Stronger together?

A study on the ways to quantify savings achieved by collective procurement in organizations for nursing, care, and homecare.

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1. Abstract

Introduction: Many healthcare organizations in the Dutch sector for nursing, care, and homecare (VVT: Verpleging, Verzorging en Thuiszorg) engage in collective procurement: Bundling their purchasing volumes to get better prices and reach other beneficial effects. Most of the smaller VVT-organizations have but small purchasing departments, if any. This makes it a challenge to spend time to invest in stronger relationships with fellow VVT-organizations and makes it even harder to have an objective way of quantifying savings that might occur. The aim of this study is to find objective ways of quantifying savings that are achieved by collective procurement.

Methods: A literature study has been conducted that found no clear-cut method. However, many organizations might keep track of their savings in some way, which is why interviews with purchasers and experts in the field were conducted to gather information from practice. These interviews were semi-structured to allow elaboration. 5 purchasers and 2 experts were asked about their experiences and procedures.

Results: Results showed that respondents are indeed interested in more insight in savings due to collective purchasing. Most purchasers have their own way of keeping track of discounts and savings. However, they are lacking in time to be able to effectively do this and there is no clear-cut method to do such an analysis. A solution to this was offered, in the shape of categorizing spend and expressing it as spend per Euro of revenue. This is the most promising method of quantifying savings.

Conclusion: Concluding, there are but few ways in which savings achieved by collective procurement can be effectively measured and quantified. The most promising one is categorizing spend and expressing it as spend per Euro of revenue or per patient or per employee. This makes comparing organizations of different sizes possible.

Further research: Further research should focus on gaining more insights in the proposed method and put it into practice to investigate whether it is indeed a reliable way of quantifying savings. Having a validated and clear method to apply to most situations can help organizations stimulate their engaging in collective procurement and in the end be able to have better insight in their savings. Never focusing on cost minimization, but always on value maximization for patients.

2. Introduction

Over the past decades, the Dutch population has been ageing increasingly (RIVM, 2018b). This increase in life-expectancies has led to, and will increasingly lead to, age-related health problems (RIVM, 2018a). Besides increasing life-expectancy, many other factors influence the increasing healthcare costs. Technological advancement is one of these factors (Ewijk, Horst, & Besseling, 2013). Without policy-changes, the costs for care for the elderly will increase with 157% over the next 20 years, to €43 bn (RIVM, 2018b). This poses a big challenge for the healthcare system as is, and justifies focusing on saving costs, while maintaining the current standard-of-care.

Effective procurement can be seen as a main strategy in halting the increasing rise in costs, while maintaining the quality of care (Nollet & Beaulieu, 2003). It is estimated that, on average, a purchasing cooperation can achieve a costs saving of around 10-18% (Dobson, Heath, Reuter, & DaVanzo, 2018). Mainly horizontal cooperation – e.g. cooperation between care organizations - is promising with regard to savings (Schotanus, 2007). What is important to consider here is both the intensity of cooperation for members and the amount of activities that members of the group purchasing process undertake together (Schotanus & Telgen, 2005).

2.1 Collective procurement in Group Purchasing Organizations (GPOs): Bundling volume can save costs, but there are also non-financial benefits

Group purchasing is not exclusive to healthcare. Many industries combine purchasing power, but often use different terminology like cooperative purchasing, collaborative purchasing, or group buying (Saha, Seidmann, & Tilson, 2019). This study focuses on business-to-business procurement, as opposed to business-to-consumer and internet-based group buying (Anand & Aron, 2003; Chen, Chen, Kauffman, & Song, 2009; Kauffman, Lai, & Lin, 2010), with a light emphasis on Group Purchasing Organizations (GPOs) in healthcare (L. R. Burns & Briggs, 2018; Carrera, Katik, & Schotanus, 2015).

A GPO can be defined as: *"The cooperation between two or more organizations in a purchasing group in one or more steps of the purchasing process by sharing and/or bundling their purchasing volumes, information, and/or resources."* (Schotanus & Telgen, 2007). Group purchasing can lead to direct financial benefits. In many different sectors, group purchasing is used to lower costs and these direct financial benefits range from 8-37% (Karjalainen, 2011), 2-90% (Schotanus, Telgen, & de Boer, 2009), but also self-reported savings of about 13% (Hendrick, 1996). The range of savings can be seen to vary tremendously. This makes that GPO cooperation falls under the pooling of demand. This is one of the six sourcing levers, and the one in fact that offers the most cost saving opportunities (Hesping & Schiele, 2016).

Not only financial benefits can arise from collective purchasing. Multiple studies have shown that positive non-financial benefits include higher quality, better access to resources/markets, reduced workload, reduced (supply) risks, and learning from other members in the GPO (Nollet & Beaulieu, 2005; Schotanus et al., 2009; Sorenson & Kanavos, 2011).

2.2 Focus of the study: Organizations in the nursing, care, and homecare sector (VVT)

According to Burns & Lee, cooperative purchasing of physician-specific products is difficult (Lawton R Burns & Lee, 2008). However, commodities are particularly interesting for group purchasing, since these products are not physician-specific, but are equally needed for multiple departments. Examples of these commodities are energy, waste disposal and food. This might make cooperative purchasing more difficult in the curative sector than in the care sector. A distinction between 'cure' and 'care' in Dutch healthcare can be made. However, a distinction on sectors based on how they are financed is more convenient for this study. Dutch healthcare is financed by roughly four instruments: The youth

act (Jeugdwet), long-term care act (Wlz), the social support act (WMO) and the health insurance act (Zvw) (Ministry of Health, 2018). This study will focus on healthcare that is financed mostly by the Wlz. This is a mandatory, collective healthcare insurance for all Dutch citizens. It covers care at home or in a care facility. People are eligible when they have a physical disease or impairment, a psychogeriatric condition such as dementia, and/or a mental, physical, or sensory impairment. This condition has to be chronic and the necessary care or supervision is needed around the clock (Rijksoverheid, 2020). The costs of the "Wet Langdurige Zorg (Wlz)" or in English: Long-term care act in the Netherlands were €21,4 bn in 2018 (Rijksoverheid, 2018). The purchasing volume of this type of organization is around 30% of the total costs, with the majority of costs going towards personnel. This makes the annual purchasing volume of the Wlz in the area of €6,5 bn (Intrakoop, 2020). Medication in Wlz-organizations is not paid for by the Wlz, but by the ZVW (ZINL, 2020). More specifically, it focuses on institutions for Nursing, Care and Homecare (Verpleging, verzorging en thuiszorg in Dutch, or VVT).

