

翻訳

Transaction advantages of Japanese automobile parts manufacturers in China

– Comparison with Western manufacturers in
consideration of stamping die transactions –

KANEMURA Tomoya

中国における日系自動車 1 次部品メーカーの取引優位性 ～プレス金型取引にみる欧米系メーカーとの比較から～

兼村 智也

要 旨

中国における日系乗用車 1 次部品メーカーと欧米系メーカーの取引優位性を中国系メーカーから調達するプレス金型で比較してみると、発注単価などでは日系メーカーが劣位にあるようにみえるが、欧米系メーカーの場合、コストも大きく、利益でみれば必ずしもそうではない。一方、組織的取引の日系メーカーには発注の継続性や安定性、革新的技術に接する機会が欧米系メーカーよりも優れ、その点で中国系金型メーカーからの評価も高い。

キーワード

日本的取引関係 金型 中国

目 次

1. Introduction
2. Analysis Perspectives and Frameworks
3. Empirical Analysis
4. Conclusion and Areas for Further Research

1. Introduction

In many ways, intimate inter-corporate relationships with parts manufacturers with superior quality, cost, delivery, and R&D are responsible for the international competitiveness of Japanese automotive manufacturers. This is true as well in overseas production activities, with the entrance of Japanese Tier1 suppliers in China, the largest car-manufacturing nation in the world, enabling the maintenance of these relationships on practically the same level as Japan (Park, 2008). However, penetration of the Chinese market by Tier2 suppliers and below, which are primarily comprised of small and medium-sized corporations, has been limited, and the "foundational technologies" (Seki, 1993) that sit at the lower levels of a hierarchical division of labor structure are forced to rely on Chinese manufacturers as Tier2 suppliers rather than the imports they had been relying on in order to cut costs (Fukao et al, 2009). Among these Chinese manufacturers, parts manufacturers that can meet the high quality standards of Japanese manufacturers are still few in number, though many that can match that level of quality are already suppliers to European and US manufacturers. In that case, the question is how Tier1 suppliers get cooperation from China's parts suppliers, or, put differently, in regards to the transactional advantages of Japanese Tier1 suppliers compared to European and US manufacturers, inter-corporate relationships are particularly critical (Taguchi, 2001), and hold the key to production technology. We will examine Chinese manufactured stamping dies that are becoming more frequently used (Kanemura, 2009b), even though they are known for being difficult to procure in China.

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2. Analysis Perspectives and Frameworks

Fukao et al (2009) used data to statistically analyze local procurement behavior of multinational corporations in China, and noted the following three points. First, the local procurement ratio of Japanese automotive manufacturers in China is at a high level, though procurement from Chinese suppliers is extremely low, with most procurement coming from local subsidiaries of Japanese parts suppliers. On the other hand, Japanese parts suppliers tend to supply a very limited number of automotive manufacturers, and most of them are Japanese. These business relationships are vastly different than German, US, or other foreign parts suppliers. Second, other foreign automotive manufacturers are more aggressive in their pursuit of relationships with highly productive parts suppliers, while Japanese manufacturers do not acknowledge that situation, and rather choose partners with greater potential for productivity improvements in the long-term. Third, as a result, the parts suppliers working with Japanese automotive manufacturers are improving their productivity in shorter time

frames, regardless of their nationality. This characteristic cannot be observed in automotive manufacturers from other countries, and seems to suggest that there is a technology transfer occurring that does not heed nationality.

The above points can be understood as advantages on the part of Tier1 suppliers that take orders from foreign, particularly Japanese automotive manufacturers. However, the advantages of Tier2 suppliers that take orders from Tier1 suppliers is not clear. In addition, this paper is not an analysis of what types of advantages are held by European and US manufacturers in response to Japanese superiority, and, as a result, how the various advantages of the Japanese, European, and US manufacturers are evaluated and selected by their suppliers, i.e. Chinese manufacturers. In our discussion herein, we will conduct a comparative analysis of Japanese, European, and US manufacturer advantages in regards to competition over high-quality Chinese stamping die manufacturers. We hope, as a result, to have a clearer understanding in what areas Japanese manufacturers have an advantage.

