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## Critical success factors for managing purchasing groups

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## ABSTRACT

In this article, we identify critical success factors for managing small and intensive purchasing groups by comparing successful and unsuccessful purchasing groups in a large-scale survey. The analysis of our data set suggests the following success factors: no enforced participation, sufficient total contribution of efforts, all members contribute with knowledge, continuity in member representation, communication, and fair allocation of savings. The findings suggest among other things that it is important that after a voluntary decision has been taken to cooperate, the members need to show that they are committed. Other factors such as interorganisational trust and formal structures are important when establishing interorganisational cooperation, but should otherwise be considered as necessary yet not sufficient in the management phase of a successful purchasing group.

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## 1. Introduction

Purchasing in relatively small and intensive groups is becoming increasingly popular in both the private and public sector (Essig, 2000; Nollet and Beaulieu, 2003, 2005; Polychronakis and Syntetos, 2007; Tella and Virolainen, 2005). More and more organisations pool and/or share their purchasing volumes, information, and/or resources in purchasing groups in which the members share the workload between themselves. By doing so, these organisations combined in a group aim to obtain, among other things, lower purchase prices and reduced duplications of efforts and activities due to economies of scale, process, and information (based on Faes et al., 2000). In the literature, terms such as horizontal cooperative purchasing, pooled purchasing, alliance purchasing, and purchasing groups are used to refer to the concept of purchasing in a group. In the remainder of this article, we use the terms cooperative purchasing and purchasing group.

In a large number of cases, the advantages of cooperative purchasing can outweigh the costs of cooperation and disadvantages such as anti-trust (legal) issues and disclosure of sensitive information. Thus, at least in theory, cooperative purchasing can be a beneficial concept for organisations. However, in practice, small and intensive purchasing groups do not always flourish and premature endings of such groups occur (Schotanus, 2007). A

better understanding of factors that play an important role in the success or failure of a purchasing group could help such groups to flourish and could prevent premature endings.

Unfortunately, current research offers little guidance in finding factors that play an important role in managing a purchasing group successfully (Essig, 2000). On a general level, there is an extensive amount of literature dealing with interorganisational cooperation, but a widely accepted comprehensive theory for successful interorganisational cooperation does not exist (Das and Teng, 2000). On a more specific level, some studies on success factors for interorganisational cooperation have been carried out (e.g., Hendrick, 1997; Gottschalk and Solli-Sæther, 2005; Kogut, 1988; Park and Ungson, 1997). However, only a very limited number of studies provide a broad investigation of success factors for interorganisational cooperation (Hoffmann and Schlosser, 2001). Most previous studies focus on one or a limited number of success factors.

Even more specifically, to the best of our knowledge, the only previous empirical study that explicitly deals with success factors for managing purchasing groups is a study carried out by Hendrick (1997) among 28 organisations that participate in purchasing groups. However, as we discuss later on in this paper, the results of Hendrick are not fully consistent with the results of existing studies on success factors for interorganisational cooperation (e.g., Hoffmann and Schlosser, 2001). It is unclear what causes these discrepancies. It could be due to the specific context of cooperative purchasing, but it could also be due to the sample or the methods used in the different studies.

Summarising, we observe many struggling purchasing groups and conclude that the literature seems unable to provide a

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comprehensive and consistent explanation for this. Therefore, we argue that it is both practically and academically relevant to investigate what makes purchasing groups successful. Our main objective is to consider a broad set of possible success factors specifically for managing a purchasing group. By doing this, we aim to find one or more critical success factors for managing purchasing groups. Our study, which follows the methodology used in Hoffmann and Schlosser (2001), can also shed light on discrepancies found between that study and the single existing broad study by Hendrick on success factors for managing purchasing groups.

This article is organised in the following way. First, we discuss methods to identify success factors, define success in the context of purchasing groups, and discuss the literature regarding potential success factors. Next, we describe the methodology used. Using our methodology, we test whether or not the potential success factors we derive from the literature are actual success factors in practice. In the analysis and discussion section, we describe and discuss the success factors for cooperative purchasing found in the present study. In the final section, we draw the main conclusions.

## 2. Literature review

### 2.1. Methods to identify success factors

In this article, we distinguish between two methods for survey research that can be used to identify success factors. The first method is used in studies such as Hendrick (1997) and Schotanus (2005). In these studies, the respondents were asked directly about the perceived importance of several factors. Using this method, it is not necessary to ask the respondents about the perceived success of the purchasing group. It is assumed that the respondents implicitly take this into account.

The second method is the one used in the present study. For several potential success factors, differences and similarities between successful and unsuccessful purchasing groups are measured. The factors that best predict whether a purchasing group is successful or not successful are identified as success factors. Using this method, it is necessary for the respondents to explicitly determine whether their purchasing group is successful or not.

We prefer the second method to the first method, because we assume that it is less difficult for a respondent to assess whether his or her purchasing group is successful or not than to assess which factors play an important role in the success of a group. In the next section, we discuss how we determine whether a purchasing group is successful or not.

### 2.2. Success of a purchasing group

Hoffmann and Schlosser (2001) note that all previous studies faced difficulties with evaluating the success of groups of organisational arrangements such as alliances. As a benchmark for success, Hoffmann and Schlosser note that some studies consider an alliance's longevity or an alliance's contribution to improving the strategic position or competitiveness of the cooperating organisations (Hagedoorn and Schakenraad, 1994; Kogut, 1988; Mitchell and Singh, 1996). Sarkar et al. (2001) note that as a benchmark for cooperative success, some studies consider financial, survival, ownership stability, etc.