2.3 Aims of the study and research question

The statement by Dobson et al. (2018), claiming that cooperative purchasing can yield a savings of 10-18%, still leaves a large range of possible savings. The spread of 8% means billions of euros worth of potential savings. This vast uncertainty in determining potential savings makes that thorough research into the financial impact on healthcare is needed in the Netherlands. Many of the research that has been considered in this section used varying methods in determining potential costs savings (Dobson et al., 2018; Hendrick, 1996; Karjalainen, 2011; Schotanus et al., 2009). Finding the strong elements in all these studies and combining them can be very useful in determining the best possible method to determine cost savings. When employees are not motivated to commit to the model, it is not unlikely that the cooperative purchasing strategy will not reduce costs at all (Kulp, Randall, Brandyberry, & Potts, 2006). These are all reasons why a sound estimate of potential costs saved is paramount in convincing organizations and their employees to engage in collective purchasing, when results prove positive.

Furthermore, cooperative purchasing is an emerging strategy in the Netherlands, while other countries have more experience with this. In the Netherlands, only 10% of the medical goods are purchased collectively, whereas in the US and Germany, this is 50% and 80%, respectively (Hu & Schwarz, 2011). Incomplete information on actual cost savings could be one of the reasons for this big difference. This lack of methods for reliably quantifying achieved savings is standing in the way and a clear overview of possibilities could help promote collective procurement. Findings of this study should be useful for Dutch cooperative purchasing stakeholders, but for the international cooperative purchasing community, too. That is why the aim of this study is to find a method to establish evidence for the financial savings and benefits that healthcare organizations in the VVT-sector in the Netherlands can achieve. This leads to the following research question:

"What are possible ways for effectively determining financial savings of group purchasing by healthcare organizations in Nursing, Care and Homecare (VVT)?"

This research question will help fill the knowledge gap on methods of quantifying savings by collective procurement. Direct financial benefits are visible effects and grouping together purchasing volumes thus creating economies of scale helps to reduce pricing up to a certain extent (Nollet & Beaulieu, 2005). Paradoxically, objective, recent data on the subject is lacking.

Increasing the knowledge base on cost savings by GPO-membership will help organizations determine whether joining a GPO is worthwhile and can give (non-)GPO-members more instruments to quantify their financial benefits due to GPO cooperation.

3. Theoretical Framework

3.1 Definitions and types of GPOs

Collective purchasing through the use of GPOs has many examples from all over the world, in a plethora of different areas. Econometrics, finance, industry, but also in the public sector, for example in healthcare.

Multiple definitions of a Group Purchasing Organization exist. One is given by Yang, Cheng, Ding, and Li (2017): *"A Group Purchasing Organization (GPO) is an entity that utilizes collective buying power to obtain significant discounts from vendors, which can be suppliers, distributors and manufacturers."* However, this definition lacks certain aspects. Using collective buying power alone to achieve cost reductions in the form of discounts is not the only potential benefit of collective purchasing. Pooling resources and information in the purchasing process is not part of this definition, even though these two aspects can improve the total costs of the process for all parties, since one purchasing department can manage the purchasing process, instead of the departments of all member institutions. More specifically, Schotanus and Telgen (2007) defined a GPO as an organization in which the following takes place: *"The cooperation between two or more organizations in a purchasing group in one or more steps of the purchasing process by sharing and/or bundling their purchasing volumes, information, and/or resources."* This definition is a more comprehensive and complete definition of GPO collaboration and will be the main definition in this study. Interestingly, it not only focuses on the negotiation part of the purchasing process, but Schotanus and Telgen (2007) mention that cooperation can take place in one or more steps of the purchasing process.

In the United States, GPOs function differently from Dutch GPOs, for example Intrakoop. They also operate on a very different scale. For instance, one of the largest GPOs in the US, Premier, has an annual purchasing volume of $61 billion (Premier, 2020). This is thrice the cost of the entire Dutch Wlz budget (Rijksoverheid, 2020).

Furthermore, the way that GPOs (generally) finance their activities differs in both examples. In the Netherlands, healthcare organizations group together and pay a fee to the GPO so they can engage in group purchasing. In the United States however, suppliers pay a fee to the GPO in order to access that part of the market. Besides that, no Dutch GPO is for-profit, and neither are Dutch hospitals and healthcare organizations. I the US, there are for-profit GPOs, but there are also for-profit hospitals. These do not make up the majority of the market however. This makes American GPOs manufacturer-focused entities, while Dutch GPOs are healthcare-focused entities.

3.2 Different forms of GPO cooperation

Many studies focus on price savings for GPOs. These studies consider many different aspects in the procurement process, but only a few took into account the fact that not every GPO is alike. Expecting all GPOs to achieve similar success (or the lack thereof) in cutting costs is unreasonable, since they are not homogenous organizations. They all have their own organizational style, operating policies, but also sizes differ significantly (Cleverley & Nutt, 1984).

GPOs can be classified based on the influence each member has on the group activities, but also on the number of activities that the group undertakes. These two factors can be placed on axes, thus creating a matrix. This is what Schotanus and Telgen (2007) did and it has led to a matrix for organizational forms of cooperative purchasing. A fitting analogy for the cooperation is the highway matrix, as seen in figure 1. In this analogy, all forms of cooperation are described as a way of using a highway together.

