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**MANUFACTURER-SUPPLIER RELATIONSHIPS:
AN EMPIRICAL STUDY OF GERMAN MANUFACTURING COMPANIES**

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Keywords *Supplier-Manufacturer Relationships, Supplier Management, Manufacturing, Germany.*

Abstract *Effective management of suppliers is one of the ways manufacturing companies can improve their performance. There are several important aspects of supplier management, they include sourcing strategies, the way relationships are management and the information exchange policies adopted by manufacturers. Typically, it has been argued in the literature that close relationships with suppliers should be developed, in contrast to the traditional price-driven transactional relationship. In conjunction with this approach manufacturers should employ a single-sourcing strategy rather than multi-sourcing. This paper presents the results of a study (using a survey) of supplier management practices among German manufacturing companies. The research found that significant portion of the companies surveyed had experienced a change in their relationship with suppliers in the last few years. In the main relationships had become closer and the use of partnerships was in evidence. Although the companies had developed partnerships with some of their suppliers the majority of firms continued to prefer a multi-sourcing policy. The research results have implications for German manufacturing companies as they indicate the potential for improvement through the greater adoption of best practices in the area of supplier management.*

Introduction

In today's industrial environment, suppliers of components or assemblies can make a major contribution to a manufacturer's performance in the areas of quality, delivery, cost containment and new product development. Consequently, effective supplier management has become a critical issue for operations managers and what has been called the 'traditional' approach to manufacturer-supplier relationships – where the main focus is on price – can no longer deliver a competitive advantage for anything other than commodity parts. Therefore, the way in which manufacturers deal with their suppliers has transformed (Lamming, 1993). Nowadays, *supplier management* is concerned with “organising the optimal flow of high-quality, value-for-money materials or components to manufacturing companies from a suitable set of innovative suppliers” (Goffin et al., 1997: 422). The challenge for manufacturers is to identify how to manage their suppliers strategically and effectively.

A number of empirical studies in the UK have explored the importance of supplier management in manufacturing (see, for example, Goffin et al., 1997; and Groves & Valsamakis, 1998). In contrast, it has been recognised that very little empirical research has been conducted in Germany (Homburg, 1995; Lemke et al., 2000; Lemke et al., 2003; and Szwejcowski et al., 2001). This is somewhat surprising, because Germany has a substantial manufacturing sector that accounts for 25% of Gross Domestic Product (GDP), which employs an equally high proportion of the workforce and is a leading exporter of manufactured goods (Anonymous, 1999). In addition, the competitiveness of German manufacturing industry has been the subject of much foreign admiration in the past (e.g., Simon, 1992; Porter, 1990), although high manufacturing costs have, in recent years, somewhat eroded this reputation (Goffin et al., 2001). Due to both its size and strength, the manufacturing sector in Germany is a relevant business environment in which to study supplier management.

The importance of supplier management has been recognised by several German authors (see, for example, Becker, 1997; and Nachtweh, 1999). Recently, Supply Chain Management (SCM) has been identified as the key challenge for German manufacturers. However, it has been found that leading-edge SCM practices and partnership approaches are not being adopted by German companies (Friedrich et al., 1995). In a similar vein, it has been reported that manufacturers in Germany have been slow to adopt lean production and other new manufacturing management concepts (Kinkel and Wengel, 1997; Lay et al., 1996).

The small number of empirical investigations into supplier management in Germany means that many SCM issues need to be investigated, such as:

- How do German manufacturers characterise their relationships with suppliers – are they establishing close relationships with them?
- How have supplier-manufacturer relationships changed in recent years?
- What are the preferred sourcing strategies of manufacturers?
- How is information technology used to optimise communications?

In order to address these questions, an empirical investigation of supplier management in German manufacturing companies was conducted by surveying three industrial sectors.

This paper is structured in the following way. First, it reviews the literature on the nature of business relationships; the development of supplier-manufacturer relationships; as well as sourcing strategies and the management of supplier relationships. Secondly, the conclusions from the literature are used to determine three research questions, which were investigated using a telephone survey. Next, the findings of the study are contrasted with the literature and implications are drawn. Finally, the implications for both managers and researchers are discussed.

The nature of business relationships

Business relationships have been defined very differently in the literature, ranging from “*good business relationships* [are] relationships customised to fit the appropriate position on a continuum of possible relationship styles” (Cooper and Gardner, 1993: 14) to “*interorganizational relationships* are the relatively enduring transactions, flows, and linkages that occur among or between an organization and one or more organizations in its environment” (Oliver, 1990: 241). Researchers have developed descriptions of many types of relationships. Gummesson (1997) defined thirty forms of relationship alone and this illustrates the diversity of viewpoints on the concept of relationships. Typically, the descriptions of relationships are relatively abstract and vary with the discipline from which they are being researched (e.g., strategy, economics or psychology). Nevertheless, a consensus of opinion seems to have been reached which indicates that a business relationship is established, *as soon as two or more parties (i.e., organisations) associate themselves in order to fulfil a mutual business purpose*. Such an association leads to various joint activities, which are dependent on the specific business objective. A key business relationship, in which two parties associate, is that between a manufacturer and a supplier (Ellram, 1991).

In the past, the objectives of manufacturer supplier relationships have been focused on quality enhancements, delivery on time, and especially, cost reduction (Lamming, 1993; Lemke et al., 2003). The historical focus on costs in supplier management is explained by the goal of profit maximisation. Drucker (1995: 122) concurred that this traditional mindset “has always somehow perceived business as buying cheap and selling dear. The new approach defines a business as the organisation that adds value and creates wealth.”