Japanese parts suppliers are regarded as partners in our current era. From the postwar period to Japan's high growth period there were, for the most part, no suppliers with superior quality, cost, and delivery capability, as production volume was king (Sako, 1998). Buyers struggled to secure corporations as partners, and used them on a priority basis while developing their abilities (Watanabe, 1997). Chinese manufacturers are currently in a similar position in regards to the standards of their local suppliers as Japanese corporations in the former era (Kanemura, 2009b). It is very instructive for us to examine in our research the ways Japanese companies in the past competed for suppliers in order to secure supply. Watanabe (1997) noted the following competitive aspects: 1) order unit price; 2) order volume; 3) order continuity; 4) order volume stability and whether or not the transaction shows opportunities to work with technological innovations; 5) product or technical innovation ("technical innovation" below); and 6) the possibility for buyer growth. Out of these, 6) is an issue of growth strategy for the buyer, and is not a direct merit for the Chinese manufacturers. There are three things that must be kept in mind with points 1-5 as well. First, these are not relative merits of the surface metrics, but rather clarifying factors that influence competitive aspects, and need to be verified. Second, these competitive aspects are not all independent metrics, but on occasion interplay with other factors, and are thus relevant to other competitive aspects. We will address these two points more specifically below.

First is 1) order unit price. Originally, focus was on profit net of cost rather than on unit price. When we examine costs included in a unit price we see that there is an A) organizational transaction cost in inter-organization and node transactions and coordination by buyer corporations as a cost of placing an order. In the actual transaction there are four classifications (Sako, 1998) of B) transaction costs (Williamson, 1985), namely "search costs" incurred by finding new business partners; "negotiation costs" incurred in coming to an agreement on price, quality, delivery times, and other business conditions;

"inventory management costs" incurred in the management of product distribution from the supplier to the buyer; and "monitoring costs" incurred in cooperating and mutually managing during the term of a business agreement. Also, within these costs there are C) purchasing costs on the part of the buyer to cover external procurement and outsourcing of necessary materials or processing. As one can see from the above, there are various costs included in an order unit price, and the smaller the sum of these costs, the greater the resulting margin. Thus we see that each cost must be validated, but in doing so, one may wonder by what standard we should measure the various costs. First, in A) we focus our attention on who in China decides to procure which stamping die and where that person is located, in other words, the "purchaser" and "purchase location". This is because the length of the ordering route depends on if the purchaser is a Chinese subsidiary ("subsidiary" below) and is located in China. Among the four classifications of B) search costs, Japanese, European, and US companies all select supplier candidates by considering whether or not they have the appropriate facilities and technology to produce the requisite parts, as well as their track record, proximity, etc. There are no major differences among nationalities on this point. Inventory management costs are different from mass-produced products delivered on a daily basis, and can be ignored in the case of stamping dies, which are produced on a one-off basis. Thus the only factors impacting transaction costs are negotiating cost and monitoring cost. The relative size of negotiating cost can be measured by the type of transaction. In market transactions, the negotiating cost of standard materials can be kept as low as possible, but in the case of specialty items like stamping dies, information gathering must be done, causing the negotiating costs to go up. On the other hand, if the form of transaction is organizational, 3) order continuity arises, and a good track record as shown by historical transaction information and relationships reduces uncertainty leading to an ability to control costs (Ito, 1989). Monitoring costs increase as the frequency and involvement in response to "management and instruction" on the part of the buyer and "design changes" on the part of the supplier increase. Alternatively, if there are inter-corporate "specific skills" that heighten productivity (Asanuma, 1997) then costs decrease. The formation of these "specific skills" are necessary for 5) technical innovation as a basis for 3) order continuity, and as "order standards" approach approved ideals, as a specific example, 5) technical innovation is increased and the existence of "specific skills" becomes clear. On the other hand, in the case of C) purchasing costs in China, there is not yet a division of labor there wherein stamping die manufacturers can outsource to other stamping die manufacturers, as is done in Japan, so the bulk of these purchasing costs are seen as "material costs".

As the size of 2) order volume increases, order unit prices drop as the merits of concentrated purchasing begin to take hold, and purchasing costs drop as a result. Order volume, along with order continuity, is a factor in determining 4) order volume stability. Figure 1 outlines these competitive aspects, their factors, and their relationships.

