

TRADING FIRMS AND THE INTERNATIONALIZATION OF THE MOULD CLUSTER OF MARINHA GRANDE¹

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Abstract

The role played by trading firms in the internationalization process of mold makers located within the Marinha Grande cluster (Portugal) is a controversial issue. Besides finding foreign customers some traders provide a full service to customers, from product development to the injection and assembly of plastic parts. These traders add value to mold making and build long-term relations with customers, contributing to clusters' internationalization. Other traders are accused of opportunistic behavior both as regards their relations with local producers and relations with foreign customers, harming the cluster's international reputation. This paper aims to contribute to this on-going debate by presenting a study of three mold traders and the relations they have established with foreign customers and with local mold makers.

Introduction

The mold cluster of Marinha Grande located 93 miles north of Lisbon in Portugal is composed of different types of firms and institutions. Mold traders, mold makers, subcontractors, specialized producers, suppliers of standardized components, designers, engineering firms, and service providers are involved in the process of producing and delivering molds to customers in different industries, located in more than 100 countries.

Despite the small size of firms in the cluster, 90% of total production is exported. Commercial firms and agents are present in this cluster since its early years connecting small local producers with customers located in foreign markets. According to official statistics mold traders are the source of a little more than 30% of total exports. Besides, some of these trading firms provide a whole range of services; they may design the mold, make the programs for CNC machines, take care of molds' tests and measurement of plastic parts and guarantee after sales assistance to customers. Nevertheless, there are also complains that mold traders capture most of the value generated by producers, constitute an information barrier between producers and customers, and often engage in spot deals with customers. This harms the international image and reputation of the cluster. To put it briefly traders are a controversial issue within the cluster.

Industrial district and cluster literatures only recently have begun to address internationalization processes of firms located within the area and the main research focus is on the effects of globalization on local firms (Enright, 1998, Anderson, 1999; Brown and Bell,

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2001; Guerrieri, Iammarino and Pietrobelli, 2001). A few one-off studies from scholars coming from economic geography, economic sociology and management analyzed the variety of tasks carried out by local firms and emphasized the critical role performed by those firms that connect local producers with foreign customers (Lorenzoni, 1979; Hsing, 1999). The activity of these latter firms may be especially important for the internationalization of clusters where firms are often small and medium enterprises (SMEs); SMEs usually lack the organizational, management and marketing skills needed to pursue active internationalization strategies. Additionally, relations with actors from outside the district contribute to bring new information to the area, helping to avoid lock-in inherent to closed inward-looking communities (Lazerson and Lorenzoni, 1999).

Trading firms and export intermediation are under-researched areas in international economics, international business and international marketing literatures. This means there is no fully developed theory of export intermediation that cluster and industrial district research can borrow. Nevertheless, some recent studies on the importance of social relations in the process of finding and selecting customers in foreign markets introduced some potentially useful concepts into this stream of research (Ellis, 2000 Rangan, 2000). These concepts may also be useful to study the role trading firms could play in local production systems and internationalization processes.

In short, a deeper understanding of clusters' internationalization and export intermediation requires further theoretical and empirical work. This paper presents the preliminary results from an on-going research project on trading firms and the internationalization processes of SMEs within industrial clusters. Its theoretical background is on the crossroads of cluster theory, international business and social network theory, requiring the continuous dialogue between empirical evidence and theoretical concepts that is typical of case study research.

Our major research questions are: What are the tasks performed by mold traders? How do mold traders find foreign customers? How do mold traders identify and select local mold makers? How do mold traders contribute to the internationalization of mold makers located in the cluster and, therefore, to the internationalization of the cluster?

The paper is organized as follows: in the next two sessions literature is reviewed and methodological aspects are examined. A brief characterization of the mold industry and of the mold cluster of Marinha Grande follows. After that, three case studies are presented. In the closing session there is a discussion of main findings and their contributions to current research, main limitations are acknowledged and future research suggested.

Literature Review

Industrial district and cluster literatures

Literature on industrial districts and clusters traditionally share a common stress on agglomeration economies, local institutions and other characteristics of the local environment that influence the performance of firms, regions and nations (Becattini, 1990; Porter, 1990). Two major consequences result from these facts. First, firms are not at the center of the analysis and are often treated as if they were more or less similar to each other. This is especially so in industrial district literature, influenced by the flexible production paradigm that assumed firms were instantly and continuously able to change roles, adapt products and production processes to changing demand conditions (Piore and Sabel, 1982; Lazerson and Lorenzoni, 1999). Also, most

research on clusters puts the accent on business environment conditions, paying little attention to differences among local firms (Enright, 1998). Another consequence is that most research is focused on manufacturing and organization of production within the district. In the vast amount of empirical research on industrial districts, clusters and local networks of firms there are few studies that focused on internationalization of local firms or on trading firms. Even in recent studies on the effects of globalization on industrial districts little attention is paid to commercial relations between local actors and foreign markets (Guerrieri, Iammarino and Pietrobelli, 2001). The study the internationalization of firms within the cluster and the role trading firms may perform in the process are in their early stages. However, two empirical studies deserved to be mentioned since they specifically address trading firms within industrial districts and clusters, respectively.

Strategic management researchers were among the first to place firms at the core of research. The research on the textile district of Prato, in Italy, by Lorenzoni (1979) is one of the rare thorough analyses of the roles performed by different types of firms that make up a local production system and of their development between the late 50ties and the late 70ties. One particular type of firms was singled out, the *impannatore*. These firms took care of commercialization and product development, allocating production to local specialized producers (*tercistas*). The economic crisis and increased competition that characterized the early seventies have put pressure on both types of firms to change and adapt. *Impannatore* played a key role in the process of change since they not only linked the local production system and outside markets but also occupied a position that facilitate the access to information on a variety of technologies and markets. This information was then passed on to local producers. As a result opportunities were detected and products, production processes and organization systems were adapted, contributing to the sustained competitiveness of the local system. As far as products were concerned, higher quality, more fashionable and design intensive products replaced standardized ones. Small quantity orders, shorter delivery times and product life cycles became common customer demands. Higher product sophistication and the need to guarantee shorter delivery dates led to a more complex system of production, involving a variety of firms that had to be coordinated. Quality control was tighter than ever before because new customers in upward segments of the market were especially demanding. *Impannatore* developed competencies in design, in the search, selection and use of new raw materials. Technical standards were adopted and conveyed to manufacturers. Quality inspection became a rule and some *impannatore* had even invested in key production phases. Concurrently, some pure commercial agents started to operate in the district. As regards manufacturing firms, some showed an increasing interest in the commercialization of their own products and small commercial departments started to emerge within a few firms. Most producers specialized in a certain product variety or production activity, increasing the diversity of firms within the district. As a consequence, economies of scale and scope at the level of the district were possible and contributed to the international competitiveness of the local production system. Recent evidence on the industrial district of Prato reveals that *impannatore* have continued to be a central actor in the restructuring of the area. These focal firms have strengthened relations with international sophisticated buyers and invested in product development. Simultaneously, they established ties with subcontractor located outside the district to guarantee access to production competencies not available in the area. Locally, several *impannatore* invested in local subcontractors performing activities that were critical for production (Lazerson and Lorenzoni, 1999)