Similar to Geringer and Herbert (1989), we note that there is a lack of consensus regarding an appropriate measure of success for partnerships and alliances. We also note that some alliance

measures seem less appropriate for our study. For instance, longevity, survival, and ownership stability do not apply to young purchasing groups. Finally, we note that the success of a purchasing group is determined by the perceived degree of success in achieving the objectives of the purchasing group. These objectives differ between purchasing groups. Some groups have a 'hard' financial focus, others have a 'soft' focus on learning from each other. We argue that this makes using only financial benchmarks for cooperative success less appropriate for our study.

As far as we know, the most appropriate benchmark for success for our study is the measure of success developed by Hoffmann and Schlosser (2001). In our study, we use their measure that incorporates both 'hard' and 'soft' objectives. This means that the perceived success of the purchasing group for the respondents' organisations is determined by the respondents themselves, taking into account the perceived degree of success in achieving all of the 'hard' and/or 'soft' objectives of the purchasing group.

### 2.3. Potential success factors for managing purchasing groups, a theoretical basis

Potential success factors for cooperative purchasing can be related to several theories. In this article, we build our potential success factors on three theories which are recognised in earlier studies as relevant theories for interorganisational cooperation (Adams, 1963, 1965; Bakker et al., 2008). These theories are transaction cost economics, social exchange theory, and equity theory.

Drawing on transaction cost theory, a purchasing group can be viable when the total transaction costs of the group members involved are lower when they work together (based on Picot et al., 1996; Williamson, 1991, 2000). The three different types of transaction costs as distinguished by Vining and Globerman (1999) are all relevant here: production costs, bargaining costs, and opportunism costs. Joining a purchasing group may reduce prices (production costs), reduce the costs of finding, negotiating, and dealing directly with a supplier (bargaining costs), and lower the risk of opportunistic behaviour from suppliers (opportunism costs). However, as Vining and Globerman point out, it is the incremental costs that matter. After all, joining a purchasing group may lead to lower bargaining costs in relation to the supplier(s), but may also create new internal bargaining costs between the member of the purchasing group (for example about the allocation of gains and costs). The same applies to opportunism costs, as the risk of opportunistic behaviour may "move" from suppliers to "internal" group members.

Looking more specifically at the rationale for an individual organisation to join a purchasing group, we build on social exchange theory. The main level of analyses in this theory are (small) groups of social actors. An important notion here is the assumed proportionality between the value to the others in the group given by one member and the value to that member given by the others. The more one receives, the more pressure is exerted on that member to give more to the group (Homans, 1958). Also, the more one member gives, the more that member expects in return from the others. Exchange in social exchange theory is not only about material goods but may also be of a non material nature (e.g., prestige). Reasoning from this theory, a purchasing group can be successful when all group members perceive that proportionality is sustained and none of the other members receive "too much". The nature of the gains may however be quite complex: some members may primarily receive financial gains

(e.g., lower prices) while others may gain prestige as the leading member(s).

Finally, related to social exchange theory, we use basic insights from the equity theory perspective (Adams, 1963, 1965). Equity, or more specifically, inequity is defined as a situation where for one person his perceived inputs and/or outcomes stand psychologically in an obverse relation to the inputs and/or outcomes of another person with which the first person compares himself (Adams, 1963). When inequity occurs, the person or actor perceiving it will try to reduce it. Adams outlines various ways of doing this, for example by changing inputs and/or outputs or as a more drastic measure “leaving the field” (Adams, 1963, p. 428). Applied to purchasing groups, one or more members may develop feelings of inequity, for example in relation to the allocation of gains and costs to each group member. This may lead to unstable and ineffective purchasing groups (Schotanus, 2007) and ultimately to members leaving these groups.

In the next part of this section, we use the theories mentioned above and several empirical findings to identify a set of potential success factors for managing a purchasing group.

### 2.3.1. Interorganisational trust between the group members

In the literature, interorganisational trust is perhaps one of the most frequently discussed success factors for interorganisational cooperation (e.g., Nollet and Beaulieu, 2005; Quayle, 2002; Vangen and Huxham, 2003). Several of these empirical studies confirm the importance of competence and goodwill trust in cooperative relationships. These studies operationalise trust in several ways, including potential success factors such as “all members are honest and loyal”, “all members like each other personally”, and “all members meet their commitments”.

There are also several theories that claim that trust is an important factor for the success of a purchasing group. One of these theories is transaction cost economics. Trust is related to each of the behavioural assumptions of transaction cost economics. That is, there is a relationship between trust and opportunism, bounded rationality, and risk (Chiles and McMackin, 1996). Transaction costs are supposed to be lower when there is trust, because less monitoring, control, and cooperative agreements are necessary (Park and Ungson, 1997). For these reasons, we identify interorganisational trust as an important category for potential success factors.

### 2.3.2. Formality of the group

The importance of formality aspects for a purchasing group has been discussed by several authors (e.g., Johnson, 1999). These authors argue that it is worthwhile to make agreements regarding important decision moments and periodically report about performances of the group. Operationalising these actions leads to potential success factors such as “make engagements regarding important decision moments” and “report important performances of the group periodically”.

