



PERGAMON

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

SCIENCE @ DIRECT®

Journal of Purchasing & Supply Management 9 (2003) 31–41

JOURNAL OF  
PURCHASING  
AND SUPPLY  
MANAGEMENT

[www.elsevier.com/locate/pursup](http://www.elsevier.com/locate/pursup)

# A typology of supplier relations: from determinism to pluralism in inter-firm empirical research

Guido Möllering\*

*Institute of Business Administration, Free University of Berlin, Boltzmannstr. 20, 14195 Berlin, Germany*

Received 2 October 2001; received in revised form 3 April 2002; accepted 9 September 2002

## Abstract

In a survey of 196 buyer–supplier relationships in the UK printing industry, eight constructs regarding performance, trust and governance were operationalised. The paper presents the results of a correlation analysis and a cluster analysis. Both yield meaningful results, but the typology of supplier relations obtained by cluster analysis gives more pluralistic and practically relevant insights than the deterministic findings of correlation analysis. Buyers are classified as one of three types: traditional wary traders, committed flexible partners or controlled routine partners. There is a significant positive correlation between performance and trust, of which variance in governance is independent. Implications for management and further research are discussed.

© 2003 Elsevier Science Ltd. All rights reserved.

*Keywords:* Relationship management; Printing industry; Methodology

## 1. Introduction

Research on inter-firm relationships has occupied a prominent position in management studies over the past 10 years resulting in a vast and diverse literature. Within this field our knowledge about the constitution and management of buyer–supplier relationships has advanced rapidly. In particular, scholars and practitioners have recognised the potential advantages of collaborative arrangements and partnerships over arm’s-length trading or full integration (Ford, 1980; Håkansson, 1982; Dwyer et al., 1987; Heide and John, 1990; Lamming, 1993; Mohr and Spekman, 1994; Dyer and Singh, 1998; Zaheer et al., 1998b). Moreover, purchasing and supplying are now understood as socially embedded processes depending on more than just economic and technical factors (Granovetter, 1985). For instance, the role of trust has become a prominent theme (Sako, 1992; Smeltzer, 1997; Huemer, 1998; Sydow, 1998; Blois, 1999; Bachmann, 2001; Möllering, 2002).

The field has also been fruitful in that conceptual developments have led to numerous empirical studies. The starting point for this article, though, is the contention that empirical research on buyer–supplier

relations to date has focused too narrowly on correlation and regression analyses in order to understand the relationships between various dependent and independent variables (e.g., Mohr and Spekman, 1994; Zaheer and Venkatraman, 1995; Nooteboom et al., 1997; Moore, 1998; Zaheer et al., 1998a; Artz, 1999; Joshi and Stump, 1999; De Ruyter et al., 2001). What may have been lost in such work is an understanding for the relationships between the actual buyers and suppliers (see also Doty and Glick, 1994; Cannon and Perreault, 1999; Merchant, 2000). The cases have disappeared behind the variables.

It is therefore my aim in this article to demonstrate on the basis of a fairly straightforward survey the value of going beyond deterministic models. Even the use of conventional cluster analysis (Everitt, 1993), as will be shown, already enables a reintroduction of empirical reality as well as a much more pluralistic and management-oriented interpretation of data. I should acknowledge that this is a rather cautious first step towards pluralism in inter-firm empirical research. A more radical methodological shift aiming for deep and rich insights would involve the use of case studies (Eisenhardt, 1989) as exemplified by the IMP approach (e.g., Håkansson, 1982; Håkansson and Snehota, 1995; Ford et al., 1998; Huemer, 1998) or other ethnographic methods (notably Uzzi, 1996, 1997).

\*Tel. +49-30-838-56807; fax: +49-30-838-56807.

E-mail address: [moelleri@wiwiss.fu-berlin.de](mailto:moelleri@wiwiss.fu-berlin.de) (G. Möllering).

In this article, however, I will use quantitative data from a survey on buyer–supplier relations in the UK printing industry in 1997. Eight constructs, such as perceived trustworthiness, satisfaction and formality, were operationalised in a questionnaire about paper and board suppliers that 196 UK printing companies completed. I will first use the data to identify any correlations between the eight constructs and thus it will be possible, for example, to claim that the more a buyer perceives a supplier to be trustworthy, the more satisfied the buyer will be with their relationship (significant positive correlation). In a second analysis, I will divide the cases into clusters thereby identifying a typology of supplier relations from the buyers' point of view. Each company in the database can thus be labelled *traditional wary trader*, *committed flexible partner* or *controlled routine partner* and the strategic implications of being assigned to one cluster or the other can be drawn out.<sup>1</sup>

The crucial difference between the two methods of analysis employed is that the correlation analysis provides a very abstract and deterministic picture whereas the cluster analysis deals with the concrete cases and allows for pluralism. As will be shown, whilst the former method definitely has its merits, the latter method is likely to be more interesting for practitioners.

An additional aim of this paper is to give meaningful insights into buyer–supplier relationships in the UK printing industry with an emphasis on the role of trust. Interestingly, there appears to be a high level of trust between printers and their typical paper and board suppliers—in spite of common complaints about fierce price competition in this industry and widespread notions of antagonism in the supply chains of many other industries. However, as the cluster analysis shows much better than the correlation analysis, only 30% of UK printers build on trust and become *committed flexible partners*.