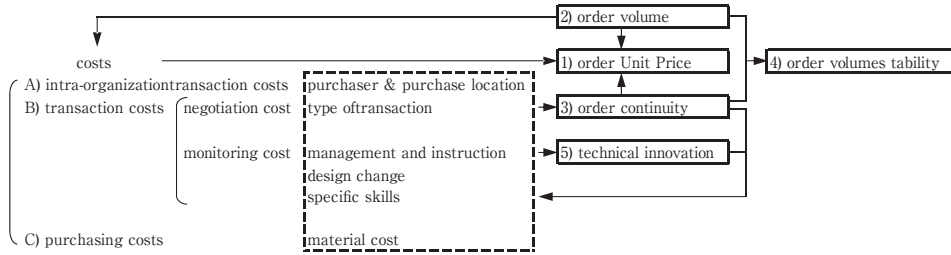


Figure 1 Relationships of competitive aspects & factors
Source : Researcher's original construction

Our third point to keep in mind is that, for suppliers, transactional advantage is not a matter of making a simple apples-to-apples comparison; priorities differ by supplier industry and by management strategy. The stamping die companies that are the subject of this paper characteristically experience cyclical demand fluctuations where demand is concentrated in periods of model changes, with demand subsequently dropping off in periods of mass production (Sugimoto and Kanemura, 1998). Because of this, 3) order continuity is a transactionally advantageous criteria for stamping die manufacturers relative to other competitive aspects, and relative to other industries. Also, for Chinese stamping die manufacturers trying to become suppliers of foreign manufacturers, the acquisition of technology and know-how in 5) technical innovation and the accompanying "management and direction" that they heretofore lacked, through business transactions, is certainly another area of transactional advantage.

With these perspectives in mind, in the next section we will conduct an empirical analysis along the lines of the framework shown in Figure 1. Research methods employed herein were surveys of existing literature and interviews of Japanese Tier1 manufacturers as buyers (seven companies in Guangdong in August 2007, March 2008, September 2009, and February, July, and November 2010) and nine Chinese manufactures as suppliers to both Japanese and European/US Tier1 manufacturers.

3. Empirical Analysis

1) Order Unit Price

The order unit price of stamping dies made for Japanese Tier1 suppliers is, relative to European and US suppliers, clearly on the low side. According to Chinese stamping die manufacturers, European and US manufacturers pay 50K-Rmb/ton versus a 10% (45 K-Rmb/ton), sometimes even 30% depending on the company, lower price for Japanese manufacturers. We will compare elements included in that cost, assuming these relative merits.

A) Intra-organization Transaction Costs

The passenger car models used by Japanese automotive manufacturers producing cars in China are for the most part the same models produced in Japan. Tier1 manufacturers receive lump orders in Japan for the same parts used in China manufacturing operations. As they do so, they make an overall evaluation, including the relative ease of use; their use in domestic plants, including at suppliers; and price. They also decide in Japan if the die will be built in Japan or China. As a result, when the decision is made to purchase a die made in China, a purchase order issued from the Japan corporate group to the local subsidiary, which then decides whether or not to make the die internally or outsource its manufacture. As can be seen, there are a number of steps in the process until the point where a decision is made to procure a stamping die from China (see Figure 2's solid line). In contrast, European and US manufacturers have their local subsidiaries directly manage the ordering and external manufacturing of medium and large-sized stamp dies, particular for body stamping (see Figure 2's dotted line), and then loan the dies to parts suppliers. In other words, the headquarters organizations of automotive manufacturers and Tier1 suppliers in China do not interpose as do their Japanese counterparts. It can be said that their intra-organizational transaction costs are therefore smaller, and advantageous. As to other types of stamping dies, ordering is done through Tier1 suppliers as with Japanese manufacturers, but here as well there is no interference from headquarters, and they are at an advantage relative to higher-cost Japanese manufacturers because Tier1 supplier capital is supplied solely from China or through a joint venture with the headquarters organization.