Reasoning from transaction cost economics, it is argued that a purchasing group has to minimise uncertainty and conflicts (based on Hennart, 1988). It is suggested to do this by setting up cooperative agreements, despite that this typically brings higher bargaining costs (based on Bakker et al., 2008; Hennart, 1991). In other words, a trade-off has to be made between different kinds of transaction costs. Bargaining and enforcement costs increase due to setting up extra agreements, but these agreements reduce uncertainty and chances of conflicts and related costs. Based on the empirical and theoretical findings, formality of the group seems to be a potential success factor category.

### 2.3.3. Uniformity of the group members

In purchasing groups, the members can complement each other by purchasing volumes, contributions with knowledge, and reducing duplications of efforts and activities. Several qualitative studies claim however that some aspects of the members should be more or less uniform (e.g., Polychronakis and Syntetos, 2007). These studies state that all members preferably have similar organisational cultures and similar procedures. Based on these studies, uniformity can be operationalised in potential success factors such as “all members have similar organisational cultures” and “all members have similar procedures”.

The empirical findings discussed above can be explained by transaction cost economics. Transaction costs are presumably lower when organisations are more alike, as there may be less uncertainty and less need for fine tuning and communication. Additionally, if members are not alike, but the contracts and agreements between the members are uniform, then this would make room for opportunism. From the perspective of equity theory, uniformity is also an important factor. Higher levels of uniformity reduce the likelihood that group members have different views on or perceptions of the value of each others contributions to the group. Given the empirical and theoretical findings, we argue that uniformity of the group members is a category for potential success factors.

### 2.3.4. Common objectives

Among others, Laing and Cotton (1997) discuss that the existence of common objectives and interests of the group members is a potential success factor for purchasing groups. If the objectives differ a lot, then this may lead to stifled innovation and tensions between the members of a group.

Similarly to the argument made for the uniformity of the group members, transaction costs are supposed to be lower when organisations have common objectives, as less fine tuning, negotiating and fewer adaptations are necessary. In other words, small and intensive purchasing groups are less viable when group members differ strongly in their interests and actions for the group. Hence, a potential success factor is “all members have similar objectives to participate”.

### 2.3.5. Communication between the group members

Efficient and effective communication is often considered to be a potential success factor for interorganisational cooperation. Among others, Hoegl and Wagner (2005) found that communication frequency and intensity have significant relationships with the performance of interorganisational projects. In practice, it is however often difficult to communicate properly in a purchasing group. In the study of Laing and Cotton (1997), it was indicated that cooperative purchasing often leads to communication problems for new and existing cooperative projects, what may result in increased throughput times. Huxham (1996) and Jost et al. (2005) conceptualised this through the concept of cooperative inertia, a situation where the rate of work output from a group is slowed down considerably compared to what might be expected.

From the point of view of transaction cost economics, it is important that there is efficient and effective communication between the group members. Otherwise, due to too little or too much communication, the total transaction costs of the group can become higher than the sum of all transaction costs of the members working alone. In addition, the more intensive and frequent the communication between members is, the more likely it is that uncertainty will be reduced (Hoegl and Wagner, 2005). Therefore, we identify “communicate and keep each other up-to-date regarding current and/or new projects” as a potential success factor.

### 2.3.6. Enforcement of cooperation

Several authors have argued that enforced cooperation has a high failure risk (Bennett and McCoshan, 1993; Brams, 1989; Enthoven, 1994; Schotanus, 2007). Among other things, they state that it is difficult to cooperate with unwilling group members.

The empirical and conceptual findings described by the authors above can be explained by social exchange theory and equity theory. If a member of a group is forced to cooperate, then it is more likely that the member does not perceive the gains to be larger than the costs of a purchasing group. The member may also perceive the situation as unfair and could frustrate the performance of the group. We therefore argue that “no enforced participation” is a potential success factor.

### 2.3.7. Influence of the group members

For several purchasing group types, it is argued that the group members should have a more or less similar influence on the group activities and decisions (Schotanus and Telgen, 2007). This especially applies to small and intensive purchasing groups as in these groups, the members typically want to have at least some control over the execution of the cooperative processes.

Similarly to the argument made for enforced cooperation it is argued that if a member of a group finds it difficult to influence the group activities and decisions, then it is more likely that this member's interests are not taken fully into account. Thus, drawing on social exchange theory, inequalities can result from exchange because some group members have more influence on the group activities and decisions than do others (Blau, 1964). As a result, these members may perceive this as unfair and/or they may perceive the gains of a purchasing group to be smaller than the costs. This may have a negative impact on levels of commitment (Molm et al., 2000) and the success of the group. Hence, we identify “all members have a similar influence on the group activities and decisions” as a potential success factor.

### 2.3.8. Allocation of gains and costs

Financial savings are often an important reason for individual organisations to join a horizontal purchasing group (Nollet and Beaulieu, 2003). If these savings are realised, each of the members of the group should receive a fair part of the total savings (based on Dyer, 2000; Heijboer, 2003). Earlier studies on vertical cooperation also indicate the importance of fair allocation of savings. For instance, Jap (2001) states that allocation methods can have a positive or negative effect depending on the type of method used and the characteristics of the resources and the organisations. Wagner and Lindemann (2008) add to this by arguing that the quality of the relationship between cooperating organisations, supplier motivation approaches, the goals of the relationship, and the allocation method all influence how value is allocated. In practice, it may not be easy to accomplish a fair allocation of savings. Earlier studies already mentioned that it is typically difficult for purchasing groups to find agreement on a fair savings allocation method (Schotanus, 2007).