## 2. The survey

During the 1990s, like in many other industries, ideas about sourcing strategies began to change in the UK printing industry. The following quote from a management textbook for printers is indicative of this view:

Many print companies are now moving away from the traditional ideas of dual sourcing 'to keep suppliers on their toes' and are instead using a single

supplier, building on a situation of mutual trust. (Green, 1994, p. 200)

Nobody could say, however, how strong this perceived trend actually was and whether the basis of trust between printers and their suppliers was indeed strong enough to move to single sourcing or other more collaborative forms of supply management. In the UK automobile industry, e.g., trust and partnership were also popular concepts in 1994, but Lamming concluded 'that the necessary levels of inter-firm *trust* are not present in the industry for lean supply—and therefore comprehensive lean production—to become a reality' (DTI/SMMT, 1994, p. 5). In collaboration with the British Printing Industries Federation (BPIF), I therefore conducted a postal survey in 1997 with the aim of obtaining a representative picture of the printing industry. In particular, we wanted to know how printers view their supplier relationships in terms of performance, reciprocity and trust, and how they organise the relationships.

The four-page questionnaire used for this survey was developed drawing on the content and format of previous research (Sako, 1992, 1998; Mohr and Spekman, 1994; McAllister, 1995; Lewicki and Bunker, 1996). A pilot test and consultation with BPIF experts ensured that the questions were meaningful and accessible to respondents. The sample for the actual survey was drawn from the BPIF membership, stratified by main product sector and company size. Out of 508 companies contacted, 196 usable responses were received giving a response rate of 38.6%. The distribution of respondents matched the original sample and is thus representative for the BPIF membership, which includes approximately 30% of the total population of printing companies in the UK. In the absence of data for the industry as a whole, the survey thus gives as close a representative picture as possible of UK printing. Whether the results will be generalisable for other industries and/or countries is a matter of further research, as industry and country effects have been excluded in this study.

As is common in this kind of research, questions were asked in the form of Likert-type scales (Likert, 1932) requiring respondents to indicate their agreement or disagreement with a battery of statements describing the relationship between their company and a specific 'typical and regular' supplier chosen by the respondent. The core of the questionnaire relevant for this article operationalised eight constructs (see the appendix) that can be divided into three groups (see Fig. 1). First, a group labelled *performance* includes the respondent's overall satisfaction with the supplier relationship, the level of reciprocity in the relationship, and the business benefit to the printer (reduced cost, consistent quality) from the relationship. Second, under the label *trust* I

<sup>1</sup>As the three types are empirically derived, some may suggest that the result should be called a *taxonomy* instead of *typology*. However, the number of constructs is small and they were chosen predominantly for conceptual reasons. Thus it seems appropriate to use the label *typology*. On this issue see, e.g., McKelvey (1975), Rich (1992), Doty and Glick (1994).

measured carefully the perceived trustworthiness of the supplier from the buyer's viewpoint and the actual trust invested in the supplier. Third, a number of statements concerned the formality of the relationship, the attitude towards making exceptions (flexibility) and the depth of the relationship (history and frequency of contacts). This last group is called *governance*. All constructs and Likert items are given in Appendix A.

In terms of descriptive statistics, an extremely positive atmosphere in buyer–supplier relations in UK printing emerged, which neither I nor the BPIF experts had expected. Satisfaction is very high with 87% of respondents giving marks of 8 out of 10 or higher as their overall rating of the relationship. As for reciprocity, 75% agree that both sides benefit from the relationship and 22% even agree strongly with this statement. On whether the supplier enables low cost and consistent quality, a smaller majority of 64% agree or agree strongly on the former while only 8% do not agree on the latter. While 92% of respondents say they trust their supplier, only 26% agree strongly with the relevant statement. Agreement on the 10 statements measuring whether buyers perceive their suppliers as trustworthy (Appendix A) is equally high.

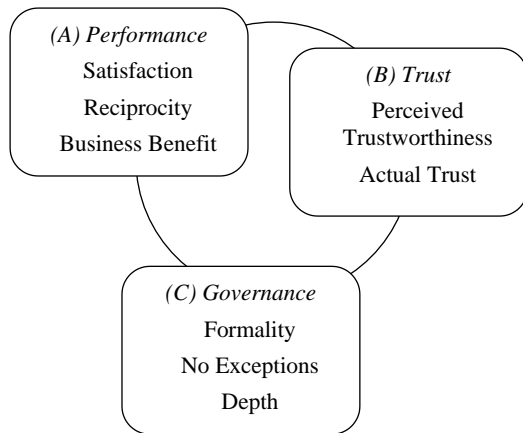


Fig. 1. Overview of constructs.

With reference to his own strong satisfaction, the Managing Director of a medium size printing company in Norwich wrote about his supplier in the questionnaire margin: ‘Otherwise we wouldn’t be using them!’ As common sense would suggest, buyers end relationships when these are not performing effectively or when they find the supplier untrustworthy. However, as further analysis will show, there is still enough variance, even if at a high level, to investigate why some relationships are performing exceptionally well and why there is very strong trust in some relationships and only ‘normal’ trust in others. Moreover, in terms of governance, there is considerable variation in the way supplier relationships are organised. In particular, the formality of relationships is highly variable, as is the attitude towards making exceptions (see Table 1).

### 3. Correlation analysis

A major interest of the study was not just to obtain descriptive statistics on the eight constructs but to understand how they interrelate. I restrict the analysis to a fairly basic Spearman rank correlation analysis (SPSS for Windows 6.1). The direction of causality between the eight constructs is not immediately apparent and they also do not satisfy interval and/or normality assumptions required for parametric tests. However, Spearman rank correlation coefficients (based on ranks of data rather than actual values) can be calculated meaningfully (Gibbons, 1985) and we can achieve a grouping (A, B, C) of significantly correlated constructs, already indicated in Fig. 1, the inner logic of which we can then interpret tentatively.