Recent research on business and social networks in international trade have highlighted the role network intermediaries, like trading firms, can play linking local producers with foreign buyers (Rauch and Feenstra, 1999; Hsing, 1999). Traders can assure local producers the orders they need to fill their production capacity. Simultaneously, they can sell foreign customers the access to their local supplier networks and play a coordinating role enabling scale and scope economics. To perform these activities, traders need to have permanent access to large amounts of information. Local networks of personal relations play a key role in this process. Hsing, (1999) studied in detailed the role of trading companies in the formation, governance and internationalization of Taiwan's fashion shoes network. She assumes that economic action is embedded in social networks and these have to be integrated in the explanation of economic behavior (Granovetter, 1985). She adopted as theoretical background several empirical studies of "socially embedded and territorially grounded relationships underlying economic organizations" (Saxenian, 1994; Piore and Sabel, 1992). Trading firms acted like commercial agents and linked Taiwanese footwear manufacturers with US and other foreign buyers. Furthermore, trading firms translated customers' requirements into madarin, participated in product development, and helped in the selection of materials and in sample production. After orders were received, trading firms allocated production to individual manufacturers, monitored quality and delivery schedules, provided technical support and contributed to problem solving, and helped to work out conflicts between manufacturers and buyers.

Trading firms access to information at both the local and global level was central to both marketing and coordination activities. Frequent contacts with foreign customers enabled trading companies to obtain information on new materials, fashion trends and production techniques. Besides, some trading companies established representative offices in foreign markets and hired foreign designers to access further information about these markets. This information was then passed on to local manufacturers. At the local level trading firms accumulated an enormous amount of knowledge about manufacturing firms; their actual production, financial and management capabilities were as important as the orders already accepted, information on potential spin-offs by partners or more qualified workers, and even issues that had to do with the personal life of entrepreneurs, as long as these might affect the price, quality or delivery dates of orders. This informed the allocation of orders to specific manufacturers and facilitated coordination. The access and permanent update of all this knowledge required constant information flows among manufactures and between these firms and trading companies. These flows were mainly based on local networks of social relations. The qualitative analysis of the social network of relations operating at the local level is one of the most interesting contributions of this paper to previous literature. Three types of mechanisms facilitating the establishment of personal relations were identified. First, geographical agglomeration and the fact local entrepreneurs, managers and other employees lived and worked in the same area for long periods of time, lead to frequent informal contacts. The high job mobility, due to excess demand for qualified workers in the local labor market, was a second factor facilitating inter-personal relations. Numerous start-ups and the high mortality rate of local firms completed the list. In addition to social relations, the materialization of bilateral investments by trading firms and manufacturers contributed to thick information flows at the local level and promoted the creation of additional inter-personal relations.

International Business and International Economics Literature

Even in international disciplines of management and economics, theoretical and empirical research on export intermediary firms is remarkably scarce. International trade theories generally assume that the invisible hand guarantees exports reach customers (Rangan, 2000). As a consequence even in empirical studies little attention is paid to firms that are behind import and export flows. Even though intermediaries are established concepts in international marketing literature, their role is far from being fully understood (Gadde and Snehota, 2001) and almost only Japanese trading companies have been object of thorough research (Mattsson, 1989; Peng and Iitich, 1998). Another exception corresponds to a series of case studies on dyadic relations between Swedish trading companies and industrial firms using a model of commercial interaction. It has revealed the existence of functional role patterns: industrial firms were generally in charge of product development while trading companies took care of sales and contract execution; no clear pattern was found as regards marketing (Mattsson, 1989).

Multinational companies (MNCs) and the causes of their existence are the main focus of most international business theories. Moreover, the large majority of empirical studies concentrate on industrial MNCs and only recently had firms from a small number of service sectors deserved some attention. In theories of the internationalization process of firms, intermediaries (agents and trading companies) are only mentioned as a form of entry into international markets typical of first stages. Exporting to intermediaries located in foreign, psychic distant markets corresponds to a smaller risk, low resource commitment internationalization strategy. This way the industrial firm may postpone bigger investment until a moment in the future where more information has been gathered and international experience developed, reducing uncertainty. The lateral role attributed to trading firms and other export intermediaries is patent on the few lines dedicated to these firms in a recent survey of empirical studies on the export development process published in the most important journals (Leonidas and Katsiakas, 1996). More recently a line of research that combines transaction costs economics, agency theory and the resource-based view of the firm has started to build a theoretical framework for the analysis of export intermediary firms (Peng and Ilinich, 1998; Peng and York, 2001). Their starting point is the statement that real world firms cannot export without incurring in transaction costs; these can be divided in search, negotiation, monitoring and enforcing costs. Exporting indirectly through intermediaries becomes an attractive marketing channel choice if the transaction costs of direct exports are higher than those of indirect exports. Two propositions relating market and product characteristics to the probability of externalizing the marketing activity of manufactures were derived and later on tested (Peng and Ilinich, 1998: 614, 615; Trabold, 2002). According to this line of research export intermediaries are more likely to be selected by manufactures the more distant and unfamiliar the export markets and/or the higher the commodity content of the products. Search costs associated with market research and negotiation costs, resulting from different languages and cultural barriers, are due to be higher in distant, unfamiliar markets, increasing the attractiveness of selling to export intermediaries. Since the size of the industrial firm and the relative importance of the foreign market in total sales of the firm are likely to influence decisions these were aspects included in the analysis. As regards the products it is argued that because the exports of differentiated, technically more advanced goods are likely to have higher negotiation, monitoring and enforcement costs, these are better handled by manufactures and their respective sales representatives abroad. Conversely, export intermediaries easily take care of export of relatively homogenous, standardized goods. This proposition passed empirical tests while the relation between distant unfamiliar markets and

the resort to export intermediaries was only partially supported by the empirical evidence (Trabold, 2002). This may be explained by social network theory.