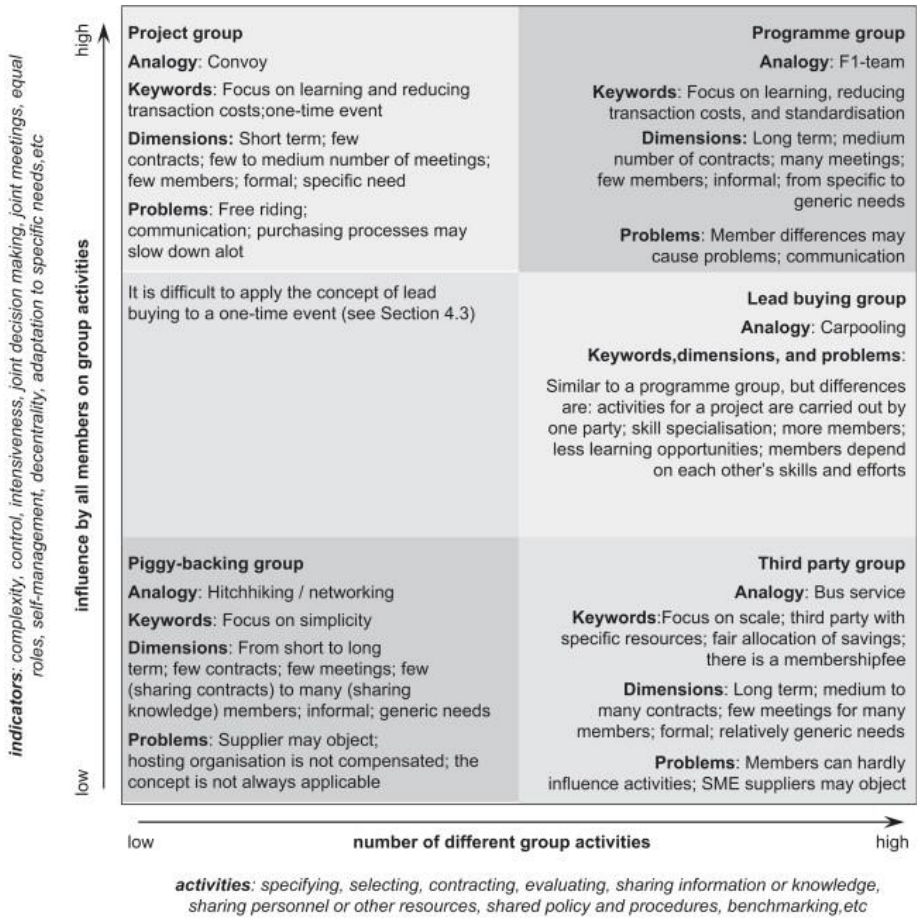


Figure 1: The highway matrix

3.2.1 Low-intensity cooperation forms

Low-intensity cooperation forms are characterized by low scores on the following indicators: Complexity, control, intensiveness, joint decision making, joint meetings, equal roles, self-management, decentralism, adaptation to specific needs, etc.

3.2.1.1 Piggybacking

Piggybacking can be seen as hitchhiking, following the aforementioned highway matrix. The cooperation is meant to be as simple as possible. Often, a large buyer contracts a supplier under their own circumstances and enables small organizations to piggy-back of their contract, the specifications of which they themselves would not be able to negotiate. This means that the hitchhiker cannot influence the destination (product specifications), but they can latch on to a favorable contract. This reduces the smaller party's specification, selection, and contracting phase of the purchasing process in both time and costs. The downside of piggybacking is that a large party can object to smaller organizations joining in on their favorable contract because they are not compensated (fairly).

3.2.1.2 Third-party group

A third-party group can be seen as a bus service, where a larger organization functions as the bus driver, where smaller organizations can buy a ticket and ride along. The larger organization, or host, can be an independent organization (GPO) that is owned by its members. This can be seen as a more intensive form of piggybacking, both in number of shared activities and in the length of the agreement.

The host organization and the members have a formal relationship and purchase relatively generic goods and services. The downside of this is that, as with piggybacking, the members have a small influence on the activities. Furthermore, smaller suppliers can object to this, since it makes it hard for them to supply to larger groups of buyers.

3.2.1.3 Lead-buying group

In a lead buying group, members have more influence on the group activities, and this can be seen as carpooling. The most suitable member of the group takes the lead in the process. This can be determined by purchasing volume, expertise, or resources. This cannot happen short-term since members become dependent on each other's purchasing skills and knowledge. The downside is that members outsource a big part of the purchasing process, and they have less opportunities to learn.

3.2.2 High-intensity cooperation forms

High-intensity cooperation is characterized by high intensity on complexity, control, intensiveness, joint decision making, joint meetings, equal roles, self-management, decentralism, adaptation to specific needs, etc.

3.2.2.1 Project group

A project group can be seen as a convoy, where driving together means that members can learn from each other and reduce transaction costs. This is a one-time event. In a convoy, there are short-term contracts in small amounts. It is often a search to a shared solution of a shared problem. An observed problem in project groups is freeriding, where organizations can try to piggy-back on intensive collaboration. Communication on an intensive scale is also a complexing factor, as is the fact that learning a lot can slow down the purchasing process significantly.

3.2.2.2 Program group

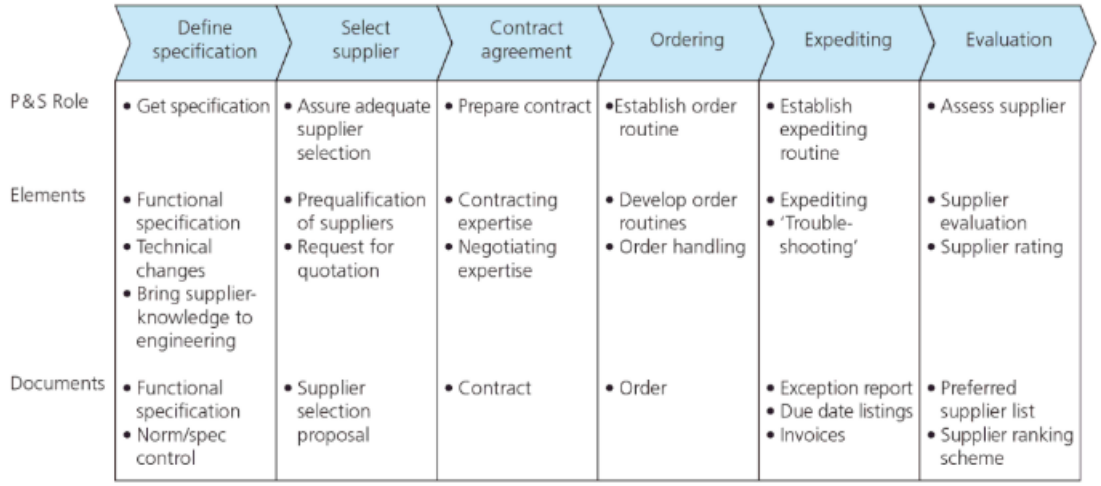
The program group can best be compared to a Formula 1 team. Their focus is on intensive, long term collaboration where members want to learn a lot from each other and reduce transaction costs, while speeding up the process with standardization. There are only few members to keep the processes efficient and quick, where a lot of joint meetings are held where all parties have a big influence on the direction. This intensive collaboration can lead to communication problems, but when members cannot agree on the course this can hamper the process a lot.

3.2.3 The purchasing Process: Steps taken from start to finish

When purchasing goods or services, structure is important and to this end, Van Weele (2009) introduced a schematic view on the process of purchasing, with six comprehensive steps that describe the entire process. This can be seen in figure 2 (Monczka, Handfield, Giunipero, & Patterson, 2015; Van Weele, 2009). In fact, this process could have been depicted as a circular model, since after evaluation, a new purchasing process can be started.