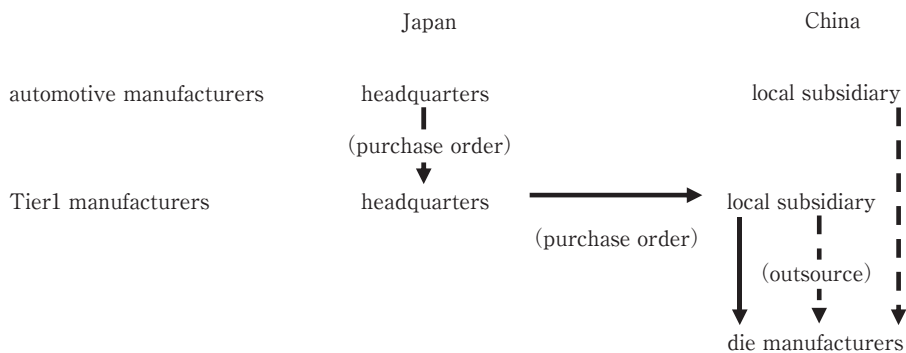


Figure 2 difference of purchaser & purchase location
 Source : Created by the researcher's interview

B) Transaction Costs

When we compare the transaction processes of Japanese, European, and US manufacturers in regards to negotiation costs, both Japanese Tier1 parts suppliers and European and US manufacturers decide on the supplier network via market principles, specifically competitive bidding. However, subsequent processes are completely different.

Japanese companies gradually whittle their supplier base down based on information they gather over time. Their selection criteria centers around quality, just as in Japan, whether or not the supplier can respond to a harsh order and management environment, and whether or not they are likely to grow in the future well beyond their current capabilities. For Japanese companies, who assume continuity in their transactions, the future is more important than the present. This mindset is greatly influenced by the goals and attitudes of the heads of operations and finance within top management. In addition, it is critical to gain the understanding and cooperation of top management in order to make things happen at the factory level, and direct communication with top management is another important selection criteria for Japanese Tier1 parts suppliers. Through this type of screening process, these companies end up paring their supplier base of stamping die manufacturers to only a handful of companies. When we examine their characteristics, there are some very large stamping die manufacturers in China with more than 1,000 employees that have more expensive facilities than can be found in Japan (Kanemura, 2009a). But more than those companies, the most common type of company is medium-sized, with 100-500 employees. While the selection process is, formally speaking, done via competitive bidding, in actuality many relationships are formed with ad hoc agreements. In other words, the relationship moves from market transactions to organizational transactions. Price-setting is done by the Japanese Tier1 parts supplier initially presenting their desired price, with the Chinese stamping die manufacturer then responding back with their proposed price. Even if there is pushback at that time, both sides eventually settle on the desired price. The reason for this is that the desired price is based on a cost table calculated by the Tier1 supplier's internal stamping die manufacturing unit. Thus even if the desired price ends up being higher than the bid price, the responses of Chinese stamping die manufacturers become a point of comparison, a baseline that manufacturers can strive for. On the other hand, European and US automotive manufacturers conduct competitive bids with suppliers that are on their approved vendor list, which is the result of plant audits and research. Manufacturers say that if they can end up with a bid of 100 RMB they will initially send an estimate for 120 RMB. After the bidding, they might then be able to negotiate down to 100 RMB. There is no need for external sales with Japanese customers making visits to manufacturer offices, but in the case of European and US customers, manufacturers add on the cost of sales to the price. As can be seen from this example, when we compare negotiation cost, European and US manufacturers have a higher cost due to the competitive bidding based on a market transaction format. On this point, the ad hoc agreements used by Japanese manufacturers as organizational transactions are advantageous.

As we compare monitoring costs, we note that, when it comes to management and direction, European and US manufacturers completely rely on stamping die manufacturers for design and fabrication once an order is placed. These manufacturers

are only interested in the end result; as long as parts coming out of the stamping die pass quality standards, everything else is extraneous. Even if they have recently encountered issues, manufacturers feel that they are the ones paying for an order, thus stamping die manufacturers should solve any problems using their own judgment. Manufacturers assiduously weed out candidates at the selection stage using this criterion. In the case of European and US manufacturers, they first ask if stamping die manufacturers can respond to a problem or not. If they cannot, they quickly move on. This behavior is based on the rational decision of these manufacturers that, because they do not assume continuity in transactions, it is most efficient to find suppliers that can respond to their needs rather than spend time and money developing and educating suppliers over time. Japanese Tier1 parts suppliers, on the other hand, will work with suppliers if they believe it is possible to solve a problem, providing technical guidance even when both sides are working on an order and it is difficult to respond. Because of that, manufacturers strive to frequently visit supplier factories, uncover problems, and manage progress. This includes direct management and guidance, but also indirect guidance. For example, one can sometimes find manufacturers in China with expensive 3D measurement devices, but employees cannot keep pace with the high level of technology, and thus cannot fully utilize the equipment they do have very well. In those cases, Japanese customers can provide guidance on how to use equipment. Of course, there is a "management and guidance" cost associated with those efforts. Traditionally, these activities should, as European and US manufacturers point out, be performed by the Chinese stamping die manufacturers themselves, or else the Japanese manufacturers, i.e. the customers, should be compensated for their management and guidance. However, Japanese companies bear those costs. In other words, because this isn't added on as a cost by the supplier, Japanese companies are not put at a disadvantage. Of course, if one considers that internal "management and guidance" by suppliers is of course an obligation, as asserted by European and US manufacturers, with these monitoring costs included in the order unit price, then Japanese manufacturers could even be considered to be at an advantage.