Social network theory

Acknowledgement of the embeddedness of economic activity in social networks has finally begun to influence international business research (Granovetter, 1985; Ellis, 2000; Rangan, 2000). The study of the influence of social structure on international exchange and investment has nearly started and there are already some very insightful studies on the importance of social ties in the explanation of search and deliberation processes. The analysis of the process of identification and selection of foreign customers or joint-venture partners are some of the few available examples (Ellis, 2000; Wong and Ellis, 2002). By applying social network theory concepts to the study of international business issues these studies have begun to illustrate their explanatory power and are inspiring other researchers. The basic argument is that key business information is frequently transmitted through social ties rather than through more formal types of relations. When this is the case, it is essential to study the social network to understand the process of transmission. Social ties have information benefits, reducing search and coordination costs. Empirical studies suggest the value of social ties is positively correlated with the uncertainty of exchange. And since market uncertainty and potential search costs are naturally higher in distant markets this means the value of social networks is expected to increase with geographic and socio-cultural distance between markets. (Podolny, 1994).

Several other concepts developed in social network theory can be brought to the analysis of international business issues. As regards personal networks the distinction between strong and weak ties has proved to be useful to explain different economic phenomena (Granovetter, 1973). Ties are strong when contacts between the parts are frequent, long lasting and tend to occur across multiple settings. These ties exist among family members, friends, and associates. Weak ties correspond to casual, eventual contacts between parts. Weak ties are just acquaintances. These two different types of ties serve different purposes. As stated by “the strength of weak ties” argument, these are especially useful to access information and resources that are present in distant parts of the social network (Granovetter, 1973). In short, weak ties are important since they guarantee the access to non-redundant information. If one believes that strong ties are generally sources of redundant information, this argument is in line with structural holes’ argument developed by Burt (1992). He argues that what matter is to be in a network position that guarantees access to non-redundant information and not the strength of ties. Strong ties enable the exchange of tacit knowledge and reduce uncertainty through norms regarding behavioral expectations and trust (Sako, 1998; Uzzi, 1996). The likelihood of opportunistic behavior is much smaller in trustful relations. This reduces the costs of coordination and increases the stability of relations, reinforcing trust.

Research on inter-firm networks resulted in the development of specific concepts. Empirical research on exchange relationships between different types of firms in the women’s high fashion cluster in New York demonstrated these are important governance mechanisms and showed the value of studying the density of network ties (Uzzi, 1996, 1997). Repeated economic transactions between two firms over the years result in embedded tied. To extreme types of exchanged relationships may be distinguished: over-embedded and under-embedded. The latter are characterized by being superficial, short-term relationships. Information flows are thin and the level of trust is generally low. The former are more dense and long-term relationships, enabling the transmission of thick information flows. Potential problems of these over-embedded

relations are the limited access to new information, fewer incentives to change and the risk of protecting inefficient partners. The case studies revealed that those firms that have managed to establish both over-embedded and under-embedded exchange relationships performed better than those firms that have mainly establish one type of relations.

As Rauch and Feenstra (1999: 6) remarked regarding the study of the influence of business and social networks in international trade: “ ... the agenda for further research in this area is wide open. For some phenomena, network intermediaries prominent among them, formal theorizing has barely begun. On the empirical side, more data sets based on surveys of individual producers and traders should prove very helpful in identifying network effects.” This paper will try to contribute to this line of research in the specific setting of a cluster.

Methodology

Our study is based on three case studies of trading companies located in the plastic molds cluster of Marinha Grande, Portugal. Case study methodology was chosen since it has been considered the adequate strategy for research on processes and when little is known about a phenomenon (Yin, 1994;.Eisenhardt, 1989).

Identifying and selecting the cases

One of the reasons that explain the existence of few studies on trading companies is the great difficulty in obtaining statistical information on this type of firms. Also in Portugal it is not easy to elaborate a complete list of engineer and trading firms using official statistics. These sources do not single out firms that deal with molds from the ones dealing with other products. We have tried to elaborate a list as complete as possible by combining two databases² and information collected near local informants; 51 trading firms located in the area were identified.

The three firms studied were selected from a shorter list of 23 firms that were willing to be interviewed. Cases were selected combining insights from key local informants and the aim of analyzing firms with different characteristics as regards age, size, shareholder composition, type of customer industries and export destination. Since this study corresponds to preliminary research on this topic its main aim is to inform further research on the subject (Yin, 1994). As a consequence these three case studies should be considered pilot cases.

Data collection

Data was collected through semi-structured interviews of one of the founders of the firm, complemented by subsequent e-mails and phone calls. Contents of the Internet site of firms and archival data (company financial reports, internal memoranda, press articles, trade publications and government reports) complemented my data sources. The same researcher conducted all the interviews that took place in February/March 2000. An interview protocol was prepared for the effect in order to guarantee all firms would be asked the same questions. First entrepreneurs were asked to make a brief description of the partners' professional background before start-up. This was followed by more focused questions on customers, methods used in the identification and selection process, services provided, joint activities, conflict management and other aspects considered to be relevant for relationship development. Then relations with mold makers and other firms active within the cluster were investigated. Methods used to select mold makers and

² ICEP database of exporting firms by product and the directory of associates of Cefamol, the National Moulds Industry Association.

forms of governance employed were among the questions asked. The role of personal and business relations both within and outside the cluster were carefully explored.

All interviews were recorded on tape with the permission of the respondents. Impressions of the field were translated into written notes on the same day of the interview. Interview reports were written up from the audiotapes into pre-structured case outlines. The case studies' database is composed of tapes, interview reports and the archival data collected (Yin, 1994).

Method for data analysis

Narrative strategies combined with visual mapping strategy were used since these had a good fit with process data complexity (Langley, 1999). Within-case analysis was based on interview reports. In each case relations with specific customers were carefully analyzed, emphasizing the major factors that intervened in different phases of the relationship. Patterns were investigated. Then relations with subcontractors were examined. Cross-case analysis began by the organization of evidence along the dimensions mentioned in the interview protocol. This was followed by comparison between cases along each dimension aimed at detecting similarities and differences (Eisenhardt, 1989; Miles and Huberman, 1994). The importance of different types of personal relationships in the initial contact and in the development of relations with foreign customers and local subcontractors was explored.

The mold industry and the mold cluster of Marinha Grande

The mold industry

Moulds are tools essential to the operation of injection machines. Every product incorporating plastic- a car, a vacuum cleaner, a doll – requires as many molds as the number of plastic parts it includes. As a consequence, molds are customized products, purchased by different industries. Also, since each mold can be used to inject millions of identical plastic parts or products, molds are in general unique products. Molds are also technologically complex, combining knowledge from different disciplines, mechanics, materials technologies, electronics, optics, and information technologies.

These characteristics explain why quality, delivery dates and price are often mentioned as the key competitive variables. Nowadays delivery time is on average 12 weeks. Customization and technological complexity require frequent exchanges of information between the firm producing the mold and its customer. Even though communication requirements are likely to be more intensive in the early phases of the project, they go on throughout production and continue during after sales assistance³. In a nutshell, molding is a rather relation-intensive industry.