An interesting observation to make in this case, is that impact on the costs of the entire process decreases as the process takes place, with the most potential impact being had in the specification of the product or service, and the least in the evaluation.

The first step is the definition of specifications. What does the organization need? Here, organizations are faced with the question whether they can make it themselves, or if the product has to be bought (the classic make-or-buy decision (Klein, 2005)). In this step, a product or service must be chosen that meets the needs of the organization, in both functional and technical dimensions. It must be prevented to select an overengineered product or a service that is too extensive. This is the part of the process where a thorough review of specifications leads to the largest impact on the final price (Bäckstrand, Suurmond, van Raaij, & Chen, 2019).



	Define specification	Select supplier	Contract agreement	Ordering	Expediting	Evaluation
P&S Role	• Get specification	• Assure adequate supplier selection	• Prepare contract	•Establish order routine	• Establish expediting routine	• Assess supplier
Elements	• Functional specification • Technical changes • Bring supplier-knowledge to engineering	• Prequalification of suppliers • Request for quotation	• Contracting expertise • Negotiating expertise	• Develop order routines • Order handling	• Expediting • 'Trouble-shooting'	• Supplier evaluation • Supplier rating
Documents	• Functional specification • Norm/spec control	• Supplier selection proposal	• Contract	• Order	• Exception report • Due date listings • Invoices	• Preferred supplier list • Supplier ranking scheme

Figure 2: The six steps of the purchasing process

After the organization is clear on the desired specifications, suppliers must be identified that can deliver them. Here, a lot of attention is needed to find the right supplier. Which supplier best fits the needs of the organization? Solely focusing on price would be a pitfall in this process. The organization must specify the factors on which they base their final decision. Internally, they can qualify the suppliers by factors like price, delivery plans, urgent deliveries or service agreements (Bäckstrand et al., 2019). This process is the subject of an entire research field, but it is not the focus of this study.

When a supplier has been found, the contract must be drawn up. Margins of prices and (bulk) discounts can be negotiated here.

From this moment onward, little influence on prices and costs can be had by buyer organizations. In the ordering phase, the contract is executed, and orders are placed for the negotiated products or services. In the expediting phase, the process is being monitored and potential problems can be resolved. At the end of the contracts, both parties evaluate their performance, update their supplier documentation, and decide whether this supplier could deliver the same or similar products in the next cycle.

3.3 GPO pros and cons

For a Dutch long-term care organization to join a GPO, many factors need to be taken into consideration. There are a lot of pros and cons to consider, depending on the kind of GPO. Benefits and drawbacks can be either financial or non-financial. And financial benefits can be direct financial benefits (lower costs of products and services) or indirect financial benefits (shorter tender duration, reducing transaction costs, etc.). The indirect financial benefits are significantly more difficult to research since they do not show as clearly on an invoice. A study in the cost-savings of GPOs could structure the analysis of all transaction-related costs in the form of the purchasing process as mapped

out by Van Weele (2009) in figure 2. Often, selection, negotiating and monitoring are frequently transferred from GPO members to the GPO itself (Gobbi & Hsuan, 2015).

3.3.1 Direct financial benefits: Not only financial benefits arise

Direct financial benefits are the most visible form of GPO benefits. Grouping together purchasing volumes, creating economies of scale, help reduce pricing to a certain extent (Nollet & Beaulieu, 2005; Sorenson & Kanavos, 2011; Stigler, 1958). Paradoxically, objective, recent data on this subject is lacking. However, studies are done on the subject of collective procurement. A clear example of this is a group of US hospitals in the New England area. Two of the largest academic medical centers in this area were merged, which led them to engage in collective purchasing of radiology equipment, supplies, and services. Bundling their purchasing volumes for radiographic film yielded 11% additional discount, for contrast materials this action yielded 14% extra savings. The total amount of money saved was $810K on a system-wide annual budget of $7M (11,5%). These benefits are purely direct financial benefits and had led to no change in either the use of materials or the vendors that supplied them (Bramson, Chiango, Seltzer, Leonard Holman, & Thrall, 1997). Another study group researched collective procurement process of 4 parties in Jordan (The ministry of health, military health services, and two academic hospitals) that engaged in the collective procurement of pharmaceuticals. This form of convoy (project group) has led to savings of roughly $850K (9%) on the costliest and widely-used pharmaceuticals in the country. Interestingly, the two smaller parties, the university hospitals, achieved the highest savings as compared to their two counterparts. This strengthens the belief that bundling purchasing volume is solely responsible for the savings (Al-Abbadi, Qawwas, Jaafreh, Abosamen, & Saket, 2009).

3.3.2 Indirect financial benefits

Not all benefits are so clearly visible on a balance sheet. Some indirect benefits are less tangible than the lower paid prices, in the fact that their savings are often embedded in overhead budgets that are difficult to separate. There are many ways in which grouping together can save on costs. Examples of this are lower costs of handling/managing products, transaction costs, overhead reduction, increased flexibility of inventory management, and many more (Tella & Virolainen, 2005). Where direct financial savings have yet to be widely studied in an objective manner, these indirect benefits have been more rarely quantified. Understandably so since it is difficult to determine the costs of purchasing a single product or service. Econometricians offer a helping hand in this case, since this field of study is based on applying statistical data to economic data. Schneller (2000) investigated the costs of closing a contract with a supplier. For a total of 600 contracts, they found that each contract on average saved $1,367. Furthermore, possible influences of grouping together for purchasing reasons can influence the supply market in their competitiveness.

3.3.3 Non-financial benefits

Besides monetary effects, some other effects can be observed. Some studies have researched this phenomenon and found that most often, reported benefits are reduced workload, better access to resources and markets, reduced (supply) rusk, learning from each other, and higher quality (Corey, 1978; Nollet & Beaulieu, 2005; Schotanus et al., 2009; Sorenson & Kanavos, 2011). The main findings of these studies, and more, have been reported by Carrera (2015). These are shown in table 1.

Table 1: Non-monetary advantages of GPO cooperation

Study	Description
Non-monetary advantages	
	Lower transaction and logistic costs
	Higher product and service quality

Study	Description
(Corey, 1978; Nollet & Beaulieu, 2005; Schotanus et al., 2009; Tella & Virolainen, 2005)	Increased flexibility of inventories
	Reduced workload
	Assuring supply (short term shortages and long-term availability)
	Better response to changes in business context
	Better and/or unique access to resources and markets
	Reduced (supply) risk
	Learning from each other

3.3.4 Downsides of GPOs

Besides potential upsides of collective procurement, many organizations see barriers in engaging in it. There are many reasons for this, which have been researched by multiple authors, which are shown in table 2, as demonstrated by Carrera (2015).

