

# **A Multi-dimensional Approach to Supply Management**

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## **Abstract**

This paper aims to contribute to a better understanding of why and how supply management influences the network position of the buying firm. The paper encompasses a multi-dimensional model built on the basis of the conceptual background of the IMP group. The model is used to analyse two cases: Adira, a family-owned manufacturer of machinery to cut steel, and Vulcano, a manufacturer of house gas water-heaters and boilers. Following totally different approaches in terms of supply management, these cases are likely to open new avenues in terms of the understanding of supply network strategies.

## **INTRODUCTION**

Supply chain management has received a special attention over the past decade. Since the seminal work of Håkansson and Johanson (1993), a number of researchers have focused their efforts in the understanding of supply chain networks (cf., Anderson et al., 1994; Håkansson and Snehota, 1995; Ford and McDowell, 1999; Möller and Törrönen, 2003; Hölmen and Pederson, 2003). In general, these works aim to understand supply relationships in the context of the network in which firms are embedded. However, important issues regarding supply management and its effects on the performance and strategy of the buying firm seem not to be fully investigated.

Based on a doctoral research project, the purpose of this paper is to contribute to a better understanding of the interdependence between supply management and the network position of the buying firm. On the basis of the conceptual framework of the IMP group, the paper

encompasses a model that is used to analyse supply networks in the context of two cases: (i) Adira, a Portuguese family-owned manufacturer of machinery to cut steel, and (ii) Vulcano, a manufacturer of house gas water-heaters and boilers, that is fully owned by the international group Robert Bosch.

This paper is divided in five sections. The first section elaborates on the interaction and industrial network approach's basic concepts and attempts to complement it with the work conducted by Brian Loasby. The second section presents a model of supply chain networks that results from a reflection on the existing literature and how it can be furthered to explore some relevant issues that still remain relatively obscure. The next section briefly addresses the research methodology which is on the basis of the cases analysed in the following section. The last section encompasses a synthesis of the previous analysis as well as some conclusions.

## **CAPABILITIES: A CORNERSTONE BETWEEN FUNCTIONS AND RELATIONSHIPS**

Several authors (cf., Håkansson and Johanson, 1993; Anderson et al., 1994; Håkansson and Snehota, 1995; Ford and McDowell, 1999; Möller and Törrönen, 2003; Hölmén and Pederson, 2003) have studied relationships' functions in industrial networks. In general, they concluded that they may have both direct and/or indirect effects. Direct functions produce effects within the dyadic relationship itself, independently from other parties' linkages to the partners involved (Walter et al., 2003). Cost reduction, quality, volume and safeguard functions are examples of direct functions. On the other hand, relationship connectedness enables the existence of indirect functions that emerge and influence other relationships and actors besides those directly involved in dyadic buyer-supplier relationships. Signalling, scouting and innovation functions are examples of indirect functions.

Suppliers' capabilities may be seen as preconditions to perform specific functions as those described before. If a supplier has a strong set of direct capabilities – i.e. if he knows how to make things very well – then buying from it will probably have cost reduction or quality effects. However, if the buying firm is looking for innovation or scouting functions, direct capabilities may be insufficient and the supplier must also present a set of indirect capabilities to access other parties (clients, suppliers, etc.) resources and activities. Moving from direct to

indirect functions progressively requires a wider range of indirect capabilities from the buying firm and the suppliers involved.

Loasby's (1998) concepts of direct and indirect capabilities defined as knowing how to "make things" and how to "get things done by others" are likely to provide useful insights on these issues as Araújo et al. (1998) have demonstrated. Making and selling products require knowledge residing in the structure of direct and indirect capabilities within each firm, supplemented by the structure of indirect capabilities that connects it with other firms (Loasby, 1998). For instance, buying a product from a supplier's catalogue or exploring its capabilities to produce new solutions that add value to the buyer's own business possibly demand different type of relationships, interfaces and firm boundaries.

When selecting and managing suppliers, a buying company must consider the type of functions/effects it looks for in each relationship, if suppliers have an adequate set of activities and resources – direct/indirect capabilities are crucial resources - to produce those effects, if its own internal and external organisation is adequate to access suppliers' resources and activities. As firms normally *buy* different functions from their suppliers, supplier relationships of a buying company will probably show some differentiation from one another.