Payment conditions also contribute to the creation of a bond between both parts of the transaction since advanced payments are current in this industry⁴. This means there has to be a

³ The need to exchange information varies with mold complexity. In any case, the preliminary drawing and final drawing of the mold have to be thoroughly discussed with the customer before approval, since several technical solutions are frequently possible. Questions and problems that may arise during production can require customer intervention. Some other times customers introduce changes in their product during mold production and, as a consequence, changes have to be made in the mold. In any case fortnight progress reports are sent to customers. After the mold is nearly finished it is tested in conditions similar to real production, the plastic parts are measured. All this information has to be passed on to the customer since it contributes to avoid problems when the mold is delivered to the customer and series production starts.

⁴ Traditionally, a 3* 1/3 rule was applied; 1/3 was paid after the preliminary design is approved, 1/3 when first samples were sent and 1/3 before the mold shipment. Nowadays this rule is less and less often applied but the

minimal level a trust between the two parts of the transaction. The customer because an advance payment is made assuming that the supplier(s) will punctually deliver the mold(s) according to specifications; even if just one mold fails, it may well compromise the introduction of the product in the market on time. The mold seller has also to believe the customer will pay the mold since molds are customized product and it is not easy to find an alternative client. As a consequence customers and suppliers in this industry tend to value stable and long lasting business relations. Moreover, through repeated transactions Mold Makers (MM) learn technical procedures and specifications of buyers and become familiar with their injection molding machines. Technical staffs from both parts meet, and learn to communicate and to work together. Easier communication, joint problem solving and reduction of misunderstandings result in improved quality and shorter production cycles.

Differences on average size of MM and customers should be remarked. Limited economies of scale in mold production are behind the small scale of most MM all over the world. These small firms tend to be production-oriented, employ few designers and only one or two persons in the commercial department. Among molds' buyers MNCs are frequent. But there are also smaller injection molders and trading firms. Quite a few of these firms have several people in charge of procurement. Communication between the buyer and the seller takes place essentially through persons in charge of the purchasing and the commercial departments, respectively. Sometimes engineers involved in product conception and designers of the mold are also involved. These are the workers more likely to develop personal relations overlapping business ties.

The mold cluster of Marinha Grande

The mold industry in Portugal has its origins in the glass industry. Marinha Grande, 93 miles north of Lisbon, is one of the two traditional glass-making centers in Portugal. It was there that the first molds for glass were produced in the mid 1920s. In 1944, the first firm specialized in molds for plastic materials, Aníbal H. Abrantes, was founded. Mold exports started in the mid 1950s and rapidly increased. The large foreign demand for molds encouraged the foundation of other mold-makers though spin-offs from Aníbal H. Abrantes and other pioneering mold-making firms (Sopas, 2000). This way mold-making firms tended to locate near each other and an industrial cluster developed⁵.

At present the Marinha Grande cluster is composed by a large number of different economic actors- mold making firms, engineering and trading companies, all sorts of suppliers of inputs (like steel, accessories and standard components), suppliers of services (design, CAD/CAM, programming) and local institutions. All these firms and institutions share the fact they contribute to mold making.

In 1998 there were between 186 and 221 mold-making firms⁶, depending on the source used⁷ These firms employed nearly 4,000 persons and had a total volume of sales of 177 million Euros. These values mean that 62% of the molds produced in Portugal were made in Marinha

customer general pays a percentage of the price of the mold with the approval of the preliminary design. Mold makers use this money to finance production.

⁵ The plastic mold cluster of Marinha Grande was identified within the project Building the Competitive Advantage of Portugal coordinated by M. Porter (Monitor Company, 1994). Barbosa de Melo (1995) identified a Marshallian industrial district in the area of Marinha Grande.

⁶ According to the classification of economics activities (NACE Rev. 1 or CAE Rev. 2) firms involved in mold-making are classified in the category 29563.

⁷ Ministry of Employment (MQE, Quadros do Pessoal) versus the National Institute of Statistics (INE, Belém).

Grande. In the year 200 Portugal occupied the 11th place in ISTMA⁸ ranking of producing countries (18 countries are included), immediately before Belgium, Netherlands, Finland, Sweden, Argentina, Switzerland and Slovenia. Not all these firms are whole mold makers; some have specialized in the production of parts (structures, cavities, accessories) and others in the performance of specific operations (electric erosion, CNC machining, polishing, assembly). This explains the large number of very small firms; more than half of the firms have less than 10 employees. In addition, there are many small shops where individual entrepreneurs and one or two workers provide specialized services to larger producers. In the last decade, several mold makers have founded or acquired other manufacturing firms in order to increase production capacity. This has been preferred to internal growth since 50 workers per plant is generally considered the maximum efficient scale for a mold maker. As a consequence, the number of decision centers is smaller than the total number of firms. Since only 4 firms are foreign owned, decision centers are locally based.

The co-location of so many different types of firms in Marinha Grande favored the outsourcing of parts, components, specific activities or even whole molds. Portugal has one of the highest values of subcontracting work among ISTMA members (15% of turnover).

The very high investment rate (16,6% of sales in 1999) is another key feature of Portuguese mold makers. Mold-making firms in Marinha Grande are virtual show rooms of up to date equipments. Most equipment, steel and standardized components are imported through local representatives or offices of foreign suppliers. These firms make frequent visits to local mold makers and organize presentations of new technologies and equipments. A diversity of other inputs and services (mold design, programming) are sourced locally. New technologies and production methods are also an important part of everyday talks, even outside working places. Entrepreneurs and employees like to discuss their work, problems encountered and solutions discovered. As a result, informal relations between firms are strengthened. Moreover, since a skilled work force is considered to be a key resource, investments in technology and equipment are accompanied by continuous investments in training.

The main customers of molds produced in Marinha Grande are foreign, unlike what is usual in other clusters. As much as 90% of mold production is systematically exported. In the year 2000 Portugal was the 9th most important exporter in the ISTMA ranking, standing ahead of countries like Spain and the UK, larger producers than Portugal. During the period 1994-99 molds for plastic injection were exported to 105 different countries. USA, Brazil and Israel are the only non-EU Member States included in the ten most important destinations. Others are by descending order of importance: France, Germany, UK, Sweden, Netherlands, Spain, and Belgium-Luxemburg. Portuguese molds are sold to a wide range of industries. In 2000 the estimated distribution of sales by customer industries are as follows- automotive (27%), packaging (18%), electronic and telecommunications (12%), electric appliances (7%), households (7%), electric material (6%), just to mention the most important. Toys, once the biggest customers, contribute today to 3% of total sales.