Drawing on equity theory, it is argued that every member of a purchasing group participates to obtain savings and these savings should be allocated to the members in a fair manner. If a group member perceives to be under-rewarded, it will try to restore equity. This may lead to conflicts, lower commitment of members, and have a negative effect on the performance of the group. A group member may even decide to join another purchasing group or purchase the needed commodities individually (based on Das and Teng, 2001). We therefore identify “fair allocation of gains and costs” as a potential success factor.

### 2.3.9. Cooperation of the group members

For a small and intensive purchasing group to be successful, sufficient efforts and activities need to be contributed to be able to run the group successfully. In particular, each group member should preferably provide similar or complementary resources, efforts, and knowledge required for the group (Anderson and Narus, 1990). Based on Anderson and Narus (1990), we operationalise cooperation in potential success factors such as “all members contribute resources and efforts”, “all members contribute with unique knowledge”, and “in total, sufficient efforts and activities are contributed to be able to run the group successfully”.

Reasoning from social exchange theory, similar arguments can be used as for the allocation of gains and costs. It can be argued that if a group member does not put the required efforts into the group, then the other group members may perceive this as unfair. This may lead to conflicts and members could leave the group or adopt a much more passive attitude to it. For these reasons, cooperation of the group members seems to be a category containing potential success factors.

### 2.3.10. Commitment and internal support

Committed group members believe that the group is worth working on to ensure that it endures (based on Morgan and Hunt, 1994). To be able to obtain cooperation, the members are supposed to have internal support and be committed to the purchasing group (D'Aunno and Zuckerman, 1987; Doucette, 1997). This leads to potential success factors such as “all members have internal support”, “all members have continuity in member representation”, and “at least one member acts as a champion”.

Again, reasoning from social exchange theory, similar arguments can be used as in the previous subsections. If a group member does not have internal support and is not committed, this may negatively affect the commitment of the other members (Doucette, 1997). In the end, this can have a negative impact on the perceived success of a purchasing group. Additionally, Emerson (1972) theorised explicitly about commitment as an emergent outcome of successful exchange relations. Group members are motivated to be committed as a way of reducing uncertainty and increasing the success of the group. Based on the empirical and theoretical findings, we identify commitment and internal support as an important category for potential success factors.

Based on our literature review and the theoretical concepts discussed, we identify a broad set of potential success factors as shown in Table 1.

## 3. Method

In this section, we discuss the methodology used to identify the most important success factors from the broad list of potential success factors. First, we discuss the data collection and research procedure. Next, we discuss the response, data set, and data analysis.

### 3.1. Data collection and procedure

We built a draft questionnaire that used a mix of question types. The questionnaire was first sent to a focus group to test the questions. After the focus group session, the wording of some questions was changed and some new questions were added. The final questionnaire consisted of four parts:

*Part (1):* The first part consisted of general questions about the respondent and the respondent's (purchasing) organisation;

**Table 1**  
Potential success factors for managing purchasing groups.

Categorised success factors
<b>Interorganisational trust between the group members</b>
1. All members are honest and loyal
2. All members like each other personally
3. All members meet their commitments
<b>Formality of the group</b>
4. Make engagements regarding important decision moments
5. Report important performances of the group periodically
<b>Uniformity of the group members</b>
6. All members have similar organisational cultures
7. All members have similar procedures
<b>Common objectives</b>
8. All members have similar objectives to participate
<b>Communication between the group members</b>
9. Communicate and keep each other up-to-date regarding current projects
10. Communicate and keep each other up-to-date regarding new potential projects
<b>Enforcement of cooperation</b>
11. No enforced participation
<b>Influence of the group members</b>
12. All members have a similar influence on the group activities and decisions
<b>Allocation of gains and costs</b>
13. Fair allocation of gains and costs
<b>Cooperation of the group members</b>
14. All members contribute resources and efforts
15. All members contribute with knowledge
16. In total, sufficient efforts and activities are contributed to be able to run the group successfully
<b>Commitment and internal support</b>
17. All members have internal support
18. All members have continuity in member representation
19. At least one member acts as a champion

*Part (2):* The second part consisted of questions about the purchasing group, such as the name, the number of members, the life span of the group, and the number of cooperative contracts and meetings. The respondents were asked to choose a purchasing group in which they recently had been playing an active role. Organisations engaged in more than one purchasing group were asked to choose the least successful group. We asked for the least successful group as we expected that it would be more difficult to find unsuccessful groups than successful groups;

*Part (3):* The third part consisted of questions about potential success factors for managing purchasing groups. We asked the respondents to what extent the factors apply to the purchasing group in which the respondent was/is involved. For instance, we asked the respondents to what extent the objectives of all members are similar;

*Part (4):* The final part consisted of questions about the objectives and the disadvantages for the respondent's organisation and the perceived success of the purchasing group. The questions specifically referred to the purchasing group in which the respondent was/is involved.

Some issues that specifically apply to our study are the following. First, some individual organisations returned multiple questionnaires about the same purchasing group. Sometimes, these answers differed slightly. In such cases, we averaged the answers. Second, for some purchasing groups, we received multiple questionnaires filled in by different organisations. If the answers to the questions that applied specifically to the

purchasing group differed, then we also averaged these answers. Finally, if a respondent did not answer a question, then the respondent was removed from the analysis of that particular question. Thus, missing values were excluded listwise.