### **A key issue: how far should supplier management go?**

The previous paragraphs addressed the interweaving of capabilities, functions and how those linkages may result in differentiated relationships within the buying company's portfolio of suppliers. Still, we believe that an important question remains unanswered: how far should supplier management go? Should it be limited to dyadic relationship or should it be stretched to other levels, such as portfolios and networks? Ritter (1999) argues that in a network context, it is impossible to consider a relationship in isolation and firms should consider their partners connections when choosing them. This seems particularly relevant if the buying firm is trying to capture indirect functions and effects.

In this broader perspective, management should probably not be limited to isolated dyadic relationships, but rather be extended to portfolio and network levels. However, this movement - progressively involving more actors with their own interests, objectives and idiosyncratic mixes of direct and indirect capabilities - introduces a higher level of management complexity

and demands a more extensive use of indirect capabilities (Loasby, 1998) and wider network knowledge. Then, why should firms go this way? Will this movement contribute to the enhancement of buying firms' performance?

At the portfolio level, individual relationships may have crossed effects that may or may not be intended, predictable and positive to the buying company (Ford and McDowell, 1999). Anticipating and/or managing those effects may help the company minimize possible negative outcomes and maximize positive ones. On the other hand, actively supporting supplier cooperation may result in better combinations of suppliers' resources and activity coordination and held many benefits to the buying company (Gadde and Håkansson, 2001).

At the network level, a better understanding of suppliers' connections and their impact on the buying company is a precondition to manage or at least monitor those indirect effects. A better network vision will lead to a higher probability of anticipating strategic moves of other actors directly and indirectly linked to the focal company (Möller and Halinen, 1999), foresee their effects and adjust its own network strategy and action.

Network knowledge is essential if supplier management assumes this broader perspective. Holmen and Pederson's (2003) show that network knowledge is very limited and argue that this may be in some degree unavoidable and advisable due to the simultaneous need to economize and develop knowledge. Nevertheless, if the buying firm is striving to capture or control suppliers indirect effects and functions, limiting their knowledge to direct partners will probably be insufficient, even if it relies on the mediation of suppliers to produce economic and developed knowledge.

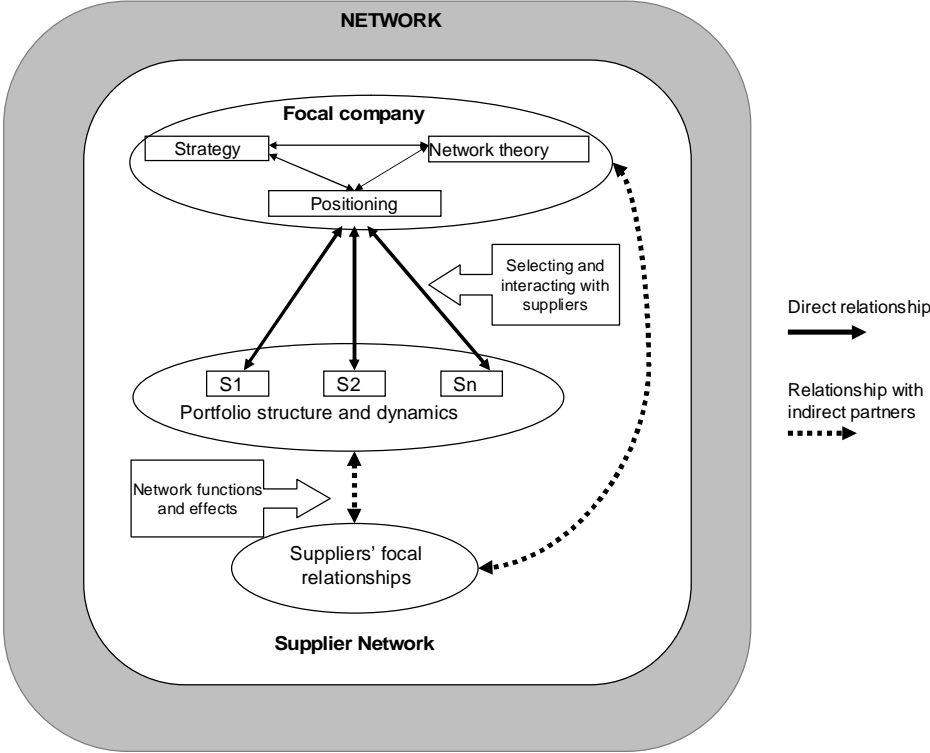
### **THE MODEL**

Based on these considerations, Brito and Roseira (2003) developed a model for the understanding of supply chain networks (Figure 1). Briefly, the model encompasses a number of issues that deserve an explanation.

