Relational View: Four Prerequisites of Competitive Advantage

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Abstract: Dyer and Singh (1998) use the dyad or network, rather than the single firm, as their unit of analysis, and suggest a relational view (RV), which considers interfirm competitive advantage. However, when discussing competitive advantage from the perspective of RV, one must be aware that the special case of Toyota and its suppliers is the assumption. Even in comparison with other Japanese automakers, Toyota and its suppliers have certain characteristics, such as: a) they are geographically close to each other; b) they have substantive special assets; and c) they proactively share knowledge via human interaction, and have a systematic inter-organizational learning system to support this knowledge sharing. Thus, firms trying to acquire competitive advantage of RV need to meet the above prerequisites. Further, RV discussions advocating an increase in special assets for long-term transactional advantage rely on d) product features. If one assumes a less-complex product such as a personal computer, with frequently changing transaction partners where short-term transactions are insignificant, the effectiveness of RV cannot be guaranteed. Given these considerations, this paper summarizes the characteristics a) through d) as prerequisites that generate competitive advantage, from the perspective of RV.

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1. Introduction

In the field of strategic management, there has been much interest in explaining differences in firm performance, with primarily two research approaches. The first approach uses industries as the units of analysis, and considers the competitive advantage of a firm given its position in a particular industry. The second approach uses firms as the units of analysis, with differences in performance dependent on the fundamental differences in each firm. However, Dyer and Singh (1998) highlight that these two approaches overlook the important fact that advantage (or disadvantage) in a single firm is related to the advantage (or disadvantage) embedded in its network. Dyer and Singh, therefore, suggest Relational View (RV), as a way of focusing on relationships with other companies with regards to competitive advantage. RV focuses on dyads or networks as the units of analysis, where advantages that are difficult to replicate by rivals are created through investments in special assets among firms, exchanging knowledge, complementary resources, and building effective governance mechanisms. Profit built on such relationships (“relational rent”) is defined as “supernormal profit jointly generated in an exchange relationship that cannot be generated by either firm in isolation and can only be created through the joint idiosyncratic contributions of the specific alliance partners.” Dyer and Singh suggest factors in determining relational rent (sources of competitive advantage), as well as the sub-processes that facilitate these factors.¹

However, it must be considered that RV was originally developed

¹ See Dyer and Singh (1998) or Kobayashi (2013) for further details.

based on the specialized case, Toyota and its suppliers. Dyer discovered that Toyota had built relationships with suppliers that differed from its competitors, and conduct a quantitative analysis² using a survey data of the Japanese and US automakers and suppliers (Dyer, 1996a, 1996b, 1996c, 1997). These studies uncover the fact that Toyota maintains relationships with its suppliers much closer than those kept by other domestic or US automakers. Specifically, Dyer highlights that there was a) physical distance; b) investment in special assets; and c) knowledge-sharing via human interactions.

Further, the effectiveness of RV, which advocates investment in special assets and long-term relationships, is reliant on d) product features as seen in the automotive industry. RV's convincing points are weakened with relationships and products (or industries) such as personal computers with their frequently changing relationships and affinity for short-term transactions.

From the perspective of RV, firms with the same prerequisites as Toyota generate competitive advantage. This paper discloses four prerequisites of RV, a) through d). Section 2, summarizes the special prerequisites of Toyota by mainly reviewing Dyer's researches, and Section 3 discusses the relationship between RV and product features.

2. RV Based on a Special Case

Despite Toyota's management system having been studied worldwide, it has created advantages that are difficult to replicate by other firms (Dyer, 1996b; Spear & Bowen, 1999). Close relationships

² The data included Japanese and US automakers (Toyota and Nissan from Japan; Ford, GM, and Chrysler from the US), and 50 of their domestic suppliers. Cusumano and Takeishi (1991) is also an example of a comparative study of Japanese and US supplier systems.

with suppliers is considered as one important element to build a superior management system (Fujimoto, 1997, 2012; Sako, 2004). Dyer explains the special relationship Toyota has with its suppliers, even compared with other Japanese automakers, and also discusses the level of investment in related special assets for the Japanese and US automakers and their suppliers. This paper summarizes such relationships in three aspects, each of which is discussed below.

2.1. Physical distance

Dyer (1996a) asserts that suppliers are located close to manufacturers to keep inventory and transportation costs low between firms, leading to effective coordination activities. In his 1992 survey, Dyer discovered that the distance between the three US automakers and their suppliers was, on average, 500 miles. This was a much larger number than the average distance of suppliers from the two Japanese automakers. Of the two, the average geographical distance between Toyota and its suppliers was much shorter, at 59.2 miles, than Nissan, which was 113.9 miles. In addition to Dyer (1996a, 1996c, 1997), Fujimoto (1997) and Fruin (2008) also note the proximity of Toyota to its group of suppliers.

2.2. Investment on special assets

High investment³ in physical assets such as special supplier equipment, tools, and dies, and low transaction costs⁴ between firms is one of the indicators that imply a special relationship between manufacturers and suppliers. Rising investment costs is considered as an issue. However, though initial investment in physical assets

³ In Dyer (1996a), the ratio of equipment investment by suppliers for specific manufacturers is used.

