SUPPLIER INVOLVEMENT IN NEW PRODUCT DEVELOPMENT:
THE PREFERRED SUPPLIER FROM THE PURCHASING, ENGINEERING AND
SUPPLIER PERSPECTIVE

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ABSTRACT
The presented research is part of an on-going explanatory multiple case study on the
information relationship between Purchasing, Engineering and Suppliers in product
development. The paper addresses the question of what in the perception of Engineering,
Purchasing and Suppliers constitutes a preferred supplier. Further the paper explores how the
status of ‘preferred supplier’ is manifested in the information relationship between the buying
and the supplying firm. The participating firms, all 1st tier and 2nd tier suppliers, come from
the Dutch and German manufacturing industries of aerospace, automotive, industrial
automation, and aeronautical equipment.

INTRODUCTION
The supplier relationship has been described as ‘the health of the supply chain’ (Lamming,
1996, p. 189). The supplier relationship can be of two kinds. First, the quantitative
relationship that focuses on the operational and logistics issues of buyer-supplier interaction.
Second, the qualitative relationship that centres on buyer-supplier collaboration in problem
solving. Literature on supplier relationship shows a gradual shift of interest away from the
quantitative issues of supplier relationship to the qualitative issues (Tang, 1999), thus
reflecting the growing importance of inter-firm relationships in the world where the firm’s
knowledge boundaries need to extend beyond its production boundaries (Brusoni, Prencipe,
and Pavitt, 2001).
When looking at the supplier relationship from the perspective of knowledge classification,
then the quantitative supplier relationship can be viewed as an exchange of explicit codified
information: the standard supplier performance metrics for product volume, purchase prices,
certification, delivery times, etc. Whereas, the qualitative supplier relationship can be characterized as an exchange of tacit knowledge, that is, the personalized knowledge and know-how of members of buyers’ and suppliers’ personnel; knowledge acquired and interpreted through their work experience.

A prime example of a buyer-supplier interaction, in which tacit knowledge and know-how come to fore is the early involvement of suppliers in product development (PD). In essence, product development is a knowledge-driven activity. The recombination of knowledge and relationships, and their effective integration has come to be understood as a strategic resource (Dyer and Singh, 1998; Brusoni, Prencipe and Pavitt, 2001; Inkpen and Tsang, 2005) and is the basic premise of the Knowledge-Based View (KBV) of the firm (Leonard-Barton, 1992, 1995; Nonaka and Takeuchi, 1995; Grant, 1996).

Research into the potential benefits of supplier involvement in PD spans almost three decades (Johnsen, 2009). As in the case of supplier relationship research, there has been a similar shift in research focus. Research on supplier integration in PD evolved from studying suppliers’ contribution to PD from the viewpoint of quantifiable, tangible, impacts such as improved product quality, reduced costs, speed to market (Monczka, Handfield, and Scannell, 2000; Petersen, Handfield, and Ragatz, 2003; Van der Valk and Wynstra, 2005; Parker, Zsidin, and Ragatz, 2008, Echtelt, Wynstra, Van Weele, and Duynsters, 2008). This was followed by research with focus on the intangible benefits of supplier involvement in PD: the buyer’s access to new manufacturing knowledge, the supplier’s propensity to innovate, and the need to develop and evaluate relational competences by both buyers and suppliers (Lamming, 1993, Lamming, Cousins and Notman, 1996; Dowlatshahi, 1997; Wynstra and ten Pierick, 2000; Koskinen, 2000; Lamming et al., 2001; Wagner and Johnson, 2004; Schiele, 2006, 2010; Giannakis, 2007; Song and Thiemke, 2009; Liker and Choi, 2004; Johnsen, Johnsen, and Lamming, 2008; Wynstra, Von Corswiant, and Wetzels, 2010; LeDain, Calvi, and Cheriti, 2011).

The implication of the above research is that the exchange and creation of knowledge between buyers and suppliers in PD, in other words, the information relationship between buyers and suppliers, can be said to constitute a vital element in supplier relationship.