In the current business environment, that manufacturers face, relationships should not be concerned simply with maximising the difference between purchasing costs and the sales price – there needs to be the development of lasting relationship (Anderson and Katz, 1998; Kim, 1999). The change of emphasis from reducing costs to improving quality and utilising the innovative potential of the supplier to create value has influenced relationships with suppliers. Leenders and Fearon (1997: 282) highlighted this in saying that “the whole art of supplier relationship management from a supply perspective is to bring both sides into an effective working relationship.” The exact nature of the relationship has changed over the decades, the next section examines the development that has taken place.

The development of supplier-manufacturer relationships

McGinnis and McCarty (1998: 13) argued that “in an effort to optimise buying externally, companies are instituting sophisticated new buying processes and changing the relationships they have with their suppliers” Figure 1 illustrates the development in the nature of typical manufacturer-supplier relationships over the last 40 years.

Take in Figure 1

Traditional relationships in the 1960s and '70s were characterised by an adversarial arm's-length approach. Lamming (1993: 149) surveyed supplier-manufacturer relationships in the UK automotive industry and identified that at this time there was “a period of relative calm with domestic demand and supply well balanced for mass producers.” This suited traditional purchasing, which is primarily price-oriented. The pressure for change was low, but increased in the next decade

so that *logistic relationships* were adopted. These added an emphasis on making the materials transfer from suppliers to manufacturers more efficient (da Villa and Panizzolo, 1996). At the beginning of the '90s, relationships required an even greater degree of interaction due to the added need for product innovation and cooperation in technological developments – and this high level of interaction is termed *partnership* (Lamming, 1993). Unfortunately, it is unclear how exactly partnerships differ from other forms of relationship. Lemke et al.'s (2003) study of the attributes of partnerships was a rare empirical investigation of this area. As it was based on a limited sample, however, the findings cannot be generalised. Similarly, it is unclear how the typical forms of supplier-manufacturer relationship will develop in the 2000s (as indicated in Figure 1).

From a theoretical point of view, the difference between, traditional arm's-length relationships and partnerships is clear – partnerships are *closer* than other types of relationship (e.g., Ellram, 1991; Lambert et al., 1996; Lemke et al., 2003; Macbeth, 1998). In practice, however, the differentiation between types of relationships is not straightforward. This is because of the abstract nature of most definitions of relationships makes them difficult to operationalise. For instance, when exploring supplier-manufacturer relationships in the US automotive industry, Dyer et al. (1998: 59) discovered that “U.S. automakers' relationships with 'partners' were not significantly different from their relationships with 'arm's-length' suppliers.” The authors attributed this to the history of how suppliers have been managed. In America, suppliers had traditionally been dealt with at arm's-length and it is reported that this is still a common approach today, even in so-called partnerships. Another conclusion, however, might be that researchers have not yet identified the critical dimensions of partnerships. In addition, there is the strong possibility that managers' understandings of partnership are different from those of researchers. Support for this view comes from New and Payne's (1995) exploratory work, which indicated a great diversity of interpretations of partnership among managers. Therefore, it can be deduced that partnership is currently an equivocal concept and

exploring supplier-manufacturer relationships from the manager's perspective is both timely and relevant.

Sourcing Strategies and Options

It is unlikely that it is desirable to establish partnerships with all suppliers. For example, partnerships are unnecessary with suppliers of commodities. Therefore, sourcing policies are closely allied with the type of relationships a manufacturer intends to establish and partnership typically stands for 'one supplier per part/component' (single-sourcing strategy), according to Groves and Valsamakis (1998). Conversely, when suppliers are managed at arm's-length, the multi-sourcing strategy (i.e., several suppliers per part/component) appears more suitable. In this case, quickly changing from one supplier to another is easier, as a close relationship has not been developed.

Take in Figure 2

There are a number of possible sourcing options, as illustrated by Figure 2. Between the single-sourcing and multi-sourcing strategies is the 'single-active' variation. This consists of one active partner and one inactive back-up supplier. Additionally, there is a 'dual-sourcing' strategy (with two active suppliers). There are numerous options between dual- and multi-sourcing for example, any strategy involving more than two suppliers per part/component as shown by the dotted line in Figure 2. Typically, a manufacturer will have a mix of options in its sourcing strategy. For example, critical components may be sourced using a dual option, and commodity parts from multiple sources.

Each sourcing option has distinct advantages and disadvantages (Godefroid, 2003; Slack et al., 1998). In the past, for instance, the safest approach was to focus on multiple sourcing, avoiding the

potential dependency on a small number of suppliers. This was most beneficial when the focus was on price alone (Green and Nordstrom, 1974; Ramsay, 1996). Today, however, the majority of researchers and practitioners advocate investing time and resources in maintaining relationships, rather than choosing new suppliers time and time again (Peck et al., 1999; Preiss et al., 1996). This shift in emphasis renders the sourcing options on the left-hand side of Figure 2 advantageous and conversely, multi-sourcing appears outdated in many business situations. Christopher (1998: 32-33) highlights the fact that “in many industries the practice of ‘single sourcing’ is widespread, More and more companies are discovering the advantages that can be gained by seeking mutually beneficial, long-term relationships with suppliers.” This observation accords with the development of partnership relations in the '90s as portrayed in Figure 1.

Larson and Kulchitsky's (1998) empirical work in the US lends support to Christopher's observation, as their survey and exploratory case study established significant links between *single-sourcing*, *higher supplier product quality* and *lower total costs*. In addition, Kalwani and Narayandas (1995) demonstrated that suppliers in long-term relationships achieved a higher profitability compared to other transactional oriented firms in the USA. Long-term relationships have thus the potential to benefit both business partners.

Empirical evidence on manufacturing companies' sourcing strategies is relatively sparse and so, further empirical investigations are required. The tendency towards single-sourcing strategies implies the development of supplier-manufacturer partnerships, but the question is: how can they best be managed?