⁴ In Dyer (1997), transaction costs as the dollar value of parts purchased per procurement employee and higher economic value of purchased parts led to lower transaction costs.

(such as establishing new specialized production lines) can be huge, transactional relationships continue over the long-term, in the end offsetting the initial investment costs and leading to improved productivity (Dyer, 1996a, 1997).

Regarding investments in physical assets, the ratio of investment in special assets by suppliers for specific manufacturers is higher in Japan than in the US. According to Dyer's 1992 survey, among Toyota and Nissan suppliers, 21% of equipment on average was specific to those automakers, while among the three US automakers' suppliers the average was 13–19%. Japanese automakers had lower transaction compared with the US automakers. The economic value of parts purchased by Toyota was highest overall, at \$12.6 million, followed by Nissan at \$9.7 million, Chrysler at \$5.7 million, Ford at \$5.3 million, and GM at \$1.6 million (Dyer, 1997). In other words, Toyota had the lowest transaction costs among Japanese automakers, and Toyota's special relationship with suppliers is striking (Dyer, 1997; Fruin, 2008; Fruin & Nishiguchi, 1993).

According to Dyer (1996b), US automaker Chrysler's traditional method for selecting suppliers was to simply pick those with the lowest parts cost. However, Chrysler faced severe financial straits at the end of the 1980s, and began a management overhaul in 1989. In addition to changing the organizational structure, Chrysler introduced Japan-style supplier relationships as part of its reforms. Prior to these changes, Chrysler tried as much as possible to keep investment in special assets with its suppliers to a minimum, and investment in special equipment and factory startups consumed 20–50% of Chrysler's internal budget. After the implementation of reforms, Chrysler changed its basis of supplier evaluation from cost to capability standard, increased investment in special assets with suppliers, and began joint work with suppliers at early stages of product development. As a result of these efforts to build close relationships with suppliers, Chrysler overtook GM and Ford in

terms of ROA in 1991, and greatly reduced development lead times from 234 weeks to 183 weeks, though there was still a large gap with their Japanese competitors. The effectiveness of a Japan-style supplier system is globally acknowledged from this example of Chrysler, though simultaneously one can observe that the relationship built by Toyota with its suppliers as well as the advantages derived from it are difficult to replicate by other firms.

2.3. Knowledge sharing

Prior research has noted that product development lead times can be reduced by a high level of knowledge-sharing through human interaction between automakers and suppliers (Dyer, 1996a).

Based on Dyer's 1992 survey, face-to-face interactions⁵ between Toyota and its suppliers annually averaged 7,236 man-days, while at Nissan it annually averaged 3,344 man-days, and the average of the US automakers was 1,025 man-days (757 for Chrysler, 1,206 for Ford, and 1,107 for GM). The number of guest engineers working at Toyota was twice as high compared with Nissan or the three US automakers.

What is behind the knowledge-sharing between Toyota and its suppliers is a systematic inter-organizational learning system (Dyer & Nobeoka, 2000; Manabe & Nobeoka, 2003). This system can be described to the *Kyohokai* (supplier association), Toyota's operations management consulting division, *Jishuken* (voluntary small learning group), and interfirm employee transfer.⁶ Within this system, 1) network members are committed to the Toyota network; 2) sharing knowledge and values to build mutual trust; and 3) studies are not limited to between manufacturer and supplier, but rather as a

⁵ Interactions between Toyota engineers or purchasing counterparts and supplier engineers and sales personnel.

⁶ See Dyer and Nobeoka (2000); Manabe and Nobeoka (2003) for more details on these efforts.

member of a supplier network, which enables the transmission and sharing of explicit and implicit knowledge among participants.

Toyota selects, educates, and evaluates its suppliers without forcing them to relinquish their way of conducting an operation. In doing so, Toyota's internal production system can be turned outward, changing to an interfirm-based production system, and enabling close coordination between Toyota and its suppliers. In other words, the long-term and strong relationship between Toyota and its suppliers is difficult to imitate, as they are supported by a systematic network (Fruin, 2008; Sako, 2004).

Further, Fujimoto (1995, 1997) and Konno (2007) focus on product development activities, and note that, even among Japanese automakers, Toyota has a high level of knowledge sharing with its suppliers. Konno (2007) investigates the number of patent applications⁷ and joint patent applications⁸ in Japan within the auto industry. The results showed that Toyota, Nissan, and Honda had 60–70% of patent applications overall, with Toyota having the most. In joint patent applications, Toyota, Nissan, and Honda again formed the top three, and Toyota once again had the highest number.⁹ This quantitative research shows that Toyota and its suppliers were the most active with regards to joint development.

In addition to these figures, Fujimoto (1995, 1997) provides findings using a case study of joint development between Toyota and its suppliers. In general, the parts can be divided into three categories: supplier proprietary parts, detail-controlled parts, and black box parts. These divisions are based on transaction patterns between automakers and suppliers, the parts development capability of suppliers, and their level of involvement in automotive

⁷ Based on data from 1993 to 2004 of nine large Japanese automakers.