Table 2 reports the Spearman coefficients (two-tailed) for correlations between the eight constructs operationalised in this survey. The overall picture that emerges is that for *performance* and *trust* intra-group (A × A, B × B) and inter-group (A × B) correlations are positive, highly significant and convincingly strong. In contrast, the constructs under *governance* are not

Table 1  
Distribution of (selected) governance constructs

	Strongly disagree (%)	Disagree (%)	Neither agree nor disagree (%)	Agree (%)	Strongly agree (%)
<i>Formality</i>					
Contractual arrangements	17.03	35.16	21.43	22.53	3.85
Prices fixed	16.30	48.37	9.78	22.83	2.72
Detailed records	1.09	7.07	4.35	50.53	36.96
Formal communication	12.50	44.57	14.67	20.65	7.61
<i>No exceptions</i>					
No leeway grated	14.67	59.78	15.76	8.70	1.09
No exceptions expected	18.48	51.63	5.98	19.02	4.89

NB: See Appendix A for actual construct wording.

Table 2  
Spearman rank correlation coefficients (2-tailed)

		A		B			C	
A	Reciprocity	0.4396**						
	Business benefit	0.3407**	0.3219**					
B	Trustworthiness	0.5255**	0.4516**	0.4997**				
	Actual trust	0.4372**	0.3430**	0.3637**	0.7059**			
C	Formality	-0.0387	0.0700	0.1170	0.0440	-0.0123		
	No exceptions	-0.2083**	-0.2141**	-0.1401	-0.3505**	-0.2687**	0.1304	
	Depth	0.1181	0.1484*	0.0770	0.1271	-0.0108	0.0120	0.0159
	Satisfaction		Reciprocity	Business benefit	Trustworthiness	Actual trust	Formality	No exceptions

\*\* $p < 0.01$ , \* $p < 0.05$ .

significantly correlated with each other ( $C \times C$ ) and only 'no exceptions'—i.e., an attitude of not making and expecting exceptions—correlates negatively and significantly with the other two groups.

Specifically, the correlation analysis gives support for a notion of *performance* in buyer–supplier relations which combines the overall satisfaction of the buyer with the buyer's specific cost and quality benefits as well as the mutual benefit of buyer and supplier (see coefficients  $A \times A$ ). In other words, high performance ratings rest on reciprocity at least as much as on the buyer's own benefit. Moreover, reciprocity reinforces the buyer's perception that he benefits in terms of cost and quality.

Looking at the coefficient for *trust* now ( $B \times B$ ), perceived trustworthiness and actual trust are very strongly and positively correlated (0.7059,  $p < 0.01$ ). This may be hardly surprising, because it seems natural that if a buyer perceives a supplier to be trustworthy, the buyer is also very likely to actually trust that supplier. However, various studies have stressed the difference between trustworthiness and trust (Hardin, 2001) and demonstrated that there are a number of other variables besides perceived trustworthiness (Sztompka, 1999), such as the trustor's own disposition to trust (Rotter, 1967; Mayer et al., 1995) and the institutional context (Zucker, 1986; Lane and Bachmann, 1996), which mediate actual trust. At least for the UK printing industry, though, we can conclude on the basis of this survey that it is unlikely that a printer will not trust a supplier that he perceives to be trustworthy.

There is a strong notion in the literature on inter-firm relations suggesting that trust enhances performance. This has only partly been proved empirically (Barney and Hansen, 1994; Sako, 1998; Zaheer et al., 1998a; Lane et al., 2001) and the evidence to date does not defeat contrary arguments, for instance that a 'surfeit of trust' can also be detrimental (Kern, 1998; Wicks et al., 1999). The results of my correlation analysis, however, give strong support for the hypothesis that performance

and trust ( $A \times B$ ) are significantly and positively related. What I would like to point out, though, is that the correlation analysis presented here does not predict the direction of causality between performance and trust. Notably, it would be interesting to investigate the more unusual direction, i.e., that performance enhances trust. It is plausible that buyers trust suppliers as long as 'things are going fine' without any clear cognition of the supplier's actual trustworthiness. Lane et al. (2001, p. 1152) call this the 'what have you done for me lately' effect.

Moving on to the *governance* group of constructs, it has already been stated that there are no significant intra-group ( $C \times C$ ) correlations (see Stump and Heide, 1996 for a similar finding). Thus, interestingly, the degree of formality in a buyer–supplier relationship is independent of the attitude towards making/expecting exceptions; and both are again independent of the depth of the relationship (history, frequency). Equally, formality and depth bear no relationship with performance and trust. At least, though, the result in Table 2 indicates that stronger performance and stronger trust reduce the 'no exceptions' attitude. Interpreting this inversely, buyers expect and are willing to make exceptions more easily, i.e., they are more flexible, if they trust the supplier and are satisfied with the relationship. Once again, the direction of causality could also be reverse.

The correlation analysis has thus provided a meaningful description of how the eight constructs under investigation relate to each other. What managerial conclusions can be drawn from these results, though? Buyers can learn, e.g., how closely performance and trustworthiness are connected and may therefore pay more attention in the future to the trustworthiness, in various respects, of their suppliers. And suppliers, in turn, may be reminded of the need to come across to their customers as highly trustworthy, if they want to keep their business. Both sides may take to heart the importance of reciprocity and develop a more

Table 3  
Cluster centres, distribution of cases, and cluster labels

		Cluster 1	Cluster 2	Cluster 3	Total sample
A	Satisfaction	8.0762	9.3793	9.0357	8.5781
	Reciprocity	7.9238	8.9655	8.8571	8.3542
	Business benefit	7.3905	8.1552	8.1786	7.7083
B	Trustworthiness	7.7943	8.7897	8.5143	8.1708
	Actual trust	7.7143	9.2414	8.8571	8.3125
C	Formality	5.7190	5.7586	7.3571	5.9714
	No exceptions	4.8857	3.3966	6.0357	4.6146
	Depth	9.3714	9.4483	9.8929	9.4688
	Number of cases	109	59	28	196
	Proportion (%)	55.6	30.1	14.3	100
	Cluster label (type)	Traditional wary traders	Committed flexible partners	Controlled routine partners	

NB: All constructs standardised onto a 1–10 scale.

collaborative, partnership-based outlook on inter-firm relationships.

