

Implications of a Classification of Forms of Cooperative Purchasing

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Abstract

The concept of cooperative purchasing is as old as ancient Egypt and Babylon. Even in those days groups of independent organizations cooperated in one or more steps of the procurement process by pooling their purchasing volumes, information and/or resources to improve their performances.

The main objective of this paper is to identify and classify the current forms of cooperative purchasing according to the intensiveness for the members and the number of different activities for the cooperative initiative. Based on new institutional economics and transaction cost economics we identify five main forms of cooperative purchasing depending on varying scores on intensiveness and scope of activities.

Managerial implications of a classification of forms of cooperative purchasing include differences in the organizational structure, formality, et cetera. A classification can also serve as a guideline at the early stage of a cooperative purchasing initiative when the aim is to find a suiting form of cooperative purchasing. Furthermore, we explicitly discuss the hitchhikers' dilemma. This dilemma deals with small organizations hitchhiking on contracts from large organizations. For large organizations there may be no incentive to allow hitchhiking. For small organizations it can be very interesting to hitchhike though. Savings allocation mechanisms could compensate this dilemma and stimulate the concept of cooperative purchasing.

Research implications include an emphasis on the importance of using a classification, as it may not be possible to put all forms of cooperative purchasing in one box. Therefore, when researching cooperative purchasing it is highly important to define and classify the studied forms of cooperative purchasing.

Keywords: Classification; Cooperative purchasing; Group purchasing; Hitchhikers' dilemma; Organizational forms

Introduction

Horizontal cooperation is as old as the human society and has been studied extensively ever since (Harrigan 1985; Håkansson 1987). Horizontal cooperation in the specific field of purchasing is as old as ancient Egypt and Babylon (Wooten 2003). However, despite its long history cooperative purchasing has received relatively little attention in purchasing and supply management research (Laing 1997; Mudambi 2004; Tella 2005). Especially compared to vertical relationships (buyer-seller cooperation), cooperative purchasing (buyer-buyer cooperation) has not been a major research area until now (Ellram 1991; Essig 2000). This lack of research attention seems unjustified with cooperative purchasing being more and more well-established in practice in the last decade (Doucette 1997; Kivisto 2003; Nollet 2003).

The latter is confirmed by numerous publications about cooperative purchasing in refereed or peer-reviewed professional purchasing journals as is shown in table 1. Especially professional journals in the health and library sector pay relatively a lot of attention to cooperative purchasing. We explain this particular interest by a long tradition of cooperative purchasing in these sectors.

Table 1 also shows that academic publications dealing explicitly with cooperative purchasing are rare. Of course cooperative purchasing is just a specific form of cooperating. E.g. alliance theory covers most common aspects of cooperative purchasing. However, there still exist some typical elements just applicable to cooperative purchasing. Some of these elements will be dealt with in the rest of this paper.

TABLE 1: a general overview about publications dealing explicitly with cooperative purchasing

<i>Subject area*</i>	<i>academic</i>	<i>professional**</i>	<i>conference***</i>	<i>total</i>
1. Economics	0	1	0	1
2. Education	0	2	0	2
3. General & strategy	LRP	2	0	3
4. Health	HSMR	19	0	20
5. Information systems	EM	0	0	1
6. Library	0	8	1	9
7. Marketing	JBR	0	1	2
8. OR & management science	MS & IJPE	2	1	5
9. Purchasing & supply	EJOR (2) & JSM	23	9	35
Total	9	57	12	78

* Based on the journal quality list of Harzing (2005)

** Note that particularly our overview of professional publications is not complete yet. This table is only intended to give a general idea of the current position of cooperative purchasing in literature. Furthermore, books are not included because their content mostly overlaps with academic or professional publications.

*** Overlapping publications with academic or professional journals are removed

Terminology

The terminology in the literature of cooperative purchasing is very broad and is not yet fully stabilized (Kivisto 2003). We define cooperative purchasing as the cooperation between two or more independent organizations in one or more steps of the procurement process by pooling their purchasing volumes, information and/or resources to improve their performances.