### 3.2. Response

The questionnaire was made available online and an invitation to respond was sent by e-mail to all members of NEVI, the Dutch purchasing association. Most of these organisations are private organisations. The total NEVI sample size, that is, the number of organisations that was reached was 797 (56% of the total sample size). Additionally, an invitation to respond was sent by e-mail to all members of PIANOo, a Dutch organisation for purchasing employees of public organisations. The total PIANOo sample size was 620 (44% of the total sample size). Both populations consist of purchasing professionals.

A low response rate was expected as not all NEVI and PIANOo members are involved in a purchasing group. In addition, there is some overlap between the organisations in the NEVI and PIANOo samples. After one reminder, the total response was 274, out of which 50 respondents only filled in the first general part of the survey. Thus, the total useful response was 224, representing a 'worst case' response rate of 16%. A total of 142 organisations were involved in a purchasing group and a total of 82 organisations were not. The response covered a total of 115 different purchasing groups.

To compensate for nonresponse bias and possible misinterpretations, we developed a website that contained preliminary results with a request for feedback on any perceived discrepancies and key issues. The website was only available to respondents that completely filled in the questionnaire. The representativeness of the response was tested in two ways:

1. *Early and late responders:* We tested potential nonresponse bias by comparing early ( $n=118$ ) and late responding organisations ( $n=24$ ) that are involved in a purchasing group. Respondents are considered late if their answers were received after sending a reminder. We carried out independent samples 2-tailed  $t$ -tests for 53 questions. Between the two groups, we found no significant differences between the means of the normal distributed ratings at  $p < .05$ . We also tested potential nonresponse bias by comparing early ( $n=76$ ) and late responding organisations ( $n=6$ ) that are not involved in a purchasing group. We carried out independent samples 2-tailed  $t$ -tests for 45 questions. Between these two groups, we found significant differences between the means of the normal distributed ratings at  $p < .05$  for two questions. These differences concerned a general question about the 'purchasing competence' of the organisations and a question about the advantages of cooperative purchasing. These two differences could be due to chance. Note that we asked organisations not involved in a purchasing group some different questions than organisations involved in a purchasing group. Therefore, we did not combine these two groups of organisations in one  $t$ -test.
2. *Known purchasing groups:* Before conducting the survey, we already knew the names of dozens of Dutch purchasing groups through our own contacts and the professional literature. Most of the purchasing groups that we knew responded to the survey. Only a few purchasing groups responded to the survey of which we did not know their existence already.

Given the procedures described above, we argue that the data is sufficiently representative, which according to Yang (2005) is even more important than the response rate.

**Table 2**  
Size of organisations analysed.

Size	Annual purchasing in million US dollars	% Total	% Involved in a purchasing group
<i>Public sector</i>			
Large	200 < 2000	6	83
Medium	20 < 200	33	85
Small	< 20	6	100
<i>Private sector</i>			
Large	200 < 2000	13	36
Medium	20 < 200	24	51
Small	< 20	13	36

Note:  $n=224$ .

**Table 3**  
Cooperative purchasing trends and helping others without engagement.

Description	Public sector		Private sector	
	Involved	Not involved	Involved	Not involved
Expected trend	4.0	3.6 ( $I^* > N$ )	3.2 ( $Pu^{**} > Pr$ )	2.2 ( $I^{**} > N$ ) ( $Pu^{**} > Pr$ )
Helping others	3.6	3.1 ( $I^* > N$ )	3.3 ( $Pu^{**} > Pr$ )	2.6 ( $I^{**} > N$ ) ( $Pu^* > Pr$ )

Note:  $n=224$ ; measured on a 5 point Likert scale from 1 (very low) to 5 (very high).

\*  $p < .05$ .

\*\*  $p < .005$ .

**Table 4**  
Contextual factors of purchasing groups analysed.

Group type	% Total	% Successful
Piggy-backing	6	86
Third party	8	100
Project	12	79
Lead buying/program	74	81

Note:  $n=115$ .

### 3.3. Data description

The Dutch organisations and purchasing groups analysed can be characterised by the factors as shown in Tables 2–4. Table 2 shows that most responding organisations are medium sized. It also shows that about half of the private organisations and most of the public organisations in the sample have been involved in a purchasing group in the past two years.

Table 3 shows some significant differences between public organisations ( $Pu$ ), private organisations ( $Pr$ ), organisations involved in a purchasing group ( $I$ ), and organisations not involved in a purchasing group ( $N$ ). We found the differences between the means of the normal distributed ratings in independent samples 1-tailed  $t$ -tests. The table suggests that organisations in group  $I$  expect to a higher extent than organisations in group  $N$  that cooperative purchasing will become more prevalent in their sector in the next two years. A similar conclusion concerns the willingness to help others by means of cooperative purchasing. Finally, the table suggests that responding organisations expect that cooperative purchasing will become more prevalent in the public than in the private sector. Again, a similar conclusion concerns the willingness to help others without engagement.