Table 2: Disadvantages of GPO cooperation

Study	Description
Disadvantages	
(Hone, 1974; Laing & Cotton, 1997; Nollet & Beaulieu, 2005; Schotanus & Telgen, 2007; Tella & Virolainen, 2005)	Potential limitation to product choices
	Set-up costs
	Coordination and synchronization costs
	Increased complexity of the purchasing process
	Loss of flexibility and control due to group size
	Costs created by free-riders or supplier resistance
	Disclosure of sensitive information
	Can have a negative impact on the supply market

Organizations can refrain from joining a GPO because of any of the reasons in table 2. One of the bigger disadvantages is the fact that, when purchasing collectively, the individual influence on product/service specifications decreases. Most parties will have to make concessions to find a result that is suitable for all parties. The fact that it increases the complexity of the purchasing process is another often heard problem, since it adds extra steps to an already extensive process.

Prior studies show that there are clear benefits of joining a GPO. These benefits that were identified in literature can be summarized in three categories: Making use of economies of scale, improving internal processes/sharing resources, and sharing information/knowledge (Schotanus, Telgen, & de Boer, 2010; Tella & Virolainen, 2005). Of these three, economies of scale are commonly the main reason to take part in a GPO. This entails bundling spend volumes of members in order to achieve lower prices, lower transaction costs, strengthen negotiation positions, reduce workload for individual members, and spread/reduce (supply) risks (Schotanus et al., 2010).

Direct financial benefits have been extensively researched in industry, but not as significantly in healthcare. Direct financial benefits range from 8-37% (Karjalainen, 2011), 2-90% (Schotanus et al., 2009), but also self-reported savings of about 13% (Hendrick, 1996). The range of savings can be seen to vary tremendously. The methods that were used by these researchers, and many others with them,

vary just as much from information on the internet, to surveys, to internal documents on price savings. This large uncertainty urges for more reliable research on the actual price savings of GPOs, as urged by, among others, Karjalainen (2011), Carrera et al. (2015), and Gelderman, Jonge, Schijns, and Semeijn (2018).

3.4 Products and services

Many different products and services can be targeted for collective procurement. However, not every product will be equally beneficial or easy to buy collectively. There are two main concerns when deciding which products and services to focus: Impact on costs and the likelihood that the products will be purchased collectively. These two concerns can be placed in a 2x2 matrix, as was illustrated by Kneebone, Smith, and Fielding (2017) and is displayed in figure 3.

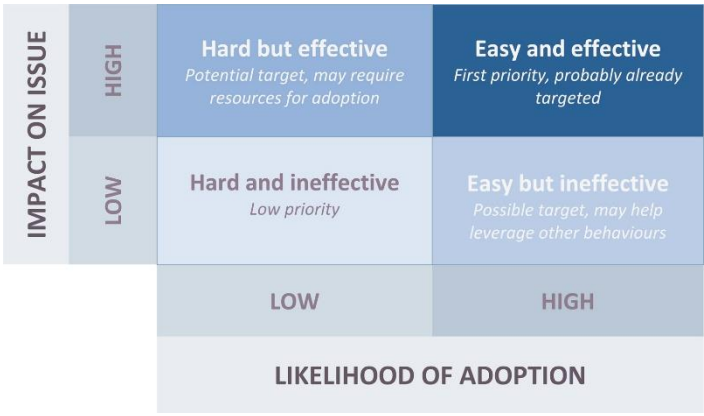


Figure 3: 2x2 matrix showing likelihood of adoption versus impact on issue

Here, the focus should be on the 'low hanging fruit': products that have a high likelihood of being purchased collectively with success and at the same time have a big impact on cost savings. Examples of these products are energy and food. Products that have a high impact, but a low likelihood will be very effective in savings costs, but the implementation might be more difficult and can require more dedication. Examples of this are pacemakers and IT-equipment. Products with a high likelihood but a low impact will be very easy to purchase together but will not have much impact. These products can however help stimulate a culture of collective purchasing in an organization, increasing the likelihood of other products and services being purchased together with other organizations (Attari, DeKay, Davidson, & de Bruin, 2011; Freedman & Fraser, 1966). The products that have a low impact and a low likelihood are not worth trying to work on and can include products like stitching and rent.

3.4 Methods to study GPO impact

That cooperative purchasing can be beneficial for healthcare organizations has been established by prior studies (e.g. Karjalainen (2011) and Schotanus et al. (2009)). These studies all have their own methodologies, and none are equal. That is why this section starts with an in-depth summary of applicable research methods.

3.4.1 Qualitative versus quantitative methods

There are various methods that can be used to investigate certain phenomena. Roughly, three methods are available: The quantitative approach, the qualitative approach, and the mixed methods approach (Kumar, 2019). These three all have a different philosophical origin explaining their characteristics, meaning that they fundamentally differ in their way of looking at phenomena. Furthermore, the schools of thought disagree on the way in which new knowledge can be gained.

The qualitative approach stems from the empirical philosophy. Empiricists like Francis Bacon, John Locke, and David Hume believed that new knowledge can only be gained (primarily) by sensory experience. Or, more colloquial, new knowledge is found by observation and experimentation. This means that it is a quite flexible and open form of research, exploring diversity rather than quantifying. It does not focus on measuring, but on describing experience and perception (Markie, 2004).

The quantitative approach stems from the philosophy of rationalism. The most well-known representatives of the rationalist school are René Descartes, Gottfried Leibniz, and Baruch de Spinoza. Rationalism centers around the belief that reason is the only, or at least the foremost, source of knowledge. It is a more structured and rigid method, aiming to quantify variation (and the extent thereof), measure variables and guarding objectivity. Generalizability is an inherently more important aspect of quantitative methods as compared to qualitative methods (Markie, 2004). Slightly confusingly, quantitative research, not stemming from empiricism, can produce empirical evidence.

Thirdly, there is the possibility to combine the strengths of one or both of the two methods in a mixed methods approach (Kumar, 2019). This is founded in the belief that for some research, qualitative research is better and for other research, quantitative research is better. To get the best outcomes for a study, both approached can or have to be combined or more than one method can or has to be used.