The suppliers involved in PD are mostly referred to as preferred, or strategic, suppliers. From the supplier classification schemes found in the literature (Ellram 1995; Tang, 1999; Halley and Nollet, 2002), we choose the preferred supplier description of Halley and Nollet (2002, p. 41) because it comes closest to the practice that we encountered.

The preferred supplier is better able to constantly offer the order giver a renewed product performance at an advantageous price. It is also a supplier with whom more intensive business takes place (medium-and long-term agreements, reciprocal trust, growth in purchases, standardization and simplification of procedures, etc.), while promoting increased coordination/integration of skills in order to create win-win situations and sharing the risks (exchange of technical and information systems expertise, joint development of new products, joint improvement of processes, profit sharing, etc.).

The status of preferred supplier is accorded after a selection process which is mostly led by Purchasing through the firm’s commodity teams or sourcing committees in which, ideally, the Engineering, Quality Control, and R&D personnel participate. According to Monczka et
al. (2000, p. 112) ‘commodity team consensus, particularly between engineering and purchasing is a critical part in this process’. Similarly, Fliess and Becker (2006) point out that the interfaces between the buying and supplier firm are typically located in two departments of the buyer firm: in the Engineering department for the technical aspects, and in the Purchasing department for the commercial aspects of the collaboration. Fliess and Becker (2006) warn that: “If the collaboration between the technical and commercial departments does not work, different instructions could be communicated to the supplier intentionally or unintentionally” (Fliess and Becker, 2006, p. 35).

The preliminary findings of our research reported in this paper show that Purchasing and Engineering do indeed have different perceptions of supplier relationship, and what to expect from it. The differences become especially apparent when the supplier relationship is studied from the perspective of the information relationship between Purchasing, Engineering and Suppliers. The objective of our research is to learn more about the conditions under which the exchange of information and knowledge between the functional areas of buyers’ Engineering and Purchasing and the Supplier takes place. To understand the perceptions that the parties involved in the exchange process have of each other is a first step therein.

The paper is structured as follows. It opens with a description of research design: the conceptual background and research questions. Next, the preliminary findings on the perception differences between Purchasing, Engineering, and Suppliers of what constitutes a preferred supplier are presented. This is followed by a discussion of single sourcing and supplier development as two examples of how the status of preferred supplier is manifested in product development. The paper concludes with managerial implications, research limitations, and further steps in research.

**RESEARCH DESIGN**

The research design is an explanatory embedded multiple case study. The embedded research design allows exploring the information relationships at different levels of analysis (individual, inter-groups, and inter-firms). In our research the levels of analysis are the buying firm’s functional units of Engineering and Purchasing, with their personnel, and the buying firm’s Suppliers. The unit of analysis is the information relationship between the Suppliers and the firm’s Engineering and Purchasing. In our choice of research design we were guided by Dubois and Araujo (2004) who contend that case study research is appropriate for instances in which the units of analysis are relationships.

There were four focal firms selected. They come from four different manufacturing industries: aerospace, automotive, industrial automation, and aeronautical equipment in the Netherlands and Germany. The firms are first tier and second tier suppliers. The selection of the product development projects at the four firms was done in cooperation with the firms’ representatives. Among the informants were Management, Purchasing and Engineering personnel. Later the snowballing sampling technique was applied in order to recruit more informants. In selecting the projects a particular attention was given to the richness of interaction within the projects, so that each project represents multiple relationships involving purchasing, engineering, suppliers, and R&D.

The data collection followed a two-step procedure: a questionnaire and a semi-structured audio taped interview. The project documentation, corporate websites, and occasional
participation at the firm’s meetings complete the triangulation of data. At the time of writing this paper, the data collection phase has been completed. In all, thirty-two interviews were conducted (in Dutch and English), varying in length from of 60 - 90 minutes. The transcripts have been sent to the informants for validation. The average transcript length is 14 pages. The data analysis is currently underway using the computer software Atlas-ti 6.2. The following analytic techniques are used: coding, categorizing, pattern matching, analytic memos, within-case analysis, cross-case synthesis (Yin, 2003; Creswell, 2007; Saldana, 2009; Thomas, 2011), and descriptive partially ordered meta-matrices for the presentation of data (Miles and Huberman, 1994).