Cooperative purchasing is also known as horizontal cooperative purchasing, group purchasing, collaborative purchasing, collective purchasing, combined purchasing, joint purchasing, pooled purchasing, consortium purchasing, shared purchasing, bundled purchasing, mutual purchasing, and this list can go on and on. Group purchasing and cooperative purchasing are far the most popular terms according to the Internet search engines Google and Google Scholar.

In practice, the term group purchasing is not only used for the cooperation between *independent* organizations, but also for *dependent* organizations (Essig 2000). As we study the cooperation between *independent* organizations we use the term cooperative purchasing.

(Dis)advantages and the private and public sector

Typical advantages of cooperative purchasing are lower prices, higher quality, lower transaction costs, reduced workload, reduced (supply) risks, and learning from each other. Typical disadvantages are

set-up costs, coordination costs, losing flexibility, losing control, supplier resistance, and anti-trust issues (Schotanus 2005a).

These advantages outweigh related disadvantages for many different situations in the public sector as we will illustrate later on in this paper. Thus, compared to the private sector cooperative purchasing seems to be especially interesting for the public sector, for instance for organizations like ministries, hospitals, schools or municipalities. These types of public organizations often have similar organizational structures, similar networks, similar purchasing needs, mutual trust, (hardly) no competition, a common external environment, and one common goal: to maximize the value of the taxpayers' money. Since most cooperative purchasing initiatives are modeled on a non-profit basis, savings are generated with little cost for the participating organizations and as a result, the majority of the savings flows directly to the cooperating organizations (Kenney 2000). The concept of cooperative purchasing can therefore be considered as being an interesting concept for private organizations, but especially for public organizations.

Objectives

To provide recommendations for future policy on the topic of cooperative purchasing for the Dutch public sector we carried out several empirical studies in 2003 and 2004. The overall goal of these studies was to analyze current and future practices of cooperative purchasing in the Dutch public sector. The main objective of this paper is to identify and classify the different forms of cooperative purchasing and to analyze managerial and research implications.

Research implications of a classification of forms of cooperative purchasing

Some empirical research has already been done to the different forms of cooperative purchasing (e.g. Arnold 1996a; Aylesworth 2003; Essig 2000; Hendrick 1997; Leenders 1997; Kivisto 2003; Klein Woolthuis 1999; Nollet 2003). However, most of the related literature discusses just one or more forms of cooperative purchasing without classifying them. A clear specific classification of the different forms of cooperative purchasing is still lacking to our opinion.

Available common classifications of cooperating mostly consider only one factor as the level of goals (from operational to strategic), formality, independence of the members (e.g. Essig 2000), intensiveness (e.g. Klein Woolthuis 1999), the product life cycle (e.g. Huyzer 1990), loosely or highly structured (e.g. Aylesworth 2003), or the time factor (e.g. Nollet 2003). We acknowledge the importance of among other things the structure and the time factor for all different forms of cooperative purchasing. However, we found that other factors play a distinguishing role in the classification of cooperative purchasing as we will discuss in the following sections of this paper.

We also note that most classifications applicable to cooperative purchasing are common classifications of cooperating (e.g. Huyzer 1990; Klein Woolthuis 1999). We propose a specific classification of cooperating in the field of purchasing as there are some unique characteristics involved. The following characteristics distinguish cooperative purchasing from cooperating in other fields: the large possible number of group members, large possible dissimilarities between group members, different cooperative product and service groups and related life cycles, the specific purchasing perspective, et cetera.

We emphasize the importance of a clear classification of cooperative purchasing as critical success factors, advantages, disadvantages, savings allocation mechanisms, and managerial implications may differ per form. It may not be possible to put all different forms of cooperative purchasing in one box. Therefore, when analytically or empirically researching cooperative purchasing it is highly important to define and classify the studied forms of cooperative purchasing. Still, several studies and papers dealing with cooperative purchasing do not clearly define and classify the studied forms. For example, Long and Marquis (1999) found during a research study that some of the studied effects fell short of their expectations. They thought that this may be because they combined all of the different forms of cooperative purchasing. They found much stronger effects when they considered the different forms separately in another study.

Research methodology

In order to get a more complete understanding of cooperative purchasing within the Dutch public sector we first carried out 21 semi-open structured interviews in 2003 and 2004. We interviewed purchasing managers within 15 different Dutch cooperative initiatives. These initiatives consist of

hospitals, municipalities, universities, ministries or police stations. One initiative consisting of municipalities was studied into more extent than the others by also observing their meetings for over two years and interviewing several of their members. Also, a small scale survey was carried out during a cooperative purchasing conference for Dutch public organizations in 2003.