The Management of Supplier Relationships

Supplier management is no longer focused on just transactions and price negotiations, but concentrates on a wider range of issues (Jahnukainen and Lahti, 1999). Today, the aim of supplier management is to achieve an optimal flow of high-quality, value-for-money materials and/or components from innovative suppliers (Goffin et al., 1997). In this situation, the new role of the purchasing manager has been described as an ‘information exchange broker’ (Spekman et al., 1998) and Figure 3 illustrates the vastly increased information flows between a manufacturing company and its supplier base.

Take in Figure 3

Purchasing is located at the supplier-manufacturer interface and deals with the co-ordination of the flow of information between the supplier base (external links) and various departments (internal links). An effective supplier base can be used to enhance a manufacturer’s capabilities. For example, through building on a supplier’s expertise in technology and new product development. Stump and Sriram (1997) found in their study of US manufacturing and service organisations that greater investment in IT played a role in changing the nature of relationships — investment in IT helped to develop closer relationships with suppliers. Consequently, one would expect the increase in external electronic information links to enable partnerships to flourish. In this environment, the purchasing manager provides other functions within the manufacturing company with relevant data for their decision-making, including:

- Suppliers' capacity and production rates;
- Logistics data;
- Pricing and discounts;
- New-product information.

Co-operation on new product development (NPD) projects is a critical element of supplier management today (Liker et al., 1996; Ragatz et al., 1997; Weken et al., 1997;). Recently, a German Delphi-Panel of experts forecast that suppliers will become responsible for major parts of research and development (R&D), as manufacturers focus on their core competencies (Cuhls et al., 1998).

An appropriate information system is required to manage information flow from and to suppliers, especially for NPD (see, e.g., Spur, 1997). The implementation of Siemens' SMART (Strategic Material Acquisition Roadmap Technique) programme is a good example of this as it encourages suppliers to submit ideas in a systematic way (Schwalbe, 1998). Overall, the content of information flow between suppliers and manufacturers and the communications process itself are under-researched areas.

Supplier categorisation

The use of a portfolio approach has been recommended in classifying suppliers and thereby assisting in the supplier management (Olsen & Ellram, 1997). In the portfolio approach, close relationships are developed with the suppliers of critical parts or components, whereas transactional relationships suffice with commodity suppliers. The method is considered to be helpful in suggesting how to deal with different suppliers and can be a useful input for supplier management decision-making. The

more traditional method for categorising suppliers is the ABC approach (Backhaus, 1992). This approach can be used to help guide how the suppliers should be managed, for example the A-suppliers should be treated differently to the C-suppliers (Hessenberger, 1991). Although, the method is recommended by some writers (for example, Hessenberger, 1991) it is not clear the degree to which German manufacturing companies use this method or the newer portfolio approach.

Conclusions from the literature

The nature of supplier-manufacturer relationships are changing from *arm's-length relationships* to close *partnerships*. This change suggests that single or dual sourcing will be more common. With closer contacts to suppliers, the literature also indicates that the information exchange will be increased. Despite the developing nature of supplier-manufacturer relationships, it is apparent that there has been relatively little empirical research on supplier management in Germany. From the literature three research questions were derived:

RQ 1. How common are partnerships in German industry?

- How do managers characterise relationships?
- What proportion of the supplier base is partnerships?

RQ 2. What are the most commonly used sourcing strategies in German manufacturing industry?

RQ 3. What information is typically exchanged between suppliers and manufacturers, particularly with regard to NPD?

Research design

In order to investigate the three research questions a telephone survey was selected as the most effective methodology. One possible approach to the research would have been to conduct a postal survey. However, the exploratory nature of the research meant that this technique was not appropriate (Alreck and Settle, 1985). The telephone interview allows the interviewer to probe in more detail into an answer that is given, to gain clarity and greater insight.

Research instrument

The survey instrument was based on the one developed by Goffin et al. (1997) for a previous investigation of supplier management. A native speaker (one of the researchers) translated the questionnaire into German. The instrument was then checked — that it was easy to understand and relevant — by an independent German expert in the supplier management field. Five pilot interviews were conducted in order to check the effectiveness of the questionnaire (one face-to-face interview, followed by four telephone interviews). The pilot interviews helped to affirm that the interview structure, the individual questions, as well as the overall flow were relevant and applicable to German manufacturers.

Sample and interview details

The study used the *International Best Factory Awards Deutschland* (IBFA-D) database, which was launched in 1996 in Germany by Cranfield School of Management (UK) and the Export-Adademie Baden-Württemberg. The German database contains detailed information from several hundred organisations from various sectors of German industry, and it is used for benchmarking and research purposes. For detailed information about the IBFA programme, refer to New et al, 1998. Each

manufacturing plant in the database has completed a detailed 16-page, confidential questionnaire covering descriptive data (e.g., cost structure), performance data (e.g., delivery reliability), the products manufactured as well as management policies (e.g., market positioning). The IBFA-D database also includes data on organisations' supplier management policies. This made it possible to triangulate respondents' comments made during the telephone interviews with some of the information in the database relating to supplier management (the answers given during the telephone interviews were found to be consistent with the information provided in the questionnaire).

Three sectors of German industry were selected from the IBFA-D database in which to examine the issues of supplier management: *engineering (including automotive)*, *process*, and *electronics*. The three were chosen because they were the key German manufacturing sectors (New et al, 1998), and this selection yielded a population of 110 organisations from the database.

Based on the exploratory nature of the research, the authors decided to conduct interviews with a representative sample of the database population. For this purpose, *a stratified random sample* from the 110 German organisations was created – 50 companies were selected to be contacted. This number was deemed sufficient for an exploratory investigation. The sample breakdown by industry is shown in Table I.