**Conceptual background**

The information relationship is studied in the context of the strength of ties that exist between the firm’s Suppliers and the firm’s Engineering and Purchasing. The ties are seen as mechanisms through which the information relationships are developed and sustained. Central to the studies of ties is the concept of embeddedness (Uzzi, 1996, 1997) which holds that all economic action is embedded in social relations, and that the structure and quality of social ties between the social actors affect the interaction of information exchanges. The literature on the relational embeddedness of social networks recognizes three types of ties: strong ties, weak ties, and trusted weak ties (Granovetter, 1973, 1983, Hansen, 1999, Levin and Cross, 2004).

Strong ties are defined as interpersonal relationships within a small group of actors (e.g., the engineers in PD teams). Strong ties prefer to engage in the transfer of internal information, i.e., information that is firm-specific (often involving tacit knowledge). Trust among the exchanging parties is taken for granted, and the information relationship is reciprocal. Thus, the relational embeddedness (i.e., the interpersonal relations) is high and the environment of strong ties is conducive to learning. In the long run, however, this learning can be hampered by knowledge redundancy (i.e., overlapping knowledge among the engineers), and the reluctance of strong ties to trust information that comes from outside the firm (The Not Invented Here syndrome).

Weak ties are defined as infrequent interpersonal relationships that lead to novel and diverse (i.e., non-redundant) information. Weak ties have low relational embeddedness, and thus contribute little to learning. Weak ties are less costly to maintain because there are no reciprocal links between the information provider and information recipient. The information behaviour of weak ties is marked by incidental information searches that take place in the environment of uncertainty and risk.

The trusted weak tie is a concept developed by Levin and Cross (2004), and can best be described as a hybrid of weak and strong ties. Trusted weak ties operate in the environment of the benevolence-and-competence based trust, i.e., in the environment in which the external information source is perceived as trustworthy, benevolent and competent. As a result of this additional relational characteristic between the information source and the information recipient, the ensuing information relationship of a trusted weak tie combines the benefits of bringing in new external information while also enabling learning. In other words, a trusted weak tie relationship can, under certain conditions, acquire the properties that have previously only been associated with the information exchange in a strong tie relationship.
The concept of social ties is especially useful for our research because the tie properties unite in themselves the processes of information search, exchange, utilization, and learning, the core elements of any information relationship.

**Research questions**

Research on trusted weak ties is still relatively recent (Abrams, Cross, Lesser and Levin, 2003, Levin, Whitener and Cross, 2006, Gubbins and MacCurtain, 2008; Levin, Kurtzberg and Philips, 2010). In our research we surmise that the information relationship between the firm’s Suppliers and the firm’s Purchasing and Engineers might contain elements of a trusted weak tie relationship. According to Levin and Cross (2004) trusted weak ties can be found in the environment in which the external information source is perceived as trustworthy, benevolent and competent. We further surmise that these qualities are also the properties of the preferred supplier. Therefore, the research questions addressed in this paper are:

RQ 1: What in the perception of Engineering, Purchasing and Suppliers constitutes a preferred supplier?

RQ 2: How is the status of ‘preferred supplier’ manifested in product development?

**PREFERRED SUPPLIERS**

One of the outcomes of the case study that we expected to find was that there would be perception differences between buyer firms and supplier firms as to what constituted a preferred supplier. However, we did not expect to find these perception differences also at the level of the firm’s internal functions of Engineering and Purchasing. Table 1 provides a glimpse of the diversity of views encountered.