Firstly, strategy, network theories and positioning are interrelated concepts that condition and are conditioned both by the dyadic relationships the company establishes with its suppliers. Secondly, supplier portfolio may influence the focal company and the net of suppliers at two

levels. On the one hand, each dyadic relationship may endure the impact of other relationships with suppliers through the mediation of the buying company and, simultaneously, these changes may also condition its positioning and strategy in each of the dyads and its capability to act according to its objectives and expectations. On the other hand, suppliers may establish or develop horizontal relationships among them outside the influence of the buying company. These interactions may have profound effects on both the focal company and their suppliers.

**Figure 1**  
**The three-dimensional model**



Source: Brito and Roseira (2003)

Thirdly, besides the interaction with its direct suppliers, the focal company is also influenced by the suppliers' suppliers that can work either in its favour or against it. The relationships between suppliers and their respective suppliers enhance their network functions and effects. The possibilities of the focal company to take advantage of them deeply depends on its network knowledge, its macro and micro positioning and also on its direct suppliers macro and micro positions, i.e. on their ability to mobilize their own focal relationship actors. Finally, regardless of the existence of direct or indirect interaction between the buying

company and its suppliers' suppliers, they are likely to influence the focal company's network theories and consequently its strategy and positioning.

In short, the dyadic level addresses the issues of selecting suppliers and relationship types, namely the links between relationship type and relationship functions and effects. The portfolio level deals with supplier interaction, the establishment and development of interaction amongst different suppliers, and roles participants play in that process. The network level focus the knowledge on supply networks – i.e. how far it goes, and how valuable it is considered to be.

### **RESEARCH METHODOLOGY**

To investigate these issues, a case study methodology was adopted due to the research context, nature and its goals. Its exploratory nature and the type of questions (mainly why and how) requires an explanatory methodological approach rather than descriptive. Case studies are considered an adequate methodology for exploratory (Strauss and Corbin, 1990) and explanatory (Yin, 1998) studies. The research context is framed by the industrial network approach where connectivity is a central issue. Consequently, Easton (1992) contends that methodologies relying on statistical inference cannot be used in the study of networks as they require independence amongst sampling units and he advises the use of case studies in this context.

Two companies were chosen to integrate the empirical research: Adira, a family-owned manufacturer of sheet metal forming machinery; and Vulcano, a manufacturer of house gas water-heaters and boilers fully owned by the international group Robert Bosch. These firms were selected based on the pre-understanding that they currently look to different suppliers capabilities and relationship functions and that these differences would lead to different perspectives and scope of supplier management. Data collection was mainly based on semi-structured interviews conducted in the focal firms and some of their suppliers, from March to October 2003. In the buying companies, several managers were involved in order to get a multidimensional perspective of supplier management. All interviews were taped, transcribed and sent to the interviewees in order to allow possible corrections or clarifications. Their analysis included the use of Nud\*ist 6 software.

## CASE ANALYSIS

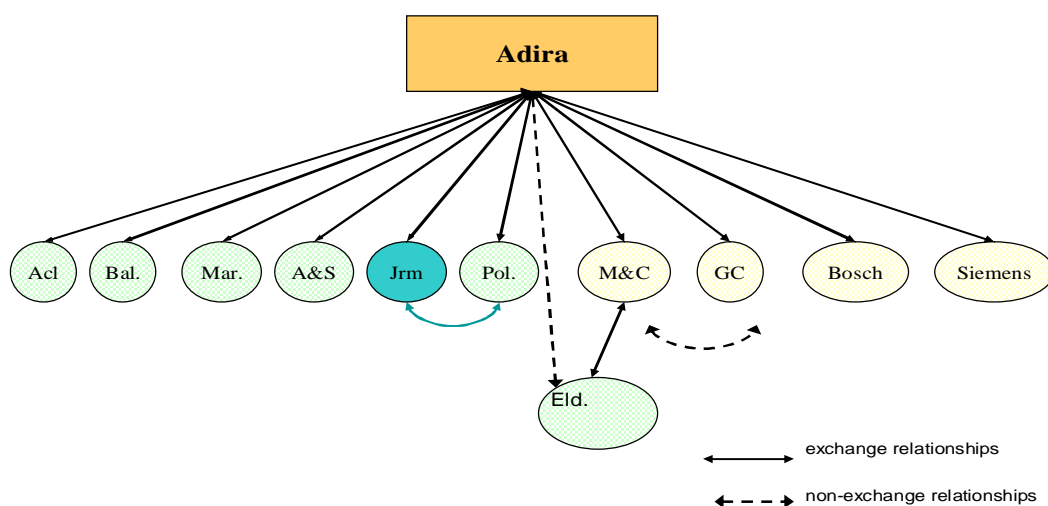
This section offers a comprehensive overview of the two cases. For their understanding, we used a framework whose elements reflect the basic model:

- ú Dyadic level:
  - ž Supplier base
  - ž Supplier functions
  - ž Dyadic relationships and interfaces
- ú Supplier portfolio level
- ú Supplier network level

### Case 1: ADIRA

Adira, founded in 1956, is considered the largest Portuguese machinery manufacturer. It presents a wide portfolio of products - shears, laser cutting shears, presses, and benders, each with a large range of optional models. Industrial manager characterize Adira as a “highly vertical company - we design our machines, buy raw-materials, manufacture the parts, assemble electric components, machinate, transport ... we make everything”. Purchased goods account for 90% of production costs of laser shears and 80% of the remaining machines. 40% of purchase costs come from a single supplier (Oxisol) fully owned by Adira.

**Figure 2**  
**Adira's Supplier Network**



### *Adira's supplier base*

Adira has two main types of suppliers: *catalogue suppliers* of materials and components, and subcontracted suppliers of manufactured parts. *Catalogue suppliers* range from multi-brand commercial firms, national agents of international companies like Bosch, the Portuguese branch of Siemens or international companies like Cybelec or Rofin (Figure 2). Products are often standardized allowing Adira to buy the same component (for instance, valves) from different suppliers “keeping its independence”.

*Subcontracted suppliers* manufacture parts according to the specifications of Adira's design team. They are divided in two groups (1) *Pure subcontract* buy materials from Adira that also gives them all product and process specifications needed to manufacture the ordered parts. They are micro-companies with few workers (normally the owners' family with very limited educational background), to whom Adira is the exclusive or almost exclusive client.. (2) *Purchase orders* also produce according to Adira's product specification but they buy their own materials and define their own production processes. They are small to medium-size companies, presenting a much better set of resources in terms of people, equipment and facilities and capabilities (technical, managerial, etc.), a diversified portfolio of clients and a much smaller dependency from Adira. Adira performs all the activities performed by all but one of its subcontracted suppliers assuring a strong control over their processes, costs and prices. They are used as production buffers to variations in demand of Adira's products. Adira's CEO defines them as “external work stations”.

According to the purchase manager, the firm has reduced its supplier base substantially in the last 3-4 years in order to reduce costs. Adira presently holds 2-3 suppliers for each type of component, material or part as this “enables them to have continuous choice and to assure continuous deliveries in case of failure of one of the suppliers”. Still, due to the complexity of their particular products, there are a few cases of single-sourcing, like Siemens or Rofin, but can still “be replaced in a couple of months”.

### *Supplier functions*



The major criterion for selecting a supplier or a component/material is product reliability, evaluated by the technical department. After this, the purchase department searches the best alternative available in the market in terms of price. In the case of *catalogue suppliers*, availability in international markets is important due to the potential need of easily and quickly replacing broken components in machines sold to export markets (60-80% of Adira's production).

It thus seem that Adira is looking for direct functions in their supplier relationships: quality (reliability) volume and cost reduction (playing the market and joining volumes) and safeguarding (keeping alternative suppliers and looking for products available worldwide). However, some suppliers also play indirect functions, even if they are not referred nor valued explicitly by the people involved in purchasing. *Signalling* is an important function, especially in export markets and in high-quality machines like the recent laser cutting shear. Adira's marketing manager says that "if we didn't have a numeric command from Siemens and a laser generator from Rofin, we would not stand the least chance of selling a laser machine as we have not yet established a reputation in this area... they are a *sine qua non* factor to sell" and adds that "in international markets, machines must be equipped with reputed [international] brands, because Portugal image in terms of technology is worse than zero and being a Portuguese manufacturer can be a major drawback". Local suppliers occasionally perform some kind of *scouting* function, helping Adira to find alternatives suppliers among their own competitors when, for some reason, they are unable to deliver the products ordered by Adira.

