol. 13, No. 3, pp.321–338.
- Teece, D.J. (2000) 'Strategies for managing knowledge assets: the role of firm structure and industrial context', *Long Range Planning*, Vol. 33, No. 1, pp.35–54.
- Tichy, N.M. and Cardwell, N. (2002) *The Cycle of Leadership: How Great Leaders Teach their Companies to Win*, HarperBusiness, New York.
- Un, C.A. and Cuervo-Cazurra, A. (2004) 'Strategies for knowledge creation in firms', *British Journal of Management*, Vol. 15, No. 4, pp.27–41.
- von Krogh, G., Ichijo, K. and Nonaka, I. (2000) *Enabling Knowledge Creation, How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation*, Oxford University Press, New York.
- von Krogh, G., Nonaka, I. and Aben, M. (2001) 'Making the most of your company's knowledge: a strategic framework', *Long Range Planning*, Vol. 34, No. 4, pp.421–439.
- Wolfram Cox, J. and Hassard, J. (2005) 'Triangulation in organizational research: a re-presentation', *Organization*, Vol. 12, No. 1, pp.109–133.
- Womack, J.P. and Jones, D.T. (1996) 'Beyond Toyota: how to root out waste and pursue perfection', *Harvard Business Review*, Vol. 74, No. 5, pp.140–158.
- Womack, J.P. and Jones, D.T. (2005) 'Lean consumption', *Harvard Business Review*, Vol. 83, No. 3, pp.58–68.
- Womack, J.P., Jones, D.T. and Roos, D. (1991) *The Machine That Changed the World: The Story of Lean Production*, HarperPerennial, New York.
- Yasumuro, K. and Westney, D.E. (2001) 'Knowledge creation and the internationalization of Japanese companies: front-line management across borders', in Nonaka, I. and Nishiguchi, T. (Eds.): *Knowledge Emergence: Social, Technical, and Evolutionary Dimensions of Knowledge Creation*, Oxford University Press, New York, pp.176–193.
- Yin, R.K. (2003) *Case Study Research, Design and Methods*, 3rd ed., Sage, Vol. 5, Thousand Oaks.
- Zack, M.H. (1999) 'Developing a knowledge strategy', *California Management Review*, Vol. 41, No. 3, pp.125–145.