The differences seem to revolve not so much on who the preferred supplier is, but what to expect from the preferred supplier firm. The expectations of Purchasing centre on performance, whereas the expectations of Engineering are much more concerned with the knowledge that the preferred supplier could bring to product development. Purchasing relationship with the preferred supplier can be described as a one-way relationship. The Engineers, on the other hand, clearly prefer to have a two-way relationship with the preferred supplier.

**Table 1: Perceptions of Preferred Suppliers**

<table>
<thead>
<tr>
<th>Function</th>
<th>Comments</th>
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<tr>
<td>PD Project Manager 1</td>
<td>We don’t have preferred suppliers. We have a list of product technologies that we use, and within each technology we have a list of firms with which we do business. When we have a product design in the suppliers’ area of expertise, we ask them: ‘can it be made this way?’ They make prototypes for us, but that does not mean that they get the order. They are invited to bid. However, they have through the prototyping gained insight about the product functionality requirements, and are therefore in position to bring out an accurate bid.</td>
</tr>
<tr>
<td>PD Project Manager 2</td>
<td>Sometimes the preferred supplier is imposed on us by our customer who has a preference for a particular supplier.</td>
</tr>
<tr>
<td>PD Engineer 1</td>
<td>Preferred suppliers must be able to add to our knowledge. They must be open about what they do, how they do it, and why they do it. In principle, the same applies to us. I don’t mind if the supplier benefits from our knowledge, because</td>
</tr>
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indirectly we benefit from it too.

PD Engineer 2

The supplier involvement in product development projects can reach 75% quite quickly. Our 25% part consists of giving product specifications, but it is the supplier who works them out.

PD Engineer 3

The Engineer’s view on preferred suppliers differs from that of Purchasing, that’s for sure! Purchasing looks at the supplier’s certification and his PPM (parts per million) defect rate. That’s statistics, ticking off boxes, nothing more. If the same preferred supplier cannot provide me with information, or contribute ideas, then I have no use for him. Of course, there is always a grey area between the two types of preferred supplier.

Purchaser 1

Purchasing has a final say about the choice of suppliers. We have diverse tools with which we measure the supplier performance. Preferred suppliers, let’s say 20% of the total number of suppliers, take care of 80% of the components that we purchase. Engineers need often to be reminded of the importance of multiple sourcing.

Purchaser 2

There is some discussion about what the term ‘preferred supplier’ actually means. You may consider the costs option (the cheapest supplier), or the technology option (the supplier is the only one who can make the component), or there is the strategic option (you want to bring the supplier on to a higher level of performance).

Purchaser 3

Dropping a preferred supplier is difficult because of the product release procedure. We need permission of our customer, and also of our customer’s customers.

Supplier Manager

I don’t want to be a supplier who can only compete on price, because then I will always lose. I want to bring in an added value that is so high that I can ask a better price, and survive. I am not selling a product but knowledge.

Supplier Sales Engineer 1

To be a preferred supplier means that you are always the first one to be asked for a project. Preferred means first.

Supplier Sales Engineer 2

I am a preferred supplier if the Engineers call me first when they have a problem to ask me if I have a solution. Besides being on the list of preferred suppliers, it’s really a human attitude: “Let’s ring up John if he can help us!”

MANIFESTATIONS OF PREFERRED SUPPLIERS

Given the fact that our data analysis is still underway, the comments in Table 1 can serve only as a preliminary indication of some of the ways that the status of preferred supplier may manifest itself in product development. In this paper, two such example manifestations will be briefly addressed: single sourcing and supplier development.

Single sourcing

What transpires from our research data is that single sourcing is quite common among the firms studied. While some firms acknowledge their preference for single sourcing (i.e., having one preferred supplier) quite openly, others are at pains to point out that the firm’s official policy is that of multiple sourcing. The motives for single sourcing are diverse: the buying firm has successfully worked with the supplier in the past (“Projects are not isolated, the experience with old projects affects the new ones.”), the communication channels used (e.g., drawings in Pro/Engineer 5), or, the firms are familiar with each other’s work.
procedures. The advantages of single sourcing for knowledge transfer have also been acknowledged in the literature. According to Cousins et al. (2008, p. 52):

Buyers and suppliers working in a single-sourced scenario often report that it is easier to exchange ideas (knowledge exchange for product development), have a clear understanding of cost structures (move towards cost transparency), and look for ways to redesign and enhance products and processes. By definition, these relationships tend to be much more long term in focus, allowing firms to spend time focusing on the development of relationship, i.e., a feeling that they are both committed.