### *Dyadic relationships and interfaces*

Adira's relationships with its suppliers are long lasting (many exist for several decades) and all the informants involved perceived them as very positive. Relationships are almost unchanged in terms of actors, activities performed by each partner, resources invested or created within the relationship. Activities division between Adira and its suppliers has remained the same throughout the years and the same happened to interfaces. Adira's machines have always been developed internally with little contribution of its suppliers – *catalogue suppliers* may be asked for some advice for the best options available in their catalogues; *subcontracted suppliers* play no role at all in this process. Siemens, selected by Adira when it built its first laser shear, was an exception as it had to adapt its Siematic numeric control to the laser machine and also provided some initial training of Adira's team.

Adira's technical manager says that introducing some changes like "involving subcontracted suppliers in the development phase would bring benefits to the company and the suppliers" and he explains that is not done because "it is not the company tradition" and "the short lead time to project a machine is not compatible with suppliers' involvement". Adira's CEO refers that some occasional past experiences in "asking selected suppliers to present a solution according to specified function" have proven to be more expensive than to do it internally because the firm's "value in terms of organization, design, etc., ultimately results in less expensive parts".

On the supply side, the single reported supplier's initiative to present a prototype (that hopefully would "solve some of Adira's problems") for testing, never got any reaction from the client. Although some suppliers refer that they could be more active in some areas like product development with benefits to both parties, they don't foresee this evolution. On their opinion, it would go "against Adira's philosophy" that is "strongly internally oriented" and anchored in a "highly competent team", that has "its own methods and market knowledge" and that "would not like to receive outside solutions". In any case, most suppliers believe they should not take any initiative in this area and that if they did, it could be perceived as interference in Adira's management.

### *Supplier portfolio*

Figure 2 depicts a single case of horizontal bonds among Adira's suppliers. *Pol* is a supplier that makes *surface zinc treatments* both to Adira and some of its *subcontracted suppliers*. Adira negotiates prices for all of them, achieving better conditions than its small subcontracted would get individually. By reducing the price suppliers pay for this service the prices of parts suppliers sell to Adira are also reduced. Besides negotiation, Adira plays no other role in the relationship among *Pol* and the other suppliers involved.

In the past, Adira tried a similar experience with one supplier of steel and the *pure subcontract suppliers*. The idea was that *pure subcontract suppliers* would buy the material directly from the supplier of steel rather than from Adira. But Adira had to give it up as *pure subcontract suppliers* were systematically unable to procure the materials in time to production. This is also an example of how a small rearrangement of activities has failed to

the lack of indirect capabilities of *pure subcontract suppliers* and the inability of Adira to shape their capabilities despite of its strong power position in those relationships.

Suppliers and Adira's informants state that there is no need of further relations within the portfolio. As design and assembly are Adira's exclusive tasks and suppliers manufacture or sell according to the client's specifications and requests, suppliers are considered to be "totally independent from each other". If, for instance, product adjustments are needed, they are achieved through individual relationship with each supplier. Adira seems to play an isolating function (Holmen and Pederson, 2003) in its supplier portfolio, by coordinating activities of indirect partners without their knowledge.

