

Core Competence and Linkage Capability: Case Studies of Japanese Companies*

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Abstract

This article is based on case studies and interviews with key technical and top managers in Japanese SMEs (small and medium sized enterprises). Through the analysis of the companies, the author developed a four-stage model and found that three points are vital to allow Japanese SMEs to promote partnerships. The analysis suggests that SMEs can grow step by step through fostering diverse partnerships with other organizations. Also, for SMEs to succeed in partnering with other organizations and survive competition, they need to continually clarify and foster their own core competence and linkage capability.

Key words: partnership, core competence, linkage capability, Japanese SMEs,
four-stage model, balance between flexibility and stability

INTRODUCTION

This study investigates how Japanese SMEs (small and medium sized enterprises) build their own business models through partnering with other enterprises or organizations, such as universities and research institutes. This article is based on case studies and interviews with key technical and top managers in companies. The analysis has been developed using a theoretical framework that the author has summarized from investigations into the Japanese automobile industry (see perspective of the management of inter-firm partnerships as follows). Through the analysis of the Japanese SMEs, the author develops a four-stage model and shows that core competences and linkage capability are not only critical factors for SMEs in the formation and management of partnerships with other organizations, but also play a supplemental role in the growth of the SMEs.

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Perspective of the Management of Inter-firm partnerships

The author has conducted research into the management of inter-firm partnerships by analyzing long-term business relationships between assembly manufacturers and their suppliers in the Japanese automobile industry (Zhang, 2004).

First, in order to avoid any possible confusion, definitions of the following terms should be clarified. A partnership is basically defined as a "cooperative relationship based on trust among constituting autonomous parties." Moreover, trust functions to strengthen the incentive to cooperate. Trust can be classified into three types: "contractual trust," "competence trust" and "goodwill trust" (Sako, 1992). Based on the social reputation resulting from the characteristics of specific enterprises (such as size, growth rate, originality of resources and capabilities), "contractual trust" and "competence trust" can be evaluated to some extent in advance. On the other hand, "goodwill trust" can only be evaluated in individual situations, and is, therefore, trust after the fact.

Based on a number of studies of the historical transition of long-term business relationships between assembly manufacturers and their suppliers in the Japanese auto industry, the following has been found regarding the inter-firm partnerships. Firstly, inter-firm partnerships are not always maintained on a basis of equally shared power, and the existence of one-sided power superiority can in fact produce dynamism in the management of the partnership. Moreover, in order to maintain the effectiveness of a partnership and secure its continuation, it is essential to create a mechanism for the stabilization of the partnership as well as to incorporate a mechanism for ensuring flexibility. In fact, the coexistence of such conflicting requirements for stability and flexibility is a characteristic of partnerships among Japanese companies (for example the Toyota Group), and has served as a source of competitive advantage for Japanese companies.

If the experience of Japanese partnerships as mentioned above is generalized, the three following points become the key for the management of partnerships.

The first point involves the mechanism for deciding the direction of the partnership to maintain a balance of interdependence: namely, deciding what standards the partners should be subject to. The success or failure of a partnership is influenced not only by the interdependence among the partners but also by the sharing of purpose and the division of roles among partners. Therefore, when enterprises that are optimally compatible with the initiating enterprise are selected as its partners in the partnership-forming stage, it is important that basic principles are established between both parties. On top of that, the location of roles and responsibilities of both parties should be clarified in order to provide incentives and contributions.

The second point involves the existence of a mechanism for maintaining the stability of the partnership. Within the mechanism for stabilizing partnerships that have already been formed, inter-organizational learning and trust building are important.

Moreover, when there are several partnerships, the existence of an organization that plays a coordinating role is important. For example, it has been recognized that the mechanism of

inter-organizational learning between Toyota Motor Corporation and its suppliers (Dyer & Nobeoka, 2000). This has improved the capability of suppliers by allowing them to learn formal and implicit information concerning the Toyota production system. At the same time, it improves the relationship of mutual trust through the sharing of corporate cultures and values. As a result, this mechanism produces a win-win situation which has helped in stabilizing their businesses.