Take in Table I

Initially, the organisations selected were sent a letter explaining the research project. Our 'first contact' (as listed in the database; usually the Managing Director/*Geschäftsführer*) was asked to pass the letter on to the most appropriate manager dealing with the management of suppliers (normally the purchasing manager). Thereby ensuring that interviews were carried out with the person with a good understanding of how the company manages its suppliers. On the back of the letter was a pre-

printed form for the manager responsible for suppliers to complete with his/her name and contact details. In addition to the first letter, a follow-up letter was sent three weeks later. After further two weeks, one of the researchers (a native speaker) contacted the organisations that had not responded. In this final contact phase, the MD was called directly and asked if their organisation would be willing to co-operate. Utilising this intensive approach meant that 34 organisations agreed to participate in the research (a 68% response rate). As an incentive to all participating companies, respondents were offered the results of the study in return for their support. All the respondents were promised confidentiality — individuals' and companies' names would not be revealed.

Before each interview, it was vital to ensure that the interviewee was the key informant for the current research purposes. As Campbell (1955) noted, knowledgeable individuals generate the highest quality data when answering questionnaires within their area of expertise. Therefore, the interviews were held mostly with senior purchasing managers (see Table II).

Take in Table II

One researcher conducted all 34 telephone interviews in his native language in order to avoid possible errors resulting from multiple interviewers. Since the interviews were exploratory in nature, recording the conversation on tape is beneficial (Oppenheim, 1992) and so respondents' consent was sought. In 32 cases the respondent agreed to a recording. In addition, notes were taken during the interview process (and where recording was not allowed, this formed the data collection method). The interviews took 30 minutes on average and discussed in-depth each company's approach to supplier management.

Results and discussion

This section presents the results of the investigation of supplier-manufacturer relationships, moves on to sourcing strategies and concludes with the types of information that typically is exchanged between manufacturers and their suppliers, including NPD.

Supplier-manufacturer relationships

In the first part of the investigation, the respondents were asked to characterise their relationships with suppliers. The thirty-four managers described the relationship to their suppliers in thirteen ways and Table III summarises the answers given, as well as the frequency count.

Take in Table III

The table highlights that fourteen managers characterised the relationship with their suppliers as “good” and nine described it directly as “partnership-like” (i.e., about a quarter of the respondents, highlighted in grey). The remaining eleven interviewees, however, did not use either expression but mentioned one or more other characteristics. This explains why the sum of responses (n = 49; i.e., 14 tangible + 35 intangible factors) is higher than the total number of respondents (n = 34). They described the relationships, for instance, as ‘goal directed or profit focus’ or ‘climate of trust.’ The researcher probed deeper into each relationship characteristic in order to gain a fuller understanding. Interestingly, only three factors could be backed up by tangible measures: for example ‘co-operative’ was explained as having regular supplier meetings for problem solving and improving results, while; ‘goal directed / profit focus’ meant that goals had been officially established between both parties; and ‘long-term perspective’ sealed by a long-term contract between the supplier and the

manufacturer. The remaining characteristics, such as ‘understanding / helpful,’ were explained with phrases like “It is my feeling that...” “My experience tells me that...” or “In my point of view...” In short, these characteristics are intangible and are therefore should be differentiated from the more tangible ones in Table III.

It is worth noting that every respondent had some difficulties expressing the views on supplier-manufacturer relationships; many were even surprised have being asked the question directly. This might indicate that practitioners do not often discuss the real nature of supplier-manufacturer relationships. The answers offered illustrate that a diversity of perspectives on relationships exists. The marketing literature indicates that relationships are driven by deeply held personal perceptions but unfortunately, the telephone interview format did not allow the researchers to explore this issue further. Therefore, the drivers and real meaning of ‘partnership’ is an area that warrants further empirical attention.

Proportion of partnerships

Managers perceived that their organisations had a given proportion of partnerships of their total supplier base – see Table IV. This illustrates the proportions of partnerships ranges from 1% to the complete supply base, i.e., 100%.

Take in Table IV

However, interpreting the results is difficult, as the perception of what a partnership constitutes is obviously not the same among the manufacturers. This again points to the need for more research on the meaning of partnerships. Only a few respondents (i.e., 6) claimed to have a partnership

proportion of more than 50% in their supply bases (highlighted in grey). The majority perceive themselves as having a substantially smaller number of partnerships. The nature of the manufacturer supplier relationships also has changed over time and needs to be considered (refer to Table V).

Take in Table V

Trends in relationships

Table V shows that 50% of managers (n = 17) perceived to have a closer relationship with their suppliers today compared to 3 or 5 years ago (highlighted in grey). In the answers, the term 'close' appears to be often used synonymously with 'partnership'. By contrast, five respondents perceived the relationship to be more distant today, compared to the past. Interestingly, nine respondents did not experience any changes in their supplier relationships within the same period. Their answers prompted the question of whether the relationships were perceived to be partnerships already and did not need to be changed as a result of this. It turned out that six, out of nine managers, described their supplier relationships as being '(very) close' which is an indication that a partnership had already been established some 3 or 5 years prior to our investigation.

Supplier categorisation

The research also looked at how suppliers are categorised. Although intangible supplier characteristics play a vital role in relationships (as highlighted in Table III), New and Burnes (1998) had the notion that the majority of companies tend to categorise suppliers in terms of product/services they offer rather than their capabilities. This means that the supplier's past and present levels of quality are of greater interest to manufacturers than, for instance, their expected

capability to innovate. The present research has shown that all but three managers use a categorisation scheme based on ABC-analysis (see Table VI).

Take in Table VI

Of the thirty-one manufacturers who categorise their suppliers, twenty-seven take 'volume' as the criteria. This approach is followed by 'quality' and 'delivery.' These three categories clearly dominate the ABC evaluation scheme and are often applied in combination. Other ways of grouping suppliers were mentioned somewhat infrequently, as for instance, ABC analysis in terms of 'packaging.' Categories like these are not included in the table, as only single respondents mentioned them.

Sourcing strategies

Respondents were asked to identify what their organisation's 'predominant sourcing strategy' was (refer to Table VII).