Based on these studies and on our literature study we wrote a Dutch book for practitioners (Schotanus 2004). We met twice with a focus group of four purchasing managers to discuss and evaluate the progress and content of the book. These purchasing managers were all actively involved in different public cooperative initiatives consisting of municipalities or hospitals. Just one of the members of the focus group was also interviewed in the first phase of our study.

Furthermore, three other purchasing managers were involved in the research project by writing case examples of their active cooperative initiatives. Finally, two more purchasing managers were involved in the project by writing case examples about why their organizations made an explicit choice not to join a cooperative initiative.

The final phase of our research project consisted of a presentation of the findings of the book at an annual conference for Dutch practitioners in the public sector. The book was distributed to all 4.000 members of the Dutch Association of Purchasing Management (NEVI) and is online available with a request for feedback on the key issues and on any perceived discrepancies. Until now, several responses have been received which we used to refine our analytical research results.

This paper is part of the empirical part of a PhD-project concerning cooperative purchasing. In this research project we recognize an empirical and an analytical approach. The empirical approach serves as an inspiration, validation, and background for the analytical approach. More specifically, the empirical approach recognizes three theory career stages: discovery (Reichenbach 1938), pursuit, (Laudan 1977) and justification (Reichenbach 1938). This paper is particularly written in the context of discovery and pursuit.

Results and discussion

A classification of forms of cooperative purchasing

Cooperative purchasing can be explained by several theories as new institutional economics, transaction cost economics, resource-based view, network theory, and organizational learning theory (e.g. Arnold 1996b; Kamann 2004; Kivisto 2003; Tella 2005). Based on new institutional economics and transaction cost economics (Williamson 2000) there exists a wide range of different hybrid organizational forms for cooperative purchasing initiatives. These organizational forms can be defined as coordination by network and range between coordination by hierarchy and coordination by market (Arnold 1996b; Jones 1988; Kivisto 2003; Thompson 1991). That is why cooperative purchasing initiatives can be organized in quite different ways.

In some cases an organizational form leaning to coordination by hierarchy may be quite suitable, for instance when several organizations work together in a large exceptional purchasing project and all need to agree on the cooperative specifications and supplier choice. In other cases an organizational form leaning to coordination by market may be quite suitable, for instance when several organizations have the same purchasing need for electricity and agree to outsource most procurement steps to an external party or to one of the cooperating organizations.