The third point is the establishment of a mechanism that brings flexibility to the partnership. When the maintenance of an existing partnership is no longer the best way to fulfill the purposes of the initiating enterprise, the existing partnerships will trigger several adversities. This is due to changes in the capabilities of partners, technologies or market needs. To escape the trap of a rigid relationship and respond to environmental changes, it is essential to secure flexibility by introducing a competitive mechanism in the partnership. Moreover, as indicated by the practice of creating partnerships between numerous companies, securing such flexibility requires linkage capability.

Specifically, linkage capability is defined as follows, i.e. it is constituted in the three following points:

- (a) Capable of proposing attractive business concepts to concerned entities in value-creating systems.
 - View the business as a value-creating system, comprehend business flow comprehensively, and then have the conceptual power to start a new business or the capability to create business concepts by utilizing the capabilities of members.
 - Have the charisma to attract interested parties. For Example, to have presentation skills besides the company's own core competences.
- (b) Capable of selecting suitable partners
Have not only core competence (i.e. know-how) but also "know-who." Furthermore, supplement the business with new members in addition to business-matching.
- (c) Having the management skill to control various functions of the value-creating system.
 - Share the purposes of the partnerships and formulate specific action plans.
 - Make efforts to spread the above-mentioned purposes and action plans among and inside the participating enterprises, and create a mechanism for interaction among members.
 - Set fair rules for bearing costs and the distribution of benefits.

Through this investigation into Japanese partnerships, it can be concluded that two capabilities are indispensable for the creation of a successful partnership: namely, core competence and linkage capability.

The three following points make clear that linkage capability and core competence reciprocally supplement and promote one another.

(1) In the sense that it fosters trust among partners and contributes to the formation and maintenance of a relationship, core competence provides stability to the partnership. With only core competence, however, the risk is run that organizations may merely focus on

specific domains of expertise and not adapt to environmental changes. At such time, the concerned company can achieve the evolution and innovation of its core competence by inter-organizational learning through partnerships.

(2) Linkage capability allows information exchange with external organizations and makes the partnership more flexible and dynamic. However, if the partnership becomes so flexible that there is a loss of focus or direction, a sense of identity and continuity that results from the relationship of mutual trust will be lost.

(3) From the long-term perspective, linkage capability can enable adaptation to environmental changes. Therefore, as long as a partnership can be maintained through change, linkage capability may be seen as contributing to the stability of a partnership.

Therefore, the simultaneous development of core competence and linkage capability is key to maintain a balance between flexibility and stability in a partnership and concomitantly the effectiveness of the partnership.

Case Studies

It is widely accepted that the need for flexibility has increased following rapid changes resulting from advances in technology and the spread of globalization. SMEs are smaller in size compared with larger companies, but at the same time they can make the most of their advantages in mobility and flexibility. When SMEs initiate business activities, they often lack managerial resources due to their small size. Therefore, through collaboration with various outside organizations, they can gain supplemental resources. But, do such collaborations also apply to the framework mentioned above?

In this section, two examples of SMEs that have successfully created new business models through the promotion of partnerships are examined (see Table 1). The cases are all taken from the manufacturing sector. The companies were examined through interviews with upper management and chief R&D officers in 2005. In addition, corporate web sites and publications were also used as reference material for the analysis. The companies were examined from the start-up stage, continuing through the growth and development process, to the recent activities of partnering with outside organizations.

Case #1: Honda Electronics Co., Ltd.