As to the frequency and extent of design changes, design changes themselves directly influence stamping die designs, given their relationship to parts geometries both inside and out. Among European and US manufacturers, orders for parts are typically placed when parts designs are complete so there isn't much impact due to changes. However, Japanese Tier1 parts suppliers do not wait for the completion of parts designs to begin designing stamping dies, in an attempt to shorten development cycles. Because of this, design changes have a tremendous influence on Japanese manufacturers. Costs due to design changes are traditionally paid for by the customer, i.e. the Japanese corporations, but unlike the case with "management and guidance", suppliers cover these costs, putting Japanese manufacturers at a transactional disadvantage.

Further, the existence of "specific skills" has been confirmed in transactions with

Japanese Tier1 manufacturers, putting them at an advantage compared with European and US manufacturers. Details on this phenomenon are explicated in 5) below.

C) Purchasing Costs

Stamping dies require materials such as casts, special steel, and standard parts, and Japanese, European, and US do not use cheap Chinese-manufactured parts, in particular those with quality and durability issues (Kanemura, 2009b). Instead they primarily use parts made in Japan or imported materials made in northern Europe. On that point, both parties do not differ much, and differences are mostly in size. European and US stamping die design concepts are "maintenance free", and thus the main die (made of special steel) and cast iron holder are designed on the large side. In contrast, Japanese stamping dies are designed to be easily modifiable to accommodate design changes, or to be compact and lightweight with dies that are easily removable from presses to support easy maintenance and production model changes. Because of these factors, European and US manufacturers require additional material in their stamping dies, which drives up material cost and puts Japanese manufacturers at an advantage.

2) Order volume

Based on the strength of inter-corporate relationships between Japanese automotive manufacturers and Tier1 parts suppliers as seen in previous studies, as well as the proportional relationship between stamping die demand and the number of new passenger car models introduced, it is possible to substitute stamping die demand among Japanese Tier1 suppliers for the number of new models from Japanese auto makers. When we examine new model trends of Japanese, European, and US auto makers there are differences from year to year, but on average the number of orders for stamping dies placed by Japanese manufacturers is greater than the number placed by their European or US counterparts (Figure 3).

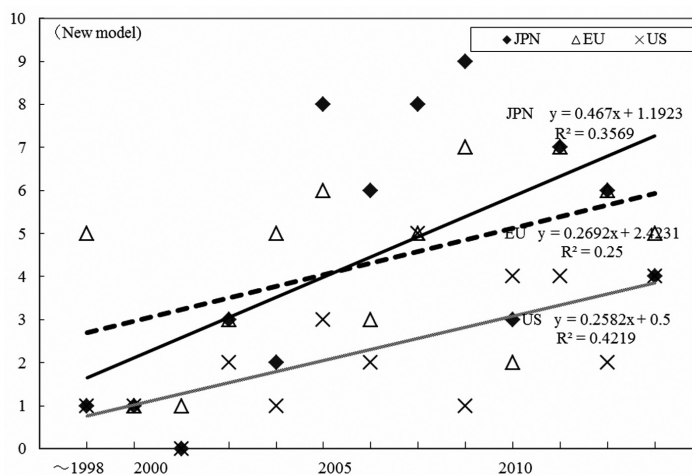


Figure 3 New model trends of Japanese, European, and US auto makers
 Source : Fourin, "China Automotive Industry 2011 Yearbook -Automotive Parts-"

