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INDUSTRIAL NETWORKS: SPACE, REGIONS, CULTURE AND POLICIES

Summary

Industrial subcontracting, outcontracting and networking between firms has generated a lot of attention in the field of research. This attention is quite understandable because it reflects a number of important developments in the international restructuring of the economy. However, not all aspects of industrial networking have been given equal attention.

Most research deals with the description and explanation of the marketing and organisational aspects of networking - financial and technical - for the firms involved. In contrast to this, very little attention is paid to the spatial and cultural aspects of industrial networking. In this study a combination of both fields of interest is made in which organisational as well as cultural, spatial and also policy aspects of industrial networking are included. The study is built up in two parts. In the first part, consisting of chapter 1 through 4, the influence of physical distance on the 'birth' and functioning of subcontracting-outcontracting- and network-relations is the central topic. In the second part, consisting of chapter 5 through 9, not only physical distance, but also other influencing factors like trust, regional culture and personal background of decision makers are dealt with. In this way, a broad overview of factors influencing industrial relations is obtained which can help to understand the spatial organisation of these relations.

In *chapter 1* an overview of the background developments related with industrial networking is given by means of a general introduction to the subject. The main developments regarding to changing market and production situations are described, together with the changing position of subcontractors and outcontractors. Introductory attention is paid to industrial network-development and the spatial as well as regional aspects involved. The central outcome of this chapter is the formulation of the following research questions:

1. In which way are subcontracting and outcontracting strategically, organisationally and spatially structured in industrial networks?
2. In what way does physical distance influence the development and functioning of industrial subcontracting - outcontracting relationships and what are the effects in regard to the spatial production network?
3. In what way do Dutch firms participate in cooperation networks for product development and which factors influence the development and functioning of those networks?
4. What regional differences can be measured regarding to the regional orientation of industrial firms looking for partners in the area of subcontracting and outcontracting, product-development and services?

In *chapter 2* industrial subcontracting and outcontracting will be positioned in a

theoretical framework. Next to the positioning of the subject in a geographical context, also a selection of relevant organizational theories and models are presented. The geographical context contains next to an elaboration on behavioral aspects of firms in space also recent theoretical viewpoints on the spatial implications of industrial subcontracting and outcontracting in general. The organizational viewpoints consist of a number of models and viewpoints on industrial buying behavior and possible influencing factors. Both geographical and organizational aspects are combined in explaining and defining the main concepts in relation with industrial subcontracting and outcontracting used in this study.

Chapter 3 contains the main results of two national research projects on subcontracting and outcontracting relations performed by Leus (1989a,b) at the Faculty of Spatial Sciences of the University of Groningen. These research projects aimed to describe the main trends and spatial aspects of industrial subcontracting relations in the Netherlands, both from the viewpoint of a selection of 'trendsetting' subcontractors and from the viewpoint of the outcontractors.

The results of this study show an increase in subcontracting activities from 1980 - 1987, while the importance of specialised outcontracting is growing, together with the increasing mutual dependency between subcontractors and outcontractors. The most important motives to contract out are technical motives, logistics, externalising labour and orientation on core activities. Subcontractors are mainly involved in structural, specialised orders; one-sided dependency of the outcontractors seems to get less when cooperation gets more strong and intense. Finally, two-third of the three most important subcontractors are localised within 100 kilometers of the outcontractors; most outcontractors consider short distance of subcontractors of great importance; specialised subcontracting mainly takes place at greater distance. The subcontractors show that more than half of their subcontracting relations are developed within 100 kilometers of the location of the subcontractor. The results of these two projects provide a basis for the research described further on in the book.

Chapter 4 contains the results of a survey amongst the network of subcontractors (1573) of five selected outcontractors in the Netherlands, followed by indepth interviews with the management of the outcontractors as well as a selected group (14) of subcontractors. For each of the outcontractors the make-or-buy-decision is dominated by first the consideration of the strategic importance to externalise or internalise an activity permanently, and second the consideration of costs. The main selection criteria used by the outcontractors to select subcontractors are quality, reliability of deliverance and price, before synergy and flexibility. Distance is only important in the case of incidental outcontracting of products with little financial and strategic value and in the case of voluminous

products with little financial and strategic value. The advantages of regional industrial complexes are hardly seen by the outcontractors. Moreover, they foresee disadvantages because they suspect the possibility of subcontractors making joint price-agreements against the outcontractor. Some subcontractors see an advantage in the possibility of forming joint depots, but a major disadvantage in threatening 'Toyotism'. In general, both parties don't look forward to the idea of the government stimulating the forming of regional industrial complexes.

The subcontractors only see distance or peripheral location as a barrier in the case of incidental subcontracting and in the case of finding suitable subcontractors themselves; in the case of structural subcontracting distance is not considered a barrier. Subcontractors avoid dependency from the outcontractor by living the 20/80-rule: a minimum of 20 outcontractors should provide a maximum of 80% of the turnover of the subcontractor.