More than 20 years ago, Honda Electronics Co., Ltd. (Honda) achieved consistent growth as a specialist manufacturer of an innovative fish finder. The company successfully penetrated the American market. However, after the "shock" of the strengthened yen following the Plaza Accord in 1985, the company's profits suddenly collapsed. At that time the company recognized that its core technology was not simply the fish finder but rather the ultrasound technology that had been cultivated while developing the equipment. The company therefore decided to withdraw from the American market. Starting with the simple

Table 1 Two cases of SMEs

	Case#1: Honda Electronics	Case#2: Tosei
URL	http://www.honda-el.co.jp/	http://www.tosei.co.jp/
Business & operations contents	Utilizing ultrasound for automobiles, semiconductor devices, home electric appliances, machinery tools, etc.	Processing, welding and surface re-forming technologies using various types of lasers Electron beam welding and surface re-forming technologies
Technical originality	Ultrasonic wave technology; Application to wide-ranging fields (product group)	Advanced welding technology state-of-the-art machinery
Development of linkage capability	"Open technology": Basic research jointly with more than 30 universities; joint product development with more than 50 companies; partnerships with subcontractors	Created partnerships with multidisciplinary SMEs; Alliance with strong SMEs ("5 Tec.Net")
Mechanism of stability and flexibility	Building trust relationships by sending employees to outside research institutions; Does not sign long-term contracts.	Information sharing system through regular top-level and operational level meetings; Coordinating company is not fixed.

manufacturing of fish finders, Honda 20 years later has gone on to diversify and produce numerous products spanning a wide range of fields. Now its products include ultrasound cutters, cleaning machines and processing equipment using ultrasound vibration and medical equipment such as ultrasound systems for doctors to examine bone fractures and ultrasound imaging equipment for embryos. Now Honda is producing world-leading ultrasound technologies to bring new efficiency to many industries.

The company always spends 10% of its earnings on research and development. Currently, approximately 50 of the company's 150 employees are dedicated to the R&D section targeting new products.

Defining ultrasound as its core technology, Honda has been vigorously investing its management resources in that area. At the same time, the company has implemented an "open technology" strategy of actively disclosing its technology to outside companies. Honda has promoted a broad range of partnerships in fields spanning basic research, product development, operation, and marketing. Consequently, Honda built a mechanism for cooperation and coexistence with organizations of different capabilities.

This mechanism matches "seeds" (the leading-edge technology of universities, research institutes and Honda's specialized ultrasound technology and know-how) and "needs" (the existing technology and markets of other companies). First, in the field of basic research on ultrasound, Honda is currently engaged in joint research in almost 50 areas with more than 30 universities. Next, Honda tries to absorb leading-edge technologies through cooperation with companies and academia. If any idea has potential for commercialization, Honda makes proposals to related companies in various other industries and conducts joint product development with them. However, when the company begins such joint research, it tries to avoid signing a long-term contract in each R&D project. Also, the company sends its employees as "research students" to work at the cooperating research facilities of these joint projects.

Currently, Honda is engaged in joint research projects with more than 50 companies in a wide range of fields including electrical equipment manufacturing and food processing. As a result, approximately 20% of its current earnings are derived from such partnerships.

Honda does not have its own production plant to make finished products. It out-sources the production of parts and the assembly of finished products to surrounding plants, so that it can remain focused on R&D activities. The one exception to this is the piezoelectric ceramics that generate ultrasound waves when voltage is applied to them. These products are handled completely in-house, from design to production. Manufacturing piezoelectric ceramics within the company enables Honda to ensure shorter product development times and a greater diversity of different functions for specific applications. In this way, its partnerships with outside organizations enable Honda to meet the demands of a broad range of markets with only a limited number of employees.

Case #2: Tosei Electrobeam Company Ltd.

Tosei Electrobeam Company Limited (Tosei) was founded in 1977. Focusing on a niche field in the technology of material processing using electron beams and lasers, Tosei has built its unique position through advanced welding technology. Its technology is even used in the space shuttle and F1 racing cars. Tosei was the only SME to receive a "Nikkei Manufacturing Award" in 2004, given to the company achieving the latest technological developments and products using state-of-the-art technologies in Japan. Now, Tosei has 2500 clients including many of the biggest and most famous Japanese companies.