### *Supplier network*

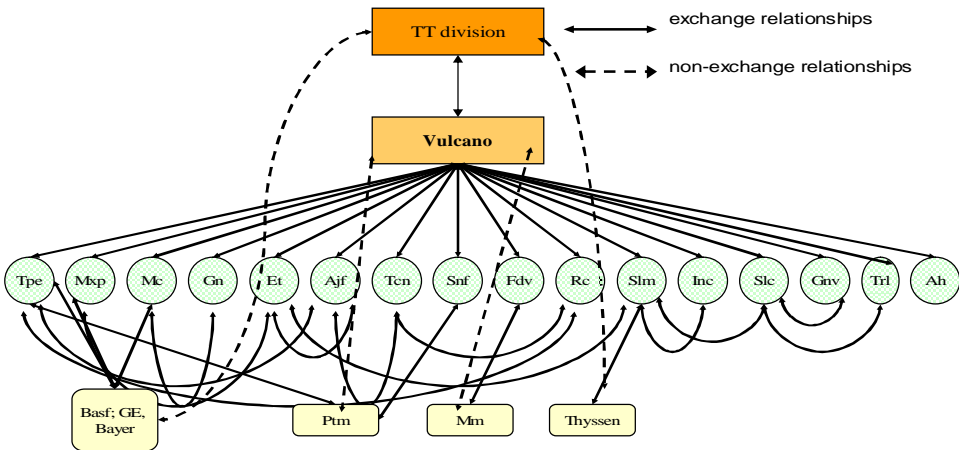
Adira does not play an active role in its suppliers' network. The buying company has very limited knowledge about suppliers connections and doesn't voluntarily seek any information about them. Suppliers confirmed that they were never asked about their partners. Network knowledge is not given a relevant value in Adira. Only the technical director (the most important player in supplier selection) knows some suppliers' clients names, as they were sometimes mentioned in suppliers presentations or catalogues, but he does not attribute any particular significance to that knowledge. Regarding supplier's relationships with their own suppliers they are said to be "rather invisible", and again not important. This lack of interest is justified with ideas like "as long a supplier is trusted and quality and price are assured, it doesn't matter who their suppliers are" or "if they deliver us what we ordered at the price we established, who they buy their material from or at what price is their own business".

### **Case 2: VULCANO**

Vulcano was founded in 1977 by Portuguese partners to produced house gas water-heaters under a Bosch technological license. In 1983, Robert Bosch bought 90% of Vulcano and later on bought the remainder 10%, integrating this company in its *Termotechnik division* (TT). In 1992, Vulcano became the European market leader of gas water-heaters. In 1993 the company was designated Bosch's gas water-heaters *competence centre*, the R&D department was transferred to Portugal and the company became the unique technological licenser in this area. Vulcano presently produces 1'500'000 house gas water-heaters 100'000 boilers per year, 80%

of which are exported. Purchase costs range from 50% of production costs of water-heaters and 65% of production costs of boilers. Vulcano managers believe that the company is still to vertically integrated and would be willing to further outsource some activities and concentrate on their core competences – instant production of hot water. However, the productivity and the volume and specificity of parts “work as entry barriers” and past attempts to find suitable external suppliers failed.

**Figure 3  
Vulcano’s Supplier Network**



*Supplier Base*

Vulcano’s supplier base presently follows two main principles (Figure 3): (1) rationalization: whenever possible, volumes from the several TT companies are consolidated to achieve price reductions from suppliers; (2) localization - selection and development of local suppliers (Portuguese and Spanish). In the last years, supplier based was substantially reduced. Suppliers are Portuguese or foreign medium and large firms. Normally, Vulcano has 2-3 suppliers in each of its supply areas. All suppliers have (or must develop) a “minimal structure of resources in quality, logistic, manufacturing, development (more recently) and management”. Almost all parts bought are customized and product specifications are normally defined by Adira’s development team, which in the last 3-4 years has been actively

seeking suppliers' assistance in the development phase. The number of suppliers is also affected by a Bosch rule, according to which Vulcano can not represent more than 25% of its suppliers' sales to avoid excessive dependency and to foster network effects. If this share is surpassed new suppliers may enter the portfolio.

### *Supplier functions*

Vulcano expects its suppliers to perform a mix of direct and indirect functions. Adira managers refer factors like quality, price, flexibility (ability to adjust to frequent changes in order plans, and products specifications), continuous sourcing. All of these are identified in the literature as direct functions, like quality, cost reduction, safeguard. But besides these functions, Vulcano also expects its suppliers to “able to assist in the parts development”, to be “to proactively produce and suggest new solutions in terms of product specifications, materials or processes”, to be able to “develop a vision of the business, of the complementarities rather than just of the product or of the manufacturing”. All these factors require the use of indirect capabilities, the competence to relate to other parties, to produce innovative solutions that frequently arise from network connections.