Chapter 5 serves as a turntable with which the change is made from the influence of physical distance alone to the influence of other more personally related factors in part II. At the same time it forms a prelude to the description of theoretical viewpoints on regional industrial complexes, networks and clusters as a preparation for the description of further empirical results in chapter 7 and 8. This chapter describes the outcome of two research projects on regional interaction patterns in the north of the Netherlands (the provinces of Groningen, Friesland and Drente). The results of the two projects are consistent about the regional orientation of northern industrial firms. The recurring proportion of two-third intra-regional inter-firm relations against one-third extra-regional inter-firm relations is remarkable and holds for both outcontractors and subcontractors. For a number of observed functional sub-systems of interrelated industrial activity it does not become clear if this spatial concentration of industrial activity is formed around co-makers or outcontractors.

In *chapter 6* an overview is given on a selection of existing relevant theoretical insights on industrial complexes, clusters and networks. Attention is paid to older existing viewpoints on the development of regional complexes, in relation to the classical location theory and agglomeration effects (Weber, Perroux and Chardonnet). Subsequently a transfer is made from these older views to the actual situation, where regional clusters and regional industrial networks show as modern varieties of these older theoretical magnanimities. Also the influence of cultural aspects and government policies regarding industrial networks is discussed. Finally a definition is given of the three types of networks (R&D networks, subcontracting-outcontracting networks and service networks) which play an important part in the empirical results described in chapter 7 and 8.

In *chapter 7* a total of 10 cooperation networks between industrial firms that

could be traced are described following the results of interviews with 'key-persons' of participating firms in those networks. These cooperation networks are not only aimed at mutual supply of goods and components, but also at the exchange of R&D data, technology and market information, sometimes with the object to cooperative product development. As a recurring major advantage in forming a cooperation network is considered the proximity of participants. At the same time a corresponding corporate culture is considered very important, while also the possible binding influence of regional culture is not overlooked. Synergy, in combination with functional complementarity between the participants is considered a decisive factor in the success of the network. As recurring major disadvantages are considered the harmonizing of the viewpoints of the participants and the fact that individual firm interests prevail over joint interests. In the opinion of the respondents the role of the Innovation Centre is considered very useful and sometimes crucial. Overall, the conclusion can be drawn that an increase in the number of participants of a network decreases the chances for success.

In *chapter 8* the results of an explorative telephone enquiry amongst 489 industrial firms in five provinces of the Netherlands (Groningen, Friesland, Drente, Overijssel and Noord-Brabant) are described. These provinces were selected for their differences in degree of economic development, number of firms and regional culture. In the enquiry questions were asked about the spatial (regional) orientation of industrial firms in the case of R&D networks, subcontracting- outcontracting networks and service networks. Although the number of respondents was too little to provide any statistical evidence, some remarkable indications were discovered. R&D networks are developed both over small distance and over greater distance, with the exception of the province of Noord Brabant, where mainly local inter-firm contacts could be discovered. Mutual trust and inter-personal aspects are considered very important in developing intensive inter-firm relations, while the influence of regional cultural background of the contact persons is much less recognised. In general the involvement of government organizations in the development of R&D networks is little. The most feasible option to cooperate in an R&D network seems to be cooperation in the context of a concrete order, for which in cooperation with the customer complementary partners are searched for in order to join forces to get a successful and satisfying result. Subcontracting-outcontracting network relations experience a greater barrier of distance compared to R&D networks. Two-third of the structural relations and even three-quarter of the incidental subcontracting relations manifest within the region of location of the respondents (< 50 kilometers). The motives for developing subcontracting-outcontracting relations are more practical compared to R&D networks. Comparing both types of networks, a tendency starts to show that when the invested time and the intensity of cooperation is increasing, the

barrier of distance between participants is decreasing. In the case of service network relations the regional orientation of the respondents is remarkable. Insurance companies are for two third called in within the region of location of the respondents (< 50 kilometers), other services like banking and cleaning companies are for threequarter or more called in within the region of location of the participants. For the advertising agencies as well as engineering firms it is remarkable that only one-third of the respondents are able to use regionally located agencies. Overall, the conclusion on the basis of this telephone enquiry seems to be that the regional orientation of firms looking for partners becomes less when the strategic importance of the issue/matter in question is increasing.

In *chapter 9* a number of overall conclusions are drawn, looking back at the results described in the previous chapters. The main conclusions can be summarised as follows:

- The importance of distance in forming industrial networks seems to be inversely proportional to the financial and strategic importance of the product or component involved.
- The importance of the forming of regional complexes, as well as the importance of proximity of differentiated industrial activity as a stimulus or even as necessary condition for the development of industrial cooperation networks can be put strongly into perspective.
- There is evidence that amongst industrial entrepreneurs and managers there do exist clear ideas about certain differentiated characterising elements of other entrepreneurs or managers located in their own region, which bias their opinions and their decisionmaking behavior concerning partner selection consciously, if not unconsciously.
- The role of government institutions in developing and stimulating industrial networks could be enlarged.