It is very hard, though, to use the results of the correlation analysis in order to give individual buyers, even the participants in this survey, useful practical advice. The analysis yields very abstract lessons, which also have a deterministic undertone. While it is perfectly correct to state very generally that the more trustworthy a buyer finds a supplier, the more satisfied the buyer will be with their relationship, this does not sensibly translate into a prescription along the lines of: 'See if you can trust your supplier and, if so, be satisfied with your relationship.' Consequently, it would be desirable to analyse the survey data in a way that brings out patterns in the constructs and at the same time tells us something useful about the individual companies in the population under investigation. As I argued in the introduction already, most studies on buyer–supplier relations do not achieve the latter, because they focus on modelling or hypothesis testing. In the remainder of this article, I aim to show that even by simply moving on to a conventional cluster analysis, a richer, more pluralistic understanding of the survey data can be produced. Admittedly, this is just a small advance, as the most comprehensive understanding of supplier relations can only be obtained through qualitative research or case studies.

#### 4. Cluster analysis

Following the correlation analysis reported above, I entered the data into a straightforward cluster analysis (Everitt, 1993; Aldenderfer and Blashfield, 1984) in SPSS for Windows 6.1 known as 'Quick Cluster (K-Means)'. It assigns cluster membership to each case (i.e.,

respondent) on the basis of minimum within-cluster and maximum between-cluster distance from cluster centres for the variables entered. The analyst is required to specify the number of clusters in advance. Since the number of clusters cannot be assumed to be naturally given, it is customary to run the analysis several times with different numbers of clusters and then to select the result that yields the clearest and most meaningful set of clusters. Hierarchical cluster analysis can also be used alongside 'Quick Cluster', as I did in this study, in order to facilitate the selection of a meaningful number of clusters (see also Bunn, 1993).

It turned out that dividing the 196 cases in this study into three clusters makes the most sense. Table 3 gives the cluster centres after 11 iterations for the eight constructs. It also shows the proportion of cases per cluster. The main challenge of any cluster analysis is to interpret the technical result in such a way that a meaningful *typology* of cases is obtained. Because the analyst's interpretation is involved and because the number of clusters is not naturally given, a note of caution is called for: the types/clusters identified are not real in a positivist sense, but serve only as a heuristic tool bringing out general differences within the population. As such, clusters simplify and exaggerate.

The interpretation of clusters becomes easier, if the cluster centres are displayed graphically. For my result, the interpretation is further facilitated by showing the distance of cluster centres from the overall sample centre for each variable (Fig. 2). This graphic representation plus some imaginative thinking gives the following typology of supplier relations in the UK printing industry.

The first type of buyers (Cluster 1) is called *traditional wary traders*. It represents more than half of the respondents (55.6%) in the database. They display

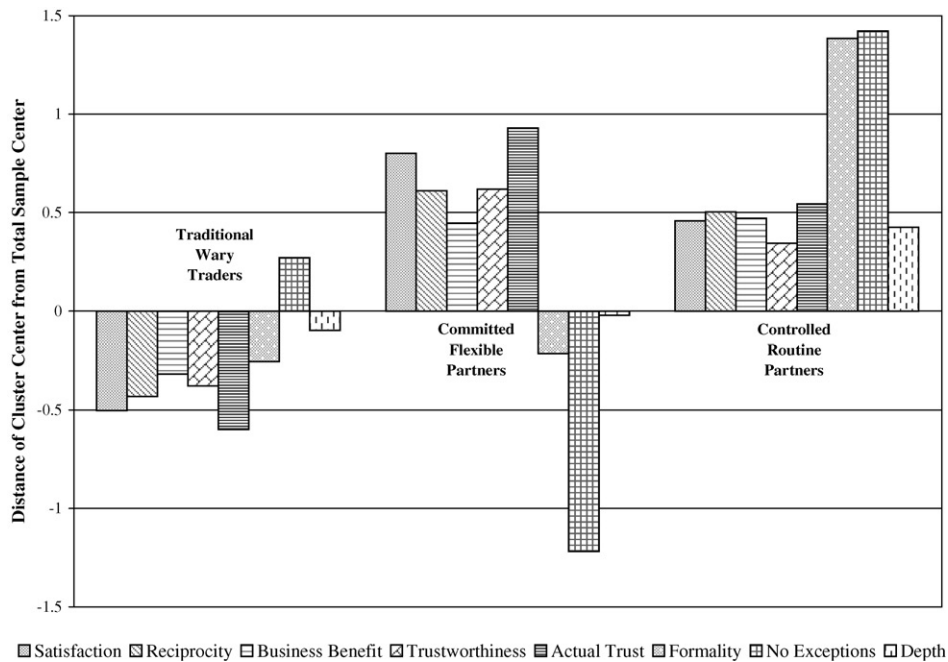


Fig. 2. Graphic representation of cluster characteristics.

much lower levels of trust and performance than the respondents in the other two clusters. Certainly, *traditional wary traders* do believe that the relationship with the supplier works well and they do not distrust the supplier. These relationships lack, however, the sort of openness, flexibility and strong trust that would be essential for truly collaborative supplier relations. In most respects, the printing companies in this cluster use traditional ways of trading, focusing on the immanent, isolated deal. The buyers generally know and trust their supplier, but remain wary and do not get involved with them.