Upon request from customers in 1985, Tosei chose a certain strategy for establishing a package ordering system through the creation of partnerships with other SMEs. In fact, at the start of operations under the new system, Tosei failed to manage a particular partnership because of increasing problems arising from the adjustment of costs and responsibilities among subcontracting companies. From this experience, Tosei decided to select participating companies more carefully on its own and take responsibility for developing these participating companies. Rather than selecting a strategy for expanding by developing various processing technologies in house, Tosei improved its linkage capability through a process of partnering with other companies. As a result, this way of partnering has expanded into a wide area around the country. In 2004 a new type of alliance called "5 Tec.Net" was established, in which five SMEs with excellent technical capabilities in each field closely arranged their proven technologies and know-how to flexibly supplement one another by offering their particular advantages. That allowed them to generate products and services with high added value.

Three features of the "5 Tech.Net" are:

(1) Five companies dispersed over the country do not always work together.

Since each of them has its proven technology, the alliance is expected to be able to respond to various orders from customers. Therefore, the five companies are always pressured to polish up their individual technologies.

(2) Mechanisms for the close exchange of information exist.

"5 Tech.Net" established constant meetings at the operational level, such as R&D or

marketing section meetings. At the same time, the top management of the companies mutually disclosed their annual business plans, B/S reports, and signed now-disclose agreements about client's technologies.

(3) Existence of a coordinating company

The coordinating company holds the technology which serves as the core of a project. The coordinating company is not fixed but changes according to business concepts.

Four-Stage Growth Model

The author found that each company in the "5 Tec.Net" alliance has simultaneously strengthened its own expertise and created partnerships with other organizations in the process of developing their business models. What should be noted here is that all the companies had scant management resources in their early stages. As time passed, however, they transformed themselves from companies easily affected by economic fluctuations into companies that came to possess technologies equal to those of medium or large-sized ones. How was this possible? The author wants to highlight the development of core competence and linkage capability in the growth of these SMEs.

SMEs growth can be described as a Four-stage model, which is summarized in Figure 1. Specifically, companies in stage I have no originality regarding their own products and services and no linkage capability to collaborate with other organizations by themselves. Companies in Stage II have their own originality, but lack linkage capability. And, companies in Stage III have both their own originality and linkage capability. Although companies do exist which have linkage capability without originality in their products or services, this paper does not include their details because they are not the concern of this research.

In the case of Honda, since its foundation, they have had proprietary ultrasonic wave technology. However, because Honda only handled a single product the fish finder, it is hard to say that the company was capable of withstanding the changes of the external environment. In fact, it was not until the company decided to withdraw from the U.S market in 1985 that it defined ultrasonic wave technology as its core technology. Since then, they have specialized

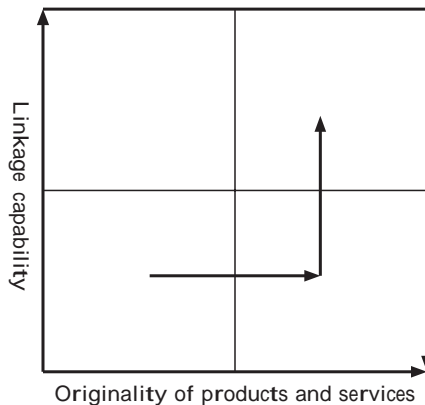


Figure1. The growth stages of SMEs

in promoting their core technology and in the process making the company name synonymous with ultrasonic wave technology. Moreover, through the creation of close partnerships with customers as well as joint research and development with universities and private enterprises, Honda successfully diversified its product line based on ultrasonic wave technology while advancing into the application fields of ultrasonic waves. In the process of creating a variety of partnerships, Honda enhanced its linkage capability and evolved from Stage I to Stage II and then to Stage III.

As mentioned above, Tosei also improved its linkage capability through a process of partnerships with other SMEs while promoting its own strengths.

In this way, companies in Stage I can evolve to Stage II by delving into their own business areas and promoting their originality. Moreover, through the creation of partnerships with external organizations, companies can simultaneously build linkage capability and improve core competence, and evolve from Stage II to Stage III.

How to promote partnerships successfully?