Tier1 parts suppliers place fewer orders than European and US suppliers. The reason for this is that Japanese companies order stamping dies in small lots across several companies, while European and US companies concentrate their orders on a small number of manufacturers. Japanese Tier1 parts suppliers measure the capability of stamping die manufacturers when they first begin doing business with them, and place small orders with many manufacturers. They then gradually increase the size of their orders as they winnow the number of suppliers down to a select few. Even then they do not concentrate their orders into large lots. By spreading orders out, they reduce the risks of concentrating their business on specific manufacturers, such as issues with late deliveries. In addition, this allows stamping die manufacturers to feel competitive pressure from other vendors. As an aside, Japanese Tier1 suppliers keep manufacturers that do not make their selection cut as sub-suppliers in addition to their main suppliers. By doing this, Japanese suppliers aim to have backups for times of peak demand and to constantly keep competitive pressure on their main suppliers. In order to maintain this ability, Japanese companies invite sub-suppliers to participate in competitive bids, or give them work when their main suppliers do not have capacity. It should be pointed out that this is another factor explaining the small lot sizes. On the other hand, in exchange for the positives of placing large orders with stamping die manufacturers selected in a bidding process, European and US manufacturers pursue the maximum transaction profit by controlling the overall order price. Further, with stamping dies being subject to large fluctuations in demand, stamping die manufacturers take orders in quiet periods with little work simply out of their own interest, but show less aggressiveness in taking orders during peak periods when they quote prices at a higher level. When Japanese manufacturers have no choice but to place orders during such peak periods, they will temporarily concentrate orders much like their European and US counterparts as a means of controlling the overall price.

3) Order Continuity

Japanese Tier1 parts suppliers submit orders to their main suppliers on an ongoing basis as a matter of policy so that work does not stop even during quiet periods. In the case of insufficient demand within China, there are some Japanese manufacturers that will secure order volumes by ordering stamping dies for export products. There are differences in responses to main suppliers and sub-suppliers, with repeat orders being maintained for main suppliers, and orders to sub-suppliers being kept at a level that gives them a minimum amount of business. This is identical to the phenomenon seen in Japanese sub-contractor *keiretsu*, where "ongoing business relationships with main suppliers, and repeat business relationships with sub-suppliers form a group of many suppliers" (Watanabe, 1997). On the other hand, similar policy implications cannot be found in European and US manufacturers even though they may place orders via a competitive bid process on an ongoing basis, or have an ongoing relationship with a

specific stamping die manufacturer.

4) Order volume Stability

Depending on the order volume we examined in (2), European and US manufacturers have a larger order volume than Japanese Tier1 parts suppliers, and Japanese companies continually submit orders to their main suppliers, with European and US manufacturers using non-recurring bids. Based on that, Japanese companies have greater stability in their order volumes, while European and US manufacturers display tremendous fluctuation. In addition, European and US manufacturers use order volume strategically in competitive bid situations by suddenly requesting quotes, while Japanese Tier1 parts suppliers will communicate their production plan to their main suppliers and actually place orders according to that plan. On that point as well, Japanese companies can respond in an organized fashion, in contrast with their European and US counterparts who give no visibility into their future ordering patterns. Also, the order volumes of Japanese companies are kept stable, and with ongoing orders it is possible to exceed mid and long-term aggregate order volumes of European and US companies who have tremendous instability in their orders, which themselves are sent on a non-recurring basis.

One Chinese stamping die manufacturer described it thus: "this Japanese way of doing business allows Japanese companies to understand supplier needs and educates suppliers on Japanese company production capacity through interaction. It enables planned, stable production, which we can continuously expand upon."

5) Technical Innovation

In general terms, the stamping die manufacturing process is as follows: i) creation of die layout design based on part design; ii) creation of individual plots (and modeling data as necessary); iii) creation of machining data; iv) machining; v) testing (assembly and fine-tuning); vi) acceptance inspections. The closer to step i), and likewise in step v), the greater the skill required in the various processes. When we examine the "order standards" of Japanese Tier1 parts suppliers, steps i) to iii) typically are done in-house, with iv) being outsourced by manufacturers like Company F, while others, like Company C, provide parts designs to suppliers and outsource everything from i) on, just as is done in Japan. Further, among changes in recent years, one can see examples of Tier1 parts suppliers placing orders from processes further upstream. Following classifications by Asanuma (1997) for "provided drawings/approved drawings", this shows that, through transactions a manufacturer can move from being merely a "provided drawing supplier" to a higher-level "approved drawing supplier", gaining opportunities for technical innovation by taking on orders from Japanese Tier1 parts suppliers.