Between 1994 and 1999, engineering and trading firms accounted for at least 31% of exports of molds produced in the cluster and mold-makers for at least 43%⁹. As a consequence,

⁸ ISTMA stands for International Special Tooling and Mold Association.

⁹ Criteria of Statistical Secret do not allow us to obtain information regarding the economic activity of firms responsible for the remaining 27% of exports. Our guess is that most of these exports originate in mold makers and mold traders but amounts by country of destination are too small to respect the criteria of statistical secret. Exports of injection molds at the country level sustain this guess since mold-makers account for 65% of exports and mold

trading companies are probably mold makers' most important local customers. In 2000, 51 engineering and trading firms located in Marinha Grande exported molds. Most firms employ less than 10 persons while a few have between 10 and 49 workers. Five of these larger firms are part of business groups.

Both mold making and trading companies have been investing in different types of projects throughout the 90s. The first type of projects corresponds to downstream investments in the plastic industry. This includes investments in testing facilities and/or in series production. Subsequently, investments in engineering and product development became frequent. Through these upstream and downstream investments firms become able to offer their customers higher value added services, strengthening relations. Finally, the internationalization of mold production has to be mentioned. Most of these projects have started in the late 90s and are directed towards Brazil and also Mexico, two markets with good demand prospects.

Local institution should not be forgotten. As early as 1969, Cefamol - the National Moulds Industry Association was founded in Marinha Grande. Presently with 120 members, its activities include the representation of industry in dealings with official bodies, professional training and provision of technical support to members. Moreover, the external promotion of the mold industry is carried out jointly with ICEP - Portuguese Foreign Trade and Investment Department, in Lisbon. In the early 90s Cefamol was involved in the setting up of Centimfe, an advanced technological center for the metal and mold making industries. It is presently participated by more than 200 companies and provides services in the areas of quality control, research and training, technological development, provision of information on new technologies. Another important local institution is Cenfim -the Professional Training Center for Metallurgic and Mechanical Industries. Courses offered range from extensive training for apprentices to specific courses on selected topics for specialized workers and to management education for executives. As far as the universities are concerned, the School of Engineer of the University of Minho, even if not located in the cluster, was able to work closely with local institutions like Centimfe. At the local level, the Polytechnic Institute in Leiria has also established frequent relations with local firms and institutions.

Case Studies

Mold Trader A

Four partners founded Mold Trader A (MTA) in 1985. These were respectively the partner of a local mold maker, the head of its commercial department (Partner A), a subcontracted designer and an American commercial agent with a long lasting relationship with that mold maker. Excess demand for molds, increasing difficulties of ensuring punctual delivery and the fact it was difficult for a manufacturing firm to subcontract directly were the main reasons that lead to the establishment of this trading firm. Between 1989 and 1995 three of the partners sold their shares to Partner A that presently owns 75% of the social capital. The remaining shares are hold by several other employees of the firm. MTA does not hold any participation in other firms and defines itself as an independent, engineering company, supplying injection molds for the plastic industry. MTA is certified by ISO 90001 (quality), ISO 14000 (environment), and ISO 18000 (security). MTA is moving to a new bigger facility and has plans to invest further in product development, quality control and plastic injection.

traders for 31% in 1998. These numbers were calculated from official statistics (INE), after corrections regarding firm classification of economic activities were introduced.

Today MTA employs a total of 10 professionals. Three are heads of the main departments –technical, administrative and financial - 5 other work in the technical division and 2 provide administrative support. MTA sells between 60 and 70 molds a year to 12 regular customers from different industries and countries. It exports almost 100% of total sales (€ 3.3 million in 1998) to customers located in the USA, Canada, France, United Kingdom and Ireland. In most of these countries their customers are injection molders working in (or for) different industries, with a predominance of small electric appliances and domestic utilities.

The older customer of MTA is an American injection molder that produces hangers for the clothing industry. It was already a customer of the mold maker where Partner A had worked. Most of other customers came through different reference mechanisms. Sometimes it was an employee in charge of molds' purchases in a customer firm (Client 2) that move to a different firm and introduced MTA to his new employers. A new customer was often gained and to avoid losing Client 2 someone in MTA had to develop a relation with other person in Client 2 purchasing staff. In this case MTA benefited from the fact the Client 2 had already bought several molds from the trader and knew it was a reliable supplier. It was also a personal relation that enabled MTA to get its first customer in the United Kingdom. Here, MTA benefited from the fact that one of its personal contacts in an American customer had a brother working in an English injection molder and introduced MTA to him. Afterwards, this new customer referenced MTA to many other European customers.

As regards other more formal mechanism to obtain foreign customers MTA started to be present on trade fairs only in 1996. According to the firm representative, being in the fair is more important to be able to meet regular customers than to obtain new regular customers. Customers found through trade fairs tend to be more interested in checking prices and trying potential suppliers rather than being willing to develop long-term relationships.

MTA offers customers a full project management service, from part drawing to final product. Customers needs vary a lot, depending on their own internal capabilities. For example, some customers do not have design capabilities and just tell MTA what type of object they want or bring a sample asking the trader to take care of part drawing. Other customers have big design departments and only order the molds needed to produce the plastic parts. Still other customers like to involve MTA in product development from the beginning of the process. MTA envisages the continuous development of close relationships with customers. It assumes an active role, proposing the best technical solutions in the design of parts and molds. As regards molds' orders, MTA guarantee the customer it will select the most adequate mold maker for each kind of mold. Specialization reduces error, increasing the final quality and reliability of molds. During production MTA represent the customer interest near the subcontracted mold maker. As regards the preliminary drawing, it is either made internally or outsourced to one of the three design firms with whom MTA works on a regular basis. The mold maker generally does the final drawing but it is revised by MTA before being send to customers for approval. Furthermore, MTA oversees the production process and schedules, visiting subcontracted mold makers daily (or even twice a day if necessary) and producing the fortnight reports that are send to customer; it provides technical support to mold makers, monitors the molding trials in real production conditions; and, it takes care of parts and molding areas dimensional control reports.

Relations with mold makers are also close and classified as partnerships. MTA works with a little more than 20 mold makers all located in the Marinha Grande district. These firms have different sizes, specializations and production capacities. None works exclusively for MTA. In the beginning, MTA partners used their knowledge of local mold makers to select

subcontractors, matching the characteristics of molds ordered to the specialization of mold makers. Now MTA selects mold makers based on past working experience. The high mobility of workers in the district area and frequent spin-offs have enabled the gradual enlargement of the initial supplier base. After the process of quality certification MTA has to certify its suppliers formally, even if MTA sees it as a mere administrative requirement. According to this firm the most important factors that are behind long-lasting relationships are punctual delivery of molds that fill the quality requirements demanded. Sometimes MTA tells some mold maker that there is an increasing demand for molds that require a specific type of equipment. This works as an incentive for mold makers to invest in new equipments. Nevertheless, it is the mold maker that has the final decision on any investment. Some other times mold makers came to MTA asking for orders. MTA tries to help and remembers these firms when new orders come. Besides ensuring regular work to these mold making firms, MTA also takes care of molds' quotations. This corresponds to a rather heavy administrative burden and cost since quotations often require a preliminary drawing. And, on average less than 10% of quotations sent to customers result in actual orders.

