

Small Firm Networks – The Case of Industrial Districts in Japan

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ABSTRACT

The present research examines small-firm networks in Japanese industrial districts. We propose and discuss the typology of these networks. Special attention is paid to horizontal networks, characterised by enhanced co-operation and competition between small firms. We analyse these networks from the perspective of the social embeddedness approach and the resource-based view. We argue that the horizontal form is the most appropriate network form for small-sized firms. In the concluding section some of the limits of the paper and future research directions are outlined.

INTRODUCTION

Even though Japanese management practice and the success of Japanese large firms have attracted significant attention from Western scholars, very little is known about Japanese small firms. This is rather surprising, since Japan, along with Italy is characterized by the greatest proportion of Small and Medium-sized enterprises (SMEs) among the developed countries (OECD, 1996). In 1996, 99.4% of Japanese enterprises were SMEs and they employed almost 80% of the Japanese workforce (Japanese Small Business Research Institute - JSBRI, 1999).

Our research focuses exclusively on manufacturing SMEs in Japan. Japanese manufacturing SMEs tend to concentrate in relatively small geographic areas, forming industrial districts. There are different types of industrial districts and it is therefore more appropriate to approach them as a heterogeneous phenomenon. However, all districts are characterized by a certain degree of cooperation between small firms (Bagnasco & Sabel, 1994), through different forms of strategic networks. In this paper we study small-firm networks in Japanese industrial districts. Networks are defined as groups of independent but related small firms, which concentrate in relatively limited geographic areas and which undertake cooperative activities to accomplish business objectives (Bosworth & Rosenfeld, 1992). For the purpose of this research we decided to adopt a broad definition of cooperation. Thus, cooperation refers to joint production, joint marketing and branding activities, R&D, as well as information sharing, joint training etc.

Although networks of manufacturing SMEs may exist outside the industrial districts we have chosen to study only the networks within the districts. The first reason for this is that the literature that we analysed and interviews that we conducted so far have not shown the

evidence of such groupings outside the industrial districts. Moreover, the literature indicates that the most efficient forms of cooperation can be observed within industrial districts (Marshall, 1923) and that Japanese small firms can be best understood within the environment in which they are embedded (Whittaker, 1997), which is the industrial district. We believe that the heterogeneity of Japanese industrial districts provides sufficient variance to comprehend well the concept of small-firm networks.

RESEARCH QUESTIONS AND METHODOLOGY

As we have mentioned above, this research examines small-firm networks in Japanese industrial districts. The first research question on which we focus is: what are the types of small-firm networks in industrial districts in Japan? The second and the third research questions are oriented towards a better understanding of the small-firm network creation. In fact we study why networks are created and how they function. These questions are much broader and we are not in a position to present the complete results of our research at this point. Therefore we shall only focus on horizontal small-firm networks and discuss them within the perspective of the resource-based view and the social embeddedness approach.

The methodology that we applied to develop the small-firm network typology consisted of analyses of various secondary data sources: case studies of Japanese industrial districts; articles and books on SMEs, Japanese production system, industrial agglomerations, Japanese economic geography; official documents of cities and regions; documents obtained from the SMEs research institutions (Japanese Small Business Research Institute and the SME Agency of MITI). Moreover, we conducted several interviews with Japanese researchers specialized in the field. We proceeded by triangulation of different data sources.

The starting point for the development of our typology is industrial districts in Japan. We are studying how district characteristics influence the characteristics of networks found in them. After examining about a dozen cases (more or less detailed, depending on data availability), a typology of small-firm networks has emerged. In the two following sections we present the industrial districts in Japan and our typology of small-firm networks in Japanese industrial districts.

INDUSTRIAL DISTRICTS IN JAPAN

In 1994, there were 483 industrial districts in Japan (Okamoto, 2001), most of which were formed during the process of industrialisation (Kiyonari, 1995). Japanese industrial districts are mainly manufacturing districts (Hashimoto, 1997). The basic distinction between the districts can be made according to their production and technological characteristics. Thus, there are two major types of districts - the technologically oriented and the geographically-based (Japanese Small Business Research Institute, 1998). The first type is present mostly in machine and metal industries and can be subdivided into three categories - castle-town type, large urban industrial area type and regional industrial type. The second major type is a district where traditional and consumer goods are produced.