Take in Table VII

Seventeen managers claimed to predominantly apply the multi-sourcing strategy. This means that in some instances a 'multi-sourcing manufacturer' might be forced to purchase a specific component from a single supplier, because there is no alternative available. However, as his policy is predominantly multi-sourcing, his goal is to continuously search for other options – single-sourcing is not the preferred solution. Half of the respondents claimed to have a multi-sourcing policy in

place, while less than half (41%) apply the dual-sourcing strategy. Only three manufacturers had a genuine single-sourcing policy. The relative low number of companies choosing single sourcing could indicate that true partnerships are rare.

Information exchange and NPD

It was of interest to determine the forms of information exchange that are now commonly used (see Table VIII). Over 70% of the manufacturers had email contact with their suppliers. Due to the small size of some suppliers, six of the twenty-four respondents who claimed to utilise the email system, clarified that they only did so infrequently. This leaves eighteen (53%) of the companies surveyed who have regular email contact with their suppliers.

Take in Table VIII

The research also explored the content of the information flow between manufacturers and suppliers (see Table IX). The table illustrates that the majority of the information types identified (81 = 72%) passing between suppliers and manufacturers is related to order details (e.g., delivery, price, and quality; highlighted in grey) and to a much lesser extent (17 = 15%) with technical specifications (e.g., technical drawings, design sketches). A small proportion of the information exchanged (14 = 13%) is associated with the strategic side (e.g., new business directions, changes in product and process designs).

Take in Table IX

As information exchange is predominantly driven by specific orders, the researchers were interested in finding out whether the information provided by the suppliers is suitable for improving manufacturers' NPD processes. Of the thirty-four respondents, twenty-nine (85%) claimed to use the information in their NPD processes while five (15%) admitted to find the information provided by suppliers to be unsuitable for this purpose.

In the interviews, manufacturers stated that information is commonly exchanged in meetings with suppliers, and in the exchange of engineers. Table X shows their answers.

Take in Table X

Typically, the flow of information between suppliers and manufacturers is optimised when they exchange engineers on a temporary basis. This is especially important in NPD. The majority (82%) stated that they use this practice, but only when they are experiencing problems at the manufacturing site and solutions are needed quickly to keep the production process going. In turn, this means that the exchange of engineers does not take place when production processes run trouble-free. Somewhat surprising, no engineers were exchanged to enhance NPD possibly indicating that German industry is not yet taking advantage of the guest engineer concept. Approximately every fifth respondent did not exchange engineers at all, no matter of the nature of the problem at hand. One of the reasons for avoiding exchanges was given by an MD in the engineering sector who said *“our industry sector is characterised by know-how. Exchanging engineers would put this know-how at risk, as it could unconsciously be transferred to competitors.”*

Similar findings were made with regard to meetings with suppliers. Here, the majority (65%) prefer meetings with the supplier in order to establish a personal contact. However, meetings only

take place in ‘problem cases’ or when ‘something of importance’ needs to be discussed – a regular meeting-cycle is not agreed on. The researchers did not expect to find that 35% of the respondents do not utilise any meetings with suppliers to discuss NPD. A manager for central purchasing in the electronics industry highlighted in this respect that “*we do not have any meetings with suppliers, but I am trying to organise these. I have to admit that there is an opinion in some areas of our company, which says ‘this component has not been invented here, so it cannot be any good.’ This view needs to change before we can come together with our suppliers.*”

Summary and conclusions

The literature on supplier management shows that supplier-manufacturer relationships have evolved and a partnership approach is now preferable, particularly for components where suppliers can help in the development of innovative designs. Partnerships are characterised by closer contacts and is sometimes embedded in manufacturers’ single-sourcing strategies. A long-term perspective is a prerequisite for a higher degree of integration among partners and greater level of information exchange. Purchasing managers became information brokers as they form the interface between the manufacturers’ site and their supplier base.

Surprisingly little empirical research has been conducted. Hence, this study:

- Explored supplier-manufacturer relationships;
- Determined sourcing-strategies; and
- Investigated the nature of information exchanges between suppliers and manufacturers.

Key findings

The findings show that half of the German manufacturers surveyed experienced changes in their relationships with suppliers in the last 3 to 5 years. In the main, relationships have become closer and ‘partnership-like.’ Nevertheless, managers hold different views on supplier relationships and this study was able to lay open the range of perspectives. This probably reflects the wide diversity of relationships that exist in supplier bases. Some respondents described 1% of their supply base as partners; others saw 100% of the base as partners. This huge difference makes it difficult to draw conclusions other than a) partnerships are different to normal relationships, and b) managers are clearly able to distinguish relationship types. However, the need for further empirical investigation is clear, as is the need to recognise that the term ‘partnership’ is both overused and somewhat equivocal.

As partnerships are evidently different from other types of supplier relationships, one would expect to find additional factors used when evaluating partners. The present investigation has shown that this is not the case. German manufactures commonly classify their suppliers in terms of ‘volume,’ ‘quality’ and ‘delivery,’ no matter what type of supplier relationship is perceived to be. This approach goes against the long-term view associated with partnerships. Indeed, identifying and monitoring the performance of companies in the supplier base merely using three factors is insufficient. This suggests that the categorisation scheme of the companies surveyed is outdated (New and Burnes, 1998).

With regard to the sourcing strategy, 50% of manufacturers stated that they predominantly use a multi-sourcing policy, while 41% adopted the dual-sourcing approach. Only 9% of respondents have a genuine single-sourcing strategy in place. The result would suggest that only a small percentage of manufacturers apply the full partnership approach. Yet, about 67% of respondents believed they were in partnership with their suppliers. Taking the high percentage of multi-sourcing into account,

one is led to believe that practitioners use the partnership-term lightly – a *multi-sourcing partnership* is somewhat a contradiction in terms. Yet, it appears that the German managers interviewed do not perceive a problem with combining multi-sourcing with partnership. This point requires further investigation.