Based on the case studies of Japanese SMEs, it can be concluded that, in order for SMEs to develop new business models and achieve growth through the creation of partnerships, the following three points are important.

The first point is to constantly enhance the company's own expertise and focus on the improvement of core competence. Core competence of companies leads to "trust in capability," it can produce an image and atmosphere which attracts partners. By demonstrating core competence, companies can show their originality more clearly.

Then, how should enterprises develop their own originality? More important than any thing else is to sensitively respond to the changes in social needs and industrial situations. The reason Tosei started partnerships with other companies was to respond to package orders from customers.

As is well known, in the Japanese auto industry inter-organizational learning between assembly makers and suppliers is conducted on a daily basis through the parts development system known as "design in." Auto parts designs are modified frequently; tight control of information is a prerequisite in design tasks. Therefore, it is essential to negotiate design information details in a face-to-face setting. SMEs, as suppliers, handle this by sending their engineers to work at the premises of assembly makers. In addition, sending young engineers as well as skilled engineers to assembly makers also serves to train the engineers of the SME. In particular, the practice of dispatching engineers created a point of interaction with customers and they accumulated know-how on products and processing. It can be seen that such operations have helped SMEs achieve originality of its products and services efficiently.

In this way, the creation of new business models has helped the company meet the demand (values) of their customers. Although it may deviate from collaboration, this point should not be underestimated, because this point is nothing more than the basis for bringing reciprocal benefits to the concerned entities. This is the purpose of the collaboration. In this regard, the two companies fundamentally differ from networks such as cooperatives and cross-

industrial exchanges whose purposes are unclear.

The second point is to develop linkage capability. According to interviews by the author, SMEs in Stage I and Stage II of Fig. 1 were deeply centralized and internally focused. They strongly believed that collaboration would not work well. In this respect, however, it should be emphasized that the rapid progress of globalization and information technology continues to force SMEs to collaborate more than ever. In the era of collaboration, rather than questioning the size of any given company, the top priority should be to shift mind-sets away from the resistant idea "not invented here". Instead they should accept the need to nurture an internal culture change, so that one's own capabilities are expanded through partnerships with various organizations.

In recent years, coordinators (intermediary organizations or individuals that conduct coordinating activities) that promote collaboration among economic entities with technological seeds and match those to market needs have attracted attention. Enterprises in stage II, therefore, can commission external coordinators to play an intermediary role in finding their collaborating partners. If such enterprises have linkage capability, however, they can broaden their partnership options, and, thus, make more independent decisions. In this sense, in this age of rapid environmental changes, linkage capability can be considered to be the essential capability. Therefore, companies in stage II should actively develop their dissemination and promotion power. In fact, the two companies mentioned above secured opportunities for business-academia collaboration by actively making presentations at and contributions to academic societies and associations. They have also been accepting students conducting undergraduate research and interns.

The third point is to secure the stability and flexibility of the partnership. Firstly, it is crucial to create a mechanism of inter-organizational learning and trust building to secure the stability of a partnership. By adopting a strategy to make their own technologies public, Honda Electronic Co. created a mechanism that allows other members with different capabilities to cooperate with each other. One such example is to send its employees to universities or research institutions concerned as research associates.

The importance of an "equal" relationship has been frequently asserted in discussion of networks. In reality, however, it has been observed that, as members of a network become more fixed and organized, the power relationship changes. This is because participants with different technological backgrounds do not always have equal power relationships with each other when pursuing joint R&D projects or joint ventures. Therefore, if companies want to benefit through networks, they must adjust their relationship in each particular case. Who should play a coordinating role in the network depends upon who can propose original business plans, namely, who has linkage capability. There are numerous cases wherein a partnership based on "equal" relations became in the end, no more than a "friendly club," which proves the above-mentioned point from the reverse view. In this regard, the aforementioned framework for managing inter-firm partnerships is highly applicable.

On the other hand, to secure the effectiveness of a partnership, simultaneous incorporation of flexibility into such relationships is indispensable. Honda Electronic Co. does not sign a long-term contract in each R&D project. This helps to secure flexibility in a partnership.