The castle-town type district is formed by firms which operate within specific industries such as automobile or electrical machine industries. Examples of this type of district are Toyota-city and Hitachi-city. In these cities, large enterprises and their subcontractors coexist and their relations are nurtured over long years of transactions. As it is often said, parent-child relationships are created between contractors and the subcontracting firms (JSBRI, 1998). The

division of labour is accentuated and firms are often highly specialized. Networks that operate within the castle-town districts are characterized by a rather vertical structure, which resembles a pyramid with multiple layers.

The large urban industrial area type districts consist of more diverse industries. This type of district can be found in large cities like Tokyo, Osaka or Nagoya. Many small firms have accumulated experience in Research and Development and have therefore been able to develop their own original products. A high percentage of SMEs work as subcontractors, although the number of independent SMEs is in constant progression. With clients in different industries, a multitude of suppliers and producers of finished goods, metal and machine processors form dense districts and are flexibly united in horizontal networks (JSBRI, 1998).

The regional industrial type district is a middle-type between the castle-town and the large urban industrial area districts. This type of district is not completely governed by large enterprises as it also consists of independent small firms in machine and metal industries. In these districts firms that develop new products following the technological progress emerge as new regional leaders. Small firms in this type of district are relatively free from the parent-child relationship. Among them, there are many parts manufacturers, processors and design firms that have grown by developing new technologies. Two kinds of networks can be identified in these districts – vertical and mixed.

Geographically-based districts are areas where consumer goods are produced. Industries are mostly traditional such as textile, furniture, ceramic etc. These districts are localized in the countryside and have strong links with wholesalers and traders in big cities. Cooperation networks in these districts take a horizontal form.

In this section, we have briefly presented different types of industrial districts in Japan. Small-firm networks that operate within these districts are characterized by different organizational forms. We have identified three major types of small-firm networks: vertical, horizontal and mixed.

THE TYPOLOGY OF SMALL-FIRM NETWORKS IN JAPANESE INDUSTRIAL DISTRICTS

Vertical Networks

According to the organizational form, the first major type of small-firm network that we have identified is vertical. However, we have noticed that all vertical networks are not identical. Two sub-types of these networks can be distinguished. The first sub-type is the network, which is found in the castle-town type districts. Its organizational form is pyramidal and hierarchical. The relations between the firms are based on hierarchical subcontracting. Firms have strong links with their client (only one client per firm) and with their subcontractors. For the majority of firms, clients provide parts and specifications according to which the work has to be done. Firms are specialized in very narrow fields and lack commercial and design skills (JSBRI, 1998, 1999). There is very little exchange of information or cooperation between firms that belong to the same tier of the subcontracting system. Communication and cooperation are achieved through vertical channels. Large enterprises at the top of the pyramid (such as Toyota or Hitachi) dominate the entire system. Relations between the firms are vertical and exclusive. We have named this type of network “the vertical rigid network”.

The second sub-type of vertical small-firm networks is found in the regional industrial type districts. In some of these districts there are firms of medium to large size which produce their

own products. Some of them are car makers (but much smaller than Toyota), others produce electrical machines or other products. They often have three-level subcontracting networks, with the primary and secondary subcontractors and cottage industries at the third level (JSBRI, 1998, Whittaker, 1997). The important difference from the rigid vertical network is that these networks are much more flexible since small firms that work as subcontractors have greater capacity to turn to other clients. This means that they are not completely locked into subcontracting relations within one single network. For this reason, this type of network can be called “the vertical flexible network”.