*Committed flexible partners* is the label given to Cluster 2 representing 30.1% of the sample. These cases have very high levels of trust and performance. Strong reciprocity means that they are very likely to see their suppliers as partners with whom they have mutual interests. The relationship is relatively informal and it is expected that both sides be prepared to make exceptions under special circumstances. This is the environment in which suppliers are valued beyond their competitive prices and technical competence. The buyers feel reassured and well understood, which can enable sharing of information and flexible adaptation.

The third cluster can be described as *controlled routine partners*. Like the *committed flexible partners* before, this group of buyers (14.3%) is characterised by high trust and performance (including reciprocity) and they can therefore be called 'partners'. The difference is, however, that the partnership relies heavily on formality and strict following of agreed terms. The exchanges between buyer and supplier are very much like a highly reliable but

unstoppable routine. This type of relationship can be very successful over long periods of time. Due to their inflexibility, manifest in an attitude against exceptions, and their lack of openness, however, the buyers run the risk that their supplier relations break apart when unexpected changes in the business context occur.

The cluster analysis thus retains some of the patterns identified in the correlation analysis. Notably, comparing the *traditional wary traders* with the other two clusters, the correlation between performance and trust is evident once again. Cases with relatively low trust and low performance are in Cluster 1; cases with relatively high performance and trust are in Cluster 2 or 3. But, crucially, by also dividing the 'high performance-high trust' cases into two different clusters, the issue of governance now becomes clearer. Apparently, buyers exercise a certain degree of choice, irrespective of trust and performance, insofar as they can organise supplier relationships more or less openly and flexibly. This means that high trust and performance do not 'automatically' produce more collaborative relationships (Möllering, 2002). We have to allow for plural forms of governance (Bradach and Eccles, 1989). Further research can now focus on the question of what leads a buyer to become a *committed flexible partner* rather than just a *controlled routine partner*.

Besides these differentiated yet abstract results, the typology obtained through the cluster analysis should also be of great interest to practitioners. Specifically, each of the three types has certain strategic implications. Thus, it was possible to give feedback to the respondents by telling them which cluster they were in and what this

meant. Similarly, printers who have not participated in the survey may ask themselves which type best describes their attitude towards suppliers and whether they ought to change their supply management strategy.

In short, the main strategic issue for *traditional wary traders* is that they need to start thinking about supplier relations in terms of the slogan ‘co-operating to compete’ (Faulkner, 1995; Möllering, 1998). They should begin to look for joint efforts with the supplier to improve their competitive position. Step-by-step they should learn to trust suppliers enough to enter into true partnerships. *Committed flexible partners* should feel reassured about their supplier relations but not be complacent. Continuous efforts are required to utilise trust and flexibility for implementing up-to-date data exchange, logistics, joint problem solving and product development. And *controlled routine partners* must specifically address the question whether the routine trading relations with their partner will survive in a rapidly changing business environment. Attitudes have to change as companies learn to accept exceptions and informal ways of dealing with each other. *Controlled routine partners* are in a much better position than *traditional wary traders*, but they must equally ask themselves if they are able to ‘co-operate to compete’ and to make open commitments towards suppliers.

It has to be acknowledged that individual companies will not normally be able or willing to conduct a comprehensive survey of this kind themselves. Cluster analysis in the way it is presented in this article is mainly a research method for academics and consultants and not a practical management tool. However, the resulting findings can certainly inform practitioners, for instance, when they design supplier assessment instruments, supplier strategy reviews or benchmarking exercises.

## 5. Discussion

Clearly, the results of the cluster analysis presented here are a radical simplification of the reality they relate to and, in this sense, only a small improvement on the correlation analysis has been achieved. Note, however, the more explorative and therefore pluralistic nature of the cluster analysis. While the number of cases is large but fixed and the set of constructs predefined, we do not require explicit hypotheses or a predefined number of clusters before this analysis. Rather, the onus is on interpreting the emerging pattern in a way that is meaningful from a practical perspective, in this case from the point of view of buyers in printing companies. Cluster analysis thus ensures that the cases do not disappear behind the constructs.

Table 4 summarises the results of the correlation analysis and the cluster analysis. This side-by-side

comparison shows that both methods yield meaningful empirical insights and practical implications. The correlation analysis gives interesting information on how the eight constructs used in the study are related to each other. The cluster analysis draws on the connections between constructs as well, but its crucial contribution is that it enables us to say something about the population studied, i.e., UK printing companies (see also Cannon and Perreault, 1999). It gives a typology that could be useful in practical supply management in the sense that buyers might evaluate which relationships should be developed, e.g., from the *traditional wary trader* type towards a *committed flexible partnership*.

Whether or not *all* relationships should necessarily be developed into ‘partnerships’ and especially the *committed flexible partnership* type is actually a contentious issue. On the one hand, both the cluster analysis (Fig. 2) as well as the correlation analysis showed that stronger satisfaction and business benefits are associated with the more reciprocal and trusting partnership types. And noting a general trend towards more flexibility in business, the *committed flexible partnership* type, in particular, appears most attractive. On the other hand, Gadde and Snehota (2000), e.g., argue convincingly that there is no ‘one best way’ for supplier relations. They point out that, ‘developing partnerships with suppliers is resource-intensive and can be justified only when the costs of extended involvement are exceeded by relationship benefits’ (Gadde and Snehota, 2000, p. 305). A company can only have a limited number of close relationships with (strategically important) suppliers. Many of their other suppliers might then fall into the category of *traditional wary trader*, but this would not necessarily be problematic. Moreover, Gadde and Snehota (2000), in line with Bensaou (1999), suggest that variety in relationships not only reflects empirical reality but can also be recommended to practitioners. Overall, it should be clear that the strategic implications derived from the typology presented here are tentative, preliminary and subject to many other factors not captured in the empirical study.