Mold Trader B

Several partners founded Mold Trading B (MTB) in 1991. Only one of the partners (Partner B), a mechanical engineer, had a previous working experience in the mold industry. He had worked in two mold making firms in the Marinha Grande cluster and afterwards in a top CAD/CAM commercial agent. His experience in the mold industry was quite diverse, ranging from drawing, production planning, and production methods, CNC machining, and quality control. He had never worked in the commercial department but he soon discovered that relational capabilities were key to success in this industry. In the mold industry relations are important at different levels. First, personal relations within and across local firms contribute to learning and to the professional training of local workers. Learning by doing, learning by observing others doing and learning by interacting are all mechanisms of knowledge development. These mechanisms are active in the production phase of mold making firms and are key cluster assets. Additionally, relations with foreign customers are especially important due to the fact that these are generally located in foreign markets and frequent contacts between customers and mold makers are needed during the 10 to 12 weeks that an order takes to be delivered. If relations among employees that work in local mold makers are naturally established, the same does not happen with relationships between local mold makers and foreign customers. Partner B learned this while selling CAD/CAM to mold makers in the Marinha Grande. Most mold makers are founded through spin-off process and in most cases partners come from mold manufacturing. These ex-employees have deep knowledge of production techniques but they have little experience of dealing with customers, especially with those that speak foreign languages and impose complex demands on suppliers. The creation of MTB aimed at filling the gap between a well-developed production capacity and an under-developed commercial function in many local mold makers.

MTB have built a professional organization with an aggressive commercial team that target the most demanding foreign customers. These customers have projects integrating several molds, exceeding the production capacity of individual mold-makers. Among other things, MTB offers these customers the possibility of having one supplier instead of a more or less larger number, depending on the number of molds included in a specific project. This is especially important since customers are located far from Marinha Grande. MTB guarantees customers that

the preliminary drawings of all the molds that compose the project are done by one specialized firm, making sure that the different plastic parts will fit perfectly. Then, MTB places each mold or molds in a local mold maker specialized in manufacturing that specific type of molds and it monitors the firms during the process, ensuring that all the different tools are produced according to the exact technical specifications and are ready on time. As a result economies of scale, scope and time can be achieved. After molds are ready, MTB takes care of final tests, measures parts and verify their fitting. In short, MTB offers customers a global service, quality, competitive prices, punctual delivery, and on-going communication.

In 1996, all the partners except Partner B sold their shares in MTB to two new partners. The new partners were friends of Partner B and even though they had no previous working experience in the mold industry they had important management and organizational skills, in short supply in this industry. In 1998 MTB acquired one of the largest mold-making firms in Marinha Grande. This acquisition was considered of strategic importance to MTB since the acquired mold maker was one of the few equipped to produce large molds (molds of 35 tons or more). Being able to supply large molds is a necessary condition to obtain projects in industries such as automotive. With the acquisition of this mold-maker MTB guarantees access to its production capacity. Moreover, MTB feared that if a competitor would buy this mold maker and would decide to stop working on subcontract, it would close important business opportunities for MTB. More recently MTB has acquired a participation in the capital of other local mold maker that had specialized in complex molds of medium dimension but had an under-developed commercial department. Notwithstanding these acquisitions, most orders are still subcontracted to local mold makers.

Today MTB employs a little more than 20 professionals that are divided between sale management and project management. Seven people work in the sales management division and each one is responsible for one or more of 19 markets located all over the world¹⁰. These people take care of market prospecting and negotiate orders. The project management team function begins after orders are received. Two mold designers are in charge of subcontracting the drawing of the molds. The majority of the other employees work in the management and monitoring of subcontracting. The two mold makers that MTB has acquired employ a total of 150 workers, a number well above average size in this industry.

MTB sells between 280 and 350 mold a year to 15 regular customers from different industries and countries. The automotive industry represents 32% of sales, being followed by large domestic appliances, electronics and electric industries. Well known firms like Bosch, Valeo, Magneti Marelli, Suzuki, Yazaki and Behr are among their customers. MTB exports almost 100% of total sales (€ 5.6 million in 1998 and € 9 M in 2001) to customers located in Israel, France, Germany, Sweden, and Norway just to refer the most important markets.

MTB obtained its first customers through active marketing efforts but then the reference mechanism was responsible for many of the customers that followed. The acquisition of the large mold maker has also meant the acquisition of its customer portfolio since the former partner agreed to stay and work in the firm during two years. Every year MTB is present in the most important trade fairs and have a technical and commercial representative in Israel that also covers Egypt, Jordan and Turkey.

As regards relations with local firms, MTB subcontracts drawings to local small design offices. Mold making is subcontracted to nearly 40 local mold makers of different sizes and

¹⁰ A market area can correspond to one or several countries (Scandinavia, for example) or even sub-continent (for instance, Latin America).

specializations. These firms were selected on the basis of personal and professional relations Partner B has established with partners and workers of local mold firms during his working career. Information freely available locally has also been used. After first exchanges, the quality of the work delivered by the mold makers, along with on-time deliveries and price were the main factors explaining long-terms relationships. Four firms located in Oliveira de Azeméis are also regularly subcontracted. Generally MTB subcontract the whole mold but sometimes the structure is subcontracted to a very specialized firm and the rest of the mold to another firm. None of the firms works exclusively for MTB. More than a contractor MTB sees itself as supplying local firms the management and organizational competences they are missing. When subcontractors are larger firms with their own direct customers, MTB demands to be treated like a customer, a regular, reliable and sophisticated customer. Finally, it should be noted that MTB's management, organizational and financial skills guarantees that orders integrating a large number of molds still come to the cluster, even if beyond the production capacity of most individual mold-makers.

Mold-trader C

Three mold makers and Partner C, a former employee of an American toy maker that had a mold purchasing office in Marinha Grande, founded Mold Trader C (MTC) in 1986. After realizing that marketing investments were too costly and not very effective for an individual mold-maker, the three firms have decided to establish a trading firm. On the one hand the financial and human resources needed to be annually present in the most important trade fairs are significant to an average mold maker. On the other hand, if investments are successful, it is very likely orders received will exceed the production capacity of individual mold makers. And this is more and more likely since customers more often want to place orders that included 10 to 12 molds and an average mold maker can only produce simultaneously 2 or 3 molds. After MTC was established the three mold makers could share marketing costs and have someone in charge of managing the projects that included several molds. MTC allocated molds to partner firms, subcontracted work to other local firms, when necessary, and coordinated production that took place in different firms. Partner C has an extensive knowledge of local mold makers because of his previous working experience. Besides having purchased molds for an American toy maker, he also worked for a local mold maker and for a local injection molder. Moreover, his personal knowledge of several mold entrepreneurs and employees has been reinforced by the fact he was born and raised in Marinha Grande. Therefore, he went to school, played football, did the military service and met frequently a large number of local entrepreneurs and workers.