In an article by Carrera (2015), an overview of different research that look at cost savings was given. This evidence on savings is presented in table 3. Roughly three methodologies can be identified. However, all three methods are similar in the fact that they inspect the cost savings of group purchasing: quantifying a phenomenon. They all ask the question whether this phenomenon occurs, and if so, to what extent. Within quantitative research, many different approaches can be observed. In the article by Carrera (2015), three main approaches are identified. They all center around finding the cost savings that organizations realize by cooperative purchasing, but they vary in their execution. The results of these different executions vary in reliability because of their fundamental difference in data sources, ranging from second-source evidence, theoretical evidence, to practical evidence.

Table 3: Summary of Specific Literature on Price Savings Percentages due to Cooperative Purchasing (Carrera et al., 2015)

Study	Data source	Main contribution related to joint price savings
Methodology: comparing individual prices with central prices		
Corey	Prices of work gloves bought centrally by a multinational company and bought by individual business units	Calculated savings of more than 12%
Methodology: analyzing price schemes and/or quantity discount schedules found by mainly using internet search engines		
Karjalainen	Market prices found on the internet and framework agreement prices of commercial flights and office supplies bought centrally by the Finnish government	Calculated savings between 8 and 37%
Schotanus and Telgen	Maximum and minimum prices of quantity discount schedules found mainly on the internet and a few found in standard supplier offers and academic papers	Calculated savings between 2 and 90%
Methodology: analyzing respondents' perceptions and/or self-reports		
Cleverley and Nutt	Self-reports of directors of purchasing in six US GPOs and 19 control hospitals	Calculated savings between 12 and 25% based on respondents' self-reports
GPO report	Self-reports of 18 US hospitals not involved in a GPO and eight GPOs	Calculated savings of up to 26% but also higher prices of up to 39%
Hendrick	131 US *Fortune 500 firms* survey respondents	Respondents reported on average savings of about 13%
Muse & Associates	Self-reports of 221 US hospitals	Self-reported savings of 10 to 15%

Study	Data source	Main contribution related to joint price savings
Pedersen	Self-reports of purchasing groups	Benchmark reports savings of 25%, 35% and 5-10% in the electronics, auto manufacturing, and health care sector

The evidence can be classified by their scientific approach. Methodologies for assessing quantitative data are plentiful, and some of them fit this study's focus better than others. There are three typical approaches, differentiated by their degree of reliability. The first approach, the expert opinions and self-reporting, being the least reliable. There is the risk of misinformation, socially desirable answers or recall bias (Pannucci & Wilkins, 2010). The second approach is analyzing quantity discount schedules, where a theoretical analysis looks at how bundling demand affects pricing. This approach cannot possibly consider factors that can in the end influence price, like negotiating, different packages within GPOs, etc. Thirdly, there is the actual spend data, where a comparison is made between GPO-aligned institutions and non-GPO-aligned institutions that purchase the same or similar products, goods, or services and the price that they pay. When all relevant influencing factors are considered, this should give the most reliable outcomes.

3.4.2 Expert opinion and self-reporting

The first approach entails second-sources data. In Cleverley and Nutt (1984), surveys were sent to the directors of purchasing of six GPOs and to control hospitals. These surveys contained questions on the organizational differences among the GPOs and how those differences affect pricing. Examples of these differences were leverage (volume) or purchasing strategy. The incentive for participants to participate in the study was noted as being (since anonymity was guaranteed) an opportunity to compare their performance to competitors. This kind of incentive poses as a risk of instigating some form of bias.

Another article by the US General Accounting Office (Scanlon, 2002), investigated the potential price savings of 18 metropolitan US hospitals for two items: pacemakers and safety needles. Officials of 11 hospitals, 4 GPOs and several types of manufacturers were interviewed and subsequently asked about prices they paid for the two categories of items mentioned earlier. GPO-negotiated prices were compared to prices from hospitals that purchased these items on their own. This is the article that is least positive about GPO savings, reporting cost cuts of 26% up to prices that are 39% above the independently negotiated price. Unfortunately, Scanlon (2002) is not an academic article and as such is not entirely clear on the details of the methods used.

3.4.3 Quantity discount schedules

The second method is theoretical and entails the use of quantity discount schedules. The article by Schotanus et al. (2009) used this general method. More specifically, they created a quality discount function (QDF) that takes into account discount schedules of academic papers (Dolan, 1987; Lal & Staelin, 1984), but also actual offers that were provided to purchasing groups and online stores.

As mentioned by Schotanus et al. (2009), this method comes with disadvantages. First and foremost: Group purchasing was only marginally included in the research and could severely impact purchase prices. Collectively purchasing certain commodities and services can be included in this approach to increase reliability.

3.4.4 Actual spend data

The most reliable way of assessing actual cost savings in healthcare organizations would be comparing prices of a healthcare organization before and after they join a GPO or comparing prices of GPO-members and non-GPO-members; actual spend data. Typically, studies that compare prices from individual (often larger) organizations with GPO members often use objective data (Carrera, 2015).

4. Literature findings and proposed structure

There are many different methods that are used to measure financial impact of collective procurement. All these methods vary significantly in their approach, their use of data, and on how accurate these studies analyze reality.

These methods can all be placed in a theoretical framework. This framework consists of two dimensions, a qualitative and a quantitative one. Within these dimensions, the methods vary in their accuracy in representing reality. This framework was constructed and is shown in figure 4. This framework has a wide scope and can fit all the possible methodologies of studying price impact of group purchasing.

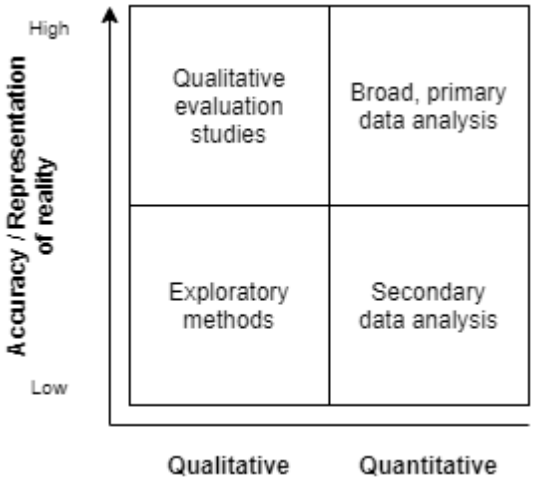


Figure 4: four-quadrant matrix showing different methods varying in accuracy and methodology

In the left-side dimension of the framework, the qualitative methods can be fitted. The exploratory methods can be biased or cover a small range of organizations with their qualitative methods. An example of an exploratory method is expert testimony, like in the article by An example of an exploratory method is expert testimony, like in the article by Hendrick (1996). Here, 131 US *Fortune 500* companies were asked about savings they achieved by group purchasing. In the upper quadrant, methods result in a more accurate representation of reality, by covering a broader spectrum of organizations. These studies can focus on certain product groups that organizations find to be suitable for group purchasing or not.