The highway matrix

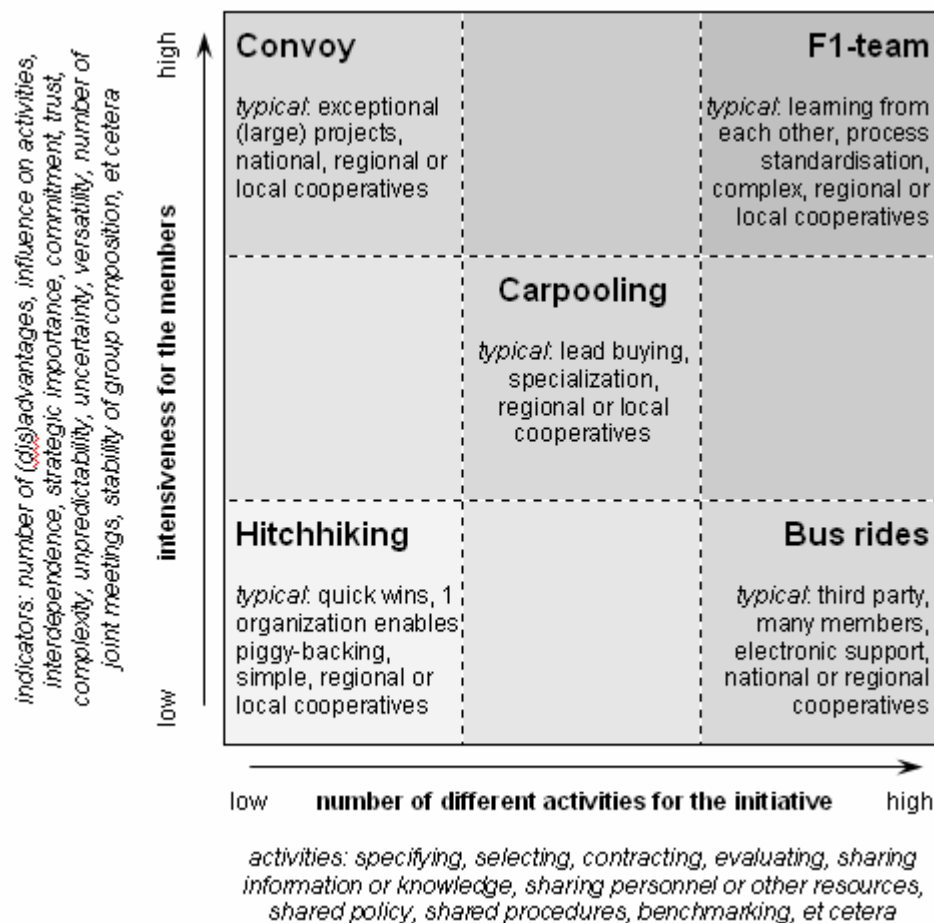
To be able to categorize and analyze the different forms of cooperative purchasing we developed the highway matrix. In order to do so we first derived five main forms of cooperative purchasing from our empirical observations within the Dutch public sector. We derived the forms by using several typical properties as are shown in figure 1. We used road transport as a metaphor just to have practical labels for the main forms. The next step was to find a matrix that suited all of the forms. We found a fitting matrix by using two factors.

The first factor, the 'intensiveness for the members' on the vertical axis is defined as the extent to which an organization is compelled to perform an 'active' role in the cooperative initiative. The higher the intensiveness, the more the organizational form usually leans to coordination by hierarchy. The lower the intensiveness, the more the organizational form usually leans to coordination by market.

The second factor, the 'number of different activities for the initiative' on the horizontal axis ranges from undertaking 'one occasional cooperative activity' to 'continuously undertaking different activities within the same cooperative initiative'. These activities can be carried out by an external party or by

the members themselves. Combinations of forms apply when different members of the same initiative score differently on one or both factors.

FIGURE 1: the highway matrix; a classification of forms of cooperative purchasing



A description of forms of cooperative purchasing and related managerial implications

Within a more intensive and active form of cooperative purchasing like an F1-team an organizational range exists from loosely structured relationships under the control of institutional purchasing managers to highly structured business models with complete autonomy (Aylesworth 2003). The time factor, formality, number of participants, et cetera may also differ per form, but still there are several similarities *within* each of the forms in figure 1.

Lower prices and reduced transaction costs are potential advantages of *all* of the different forms of cooperative purchasing. These common properties fall outside of the focus in the next sections. Also outside of the focus are properties and success factors of alliance theory that are not typical for cooperative purchasing, like commitment, trust, champions, et cetera. Note that the more integration of the processes of the members of purchasing cooperatives takes place, the more the properties mentioned in alliance theory apply (Kamann 2004). The *typical* properties of the main forms of cooperative purchasing are discussed in the next sections into more detail.

Hitchhiking

Hitchhiking sometimes just involves the sharing of purchasing related information with other organizations. However, most of the times it involves a large organization that establishes a contract on its own specifications, and this contract may be used by other (smaller) organizations. The others usually cannot influence the specifications and supplier choice, such as a hitchhiker cannot influence the final destination of its ride. Therefore this form of cooperative purchasing is of limited use. Another difficulty may be that suppliers not always allow smaller organizations to hitchhike on the contract of a large organization under the same conditions. This issue may be solved by a somewhat higher purchasing price with the other contract conditions unchanged. Despite a somewhat higher purchasing

price there still remain reduced tender process times and transaction cost savings, which are advantageous both to the supplier and the buyer (Arnold 1996a). Another advantage for suppliers is that it might be beneficial to supply a whole region of cooperating organizations in one sector.