Although the collaboration in an individual project itself may appear to be short term, through such collaboration, mutual trust among partners will develop, leading to future long-term partnerships.

For Tosei, the maintenance of partnerships has become one of the purposes of "5 Tech. Net," but its management is more flexible. It is most clearly expressed in that the coordinating company is not fixed. Because each member in "5 Tech. Net" has their own technological expertise, it may not be effective for only Tosei to play the coordinating role. If only one company plays a coordinating role, it may limit business opportunities of the partnership. Customer needs are constantly changing; companies are required to respond to every business opportunity. In this way, according to business concepts, SMEs that have distinct specialties gather together under the guidance of an adequate coordinator. In the process of such collaborations, each partner can strengthen its own core competence and simultaneously improve linkage capability. As a result, companies can enhance the effectiveness of the total network, and the concerned parties can mutually benefit.

Summary

The Author found that the following three points are vital to allow Japanese SMEs to promote collaboration among academia, industry and government (mainly public industrial technology research institutes). Firstly, SMEs should clarify their specialty or core competence and continue improving their capabilities. Core competence could instill trust in the SME among outside organizations and create stability in the partnerships. At the same time, core competence may create the risk of inadaptability to environmental changes. Therefore, inter-organizational learning through partnerships improves and promotes core competence. The second point vital to SMEs is the need to cultivate their linkage capability. Linkage capability can promote openness to change and make partnerships more dynamic. But, giving full play to linkage capability might not retain continuity and result in the loss of trust among partners. Considering that linkage capability can enhance adaptability to environmental changes in the long run, which also contributes stability to the partnership by maintaining partnerships through changes. Therefore, the third and final point is that simultaneously building core competence and linkage capability is a key in maintaining a balance between flexibility and stability in a partnership and concomitantly the effectiveness of the partnership.

Actually, a similar case as the above Japanese SMEs has been reported in the recent Journals of Harvard Business Review (March, 2006). It shows how Procter & Gamble (P&G) used the strategy called "connect and develop" as its new model for innovation and made the company gaining higher productivity.

For generations, P&G generated most of its phenomenal growth by innovating from within-building global research facilities and hiring the best talent in the world. Back when companies were smaller and the world was less competitive, that model worked just fine. But in 2000, newly appointed CEO A.G. Lafley saw that P&G couldn't meet its growth objectives by spending greater and greater amounts on R&D for smaller and smaller payoffs. So he

dispensed with the company's age-old "invent it ourselves" approach to innovation and instead embraced a "connect and develop" model.

By identifying promising ideas throughout the world and applying its own capabilities to them, P&G realized it could create better and cheaper products, faster. Now, the company collaborates with suppliers, competitors, scientists, entrepreneurs, and others (that's the connect part and enhances the company's linkage capability or builds its core competence), systematically scouring the world for proven technologies, packages, and products that P&G can improve, scale up, and market (in other words, develop), either on its own or in partnership with other companies.

Thanks partly to this connect-and-develop approach, R&D productivity at P&G has increased by nearly 60%. In the past two years, P&G launched more than 100 new products for which some aspect of development came from outside the company. Among P&G's most successful connect-and-develop products to hit the market are Olay Regenerist, Swiffer Dusters, the Crest SpinBrush, and the Mr.Clean Magic Eraser.

Most companies are still clinging to a bricks-and-mortar R&D infrastructure and to the ideas that their innovation must principally reside within their own four walls. Until they realize that the innovation landscape has changed and acknowledge that their current model is unsustainable, top-line growth will elude them.

All in all, the case studies shown in this paper suggest that SMEs can grow step by step through formatting diverse partnerships with SMEs in geographically distant regions, and new forms of collaboration with companies in other sectors, research institutes, NPOs and a variety of other players. The author believes that the strategies shown in the above case studies will become the dominant growth model in the twenty-first century. Again, for SMEs to succeed in partnering with other organizations and survive the competition, they need to continually clarify and foster their own core competence and linkage capability.

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