Due to the high percentage of manufacturers who claimed to see their suppliers as partners, one would expect to find regular meetings as well as an exchange of engineers as typical ways of sharing information. Contrarily, meetings and exchanges of engineers are taking place infrequently - particularly depending on whether problems occurred in the production process. About 20 per cent of the company did not exchange engineers with their suppliers at all; about a third did not have any meetings with suppliers. Again, these results contradict the common understanding of how partnerships should be managed as advocated by the literature.

As soon as purchasing transactions are facilitated by IT, supplier-manufacturer relationships become closer (Stump and Sriram, 1997). The present study revealed that only 53% of manufacturers keep in permanent email contact with their supply base. Typically, communication and placing orders takes place in a conventional way (i.e., telephone, fax, letter). The information content, which is normally shared, is concerned with details of the actual order (i.e., price, quantity). Merely 13% of the information flows carries strategic issues, such as suppliers' suggestions, product design changes and new business directions. So, only a very limited proportion of information is actually applicable to NPD processes. However, 85% of the respondents claimed to use the information generally exchanged with their suppliers for NPD purposes.

Implications for research

This study has implications for future research, as it has often been argued that supplier-manufacturer relationships were influenced by recent changes in the manufacturing environment. The research has shown that confusion exists about what relationships are – in particular the term ‘partnerships’ is used by practitioners to apply to a range of relationships. What are the main dimensions of relationships? ‘Closeness’ appears as one major dimension, but what are the other dimensions? Furthermore, what factors constitute ‘closeness’ – is it the *social distance*, *cultural distance*, *technological distance*, *time distance* and *geographical distance*, as for instance, Ford (1980) suggested? What comprises the quality of supplier-manufacturer relationships in today’s manufacturing industry? Future research needs to probe purchasing managers perceptions deeper than what can be identified by telephone interviews. These are worthwhile research streams and it would be fruitful to pursue them using a multi-method case-study design. Obviously, the cultural context in Germany may be strongly influencing supplier-manufacturer relationships. If this is the case, German manufacturers may be missing the opportunity to improve product quality, delivery times, innovation processes beside other issues.

Ramifications for manufacturing companies

The project also has ramifications for manufacturers and suppliers. On the one hand, manufacturers need to understand that partnerships should consist of more than rhetoric and should be managed to produce an improvement in manufacturing performance. The multi-sourcing strategy needs to be revisited, as true partnership should give better returns in simple scenarios, where the supplier can contribute more to innovation. How a manufacturer manages the ‘portfolio’ of relationships with suppliers could be a key source of competitive advantage. Suppliers need to be

encouraged to submit their ideas and systems needs to be set in place to channel these suggestions to the appropriate places (e.g., R&D department). Regular meetings as well as the exchange of engineers with selected partners seem to be the way forward. On the other hand, suppliers need to demonstrate their innovation potential and their R&D capabilities if they would like to consolidate their future place in the supply base as the manufacturer's partner. They need to assemble a 'full service package' which is attractive enough for manufacturers to treat them as sole long-term business partners – fulfilling price, delivery and quality requirements is not good enough any longer.

Our study indicates some areas where German companies can take immediate action to improve their manufacturing performance. Close relationships with innovative and high-performing suppliers are the key to how this can be achieved. Currently, there is a debate in Germany about the international competitiveness of its manufacturing industry, and has become generally known as the *Standort Deutschland* discussion. This debate centres on the issue of whether Germany is a viable location for manufacturing – some companies have been questioning the viability of producing in Germany (Fischer and Allen, 1998). Unfortunately, the debate in Germany has too often focused only on the negative impact of high labour and social costs on the competitiveness of German manufacturing industry (e.g., Rexrodt, 1997). Although these issues should not be ignored, it also needs to be recognised that individual German manufacturers have little influence over the political issues that determine social costs and how quickly they will be addressed. Companies have other opportunities to improve their performance now. Our analysis has shown that supplier-manufacturer relationships provide a very practical opportunity for German manufacturers to move forward. One area where manufacturers have the power to improve is product innovation. With the goal of greater product innovation the manufacturer and suppliers can work together to become more competitive. To be more innovative the German manufacturers need to create partnerships with some of their suppliers. To help companies do this, researchers need to capture the key ingredients of successful

partnerships now in order to contribute positive ideas and solutions to the Standort Deutschland debate.

Overall, the research shows that appropriate use of partnerships offer a means for manufacturers to improve performance. Unfortunately, the empirical evidence on how partnerships can best be formed is currently weak. Researchers urgently need to address this, as the information is highly relevant to practitioners in today's competitive manufacturing environment.

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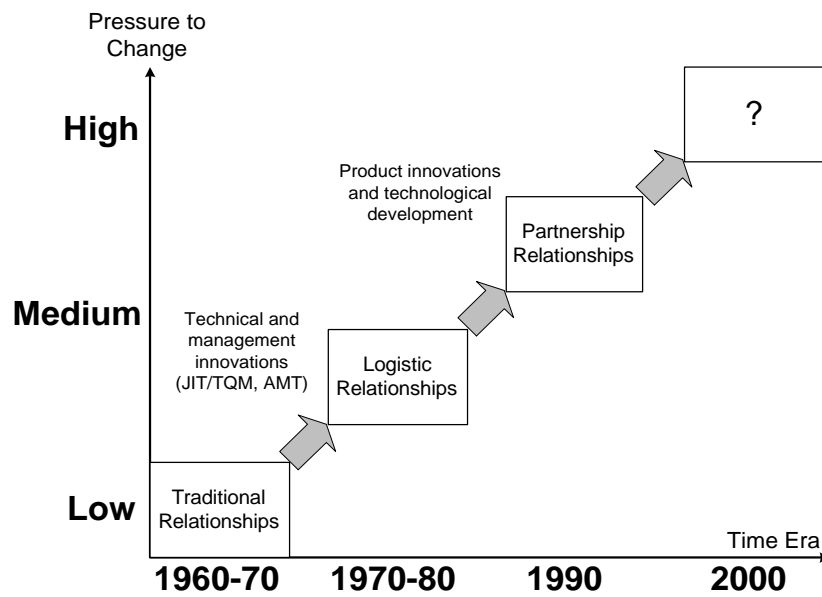