An example of a large and relatively intensive hitchhiking initiative is the consortium of the municipality of Groningen and several other local governments in three different provinces. This initiative has been active for more than two decades¹ and covers about 20 mostly common commodities. Groningen is relatively large compared to the other organizations and allows them to hitchhike on its contracts. When purchasing managers of Groningen negotiate a new contract for their own organization they ask the supplier whether or not it is possible for smaller governments to hitchhike on the contract. The smaller governments are free in their choice to hitchhike and to make use of the scale and expertise of Groningen. Groningen receives a small fee from the suppliers to cover the expenses related to the initiative as e.g. helpdesk costs. These expenses amount about half an FTE.

The hitchhikers' dilemma

Large and/or excellent organizations generally profit less from hitchhiking on contracts from other organizations, as more specific individual contracts might be necessary or contracts based on the aggregate procurement volume of all cooperating organizations might be more interesting.

Small organizations are often involved with hitchhiking on contracts of large organizations, as they lack specific purchasing expertise and economies of scale. They can also reduce their transaction costs drastically by hitchhiking. Thus for small organizations it can be very interesting to hitchhike on contracts from large organizations. However, for large organizations there may be no direct incentive to allow small organizations to hitchhike on their contracts. Sometimes large organizations manage to negotiate a somewhat lower cooperative price, but this is often the exception rather than the rule. Allowing others to hitchhike even involves some costs like negotiation costs with the supplier to make hitchhiking possible.

We define this dilemma as the hitchhikers' dilemma. A savings allocation mechanism could compensate this issue and stimulate the hitchhiking concept. Compensation could take place by reallocating some of the cooperative gains from the smaller organizations to the larger ones, making hitchhiking also interesting for the larger organizations (Schootman 2005a).

One example of the hitchhikers' dilemma is illustrated by Vigoroso (1998) by quoting a manager of a large consortium member: "We learned we were already buying better than the other companies participating. We lowered the costs of the other companies by 10%, but ours didn't change."

Bus rides

Bus rides mostly involve long term hitchhiking made possible by public or private external parties or central authorities. These parties can be for-profit organizations or non-profit organizations. They may host forum websites for purchasing related discussions or establish agreements for common commodities on behalf of and for use through e-procurement or direct use by all of their customers. The bidding process is based on the (expected) aggregate procurement volume and is carried out with the specific purchasing expertise of the external party (Harland 2003). Most of the times there is no limit to the number of members or bus travelers and their geographical location, but they do have to pay a small (membership) fee to cover related (administration) costs made by the third party. The weakness of bus rides is that the members usually have no or hardly any control over the procurement process. Therefore, most bus rides only suit non-product related goods and services.

Examples of bus services are Electronic Purchasing Consortia (Corsten 1999; Huber 2004), National or Regional Purchasing Organizations or Member-Owned Service Bureaus. Members do not form relationships with each other, nor do they have to discuss commodity requirements (Aylesworth 2003). The external party carries out most of the procurement activities. Bus rides are especially popular in the health sector in the United States. This sector has a long history of cooperative purchasing, and nowadays bus rides cover a large percentage of the goods and services purchased by health care institutions.

¹ Some studies consider an alliance's longevity a benchmark for success (Hagedoorn 1994; Hoffmann 2001; Mitchell 1996)

Carpooling

Carpooling involves outsourcing the procurement of common commodities to one of the members: each commodity is purchased by the most suitable organization or external party according to their expertise, resources or purchasing volume. The concept of carpooling is also known as external lead buying. This concept enables members to specialize in purchasing typical commodities. Some consideration and evaluation will be necessary to determine which organization drives to which destination in the carpooling initiative. These meetings also allow the organizations to influence to some extent the tenders put out by the others. Another tool used in more intensive cooperative initiatives as carpooling are best price agreements: if one member receives a better price from a supplier for a common commodity while renegotiating a contract, all members also buying from this supplier should receive this price from this supplier for this commodity.

Of course there are some risks involved in carpooling. One disadvantage is becoming dependent of the knowledge and skills of the other members. This applies especially to cooperatives in which the members differ in size and expertise. To become a successful carpooling cooperative the members should have at least some similarities like the same geographical location, sector, network, et cetera. As more consideration is necessary with carpooling than with hitchhiking or bus rides, carpooling initiatives usually contain less members.