The following are factors in Japanese Tier1 parts suppliers moving "order standards" to a higher level. First, design personnel in Japan are in short supply. Japanese Tier1 parts

suppliers did not trust Chinese stamp die manufacturers at first, and made all plots and machining data to be used in China in Japan, providing them to Chinese stamp die manufacturers via their local subsidiaries in China. The reason for this was that the Chinese production model is also the model for production starts in Japan, and thus as Japan was already beginning work on follow-on models (i.e. copy models) they had designs and data all completed, so there was no design work to be done in China. However, because press equipment specifications were different in the two countries, areas requiring modification were taken care of by the local subsidiary in China. Afterward, as production ramp-up times were compressed between Japan and China, companies were forced to involve local teams on design work even with follow-on models. Also, US, UK, and Chinese models not produced in Japan came to be produced in China, forcing companies to involve local teams even on initial models. Japan did not have the manpower to respond to these efforts, so local subsidiaries had to fill the gap, and they entrusted Chinese stamp die manufacturers with the requisite specification changes for press equipment. Further, there were increases in local workload, and design work, under the direction of local subsidiaries, was gradually transferred to Chinese stamp die manufacturers. Ueda (2000) noted that "behind the scenes of the move to 'approved drawing suppliers' in Japan were changes that had a great impact, such as the increase in supply models from auto makers in Japan and the inability to secure sufficient development personnel within the auto makers themselves". The same phenomenon, however, is occurring in China. In particular, design and data groups do not need large investments in equipment like manufacturing groups, and with labor-intensive work, Japanese companies were able to take advantage of the abundant Chinese workforce and low cost. Second, many Japanese Tier1 parts manufacturers had internal stamp die manufacturing groups in China, but the distinction between internal and external manufacturing was not always in agreement between the two countries. In the process of observing recent intellectual property rights, when bringing stamp die designs and data created in Japan into China, the local subsidiary paid a price to the Japan headquarters, even when the designs and data were created internally. Designs and data made externally in Japan followed the same process, and for the outsourced supplier this would of course lead to a loss of in-house technology, thus they found it difficult to allow this transfer of designs and data outside of the company. The manufacture of stamp dies in Japan by third parties reiterated the necessity of creating stamp die designs and data in China. Third was the receipt of orders from the same Japanese Tier1 parts suppliers from other keiretsu in China. In this case, the Tier1 supplier that received an order would then actually become a Tier 2 supplier, but since production lead times were shorter than for Tier1 suppliers, they had no time to request designs from Japan, and were forced to respond locally. Finally, there was the acknowledgement among Japanese Tier1 parts suppliers of the necessity for development of Chinese stamping die manufacturers that would replace Japan with China as the base for global supply of

stamping dies. Along with the expansion of global strategies, multiple stamping dies of the same type simultaneously become necessary, and only in China could the manufacturing capacity to respond to that demand be put into place (Kanemura, 2009b). In particular, there is not a huge difference in transportation costs when shipping to third countries from China as opposed to shipping from Japan. Because of that, even though various difficulties may arise, the desire to develop China was felt very strongly within Japanese Tier1 parts suppliers. In this manner, raising the bar for Chinese stamping die manufacturers was not only a desire held by China, but also conformed to the strategy of the Japanese Tier1 suppliers. In contrast, some European and US manufacturers outsource stamping die manufacturing beginning with step i) above, but most begin the outsourcing process at step iii) (Taguchi, 2001). This is due to the fact that they can avoid being impacted by design changes in fabrication due to provided drawings, and the process is more "hands-off". European and US manufacturers are also moving ahead with localizing their workforce, and in many cases the head of purchasing is Chinese. They are concerned with order unit price, but have no interest in technical aspects. In contrast, technically experienced Japanese engineers are involved with internal stamp die manufacturing groups, attend their meetings, and provide guidance. The fact that, to Chinese stamping die manufacturers, these engineers present a great opportunity for technical innovation cannot be ignored. With many manufacturers, including Chinese auto makers, not demanding strict quality, there is a strong desire to make technical improvements among Chinese manufacturers taking orders from foreign manufacturers. For many Chinese manufacturers, the opportunities for technical innovation is the greatest advantage gained from working with Japanese Tier1 parts suppliers.