However, the cluster analysis is valuable in that it also serves to point out that, although the descriptive statistics suggest high levels of trust and satisfaction in the industry, more than half of the buyers are in fact still rather wary and not developing enough trust, openness and flexibility to enter truly collaborative partnerships with their suppliers. Thus a discrepancy is identified between desirable management practices like lean production on the one hand, and the empirical conditions on the other hand which, at the time of the study, cast doubts on whether UK printers were ready to trust paper and board suppliers enough to adopt such closely coordinated practices. And finally, the more pluralistic method of cluster analysis even shows that the group of buyers with high trust and performance splits into two

Table 4  
Summary of results

	Correlation analysis	Cluster analysis
Empirical insights	<p>Satisfaction, business benefits and reciprocity contribute to performance in buyer–supplier relations.</p> <p>Perceived trustworthiness has a very strong positive correlation with actual trust.</p> <p>Performance and trust are strongly and positively correlated.</p> <p>Buyers are more likely to make and expect exceptions if performance and trust in the relationship are high.</p> <p>Formality, flexibility and depth of the relationship are not correlated.</p> <p>Formality and depth do not correlate with performance and trust.</p>	<p>According to their relationship with suppliers, buyers can be divided meaningfully into three clusters.</p> <p>Cluster 1: <i>traditional wary traders</i> are relatively low on performance and trust, average on governance.</p> <p>Cluster 2: <i>committed flexible partners</i> are very high on performance and trust, very open and informal.</p> <p>Cluster 3: <i>controlled routine partners</i> are high on performance and trust, but very inflexible and formal.</p> <p>High performance and trust do not automatically lead to more open and collaborative governance.</p>
Practical implications	<p>Buyers should monitor their suppliers' trustworthiness carefully.</p> <p>Suppliers need to come across as trustworthy beyond competitive prices and competence.</p> <p>Buyers and suppliers can recognise the importance of reciprocity for successful partnerships.</p>	<p>Buyers can determine which cluster they would fall into.</p> <p>Clusters 1 and 3 need to start 'co-operating to compete', develop and/or use trust to become more open and flexible to suppliers.</p> <p>Cluster 2 needs to continue efforts in open collaboration with suppliers.</p>

sub-types, only one of which actually organises relationships in a way that enhances collaboration with suppliers. Correlation analysis alone could not have given this differentiated picture.

Above and beyond the new insights into the UK printing industry provided in this study, it was also an aim to show how inter-firm empirical research can move from determinism to pluralism. Of course, as was already acknowledged in the introduction, the study could have gone much further, e.g., by conducting longitudinal qualitative research as the IMP group has done (e.g., Håkansson, 1982; Håkansson and Snehota, 1995). Such work on inter-firm relationships is indeed desirable as a number of valuable studies not only by the IMP group have shown recently (Uzzi, 1996, 1997; Huemer, 1998; Langfield-Smith and Greenwood, 1998; Dyer and Nobeoka, 2000).

The methodological limitations of a cluster analysis are in fact much the same as those for correlation analysis: doubts about representativeness and generalisability; limited number of constructs included; problems with operationalisation; static cross-sectional data only; positivistic assumptions underlying the analysis;

and so on. I have attempted, though, to show that even a not so radical change of methodology can reintroduce reality into the analysis. In particular, with cluster analysis, the analyst is required to think in terms of cases, i.e., real respondents and their practical settings, while with correlation analysis (and also regression analyses and most forms of modelling) the variables and constructs become the analyst's only concern.

There are at least two options for further research, building on the argument presented here. First, where quantitative survey databases already exist or are currently being produced, the opportunity to conduct more pluralistic and practice-oriented analyses like cluster analysis should be seized. The interpretative and imaginative efforts thus required should prove worthwhile. Second, there are good reasons for going straight into qualitative studies where researchers can interact recursively with the population and the phenomena under investigation. The more buyer–supplier relations are understood as socially embedded processes rather than in terms of a cost function, the more pressing becomes the need to move away from overly deterministic approaches.



## 6. Conclusion

Overall, the paper makes three contributions. On a practical level, a typology of supplier relations from the buyers' point of view was developed. This typology should apply, at least, to the UK printing industry, because a survey of 196 companies in this industry provided the basis for the findings. Printing companies, as buyers, can be divided into *traditional wary traders*, *committed flexible partners* and *controlled routine partners*. Each of the types holds specific strategic implications.

On a more conceptual level, evidence has been provided for important positive correlations between trust, trustworthiness, reciprocity and performance, while issues of governance, on the whole, did not appear to be directly connected to these constructs.

On a methodological level, it has been shown how inter-firm empirical research can move from deterministic methods to more pluralistic approaches by reintroducing the reality under investigation into the analysis. It has been demonstrated that this is possible even by just supplementing a correlation analysis with a simple cluster analysis. The more researchers force themselves to interpret data with direct reference to the empirical reality concerned, the more relevant the findings should become for relationship management in practice.

## Acknowledgements

I wish to thank John Child and Christel Lane for their continued support and advice, especially in connection with the study reported here. I am grateful to the British Printing Industries Federation for their co-operation in the empirical work and to the German *Studienstiftung*, the British ESRC, Corpus Christi College Cambridge and the University of Cambridge for postgraduate scholarships.

## Appendix A. Operationalisation of constructs

Unless stated otherwise, all items given below were measured on 1–5 Likert scales where: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree.  $N = 196$  cases

### Performance Satisfaction

- Overall, how would you rate the relationship between your company and the supplier? (0–10 scale: 0 = extremely bad, 5 = average, 10 = extremely good).