⁸ Based on data from 1993 to 2004 of nine large Japanese automakers, with joint patent applications between automakers and suppliers.

⁹ Year over year; refer to Konno (2007) for specific figures.

development. Supplier proprietary parts are completely developed and manufactured by suppliers, and then selected and ordered by automakers from a catalog. Detail-controlled parts are designed by automakers, who provide drawings to suppliers, who in turn manufacture those parts. For black box parts, automakers create basic design information and suppliers perform both detailed design as well as manufacturing. Automakers test prototypes and approve designs. Suppliers that provide drawing-approved parts are relatively more involved in development, which often requires long-term buildup of design capability and technical support from the automakers (Asanuma, 1989; Fujimoto, 1995). According to Fujimoto (1997), Toyota's business resources were constrained in the post-war period, and as a result of a sudden expansion of production volumes, the company was forced to utilize its suppliers, creating the black box parts method for its key parts. However, this method is also used by other Japanese automakers, though not as effectively and comprehensively, as in Toyota. It is noted that these automakers depend more on its own development resources than on joint development with its suppliers.

Based on the above research, the relationship between Toyota and its suppliers, the basis of RV, requires rather special prerequisites besides the elements abstracted as RV. However, not all firms can realize an RV-style management strategy based on the special case of Toyota.

3. RV and Product Features

The perspective of product features brings limitation to the effectiveness of RV. In recent years, architectural theory is used to explain product design. Architecture is a design concept for products and processes, and is categorized into integral and modular architectures (Fukuzawa, 2008; Ge & Fujimoto, 2004; Ulrich, 1995).

Integral architecture features a high level of dependency among components, and requires intensive coordination. It limits independent design and free combinations of components. On the other hand, modular architecture has a pre-determined interface, enabling independent design and free combination of components. Interfirm relationships can also be applied into two categories based on the perspective of architecture (Manabe & Nobeoka, 2003). The integral architecture requires specialized know-how and complex coordination between firms. In contrast, modular architecture enables a system of external procurement of parts independently designed. Parts can be easily interchanged, as can suppliers. In this system, transactional relationships are typically, relatively short-term.

Regarding this point, Han and Konno (2001) use the integral component development case of an automotive air conditioner to explain the relationship between product architecture and interfirm coordination. An automotive air conditioning system is between a car's engine block and interior's instrument panel. Air conditioning is highly reliant on surrounding parts as an automobile has more electrical systems. For example, if the size of the windshield or the specifications of other parts are not determined, several critical product specifications of the air conditioner also cannot be determined. In turn, the product specifications of the air conditioning system heavily influence engine output and other functions. Accordingly, automakers and suppliers continually examine designs and avoid issues that can appear at a later stage in the development process. Suppliers dispatch their engineers to automakers so that they can closely coordinate at a face-to-face level with the client. In other words, from this example one can understand that products with the characteristics of an integral architecture require close interfirm coordination, when it is a joint product development. This type of close coordination enables specialized skills shared between

two firms. In general, firms acquire much rent and build long-term relationships with partners having such specialized skills (Asanuma, 1989).

On the other hand, in the case of products such as DVD players, personal computers, or motorcycles, modularization becomes the norm, and companies purchase modules for assembly into a final product (Ge & Fujimoto, 2004; Ogawa, Shintaku & Yoshimoto, 2005). Coordination among firms is less required, with each company independently developing their own parts and component units. For example, in the case of China, where hundreds of motorcycle manufacturers and suppliers appear in the market, transactions are left to the market, and investment in special assets and maintenance of special relationships are not required. This enables an easy change of transaction partners. In other words, one can surmise that RV, which advocates for an increase in special assets and long-term relationships, may be effective in products with integral architectures, such as automobiles. Products with modular architecture frequently change transaction partners and are characterized by short-term transactions, whereby the effectiveness of RV cannot be guaranteed. The way an interfirm relationship is built differs based on product (or industry) features.

4. Conclusion

Unlike ISV, which uses industries as the units of analysis, or RBV, which uses individual firms as the units of analysis, RV focuses on building interfirm competitive advantage. This paper identifies four prerequisites (Figure 1) that create competitive advantage from the perspective of RV, which Dyer and Singh (1998) suggest. First, RV is based on the model of Toyota and its suppliers. In reality, the example of Toyota is one with special prerequisites to a large extent. In comparison with the US or even with other Japanese automakers,

Figure 1. Relational view: Four prerequisites of competitive advantage

Toyota and its suppliers a) are in relatively close location to one another; b) have many investments in special assets; and c) proactively share their knowledge via human interactions. Behind the various efforts of suppliers lies a systematic inter-organizational learning network to support them. Accordingly, Dyer and Singh (1998), more accurately, discover that companies meeting these prerequisites from the standpoint of RV, can generate competitive advantage.

Another point is the d) affinity between product features and RV. The effectiveness of RV, which advocates investment in special assets and long-term transactional relationships, depends on product features such as automobiles. It is not assured whether RV can be effective for products having features with short-term transactions or frequent changes in transactional partners, such as personal computers.

From the perspective of RV, companies meeting these four prerequisites will generate competitive advantage.

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