Horizontal networks

Horizontal networks are characterized by the predominance of horizontal links between firms. We have identified three sub-types of small-firm networks in Japanese industrial districts. The first sub-type is the network found in the large urban industrial area type district. Networks of this type are present in different industries and have clients in different industries as well. However, metal and machine industries are predominant. Firms are flexibly united in horizontal groupings. They work either as subcontractors or as independent firms that manufacture parts or their own products. Some of them are Original Equipment Manufacturers (OEM). Small firms subcontract a lot among themselves. There are no large firms that dominate these networks and subcontracting relations are not hierarchical. Firms cooperate intensively in different fields - production, equipment and information sharing, joint orders, joint R&D etc. Networks are groupings of competencies and all actors know what the others can offer. These networks are characterized by flexibility, adaptability and dynamism. Relations between small firms are strengthened by social ties. The multitude of firms and strong social links between the actors act in favour of the density of these networks. These networks can be called “the dense dynamic confrere networks”.

The second sub-type of horizontal networks is found in geographically-based industrial districts in industries such as textile, ceramic, wood, furniture, paper etc. These consumer good industries have long traditions and have made the glory of their regions (Whittaker, 1997). Goods are produced through linear processes which completely cover the production, from supply to the final product assembly (Okamoto, 2001). The majority of firms are processors and do not produce their own products. Product relations are simple of cascade type. “Central” firms organize the production and establish relations with the wholesalers and traders in cities. The role of organizers is performed by district traders (*sanchi donya*), small-sized firms that are simultaneously manufacturers and merchants. Cooperation takes the form of joint production. Firms also exchange information and know-how. Networks are stable and the interdependence of firms is strong due to the linear division of labour. These networks can be called “the cascade production networks”.

The third horizontal sub-type is similar to the second one. It can also be found in geographically-based industrial districts. However, production organization is quite different. In fact, in this type of network firms produce consumer goods as independent producers. Networks that they form are informal and destined mostly to information sharing, transfer of new production techniques, exchange of experience and sometimes sharing orders. In some networks joint marketing activities are undertaken in order to leverage on the reputation of the region. Some regional brands are registered and many firms sell their products under regional brand names. Social links and sharing norms, values and beliefs work in favour of social

cohesion of these informal networks. We have named this type of network “the traditional informal network”.

Mixed networks

Mixed networks can be considered as an intermediary form between vertical and horizontal networks. Moreover, we believe that the transformation of vertical networks into horizontal ones could pass through this intermediary form.

Mixed networks are present in industrial regional type districts in which there is often a coexistence of vertical and mixed networks. Different industries are represented: metal, machines, plastic, precision instruments, Hi-Tech etc. Mixed networks are generally not governed by large firms. However, leading medium-sized firms (LMFs) that produce their original products exert strong influence on smaller firms. Small firms work principally for those LMFs and the relations between them have a vertical tendency. However, LMFs are not always the only clients of small firms. Small firms obtain orders from outside the district as well. They are open to new techniques and production procedures and strive for developing their own products. For them, diversification is important for increasing independence. In mixed networks, horizontal links exist along with the vertical. Firms often share equipment, information, know-how etc. The entire network guarantees a good execution of orders of a single firm (Freedman, 1988). We decided to call these networks “the mixed technologically diversified networks”.

Types and subtypes of small-firm networks in Japanese industrial districts are presented in Table 1.

TABLE 1. THE TYPOLOGY OF SMALL-FIRM NETWORKS IN JAPANESE INDUSTRIAL DISTRICTS

District type	Castle-town	Industrial regional		Urban area	Geographically based	
Network Type	VERTICAL		MIXED	HORIZONTAL		
Network sub-type	Vertical rigid	Vertical flexible	Techno. Diversified	Dense dynamic confrere	Cascade production	Traditional informal