A carpooling example is the consortium of 25 Dutch regional police forces. Some of these organizations carpool together on a small scale for tendering e.g. cleaning services. Lower prices and reduced transaction costs have been achieved in these initiatives. However, it has been proven to be difficult to carpool with less advanced purchasing organizations. A more intensive form of cooperative purchasing than carpooling is necessary when all of the organizations work together on purchasing more complex commodities like police cars.

Convoy

A convoy is a more intensive form of cooperative purchasing and suits well with e.g. one shared exceptional purchasing project. Supply risks can be shared and increased knowledge can be used to deal with uncertainties. Convoys involve a lot of consultation between the members to bring the specifications up to the same level, to agree with one another on the supplier choice, et cetera. Convoys may be one-time events and the number of different cooperative activities for the initiative is therefore limited. Because of the more exceptional character of a convoy there usually are several learning moments during the cooperative project. It may be difficult to work together with relatively unknown partners for one project. Particularly in a convoy one should also prevent potential free rider problems or at least try to limit its effects.

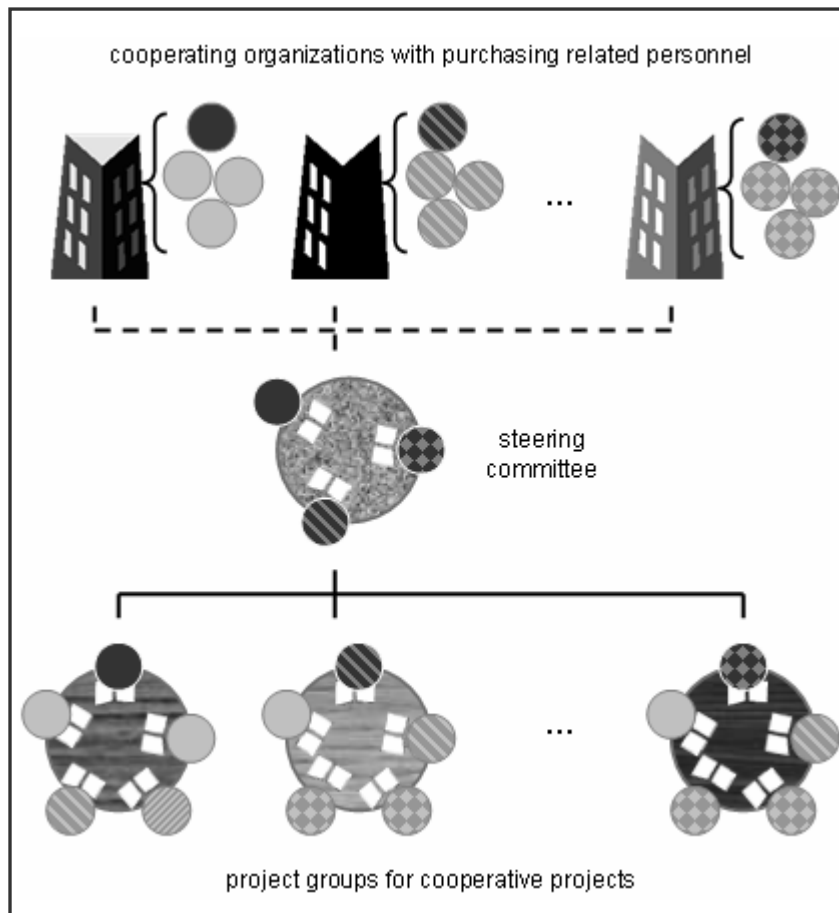
An example of a convoy combined with a hitchhiking initiative is OT2000, a very large Dutch purchasing project for telephony services involving 311 public organizations. A small number of organizations were involved in the actual tendering process. The other organizations hitchhiked on the cooperative contract. Therefore it was difficult to involve all of the final users of the telephony services during the tendering processes. Another difficulty was that the organizations that were involved in the actual tendering process were mostly located near the municipality of The Hague. Hitchhikers in regions further away were not supplied as well as the organizations near The Hague. The allocation of cooperative gains and costs was also considered to be difficult. Despite the difficulties average savings of 18% on the purchasing price were gained. The service level remained equal or was even improved. The coordination costs were high though and mostly allocated to the organizations involved in the tendering process. Some organizations evaluated the convoy as quite successful; others evaluated the convoy as hardly successful or not successful at all.