Table 4 positions the purchasing groups analysed by a typology developed for purchasing groups (Schotanus and Telgen, 2007). In the typology, several main purchasing group types are distinguished. The piggy-backing type is a non-intensive group type and can have a small or medium size. The third party type

is a relatively large and non-intensive purchasing group type. The project type has a short term focus and is a relatively small and intensive purchasing group type. The lead buying/program-like type has a long term focus and is a relatively small and intensive purchasing group type. It usually involves representatives of the management teams of the cooperating organisations meeting regularly in a steering committee to discuss cooperative projects. The members typically have medium to high involvement relationships with each other.

Table 4 shows that most groups in the data set resemble lead buying/program-like purchasing groups. For this reason, our further analyses mainly focus on this purchasing group type of small and intensive purchasing groups.

A total of 22 responding private organisations are involved in cooperative purchasing between business units of the same organisation. Typically, these business units are more or less independent and have to be profitable on their own. Still, the business units ought to have one common goal related to the holding's overall goals. In addition, there are fewer or no issues regarding confidential information in business unit purchasing groups. These aspects are quite similar to the aspects concerning cooperative purchasing in the public sector (Schotanus, 2007).

### 3.4. Data analysis

Our data analysis procedure is partly based on the procedure used by Hoffmann and Schlosser (2001). They carried out an empirical study on success factors for alliances. Their study gave special consideration to the situation of small and medium sized enterprises. In our study, we focus on success factors for the management of purchasing groups. Thus, we have a more specific research focus than Hoffmann and Schlosser who consider alliances in various areas. Nevertheless, we have comparable research objectives and we make a similar distinction between successful and unsuccessful groups (see also Section 2.1).

The specific steps that we carried out are as follows. First, we used independent samples  $t$ -tests to identify potential success factors that differ significantly between successful and unsuccessful purchasing groups. Second, we conducted a discriminant function analysis (Lachenbruch, 1975) to the success factors identified in the previous step. We conducted the discriminant analysis to analyse whether the identified success factors significantly separate successful and unsuccessful purchasing groups.

We tested the assumptions for the statistical tests as follows. We used QQ-plots to test each variable for normality assumptions. For small sample sizes ( $n \leq 75$ ), we assume unequal variances when  $p \leq .05$  in Levene's (1960) test for equality of variances. For larger sample sizes ( $n > 75$ ) we look at the variance ratio. This is the ratio of the variances between the group with the

largest variance and the group with the smallest variance (Field, 2005). We assume unequal variances when this ratio is equal to or larger than 2.5. We tested the equality of covariance matrices by using Box's (1950) test. We assume unequal covariance matrices when  $p \leq .05$ . The assumptions for the  $t$ -tests and the discriminant analyses are all met.

#### 4. Findings and discussion

##### 4.1. Main findings

In this section, we present our analyses of success factors for managing purchasing groups. We first tested whether there are differences between successful and unsuccessful groups concerning the potential success factors. We conducted independent samples 1-tailed  $t$ -tests and found several significant differences as shown in Table 5. Later in this section (below Table 6) we discuss the success factors found in more detail.

The analyses of the mean differences between the groups do not allow a direct examination of the total and individual contributions of the set of success factors. Therefore, we conducted a stepwise discriminant function analysis to examine the total and individual contributions of the set of success factors. For the success factors in Table 6, Wilks' lambda, as a test of the discriminant function in the model, was highly significant (lambda=.621,  $\chi^2=32.429$ ,  $df=6$ ,  $p < .001$ ). In the model, 89.3% of the purchasing groups were correctly classified as successful or unsuccessful.

Conducting the discriminant analysis in steps allows a direct examination of each factor's discriminating power (Hoffmann and Schlosser, 2001). At each step, all success factors are evaluated to determine the factor that maximises the Mahalanobis distance between the two closest groups. Table 6 shows the success factors that contribute most to the discrimination between the groups. In other words, the table shows the factors that best predict whether a purchasing group is successful or not successful.

##### 4.2. Categories without success factors for managing purchasing groups

The success factors covered several categories. Still, some categories do not hold factors that differ significantly between the groups. We discuss these categories first, before discussing the success factors that we did find. Note that we do not claim that

the factors in the categories below are not important in a general sense. Nevertheless, for our data, these factors do not predict well whether a purchasing group is successfully managed.

##### 4.2.1. Interorganisational trust and formality of the group

In contrast to the findings of Hendrick (1997) and Schotanus (2005), we found that factors related to interorganisational trust (i.e., 'all members are honest and loyal, meet their commitments, and like each other personally') and the formality of the group (i.e., 'make engagements regarding important decision moments and report performances of the group periodically') are not identified as success factors for managing purchasing groups.

The factors discussed are important when establishing inter-organisational cooperation in a general sense (Hoffmann and Schlosser, 2001), but should otherwise be considered as necessary yet not sufficient in the management phase of a successful purchasing group. That is, without some agreements and/or interorganisational trust, a purchasing group would probably never have come into being in the first place.

Our results regarding interorganisational trust are consistent with the related results of Hoffmann and Schlosser (2001). The differences between the study of this article and the studies of Hendrick (1997) and Schotanus (2005) can be explained by the fact that in those studies, the perceived importance of success factors was determined by the respondents. In this article, we determined the factors by testing how well different subsets of factors correctly discriminate between successful and unsuccessful groups. The differences between the studies could mean that the respondents overestimate the importance of these factors (based on Hoffmann and Schlosser, 2001). It could also mean that the respondents find it difficult to make a distinction between the importance of these factors in the set-up phase and the management phase of a purchasing group.