HORIZONTAL SMALL-FIRM NETWORKS

Resources and social embeddedness

The resource-based view seems to be the central paradigm for the domain of strategic networks (Grandori & Soda, 1995). According to this view, small firms engage in strategic cooperation in order to overcome the lack of resources, which is due to their small size. Horizontal small-firm networks in Japan fit somewhat to this picture. The complementarity of resources and competencies allows for creation of networks capable of producing any kind of product in specific fields (Seki, 1994). Network orientation encourages specialization of small firms that can count on the resources of others to execute orders or develop new products. The necessity for resources, competencies and skills of others does indeed work in favour of horizontal small-firm network creation. Nevertheless, the network in its turn favours narrow specialization of small firms, making them even more dependant on the resources of others. Therefore, the relation between the resource dependence and the network is not a pure uni-directional relation, it is rather reflexive. In the case of Japanese horizontal small-firm networks firms share a wide variety of resources and competencies. That is why these networks are often seen as flexible and dynamic forms, enabling small firms to leverage on the capacities of the entire network without losing completely their independence.

Although the resource-based view provides significant elements for understanding small-firm networks, there is one part missing. In fact, besides the complementarity of resources, the sense of community is a very important factor for the horizontal network creation (Okamoto, 2001). Social cohesion works in favour of co-operation and that is easily observed in Japanese networks. Social ties are the element that is missing in the resource-based explanation. In Japanese industrial districts small firms are situated in geographically limited zones and are linked by all kinds of social ties. In some networks family ties are strong, in others there are neighbourhood and friendship ties as well. Small firms are embedded in social relations of economic actors (Granovetter, 1985). This means that actors have both economic and social goals. The sense of mutual obligation and mutual indebtedness are strong. Good reputation and a multitude of acquaintances are appreciated as highly as excellence in manufacturing. Some authors see the resource-based view and the social embeddedness approach as two opposite paradigms for the network analysis. We believe that they are complementary. At least, this seems to be true for horizontal small-firm networks in Japanese industrial districts.

Competition and Cooperation

Networks are often taken as a synonym for cooperation (Grandori & Soda, 1995). However, in our research on small-firm networks in Japan, we have seen that cooperation does not exclude competition between small firms. In fact, competition is a sort of a guarantee that small firms will constantly be concerned about their competitiveness. Horizontal networks favour competition because the competitiveness of an entire network depends on the competitiveness of every single firm. That is why all firms must always do their best if they wish to remain within the network.

Nakama torihiki (confrere trading) and *sessha takuma* (friendly rivalry) are two Japanese expressions which refer to horizontal small-firm networks in industrial districts. Competition and cooperation can not be clearly distinguished one from the other. These two parallel processes are the necessary elements for the flexibility, vitality and dynamism of horizontal networks.

Horizontal small-firm networks - the organization of the future

We believe that horizontal small-firm networks have significant advantages compared to the vertical and mixed forms, which are more beneficial to medium and large-sized firms. Horizontal networks offer the right balance between independence and resource complementarity allowing small firms to adapt flexibly to the changing environment.

During the last several years, large enterprises in Japan have been changing radically their strategies. More particularly, their supply system is being re-examined. Some large assemblers have decided to abandon subcontracting in favour of in-house production. Others, in search of lower labour costs turn to South-East Asian countries for parts supply (Watanabe, 1999). In these circumstances many Japanese subcontracting SMEs have been left out. Many of them perish due to their low flexibility and adaptability. Others diversify their order sources and search partnerships with other small firms. Partnerships are that more necessary since the former subcontractors have no design and commercial skills and are highly vulnerable. Horizontal networks are able to provide them with the necessary resources and skills without putting in danger their independence. That is why we believe that horizontal networks are the small-firm network form for the future.

CONCLUSION

In this paper we have proposed a typology of small-firm networks that are found in industrial districts in Japan. Three major types and six network subtypes have been distinguished. Special attention was paid to horizontal networks, which we believe to be the most efficient and the most appropriate of all small firm network forms. The vitality of these networks is nurtured by enhanced cooperation and competition among small firms. The high flexibility and adaptability to the changing environment make the horizontal networks the organisational form of the future.

This study is not without its shortcomings, limiting the generalisability of the findings, while at the same time suggesting directions for future research. The study is limited to the analysis of the secondary data. A field study needs to be done in order to validate the proposed typology. Analyses of small-firm networks in other countries and in other settings would allow us to propose more general conclusions.

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