In the right-side dimension, quantitative methods can be fitted. In this dimension, there are many different studies that research the cost savings by GPO membership, but not all studies have the same degree of accuracy. Some methods use a wide range of data, such as Schotanus et al. (2009), where a wide range of quantity discount schedules were analyzed. Others have a narrower focus and investigate, for example, only a few models of a certain type of medical technology. Another type of methodology that can fit in the lower quadrant entails self-reporting by organizations. It can be difficult to ascertain the accuracy of such a study (Fischer & Verrecchia, 2000).

There are more examples than mentioned above, and in figure 5, the practical use of the methodology framework is shown. In this figure, examples of methodologies that fit in the framework are shown, as well as some existing research that was discussed in earlier sections.

When an organization might want to join a GPO, the upper quadrants of both dimensions offer the most helpful information in basing that decision.

An optimal method might not exist, yet one that best represents reality might be the best method available. For this study, the focus is a methodology that can

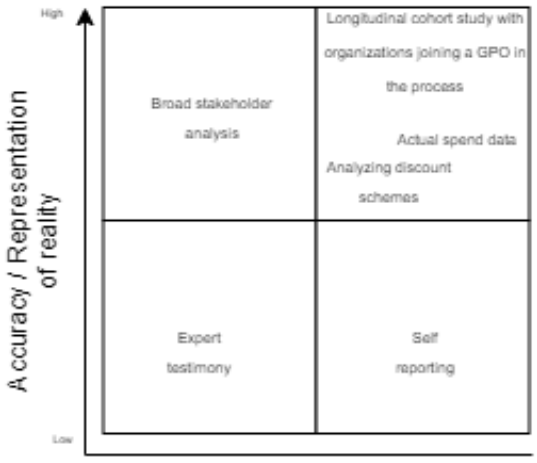


Figure 5: Methodologies fitted in the theoretical framework

deliver the highest reliability and rendition of reality with minimal resources (time and money).

Considering these constraints and the theoretical model that was constructed, the spend data analysis is in this case the most promising methodology. Furthermore, it is the most holistic approach, since it combines not only bulk discounts, but also indirect financial benefits such as a reduced workload for purchasers. The result will most likely be some kind of actual spend analysis; the details of which will be filled in in the next section of the research design. Doing such an analysis requires commitment from several organizations in the sector, giving insights in their spend. This access to the possibly sensitive data might prove difficult.

5. Research design

5.1 Study objectives

The objective of this study was to find possible ways for effectively determining financial savings of nursing, care, and homecare organizations (VVT) in healthcare. It has been established that an actual spend data analysis is the most viable and reliable method to execute in a relatively short amount of time. This is the second part of the research design of this study. The first part (Chapter 3) focused on the general methodologies and this part explains the empirical component. The result of this study is to be an overview of possibilities on how to execute the cost savings analysis of collective purchasing in VVT-institutions.

Direct access to experts in the field is needed to understand how they experience the focused problem. It also provides a deeper understanding of the phenomenon. The necessary information cannot be found in theory, but in practice. To this end, semi-structured interviews were conducted. This section of the study resulted in information on two areas. Firstly, information on how data on spending and cost saving is stored and tracked inside the organization was obtained. Secondly, information on how this data can be analyzed to find the most reliable estimate of potential cost savings was looked for.

5.2 Data collection

The data collection took place in the form of interviews. To keep an open mind in the interviews, these were semi-structured. This type of interview offered more leeway to expound on certain topics or move to a whole new subject. New interviews have been conducted until no new significant information was gained and saturation had occurred. Since this study was done amid a global pandemic, the interviews have not been conducted face-to-face. Different systems that facilitate online meeting have been used.

For these interviews, strategic or tactical purchasing officers were contacted. The goal of these interviews was to gain insight in the products and services that are or can be purchased collectively, which products are not and why, and about in which way information about savings and trends is recorded. The interview outline can be found in Appendices I and II. Respondents were asked about their job inside the organization, the way in which their purchasing department was structured and about their experience with collective procurement. Furthermore, they were asked how respondents keep track of possible savings that are achieved and how they would do this. Another important subject in interviews was methods to quantify savings.

All interviews were anonymous and cannot be traced back to the respective respondent. They were informed about this prior to the interview and could have ended the interview at any time. Where possible, interviews were recorded to improve the analysis after giving consent. In one instance, there was no permission and the interviewer kept minutes of the interview. Recordings were be used for transcription purposes only and have been immediately destroyed afterwards.

5.3 Data analysis

The information gained in these interviews led to insights in the recording of savings and allow for the construction of an outline on how to analyze this and find estimated savings. The recordings of interviews were transcribed literally, so all unimportant words were not transcribed. The way in which respondents give certain information is not important, it is all about the information given.

Seven semi-structured interviews were conducted with two types of respondents. Firstly, there were five interviews with purchasing managers from healthcare organizations in the *"VVT"*-sector, which stands for Nursing, Care and Homecare. Two experts in purchasing consultancy and collective

purchasing were also interviewed on their experiences. Respondents were asked whether they objected to the interview being recorded and in all but one case there were no objections. The interview that was not recorded was mostly written down during the interview. Recorded interviews were immediately transcribed anonymously and the recordings were deleted afterwards.

53 purchasing departments of healthcare organizations were contacted and 7 responded positively. 1 of the positive reactions asked to see the questions in advance and replied that there was no interest or use for the interview.

The interview questions are in Dutch, as were the interviews that were conducted. Relevant passages and answers were translated and included in this section.

With the use of the coding software Atlas.ti, transcripts were coded. This took three important steps that find their basis in the grounded theory (Martin & Turner, 1986; Strauss & Corbin, 1998). This means that through inductive reasoning, theories are constructed. The three phases in this process are open coding, axial coding, and selective coding. These phases are meant to structure the data that was gathered in the interviews and make theory construction possible. Open coding entails the labeling of text fragments, after which the open codes are grouped together during the axial coding. This is not a linear process, since it is possible to recode groups, change the contents of groups or combine/split codes. Relations between these axial codes are found during the selective coding, which in practice is the structure of new theory.

In table 4 below, general information about the respondents can be found.