### Reciprocity

- Both our company and this supplier benefit from the business relationship.

*Business Benefit* (Spearman rank correlation coefficient = 0.2093,  $p < 0.01$ )

- Dealing with this supplier allows us to have relatively low costs.
- Dealing with this supplier allows us to offer our customers consistent quality.

### Trust

*Perceived trustworthiness* (Cronbach's alpha = 0.8878)

- This supplier charges fair prices.
- We experience relatively few problems with the quality of materials from this supplier.
- We experience relatively few problems with the reliability of deliveries from this supplier.
- This supplier operates a reliable quality control system.
- This supplier has a good reputation in the industry.
- Legal disputes with this supplier are unlikely.
- This supplier understands the needs of our business and the way we work.
- We appreciate the way this supplier treats us as a customer.
- Our working relationship with the supplier's staff is good.
- The supplier makes constant efforts to maintain a good relationship with us.

### Actual trust

- We trust this supplier.

### Governance

*Formality* (Cronbach's alpha = 0.6823)

- The supplier and our company have long-term contractual arrangements.
- The prices for our purchases from this supplier are not fixed in advance (reversed).
- We keep detailed records of every order we place with this supplier.
- We use formal means of communication rather than dealing with this supplier informally.

*Attitude towards exceptions* (Spearman rank correlation coefficient = 0.2271,  $p < 0.01$ )

- We would not expect this supplier to support us beyond their formal obligations, e.g., by making special deliveries, extending credit limits.
- We are not prepared to grant this supplier any leeway, if they have temporary problems in delivering exactly as agreed.

*Depth of relationship* (Spearman rank correlation coefficient =  $-0.0022$ , not significant)

- For how long has this supplier been providing your company with substrates? (5 categories, from 'less than six months' to '5 years or more').
- How often does this supplier provide your company with substrates? (5 categories from 'at least twice a week' to 'at least once a month').

## References

- Aldenderfer, M.S., Blashfield, R.K., 1984. *Cluster Analysis*. Sage, Thousand Oaks.
- Artz, K.W., 1999. Buyer–supplier performance: the role of asset specificity, reciprocal investments and relational exchange. *British Journal of Management* 10, 113–126.
- Bachmann, R., 2001. Trust, power and control in trans-organizational relations. *Organization Studies* 22, 337–365.
- Barney, J.B., Hansen, M.H., 1994. Trustworthiness as a source of competitive advantage. *Strategic Management Journal* 15, 175–190.
- Bensaou, M., 1999. Portfolios of buyer–supplier relationships. *Sloan Management Review* 40, 35–44.
- Blois, K.J., 1999. Trust in business to business relationships: an evaluation of its status. *Journal of Management Studies* 36, 197–215.
- Bradach, J.L., Eccles, R.G., 1989. Price, authority and trust: from ideal types to plural forms. *Annual Review of Sociology* 15, 96–118.
- Bunn, M.D., 1993. Taxonomy of buying decision approaches. *Journal of Marketing* 57, 38–56.
- Cannon, J.P., Perreault, W., 1999. Buyer–seller relationships in business markets. *Journal of Marketing Research* 36, 439–460.
- De Ruyter, K., Moorman, L., Lemmink, J., 2001. Antecedents of commitment and trust in customer–supplier relationships in high technology markets. *Industrial Marketing Management* 30, 271–286.
- Doty, D.H., Glick, W.H., 1994. Typologies as a unique form of theory building: toward improved understanding and modelling. *Academy of Management Review* 19, 230–251.
- DTI/SMMT, 1994. *A Review of the Relationships Between Vehicle Manufacturers and Suppliers*. The Department of Trade and Industry (Vehicles Division) and The Society of Motor Manufacturers and Traders, London.
- Dwyer, R.F., Schurr, P.H., Oh, S., 1987. Developing buyer–seller relationships. *Journal of Marketing* 51, 11–27.
- Dyer, J.H., Nobeoka, K., 2000. Creating and maintaining a high-performance knowledge-sharing network: the Toyota case. *Strategic Management Journal* 21, 345–367.
- Dyer, J.H., Singh, H., 1998. The relational view: cooperative strategies and sources of interorganizational competitive advantage. *Academy of Management Review* 23, 660–679.
- Eisenhardt, K.M., 1989. Building theories from case study research. *Academy of Management Review* 14, 532–550.
- Everitt, B.S., 1993. *Cluster Analysis*, 3rd Edition. Arnold, London.
- Faulkner, D., 1995. *International Strategic Alliances: Co-operating to Compete*. McGraw-Hill, London.
- Ford, D., 1980. The development of buyer–seller relationships in industrial markets. *European Journal of Marketing* 14, 339–353.
- Ford, D., Gadde, L.-E., Håkansson, H., Lundgren, A., Snehota, I., Turnbull, P., Wilson, D., 1998. *Managing Business Relationships*. Wiley, Chichester.
- Gadde, L.-E., Snehota, I., 2000. Making the most of supplier relationships. *Industrial Marketing Management* 29, 305–316.
- Gibbons, J.D., 1985. *Nonparametric Methods for Quantitative Analysis*. American Sciences Press, Syracuse.
- Granovetter, M., 1985. Economic action and social structure: a theory of embeddedness. *American Journal of Sociology* 91, 481–510.
- Green, C., 1994. *Professional Management for Printers*. Blueprint, London.
- Håkansson, H. (Ed.), 1982. *International Marketing and Purchasing of Industrial Goods: An Interaction Approach*. Wiley, New York.
- Håkansson, H., Snehota, I. (Eds.), 1995. *Developing Relationships in Business Networks*. Routledge, London.
- Hardin, R., 2001. Conceptions and explanations of trust. In: Cook, K.S. (Ed.), *Trust in Society*. Russell Sage Foundation, New York, pp. 3–39.
- Heide, J.B., John, G., 1990. Alliances in industrial purchasing: the determinants of joint action in buyer–supplier relationships. *Journal of Marketing Research* 27, 24–36.
- Huemer, L., 1998. Trust in Business Relations: Economic Logic or Social Interaction? Boréa, Umeå.
- Joshi, A.W., Stump, R.L., 1999. The contingent effect of specific asset investments on joint action in manufacturer–supplier relationships: an empirical test of the moderating role of reciprocal asset investments, uncertainty, and trust. *Journal of the Academy of Marketing Science* 27, 291–305.
- Kern, H., 1998. Lack of trust, surfeit of trust: some causes of the innovation crisis in German industry. In: Lane, C., Bachmann, R. (Eds.), *Trust Within and Between Organizations*. Oxford University Press, Oxford, pp. 203–213.
- Lamming, R., 1993. *Beyond Partnership: Strategies for Innovation and Lean Supply*. Prentice-Hall, New York.
- Lane, C., Bachmann, R., 1996. The social constitution of trust: supplier relations in Britain and Germany. *Organization Studies* 17, 365–395.
- Lane, P.J., Salk, J.E., Lyles, M.A., 2001. Absorptive capacity, learning, and performance in international joint ventures. *Strategic Management Journal* 22, 1139–1161.
- Langfield-Smith, K., Greenwood, M.R., 1998. Developing co-operative buyer–supplier relationships: a case study of Toyota. *Journal of Management Studies* 35, 331–353.
- Lewicki, R.J., Bunker, B.B., 1996. Developing and maintaining trust in work relationships. In: Kramer, R.M., Tyler, T.R. (Eds.), *Trust in Organizations*. Sage, Thousand Oaks, pp. 114–139.
- Likert, R., 1932. *A Technique for the Measurement of Attitudes*. McGraw-Hill, New York.
- Mayer, R.C., Davis, J.H., Schoorman, F.D., 1995. An integrative model of organizational trust. *Academy of Management Review* 20, 709–734.
- McAllister, D.J., 1995. Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal* 38, 24–59.
- McKelvey, B., 1975. Guidelines for the empirical classification of organizations. *Administrative Science Quarterly* 20, 509–525.
- Merchant, H., 2000. Configurations of international joint ventures. *Management International Review* 40, 107–140.
- Mohr, J., Spekman, R., 1994. Characteristics of partnership success: partnership attributes, communication behaviour, and conflict resolution techniques. *Strategic Management Journal* 15, 135–152.
- Möllering, G., 1998. Supplier Relations: Co-operating to Compete? *Printing Industries* June, 21.
- Möllering, G., 2002. Perceived trustworthiness and inter-firm governance. *Cambridge Journal of Economics* 26, 139–160.
- Moore, K.R., 1998. Trust and relationship commitment in logistics alliances: a buyer perspective. *International Journal of Purchasing and Materials Management* 34, 24–37.