F1-team

Intensive cooperative purchasing forms as F1-teams often involve representatives of the management teams of the cooperating organizations meeting regularly in a steering committee to discuss cooperative projects (see figure 2). All parties usually can influence the specifications, supplier selection, et cetera. The project groups for these cooperative projects include at least one member of the steering committee and other representatives of most or all members. Together they carry out several steps of the procurement process and thus share the administrative work. Several F1-teams make use of a private or public external party to coordinate some of the activities. In practice the costs and workload are often allocated equally or proportionally. In our previous work we already noted that allocating the costs and workload equally is fairer and more stable on the long run (Schootanus 2005b).

A carpooling initiative is often organized likewise as a F1-team with one major difference. The project groups in a carpooling initiative consist of participants of *one* organization and not of *different* organizations. A similarity between carpooling and F1-team initiatives is that the members of these kinds of initiatives are usually active in just one intensive and active form of cooperative purchasing. In addition, both carpooling and F1-team initiatives often allow hitchhiking on their cooperative contracts for other (local) organizations.

FIGURE 2: organization of a typical F1-team



Cooperative initiatives can be informally or formally structured. Formal initiatives can be separate legal entities owned by their members, but we also consider highly structured initiatives without legal entities as being formal. Criteria for highly structured initiatives are regular and organized meetings, several procedures and rules as joining and leaving rules, duties and rights, et cetera.

Usually the more trust, commitment, need, experience or knowledge on how to work together is available, the less formality is necessary. More formality is necessary with higher financial or juridical risks and interests, more mutual competition, less organizational similarities, or a 'formal' culture within one or more of the cooperating organizations.

Some F1-teams have one contract between the initiative and the supplier, but in most F1-teams each member has an individual contract with the joint supplier. Organizational similarities and smaller mutual distances are more important than in less intensive forms of cooperative purchasing. Related coordination costs are usually higher for intensive forms. Typical difficulties of F1-teams in the private sector involve among other things the sharing of confidential information and the allocation of costs and gains.

An F1-team example is Netwerkstad Twente, a consortium of four municipalities. These municipalities share several cooperative contracts despite differences in among other things the size of their organizations. By e.g. analyzing and diagnosing their purchasing spends they found several opportunities for cooperative purchasing. Difficulties arise so now and then due to mutual organizational differences. For instance, due to these differences the municipalities find it to be difficult to cooperatively improve the professional level of their purchasing functions. Still, all members

evaluate the initiative as successful as most cooperative projects lead to lower prices and/or improved quality of the purchased goods and services.

Conclusion

To provide recommendations for future policy on cooperative purchasing for the Dutch public sector we carried out several empirical studies. The results of these studies are published in a Dutch book for practitioners (Schotanus 2004). This paper gives a more fundamental analysis of this research project. We found during our study that a clear classification of the different forms of cooperative purchasing is lacking in the literature. We emphasize the importance of a clear classification as critical success factors, advantages, disadvantages, savings allocation mechanisms and managerial implications may differ per form. A classification can also serve as a guideline at the early stage of a cooperative purchasing initiative when the aim is to find a suiting form of cooperative purchasing.

To be able to categorize forms of cooperative purchasing we developed the highway matrix according to two factors. These factors are intensiveness for the members and the number of different activities for the cooperative initiative. In further research a refinement of the classification may be possible by slightly adapting the existing two factors or by introducing a third factor like formality or continuity.

In the highway matrix we identify five main forms of cooperative purchasing from a relatively simple form as hitchhiking to a relatively complex form as a F1-team. The time factor, organizational structure, and number of participants may differ within each of the forms, but still there are several similarities.

The hitchhikers' dilemma deals with small organizations hitchhiking on contracts from large organizations. For large organizations there may be no incentive to allow hitchhiking. For small organizations it can be very interesting to hitchhike though. Savings allocation mechanisms could compensate this dilemma and stimulate the concept of cooperative purchasing.

A right balance is important between the will to cooperate, the size and form of the cooperative initiative, the allocation of gains and costs, et cetera. As long as this balance is present, cooperating organizations in the field of purchasing may maximize cooperative advantages and minimize related disadvantages.

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