Presently MTC is owned by only one of the mold makers (60% of total capital) and Partner C (40%). Both other firms left because they decided to pursue independent commercial strategies. MTC now works as an extension of the commercial department of its partner mold maker and this firm has the right to produce orders MTC gets. In practice however the decision whether or not to outsource depends on the technical characteristics of the mold, the delivery time and the price. Even though local mold makers are seldom fully specialized in a single customer industry, each firm tends to orient its production capacity to specific types of molds. Being a trader that work with different mold makers MTC does not face any restriction.

MTC employs only 3 persons, including the individual partner; the mold maker partner employs 125 workers. Almost 100% of sales are exported. The number of molds sold each year varies a lot. Nevertheless, MTC has 5 regular customers in 6 countries; this is possible because one of the customers is an agent working for customers in the Scandinavian countries. The other countries are the Netherlands, the United Kingdom and Brazil. The most important customer

industries are injection molders producing households, packaging and plastic components for industrial machines. Some of these firms own their product and others are subcontractors of final users. In the latter case final users often participate in the discussion of the drawing, enlarging the number of relations MTC has to coordinate.

The first customers were founded through visits to trade fairs. MTC and its mold-making partner usually organize a participation in the most important fairs. However, sometimes only MTC is present and often as a visitor. Other customers came through job mobility of employees of former customers and through references (word-of-mouth marketing). The Swedish agent was found through a personal relation with Partner C. The agent used to be a designer in a big mold maker in Sweden. After this firm was sold to a local bank, he and his former employer found a small design and service company. It employs 7 persons, supplies technical drawings to industrial firms and provides after-sales assistance to local injection molders; these firms are potential customers for molds. The small Swedish firm works as an exclusive agent of MTC on the Scandinavian markets. In Brazil, MTC is trying to establish a similar type of agreement with a local partner because it has realized Brazilian customers do not like to buy from foreign agents and like to have a local contact. Finally, the mold maker partner is sometimes a customer. This happens whenever the partner receives an order of molds in excess of its production capacity or technical specialization. MTC uses its subcontracting network to place these orders.

Three of the regular customers work with MTC for more than 10 years and all customers work exclusively with MTC in Portugal. According to MTC, if a customer is satisfied with its suppliers, it tends to establish long-term relationships. After some molds are delivered on time and according to requirements, customers trust MTC and do not feel the need to make monitoring visits. Most contacts are done by e-mail, fax and telephone. However when customers do come to Marinha Grande they like to visit subcontracting firms. Sometimes these firms try to start selling directly to customers but when relationships are long-term the risk of this happening is very small. MTC also visits customers to discuss a project or just to keep relationships alive. Besides buying molds some customers from the packaging industry tend to ask for product development services. This is becoming more and more frequent and although MTC does not have the necessary competencies it is easy to find local specialized firms that can supply this service, along with different prototyping techniques.

As regards relations with local mold makers, MTC works with 7 firms, including its partner. Orders are allocated on the basis of different specializations of firms. When more than one firm is involved in a project MTC coordinates production. There is no need for direct contacts among mold makers. MTC transfers technical information to subcontractors and makes an active contribution to the diffusion of technical information among mold makers. Moreover, MTC can make advanced payments to mold traders and it always pays mold makers independently of receiving from the customer.

Discussion

These three case studies represent a first contribution to the analysis of trading firms operating in Marinha Grande mold cluster. Even though molds are customized products, trading firms account for more than 30% of exports. Therefore, mold traders are one of the means used by small and medium sized mold makers to enter foreign markets. The three trading firms studied are of different sizes and have established relations with customers from different industries and countries, both close and distant (TABLE 1 and TABLE 2).

TABLE 1
Firms – basic information (1999)

Firms	Year establish.	Partners	Workers (n°)	Sales (M. €)	Export (%)	Molds (maximum ton.)
MTA	1985	4 individuals	10	3.3	95	10
MTB	1991	3 individuals	20	5.6	99	9
MTC	1986	3 firms + 1 ind.	3	n.a.	100	40

TABLE 2
Regular customer, main customer industries and main export markets

Firms	Regular customers	Services offered	Main Client Industries	Main Markets
MTA	12	Consultancy Injection Injection molds Project and Engineering	Air Conditioning Cosmetics; Electronics Fittings; Garden Lines Household Items Mould makers Office equipment Packaging Protection and Security Telecommunications	Austria Germany Ireland UK Canada USA
MTB	15	Aluminium molds Blow and Vacuum m. Compression Consultancy Die casting Heat Treatment Injection Injection molds Project and Engineering Rapid Prototyping Texturizing Thermoforming	Agricultural/Irrigation Air Conditioning Automobile Cosmetics; Electronics; Fittings; Garden Lines Household Items Laboratories Medical Equipment Packaging Pharmaceuticals Prototypes Telecommunications Toys	France Italy Spain Sweden Switzerland Turkey UK USA
MTC	3	Blow and Vacuum m. Consultancy Die casting Injection Injection molds	Agricultural/Irrigation Automobile Computers and Perip. Electrical Material Electronics Garden Lines Home Appliances Household Items Office equipment Packaging Telecommunications Toys	France Germany Netherlands Sweden Brazil Mexico USA

As regard the methods used to find new customers, personal relations were recognized as important means of information transfer, including information about the reputation of firms. Weak ties seem to be important as regards access to information about new potential customers but strong ties are key when a customer's employee changes job and in some reference processes. Personal references seem to have a multiplier effect: customer A refers the mould trader to customer B and customer B refers the firm to customer C and so on. Nevertheless, other more standard marketing initiatives, like being present in specialized trade fairs, seem to play a more or less important role depending on the firm. Some traders found their first customers in trade fairs while others only started to go to trade fairs to meet their regular customers. MTA justified its presence in trade fairs because it wanted to fulfill its customer's expectations. Being present in trade fairs is an important part of MTB marketing strategy while MTC visits trade fair on a regular basis but is rarely present as an exhibitor.