Figure 1: The Steps in the Evolution of Buyer-Supplier Relationships Driven by the Pressure to Change

Source: Based on da Villa and Panizzolo (1996: 40)

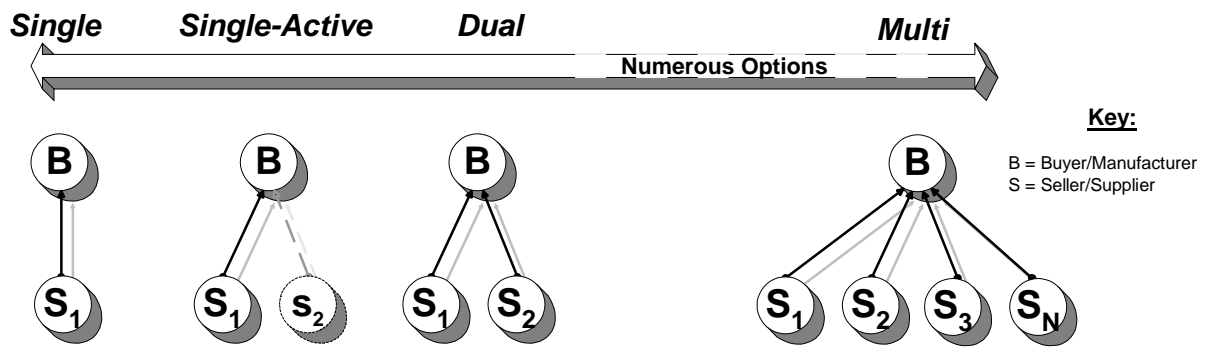


Figure 2: Sourcing Options

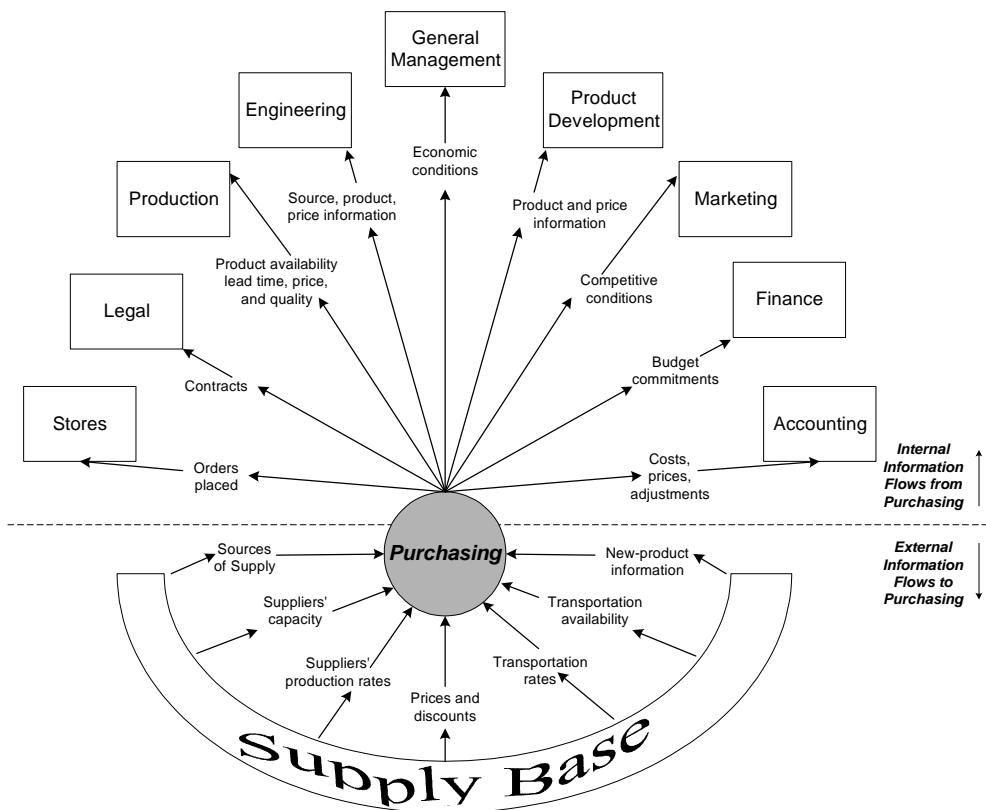


Figure 3: Information Flows from and to Purchasing

Source: Based on Leenders and Fearon (1997)

Industry Sector	Companies Contacted	Interviews Conducted	Response Rate
Electronics	11	9	82%
Engineering	34	21	62%
Process	5	4	80%
Total	n = 50	n = 34	68%

Table I: Structure of Sample by Industry Sector

Function of Interviewee	Proportion
Senior Purchasing Manager	20 (59%)
Managing Director	9 (26%)
Other	5 (15%)