##### 4.2.2. Uniformity of the group members

In contrast to earlier empirical studies (e.g., Hendrick, 1997; Polychronakis and Syntetos, 2007), we did not find a significant difference concerning uniformity of the group members (i.e., 'all members have similar organisational cultures and similar procedures'). We found that purchasing groups consisting of organisations with similar or dissimilar cultures and procedures can be both successful and unsuccessful.

These results can be explained by similar arguments as used in the previous subsection. Additionally, it could be that uniformity is less important for purchasing groups than for alliances. For

**Table 5**  
Success factors for managing purchasing groups.

Success factor	Category	Average		Sign.
		Successful groups	Unsuccessful groups	
11. No enforced participation	Enforcement of cooperation	3.8 >	2.7	.001
15. All members contribute with knowledge	Cooperation of the group members	3.4 >	2.5	.002
18. All members have continuity in member representation	Commitment and internal support	3.4 >	2.7	.003
16. In total, sufficient efforts and activities are contributed to be able to run the group successfully	Cooperation of the group members	3.5 >	2.7	.005
9. Communicate and keep each other up-to-date regarding current projects	Communication between the group members	4.0 >	3.4	.005
12. All members have a similar influence on the group activities and decisions	Influence of the group members	3.9 >	3.2	.005
8. All members have similar objectives to participate	Common objectives	3.7 >	3.1	.009
13. Fair allocation of gains and costs	Allocation of gains and costs	3.6 >	3.0	.016
17. All members have internal support	Commitment and internal support	3.5 >	2.9	.019
10. Communicate and keep each other up-to-date regarding new potential projects	Communication between the group members	3.8 >	3.3	.031

Note: Measured on a 5 point Likert scale from 1 (strongly disagree) to 5 (strongly agree); differences are compared using independent samples 1-tailed t-tests.

**Table 6**  
Main success factors for managing purchasing groups.

Success factor entered in discriminant analysis	Minimum <i>D</i> squared				
	Statistic	Exact <i>F</i>			
		Statistic	df1	df2	Sign.
<b>Enforcement of cooperation</b>					
11. No enforced participation	.937	10.007	1	71	.002
<b>Cooperation of the group members</b>					
16. In total, sufficient efforts and activities are contributed to be able to run the group successfully	2.283	12.026	2	70	.000
15. All members contribute with knowledge	3.061	10.593	3	69	.000
<b>Commitment and internal support</b>					
18. All members have continuity in member representation	3.587	9.176	4	68	.000
<b>Allocation of gains and costs</b>					
13. Fair allocation of gains and costs	3.947	7.960	5	67	.000
<b>Communication between the group members</b>					
10. Communicate and keep each other up-to-date regarding new potential projects	4.060	6.722	6	66	.000

Note: The analysis has been made between successful and unsuccessful purchasing groups; the max. number of steps is 20; the min. partial *F* to enter is .5 and the max. to remove is .25.

instance, purchasing groups are already operating at the same horizontal level of a supply chain, while alliances are often vertically linked. This may compensate other differences between the members of a purchasing group and make uniformity a relatively less important success factor.

#### 4.3. Categories with success factors for managing purchasing groups

In this section, we discuss the main critical success factors found. We also discuss the implications of our findings regarding these success factors.

##### 4.3.1. Enforcement of cooperation

As indicated in Table 6, 'no enforced participation' is the most important success factor for managing a purchasing group for our data set. A well-organised group should be cost-effective for all its members. In an ideal situation, this cost-effectiveness should attract members without enforcing them to cooperate. Based on our data set and related studies (e.g., Brockhoff, 1992), an enforced approach seems inappropriate for cooperative purchasing in many situations. Still, we argue that after a voluntary decision has been taken to cooperate, the members need to show that they are committed, which can be done by, among other things, a declaration of intent.

##### 4.3.2. Cooperation of the group members and communication

Success factors such as 'sufficient total contribution of efforts' indicate that cooperative purchasing does not occur automatically. In other words, some knowledge and efforts are necessary to coordinate the activities, to communicate with each other, and to synchronise specifications and supplier preferences. This result is consistent with the work of Hoffmann and Schlosser (2001), who found that 'establishing required resources' is a success factor for alliances. Our results concerning communication difficulties are consistent with the qualitative results of Laing and Cotton (1997). The fact that we found that it is an important success factor that 'all members contribute with unique knowledge' builds on our following argument. That is, we argue that small and intensive purchasing groups are less viable when group members differ strongly in their interests and actions for the group.

##### 4.3.3. Commitment and internal support

Other success factors concern 'all members having continuity in member representation' and 'all members have internal support'. If members have no internal support and/or frequently

change representatives, then this may hamper the learning curve of the group. In addition, it may be regarded as a lack of commitment to group, which has also been suggested as being an important success factor by Doucette (1997). As noted earlier in this paper, if a group member does not have internal support and is not committed, this may negatively affect the commitment of the other members (Doucette, 1997). It therefore seems to be important that all members are committed and have internal support. This builds on our argument that small and intensive purchasing groups are less viable when group members differ strongly in their interests and actions for the group.

##### 4.3.4. Common objectives and influence of the group members

Tables 5 and 6 indicate that some success factors concerning differences between members are important, which is consistent with success factors identified by other studies (e.g., Laing and Cotton, 1997). For our study, the success factors identified are 'all members have a similar influence' and 'all members have similar objectives'. These factors also build on our argument that purchasing groups are less viable when group members differ strongly in their interests and actions for the group.