### *Dyadic relationships and interfaces*

Vulcano's relationships with its suppliers are long lasting (some exist since its foundation) and commonly perceived as extremely positive. Despite their stability, activities, resources and interfaces between the company and its suppliers have been changing, especially due to the evolution of the buying company and its supplier strategy and the evolution of suppliers' resources, namely their direct and indirect capabilities. Vulcano actively tries to shape the capabilities of “promising” suppliers. Although “direct intervention” seldom exists, Vulcano's managers believe that change resulted from “asking them to do new things”, “forcing them to invest in better resources and structures” and “to have a more professional attitude”, placing “big volume orders in small companies”, and “forcing them to find new clients”. The evolution of suppliers' capabilities is a cause/effect of changing interfaces with suppliers.

Traditionally, Vulcano would specify all parts' details (functions, materials, dimensions,) and suppliers would manufacture them. Development manager states that “the [Bosch] group

current philosophy is to involve suppliers as soon as possible and we are constantly reminded of that need” and adds that in “our recent projects, suppliers were selected in a very early phase and helped us find the solutions for many parts in a process that could be called *simultaneous engineering*”. Rearranging activities, investing resources and stimulating suppliers to assume a bigger share of development and production activities seems to have clear benefits. As the same manager puts it: “we have a limited team of people, we can not do everything and, clearly, without our suppliers we would be unable to constantly introduce new products”. Purchase manager stresses that suppliers contributions are highly valued (“some suppliers have provoked product changes with a huge impact in costs”) and important factors in reinforcing existing relationships.

### *Supplier portfolio*

As fig. 2 depicts, several suppliers buy from or supply other suppliers, assuming the double role of direct and indirect supplier to Vulcano. Almost all those links were established by Vulcano for two main reasons: early involvement of suppliers in product development and transfer of activities from Vulcano to some suppliers. In the latter case, Vulcano has transferred some assembling activities to suppliers and, consequently, parts that were previously delivered to be assembled in Vulcano must be delivered to the supplier in charge of this activity (the case of Gn that now supplies Mc). In the former case, suppliers that have cooperated in the development of parts are normally selected as manufacturer and must deliver them to the company responsible for assembling it, that may be other Vulcano’s supplier (as is the case of Tc that supplies Rc). In both cases, Vulcano’s role is as much as possible limited to the negotiation phase, in order to make the “direct” supplier “fully responsible for the management of the relationship”. “Direct” suppliers are not *forced* to buy from the *appointed supplier* but other sources must be approved by Vulcano (both in terms of product quality, functionalities and price). “Indirect” suppliers refusal to sell to their “appointed clients” would probably result in losing the part. Although horizontal links exist, neither Vulcano nor the suppliers involved give them a significant value, probably because they represent a very small part of their respective sales or purchases. As in the case of Adira, any other case of mutual adjustments is solved in individual relationships through the mediating role of Vulcano.

### *Supplier network*

Vulcano *appoints* some suppliers' suppliers of raw-materials. Suppliers of raw-materials (specially plastics) are giant companies like BASF, GE, Thyssen, and negotiations are held at the division level, where the volumes of all the division companies and direct suppliers are consolidated allowing for substantial price reductions. In others cases, materials specification leads to a unique potential source, leaving Vulcano's suppliers with no alternative suppliers. This is done due to technical reasons, as in some cases materials used are crucial for the safety of Vulcano's products and are previously defined in the process of certification of the gas water-heater. In both cases, direct suppliers are *strongly advised* to buy from the appointed suppliers – switching them has to be previously approved by Vulcano.

Vulcano has some contacts with the manufacturers of moulds used by suppliers of plastic and aluminium injected parts. Normally, those contacts are limited to “check their working conditions” or “the evolution of tools” needed to respect the “lead times of new projects completion”. In other cases, “our suppliers visit us with their tool manufacturers if they feel the need to discuss technical details”. When direct suppliers “know everything needed about tool making, involving a third party is not necessary”. This last option is preferred because as the development manager states “the more people involved, the more complicated the process becomes and working with my supplier alone is much better for me”.

Vulcano stimulates their suppliers to develop their own client networks. Purchase manager explains that if “we want our suppliers to have competencies in quality, logistics, manufacturing, to have a small laboratory, etc. they need to have a minimum dimension and they can not do it just for us”. He adds that “if a supplier is investing just because of Vulcano, of our needs, of our parts, if he adapts ... ultimately he is replicating Vulcano and we want to avoid it; if we wanted that, we would create a Vulcano 2, 3, 4. But if he knows different markets, new technologies, new parts, different types of demands, that is positive, because there are always synergies to be found when a supplier has more than one client ”.