- Nooteboom, B., Berger, H., Noorderhaven, N.G., 1997. Effects of trust and governance on relational risk. *Academy of Management Journal* 40, 308–338.
- Rich, P., 1992. The organizational taxonomy: definition and design. *Academy of Management Review* 17, 758–781.
- Rotter, J.B., 1967. A new scale for the measurement of interpersonal trust. *Journal of Personality* 35, 651–665.
- Sako, M., 1992. *Prices, Quality, and Trust: Inter-firm Relations in Britain and Japan*. Cambridge University Press, Cambridge.
- Sako, M., 1998. Does trust improve business performance? In: Lane, C., Bachmann, R. (Eds.), *Trust Within and Between Organizations*. Oxford University Press, Oxford, pp. 88–117.
- Smeltzer, L.R., 1997. The meaning and origin of trust in buyer–supplier relationships. *International Journal of Purchasing and Materials Management* 33, 40–48.
- Stump, R.L., Heide, J.B., 1996. Controlling supplier opportunism in industrial relationships. *Journal of Marketing Research* 33, 431–442.
- Sydow, J., 1998. Understanding the constitution of interorganizational trust. In: Lane, C., Bachmann, R. (Eds.), *Trust Within and Between Organizations*. Oxford University Press, Oxford, pp. 31–63.
- Sztompka, P., 1999. *Trust: A Sociological Theory*. Cambridge University Press, Cambridge.
- Uzzi, B., 1996. The sources and consequences of embeddedness for the economic performance of organizations: the network effect. *American Sociological Review* 61, 674–698.
- Uzzi, B., 1997. Social structure and competition in interfirm networks: the paradox of embeddedness. *Administrative Science Quarterly* 42, 35–67.
- Wicks, A.C., Berman, S.L., Jones, T.M., 1999. The structure of optimal trust: moral and strategic implications. *Academy of Management Review* 24, 99–116.
- Zaheer, A., Venkatraman, N., 1995. Relational governance as interorganizational strategy: an empirical test of the role of trust in economic exchange. *Strategic Management Journal* 16, 373–392.
- Zaheer, A., McEvily, B., Perrone, V., 1998a. Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. *Organization Science* 9, 141–159.
- Zaheer, A., McEvily, B., Perrone, V., 1998b. The strategic value of buyer–supplier relationships. *International Journal of Purchasing and Materials Management* 34, 20–26.
- Zucker, L.G., 1986. Production of trust: institutional sources of economic structure, 1840–1920. In: Staw, B.M., Cummings, L.L. (Eds.), *Research in Organizational Behaviour*, Vol. 8. JAI Press, Greenwich, pp. 53–111.