TABLE 3
Ways used to find Customers

Firms	Based on personal relations	Based on impersonal sources
MTA	<ul style="list-style-type: none"> -first customers was client of the former employer of one partner; -customers' employee changes job and refers trader to new employer; -customers' employee refers trader to brother that works in other firm; -customers' employees refer trader to other firms. 	<ul style="list-style-type: none"> -presence in trade fairs only 11 years after foundation and to meet regular customers not to find new customers.
MTB	<ul style="list-style-type: none"> -customers refer other customers; -portfolio of relations of the acquired firm (because former owner of the firm agreed to stay and work for the new owners during 2 years). 	<ul style="list-style-type: none"> -first customers found through active marketing efforts (presence in trade fairs, mailings, visits); -annual presence in most important trade fairs, publicity in specialised magazines and web page.
MTC	<ul style="list-style-type: none"> -customers' employee changes job and refers trader to new employer; -customers refer other customers; 	<ul style="list-style-type: none"> -first customers found trough the visit or presence in trade fairs; -annual visit to trade fairs; -agent for the Scandinavian markets (founded by a former customer's employee) -mould maker partner outsources orders in excess of its production capacity

Some persons seem to have a large number of relations with foreign customers and other people and firms located outside the cluster in their personal networks. These contacts have generally been established during previous working experience of partners. Therefore, they tend to be more frequent in the networks of former employees of the commercial or design departments of mold makers. These are the workers who are regularly in direct contacts with customers during the whole process of mold design and production.

As far as the content of exchange relationships are concerned, the empirical evidence collected corroborates that mold traders seem to offer customers some services that many mold

makers are not able to deliver. Trading firms can accept orders integrating several molds, exceeding the capacity of individual mold makers. Also, by investing in upstream and downstream activities traders seem also able to complement the value chain of small and medium mold makers. Upstream investments include the design of molds but also product development and even building prototypes using the whole range of available technologies. Downstream investments include the acquisition of measuring equipment and injection molding machines used to test molds and to produce small series. As an alternative, mold traders can easily outsource services to local specialized firms since they are used to coordinate activities performed by different firms. Some mold traders may even take care of after sales assistance through the establishment of agreements with mold-makers in foreign countries. In short, mold traders seem able to deliver customers more value added than just the mold (manufacturing capacity), contributing to the development of deeper and longer-term relationships.

Relations with local mold makers are generally started on the basis of previous personal knowledge of partners and employees. The local reputation of firms is also a factor although less important than personal and especially professional relations. Several factors contribute to dense local networks of personal relations within the cluster. The fact that people work and live in the same area, go to the same places, meet face to face on a daily basis, change jobs frequently or start their own firm, are some examples. After an exchange relationship starts, then it is the continuous performance of both firms that is going to determine the length of the relationship. Strong ties play an active part in this process of identification, selection and monitoring of subcontractors. Weak ties contribute to find subcontractors located outside the cluster and are also used when a trader want to enlarge its portfolio of subcontractors. Traders usually try new subcontractors placing orders of a single non complex mold.

TABLE 4
Subcontractors

Firms	Activities outsourced	Mold-makers (n°, location, type)	Selection process
MTA	Mold design Mold making Mold testing Rapid prototyping Rapid molds	20 firms in Marinha Grande; Firms of different sizes and specializations.	Previous relation (personal and professional) of partners. Key employee changes job to a new mold maker or starts its own form. Results of subcontracting experience.
MTB	Mold design Mold making (whole molds and parts). Mold testing	40 firms in Marinha Grande (including acquired firms) + 4 firms in Oliveira de Azeméis; Firms of different sizes and specializations.	Previous relation (personal and professional) of partner B. Results of subcontracting experience. Acquisition of 2 mold makers.
MTC	Mold design Mold making Mold testing	7 firms in Marinha Grande (including partner); Firms of different sizes and specializations.	Previous relation (personal and professional) of partner C. One partner is a mold maker.

Mold traders can supply mold makers a whole variety of commercial services ranging from preparing hundreds of quotations, translating information into Portuguese, converting files from one software to another, clarifying all technical specificities. By working with trading firms mold makers may learn how to work with foreign customers and how to deal with their cultural specificities. Mold traders take care of international promotion by a regular presence in trade fairs, paying publicity in major magazines, sending mailings to potential customers, conducting market research, establishing offices in foreign markets or finding local agents. Through all these export promotion activities mold traders contribute to the international visibility and reputation of the cluster. International reputation attracts foreign buyers to the cluster increasing the probability of local random encounters. Additionally, it facilitates the establishment of future contacts with foreign customers since it increases the probability they will have already heard of the cluster. Because mold traders are not constrained by the characteristics of their production equipment they are able to have both a larger number and a more diversified portfolio of customers, both in terms of countries and industries, than mold makers. As a consequence, mold traders are less vulnerable than mold makers to cyclical demand crisis and are able to offer local producers work on a regular basis. Some mold traders even guarantee mold makers a steadier stream of payments by paying them monthly. Conversely, mold traders can also help mold makers to outsource in times of excess demand, monitoring and coordinating subcontracts in order to guarantee quality and punctual deliver. Finally, by working with several mold makers, traders contribute to the process of information transfer and knowledge diffusion among firms.

However, according to information collected during the interviews and in local magazines, mold traders can also act as information barriers. These firms may limit the information flow between foreign customers and local mold makers. There may be serious consequences as far as quality and delivery times are concerned, harming the image of molds made in Portugal. It can also limit learning and the development of subcontractors, contributing to their continuous dependence from traders. Besides, some mold traders seem to pursue short-term strategies. These firms prefer to constantly change customers rather than providing them a good service. They accept orders with very low prices and short delivery dates and are then forced to outsource production to firms that do not have the required equipment and/or organization to fulfill the customer's quality and time requirements. These traders damage the international image of Portuguese MM. Also, by passing on to mold makers the low prices negotiated with customers, traders are heavily limiting their financial capacity to support the continuous investments necessary to compete in this industry; in extreme cases this has led to bankruptcy of some local producers.

In short, there are probably mold traders that generate value for customers and are able to split earnings fairly between mold makers and themselves. Simultaneously other mold traders may generate little value and keep for themselves some or all the value generated by their subcontractors. The former contribute to the internationalization and development of mold makers and the cluster. These traders are likely to facilitate start-ups; first, because they act as local customers for mold makers; at the same time traders enable the creation of very specialized firms, limiting the resources necessary for start up. The latter traders damage cluster development and internationalization efforts.

To learn more about different types of traders present in the cluster and to be able to propose hypothesis that could be tested, it is necessary to study other mold traders, local subcontractors and foreign customers. This way one can bring to the analysis the points of view

of the two other parts of relations being studied (local mold makers – local mold traders – foreign customers). Finally, the role local and national institutions may play in this process should be researched with the aim of contributing to the discussion on cluster policy and its most effective instruments.

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