Synergies is one of the reasons Vulcano actively seeks knowledge on their suppliers' networks. Suppliers are formally asked to provide information about their clients and corresponding sales shares and about the introduction of new clients. This allows Vulcano to check its positioning as a “*privileged client*” in each supplier's portfolio of clients. Losing this privileged position is considered the only potential negative network effect and Vulcano

is particularly attentive to the auto industry that is said “to have centripetal effects” over suppliers.

Although knowing supplier’s suppliers structure is a “Vulcano’s important rule”, this is not considered “dramatic”. This seems to raise much less interest than suppliers clients because Vulcano exerts a strong control over suppliers network through the specification process, where both function and composition of the parts are detailed. Suppliers’ supply structures are said to have “no complexity” and to be “rather short” and the fact that all parts must be accompanied by materials certificates facilitates control. For all this reasons, knowing whom suppliers are buying from (although known) is not considered important.

### **SYNTHESIS AND CONCLUSIONS**

Both Adira and Vulcano present rather different perspectives and practices in managing suppliers. The former explores its suppliers’ direct capabilities and current offers that result in direct functions and effects. This seems to justify why it keeps the scope of its management efforts restricted to its direct suppliers. As supplier functions have remained the same, there seems to be no need to produce significant changes in resources, activities or interfaces. The reported attempt to reorganize minor activities among Adira, the pure subcontract suppliers and the supplier of steel failed because the firm, despite of its strong position, did not assure that suppliers had the necessary capabilities to do it. Adira’s knowledge on the connections of its suppliers is very limited and considered of minimal value. This may be justified by the fact that, exploring direct suppliers, it believes that suppliers’ connections have no impact on their own buyer-supplier relationships and, apparently, experience has not yet proven otherwise.

On the other hand, Vulcano adopts a much dynamic view of supplier management. It plays an active role in developing and shaping the capabilities of suppliers. Supplier relationships are stable, but resources and activities committed to the relationship by both parties have changed according to the evolution of Vulcano and its suppliers. These rearrangements were possible because the structure of direct and indirect capabilities within each firm changed allowing for different reconfigurations. In this sense, dynamic functions were both a cause and an effect of changing interfaces and relationships. Interaction between suppliers is not granted a paramount importance and existing cases are normally associated with technical or efficiency arguments, probably because activities and resources among partners remain unchanged and



only actors are partially replaced. At the network level, Vulcano values knowledge on suppliers' clients due to the potential positive/ negative effects it may have on Vulcano-supplier relationships. Vulcano does not grant the same importance to suppliers' suppliers as, like Adira, through specification and product control, they have an indirect and economic way of evaluating the impact of the latter on their own relationship with its suppliers.

These two different perspectives and practices in supply management seem to be closely linked to both firms' positioning and network strategies. In fact, Adira and Vulcano present quite different approaches. The former selects suppliers that mainly perform direct functions (quality, cost, and safeguard) based on their internal manufacturing resources and activities. Moreover, its managers contend that interfaces where partners' roles and boundaries are clearly defined are the best way to achieve what they believe to be their supplier management goals. On the other hand, Vulcano has a more complex and sophisticated approach inasmuch as it expects suppliers to perform direct and indirect functions supported by internal and network resources and activities. In this context, its managers believe that interfaces that induce closer relationships with suppliers are more likely to foster the potential contribution of each of them.

In other words, the type of supplier functions and relationships buying firms look for may be seen as reflexes, at the supply management level, of network positioning, theories and strategy. They can be synthesised in the following set questions: "what do we want them to do?", "are they able to do it?", "how should we relate to get what *we* want?". These are not independent issues. Rather, they are interrelated since changing the response to one question may imply changes to the other questions' answers. For instance, if a firm wants a supplier to perform new functions or activities, it must reassess its ability to do it. A negative answer may have different outcomes: (1) giving up the change – as Adira did when it could not persuade its *subcontracted suppliers* to procure steel directly from the steel supplier; (2) influencing the supplier to develop the required capabilities – as Vulcano did through its investments in selected suppliers; or (3) finding new suppliers with an adequate set of capabilities.

To sum up, this paper has attempted to show that different answers to these questions will produce different supply management strategies and supply network configurations. In order to foster suppliers' contribution potential, buying firms should be aware that questions and

answers should not only be consistent with each other, but also coherent with their current and desired network position.

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