Table II: Structure of Sample by Interviewee Function

Characteristic	Quotes	Tangible	Intangible
1. Good	“If you asked me directly, I can tell you that the relationships with our suppliers are very good ” (Purchasing Manager in Engineering)		X (14)
2. Partnership-like	“Our relationships are partnership-like , which sums it up pretty much” (Purchasing Manager in Process)		X (9)
3. Co-operative	“We are co-operative . So, working together does not only mean to speaking about things – actions need to be carried out together., ..., It is a co-operative effort and meetings are scheduled on a regular basis.” (Purchasing Manager in Engineering).	X (5)	
4. Normal / Reasonable	“Our relationships are normal and based on what any purchasing manager would reasonably expect.” (Purchasing Manager in Electronics).		X (4)
5. Open	“In my experience, our relationships are open which allows us to address issues in an uncomplicated fashion.” (Managing Director in Engineering).		X (3)
6. Understanding / Helpful	“The supplier has to understand our problems and has also to be helpful in solving these. I have the feeling that these are the suppliers everybody should look for.” (Managing Director in Electronics).		X (3)
7. Goal Directed / Profit focus	“The bottom-line is the goal in our business and so, the supplier relationship has to measure up against profit .” (Purchasing Manager in Electronics).	X (4)	
8. Human Factor is important / Climate of trust	“We developed our relationships in a way that we were able to establish a climate of trust . The ‘ human factor ’ is very important to us.” (Purchasing Manager in Engineering).		X (2)
9. Close	“Our relationships are, ..., close , ..., In my view, being close means that different functions should work together on several levels.” (Managing Director Engineering).		X (1)
10. Direct	“Our relationship is not so much at an organisational level, but more on a one-to-one basis. Hence, the contact is very direct .” (Managing Director in Process).		X (1)

Characteristic	Quotes	Tangible	Intangible
11. Liberal	“We are highly liberal . Yes, we want to earn money, but I don’t have any advantage if an excellent supplier cannot deliver components in two years time. Based on our understanding, there is always a way around problems.” (Managing Director in Engineering).		X (1)
12. Long-term perspective	“Our relationships are built for the long-term and are therefore sealed with a long-term contract.” (Managing Director in Process).	X (1)	
13. Fair / “Giving and Taking”	“In general, the relationship has to do with ‘ giving and taking .’ For instance, sometimes we forget to order parts on time and the supplier sends an unscheduled lorry on his expenses. At another time, I will order parts from my preferred supplier although another source could be considered. This is just fair and this situation I would describe as ‘giving and taking.’” (Purchasing Manager in Electronics).		X (1)
	Frequency	14	35

Table III: Characteristics of Manufacturer-Supplier Relationships

Proportion	Frequency
71%-100%	3
51%-70%	3
21%-50%	12
11%-20%	7
<10%	9
Total	34

Table IV: Proportion of the Supply Base with which Manufacturers have Partnerships

Change or Relationship	Quote	Frequency
Relationship became more close (partnership)	<i>“Over the last four years, our relationships became much closer. This may be due to the fact that we got to know each other better over time so that a partnership could be developed.”</i> (Purchasing Manager in Process).	17
Relationship became more distant	<i>“Today, many business contacts became anonymous. The ‘human factor’ is not so important any longer and the relationship is therefore more distant. People are replaceable, the system – I mean the organisation as a whole – counts.”</i> (Managing Director in Engineering).	5
Other changes*	<i>“Relationships became more performance oriented, which takes away the time needed to nurture our contacts.”</i> (Purchasing Manager in Engineering).	3
No changes	<i>“The relationships haven’t really changed. After all, we are the same people that work together.”</i> (Purchasing Manager in Electronics).	9
Total		34

* Other changes were ‘more performance oriented’ / ‘more joint working processes’ / ‘more co-operation and trust.’

Table V: Recent Changes in Supplier-Manufacturer Relationships

Supplier Category	Frequency
ABC in terms of 'Volume'	27
ABC in term of 'Quality'	15
ABC in term of 'Delivery'	9
ABC in terms of 'Price'	3
ABC in terms of 'Risk/Dependency'	2

Table VI: Supplier Categorisation Criteria (Top 5)

Sourcing Strategy	Frequency
Multi	17
Dual	14
Single	3
Total	34

Table VII: Predominant Sourcing Strategy

Answer	Is an Email System in Place?
Yes	24 (71%)
No	10 (29%)

Table VIII: Email System for Information Exchange between Manufacturers and Suppliers

Information Content	Order Details	Technical Details	Strategic Details	Frequency
<i>Delivery</i>	X			21
<i>Prices</i>	X			20
<i>Quality</i>	X			19
<i>Quantity</i>	X			6
<i>(Technical) Drawings / Construction Information</i>		X		5
<i>Supplier's (new) skills, suggestions, ideas, expertise</i>			X	5
<i>Market trends</i>			X	5
<i>Materials information</i>	X			4
<i>Purchasing orders</i>	X			4
<i>Negotiation records, contracts</i>	X			3
<i>Confirmation of orders</i>	X			2
<i>Technical data</i>		X		2
<i>Production Processes</i>		X		2
<i>Problems (including personal issues)</i>			X	2
<i>Offers, counterproposals</i>	X			2
<i>Product specification</i>		X		2
<i>Design drafts and sketches</i>		X		2
<i>New business directions and new scenarios</i>			X	1
<i>Data processing and IT connections</i>		X		1
<i>Packaging</i>		X		1
<i>Changes in product and process designs</i>			X	1
<i>Service information</i>		X		1
<i>Reliability information</i>		X		1
Frequency	81	17	14	112

Table IX: Information Content

Answer	Exchange of Engineers	Meetings with Suppliers
Yes	28 (82%)	22 (65%)
No	6 (18%)	12 (35%)

Table X: Exchange of Engineers and Meetings with Suppliers

APPENDIX A. EXCERPT FROM SUPPLIER MANAGEMENT QUESTIONNAIRE

Section B – Choice of Suppliers

B6) Do you have a policy of single sourcing of parts or dual or multi sourcing?

B7) (Only ask if they have single sourcing) Regarding this policy, do you do single sourcing for every part or do suppliers overlap across some of the parts?

B11) What are the benefits you have seen from a smaller supplier base?

B14) Which company, in your opinion, is a leader (world class) at supplier management? And why?

Section C – Monitoring Suppliers

C5) What proportion of your supplier base would you say you have a partnership with?

C7) Do you have particular categories for your suppliers?

Full questionnaire is available upon request from the authors.