The disadvantages of single sourcing are well known: un-competitive prices, danger of supplier going out of business, and a lack of flexibility to name a few. However, as far as the costs are concerned, there is also another side to the argument. Several of our informants pointed out that single sourcing actually helped cut down the costs that the lengthy supplier selection procedures would otherwise bring about.
The occurrence of single sourcing is very significant for our research for it is a first indication of existence of a trusted weak tie relationship between the buyer and supplier firm.

Supplier development

In the literature (Krause and Ellram, 1997, Krause, Handfield and Tyler, 2007, Modi and Mabert, 2007) the concept of supplier development (i.e., the firm assists its suppliers to reach and maintain the desired level of performance) is advocated as a means to transfer knowledge between the firm and its suppliers. In our case study only one firm had a supplier development engineer on its staff. However, there is an increasing tendency among PD Engineers to participate in the supplier audits which are usually the task of Purchasing. In the words of one PD Engineer: ‘Visiting suppliers is good for your knowledge. You should not let the supplier only to deliver the products, you must also know what more/else he can make.’ Cousins et al. (2008, p. 222) make a similar comment: ‘In long-term relationships, it would be important to consider not just the current supplier capabilities, but also their potential capabilities. Technology evolves and a peripheral supplier may become more important as time moves on.”

Our data show that for both parties the opportunity to learn from each other is there. The knowledge input from the supplier is described by a Supplier Manager as follows:

We like to go back to the basics. Mostly, we are not involved in the early stages of development. Most of the time, the development process has moved on. That means that choices have already been made, and the project has already taken a certain direction. So we try to go back a little bit, and ask: ‘What did you mean by that choice? What was your intention?’ And most of the time (and that’s why we do it), we discover that they made the choices because they lacked the knowledge. They didn’t know any other way. So they made choices in a certain direction and we tell them that there are other possibilities, and that things can be done differently.

The concept of supplier development is especially relevant to our research because it is a form of supplier relationship which assumes trust and reciprocity in information exchange. The conditions of trust and reciprocity are the cornerstones of a trusted weak tie relationship for which our research hopes to find evidence.
MANAGERIAL IMPLICATIONS

Often new technology needs to mature before it brings value. The same can be said about information relationships in the PD projects. The building of trust requires time and continuity in management. The informants in our case studies have often pointed out that each time a new management threw old agreements with suppliers overboard, the trust building process was derailed. The preliminary findings of our research indicate that the manufacturing improvements proposed by suppliers do not only lead to better products but can also reduce manufacturing costs. Although the payback time of information relationships is not as immediate as that of competitive bidding, it is no less real in its effects on reduced costs. Management should be more aware that the path to the tangible benefits of increased productivity, reduced costs, and improved product quality leads via the intangible benefits of information relationships between suppliers and the engineers at the operational level of PD projects.

RESEARCH LIMITATIONS

Of course, our research has limitations. First of all, the selection of participating firms was not random but was largely guided by convenience. The network contacts of our department played a great role. We feel that this fact did not adversely affect the initial character of our research, nor did it influence this work-in-progress paper. In the follow-up studies, however, we should enlist the cooperation of more firms.

NEXT STEPS IN RESEARCH

In line with this work-in-progress, the following actions will be undertaken. In the coming months we will be completing the coding of the thirty-two interview transcripts. The next step will be the within-case analysis and writing up the single case reports. This will be followed by a cross-case analysis and the interpreting of findings. During the coming period we also intend to take part in several more meetings between engineers and suppliers as observers. The research project will conclude with a workshop for the case study participants, with the presentation of the research results.

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