##### 4.3.5. Allocation of gains and costs

Finally, Table 6 indicates that the 'fair allocation of gains and costs' is an important success factor for the purchasing groups analysed. To our knowledge, this factor has not yet been studied in detail in empirical studies of purchasing groups. Therefore, in the rest of this section, we further explore allocation methods. Regarding the allocation of gains and costs, we found the following:

- *Allocation of gains*: A total of 87% of the purchasing groups analysed uses the so-called equal price gain allocation method (i.e., all organisations pay an equal price per item independent of their individual purchasing volumes). The other 13% uses allocation methods that are more beneficial to larger organisations than the equal price method as the equal price method is often relatively beneficial for small organisations in a purchasing group. Typically, these purchasing groups have many members and a heterogeneous composition;
- *Allocation of costs*: A total of 30% of the purchasing groups uses no formal cost allocation method, 29% uses a 'proportional to organisational size' cost allocation method, 29% uses the Equal Amount cost allocation method or a fixed membership fee, and 11% uses another cost allocation method.

**Table 7**  
Combinations of allocation methods used.

Gain allocation method	Cost allocation method	% Total	Uniformity of contributions to the group <sup>a</sup>	Uniformity of purchasing volume <sup>a</sup>	% Successful
Equal price	No formal method	27	2.7	2.5	76
Equal price	Equal amount or fixed membership fee	26	2.7	2.2	90
Equal price	Proportional	24	2.3	1.9	79
Equal price	Another method	9	2.9	1.9	86
Another combination		14	2.1	1.6	82
Total/average		100	2.5	2.1	82

<sup>a</sup> Measured on a 5 point Likert scale from 1 (very dissimilar) to 5 (very similar).

In the next table, the combinations of gain and cost allocation methods used by the respondents are shown. For instance, 27% of the purchasing groups uses the equal price gain method, but operates without a formal cost method. A total of 76% of these groups are perceived as successful. The fourth and fifth column of the table suggest that heterogeneous groups more often combine the equal price gain method with a proportional cost allocation method (Table 7).

The data suggests that certain combinations of gain and cost allocation methods occur more often in successful purchasing groups, confirming earlier analytical game theoretic results (Schotanus, 2007). But due to limited data, we were not able to test whether the usage of certain combinations of gain and cost allocation methods occurs more often in successful than in unsuccessful groups while controlling for, among other things, uniformity of purchasing volumes and contributions to a group of the members of a group. This could be an interesting subject for further quantitative empirical research.

#### 4.4. Limitations

Some limitations need to be considered regarding the present study. First, as anticipated, there was a low response rate, although we argued that the data as such is representative. Second, we focused on relatively small and intensive purchasing groups. Our findings and conclusions regarding, among other things, formality may not fully apply to large purchasing groups.

## 5. Conclusions and implications

This article set out to identify success factors for managing purchasing groups using transaction cost economics, social exchange theory, and equity theory as theoretical frameworks. The study is based upon empirical observations of success and contributing factors to this success: the relation between these two is analysed in the context of cooperative purchasing. Earlier studies on these relations analysed the direct view of respondents on the relations themselves. As such, this study provides additional insight into the relation between empirical facts and the beliefs of respondents in which factors contribute to the success of a purchasing group. Discrepancies between our results and the results of earlier studies are explained by differences in the research methods used, overestimation by the respondents of the importance of certain potential success factors (e.g., inter-organisational trust between the group members), and/or by the specific context of cooperative purchasing. The article adds to the literature by providing quantitative empirical evidence for the broad set of potential success factors studied. We also note that the critical success factors follow from different theoretical frameworks. Some critical success factors are based on transaction cost economics, while others are based on social exchange

theory and equity theory. This could mean that more than one recognised theory is required to predict whether a purchasing group is successful or not successful.

Our findings regarding the success factors have several other theoretical and managerial implications. First, we argue that small and intensive purchasing group types are less viable when group members differ strongly in their interests and actions for the group. This is because we found significant differences between successful and unsuccessful purchasing groups concerning similar 'objectives', 'influence', 'contributions with knowledge', 'commitment', and 'internal support'. These factors are all important success factors for purchasing groups. Note that if one group member does not have internal support and is not committed, this may negatively affect the commitment of the other members (Doucette, 1997). So, differences between the members on some of these success factors can even have a strengthening negative effect on the viability of the group.

Second, we argue that 'no enforced participation', 'sufficient total contribution of efforts', 'all members contribute with unique knowledge', 'continuity in member representation', 'fair allocation of gains and costs', and 'communication' are the main critical success factors. Among other things, this means that an enforced approach seems inappropriate for cooperative purchasing in many situations. Still, we argue that after a voluntary decision has been taken to cooperate, it is important for the success of a purchasing group that the members show that they are committed to the group.

Third, we found that the success factors related to 'inter-organisational trust', the 'formality of the group', and 'uniformity of the group members (i.e., 'all members have similar organisational cultures and similar procedures')' cannot be considered as typical success factors for managing purchasing groups. We suggest that these factors might be important when establishing interorganisational cooperation, but are rather necessary and not sufficient elements in the management phase of a successful purchasing group. Without at least some form of agreement, consensus and/or mutual trust, a purchasing group would probably never have come into being in the first place.

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