4. Conclusion and Areas for Further Research

Table1 is a summarization of our five aspects of competition, based on the above empirical analysis. First is that costs determine 1) order unit price advantage, and despite an advantage held by European and US manufacturers in A) intra-organizational transaction costs and B) transaction costs for design changes, Japanese Tier1 parts suppliers have advantages in negotiation costs and specific skills, as well as C) purchasing costs. As we stated above, it may appear on the surface that European and US manufacturers enjoy an advantage when it comes to order unit price, but the number of factors that are cost burdens are greater among European and US manufacturers compared with Japanese manufacturers. As a result, it cannot be definitively said that European and US manufacturers have an advantage in profit. Even in non-price aspects, while European and US manufacturers have an advantage in 2) order volumes, Japanese manufacturers carry the day in 3) order continuity, 4) order volume stability, and 5) technical innovation. In particular, based on the aforementioned industry characteristics,

4) is particularly important to stamping die manufacturers as a competitive aspect, and 5) is very significant to long-term development prospects. Chinese stamping die manufacturers understand the advantages in working with Japanese manufacturers based on these points.

Table 1 Comparison of Transaction advantages Japanese manufacturers with EU&US manufacturers

competitive aspects & their factors		standard of measurement		JPN	EU&US
1) order unitprice	A) intra-organization transaction costs		purchaser & purchase location	×	○
	B) transaction costs	negotiation cost	type of transaction	○	×
		monitoring cost	management and instruction	(×)	(○)
			design change	×	○
			specific skills	○	×
	C) purchasing costs		material cost	○	×
2) order volume			×	○	
3) order continuity			○	×	
4) order volume stability			○	×	
5) technical innovation		provided drawings/approved drawings	○	×	

Source : Researcher's original construction

In previous studies it has been shown that Tier1 manufacturers effect a technology transfer in working with Japanese auto makers, regardless of nationality, that cannot be seen from other foreign firms. However, we have shown that Japanese companies are not disadvantaged, in terms of profit, in various competitive aspects such as order unit price, and Tier 1 and Tier 2 suppliers indeed have an advantage not seen in European and US manufacturers in the areas of "management and guidance" and technical innovation. For practitioners, this suggests that, in competing with European and US manufacturers to secure Chinese stamping die suppliers, business relationships that contribute to management stability on the part of suppliers, such as "management and guidance" and technical innovation rather than order unit quantity, should be strengthened in order to gain a preferential position.

However, do Chinese stamping die manufacturers emphasize long-term development? Can they? On this point, we may point out that Chinese stamping die manufacturers use Japanese, European, and US manufacturers differently depending on their objective in taking an order. In the event working with European or US manufacturers provide an advantage from the perspective of order unit price net of costs, manufacturers will pursue short-term profit. If long-term growth is the goal, they will seek to make technical improvements through orders from Japanese manufacturers. This is a market strategy that uses the advantages of the customer to their own advantage. This kind of strategy could be said to only be possible in China, where even niche industries have multinational companies gathered together for manufacturing. Of course, there are 30,000 such companies listed, and the above does not apply for all of the 80,000 companies said to be in China's stamping die industry, indeed it applies to only a portion. For the other

companies, the more foreign they are the more the tendency to have Chinese auto makers and parts suppliers who aren't strict on quality as customers, pursuing short-term profit at the expense of long-term growth and technical innovation as they expand their markets. For future research, the author would like to study these types of companies; In China there are companies that differ in their ties to Chinese markets in the same industry, their technical ability, and how they came to be. An explication of how this variety is a foundation for accepting orders from Japanese manufacturers that demand strictness and quality is of interest, and another area for further development is whether or not Japanese manufacturers continue to enjoy transactional advantages when Chinese stamping die manufacturers obtain a certain amount of technical ability through their dealings with Japanese Tier1 parts suppliers. The question of what remains as an advantage for Japanese manufacturers is an important one. On the other hand, various phenomena explained in this paper, such as ongoing orders to select vendors, providing opportunities for technical innovation, management and technical guidance, the utilization of both main suppliers and sub-suppliers; these are all elements that can be seen in the business relationships during the formation and development of Japan's *keiretsu* affiliated companies (Watanabe, 1997). This system was said to be difficult to transfer overseas (Takada, 1994, etc.), but has this system been transferred to China? If that is the case, the reason why this was possible in China is another area of future study.

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