Table 4: Additional information on respondents (VVT is the Dutch abbreviation for Nursing, Care and Homecare)

Respondent:	Function	# Of purchasers	Type of organization
1	Purchasing manager	10	VVT
2	Tactical purchaser	2	VVT
3	Purchasing manager	18	Group of hospitals and over a dozen elderly care facilities
4	Purchaser	1	VVT
5	Purchaser	1	VVT
6	Purchasing consultant and academic	-	-
7	Purchasing consultant	-	-

6. Results

The results of the interviews are presented in this chapter. Codes that are grouped are presented here as subchapters and contain a summary of respondents experiences and opinions.

6.1 Savings and quantifying them

6.1.1 Importance of quantifying: Respondents highly value information on savings, even though few have detailed information.

This code groups all answers and quotes on the importance of savings, whether savings are realized, and whether they are documented. The importance of quantifying savings was endorsed by all respondents. When asked if respondent 3 was interested in quantifying savings by collective purchasing, they said they would absolutely like to know about and measure savings. Another respondent (respondent 4) answered that it would be very valuable to learn more about realized savings. They said that often, purchasers are associated with only looking at costs, but sometimes spending a dime extra increases the quality by a lot. This is something that all respondents mentioned in one way or another, that looking at only financial savings would not be an honest representation of reality.

Respondents had difficulty with estimating the percentage of purchase spend that was done collectively. Only rough estimations were made, when asked, respondent 1 said that their gut said that it is under ten percent, and maybe even under five percent. Respondent 3 estimated it between 10 and 15%. Respondents two, four, and five could not make an estimation.

What is certain, is that the included organizations are predominantly positive about collective purchasing and have a feeling that it pays off. This is clearly corroborated by one respondent:

> *"The expectation of savings is of course there. With collective purchasing there's only the one-time transaction costs, for the purchaser that does the actual purchasing and the negotiations etc. Specifications are part of that, so you save on that as well. It's common to think that a larger volume constitutes lower prices for both parties, because the supplier only has to do the negotiations once instead of twenty times for instance." – R6*

6.1.2 Challenges in estimating savings: better documentation gives more insight and helps with estimating savings.

Quantifying any savings is reported to be difficult, as one respondent was asked about an estimation of the volume of total spend that is purchased collectively and what they might save on that annually. The respondent answered no and said it would be virtually impossible to tell.

Getting more insight in estimating these volumes and savings are difficult to do without structured documentation. The interviews showed that most organizations do this only rudimentary or not at all. Multiple respondents expressed that Excel was used to track savings and discounts, but they also point out that it is difficult to compare:

> *"As requested by our board of directors we make a yearly savings review. But, that's never as easy as comparing apples with apples. The number of clients can increase or decrease, the purchasing strategy can change, you can lower the amount of convenience you include in contracts and all of those change your spend. That makes it difficult to effectively track." – R1*

Another respondent corroborates this statement, also using Excel for the keeping track of old prices and volumes of purchasing as well as new prices and volumes for comparison. They added that they keep track of discount agreements and add an explanation on how it is calculated.

Not all respondents used Excel for documenting savings, if any. One of the respondents, purchasing manager of a large group of VVT-locations (Nursing, care, and homecare) and hospitals, gave insights in their use of an Enterprise Resource Planning system (ERP-system). This is a system that gives organizations insight in their supply chain, financial system, resource management, accounting, and many more options. Respondent 3 gave an overview of the workings of such a system. It incorporates logistical, financial but also purchasing matters. This allows them to go further with their data, show expected spend on certain categories and make reports based on them. They make about 30 reports annually, that are all coming from the ERP-system.

If an organization uses this type of ERP-system well, they can have detailed insight in their spend, and trends in that spend. However, ERP-systems are very costly and are likely unaffordable for smaller organizations, like the ones that are the focus of this study. This was also said by a respondent, who added that ERP-systems are in the basis administrative, keeping track of what is going on:

> *"This does not make purchasing easier or better per se. When you have your bookkeeping on track, you can analyze your creditors and see what you are spending your money on. This allows for doing a spend analysis. Things become easier when you have the bookkeeping on track, but it does not in principle require an ERP-system." – R6*

This makes it safe to say that having a structured bookkeeping with clear categories will help with doing a spend analysis.

6.1.3 Methods of quantifying savings and reporting the results

This code group contains the answers of respondents on how they would quantify savings, but also how they would report these to higher management, if at all. One respondent indicated interest in using their procurement system for more detailed insight in spend on certain categories and the change in spend over the years:

> *"It is theoretically possible to use the system in that way. However, we didn't tailor our system to do that. You'll find that within the elderly care there's relatively small purchasing departments. For things like contract management and evaluation/reporting there's not enough time. I think that's a shame, because I would really like to do that."* – R2

When asked if and how they would want to quantify savings/spend by collective purchasing, respondent 3 said that they would really like to. They use a standard simple method for doing so, by comparing old prices for old volumes with new prices and old volumes. But measuring the purchasing results is reported to be difficult. Respondent 5 concurred and said it is not all that easy to measure these savings. They try to forecast on what they spent last year on the current volume and what they would pay now for the same volume.

This respondent was also asked whether they use certain systems to keep track of this data.

> *"We used a system for that in the past, but not anymore. In the contracting we try to keep track of whether we make incidental savings or that we can achieve more long-term savings. Based on that we used to look at the previous year and the current year. We extrapolated that to the upcoming year. Of course that is not set in stone, but it can give an indication on what can be expected." – R5*

Not all respondents saw possibilities on quantifying savings. When asked if they saw a viable method for quantifying savings they said:

> *"No I don't see a clear cut method. I have been a consultant for 25 years and the first question that organizations ask is: How much can I save? And my answer always was: You tell me. If you want*

10, 20 or even 25% that's fine, because I will cut down on specifications until we have reached that point. You can't see those things detach those two things." – R6

Respondent 7 had an extensive view on quantifying savings, both before the contracting and after. If savings are to be realized, the organization must be clear on what is expected. Which savings do they want to achieve and how do we measure that? For the organization of this respondent this is done in an Excel-file with KPIs (Key Performance Indicators) from which they can choose what is and is not relevant in a certain case. This is standard practice in retail, but in healthcare this is a completely new phenomenon.

As to the matter of methods of quantifying, it was proposed to indicate spend per category per patient or per employee or per euro of revenue. Either of these methods make it possible to compare organizations. So, for instance how much does an organization spend annually on waste disposal per euro of revenue.

In table 5, the main findings of this section are shown. Empty cells in the R6 and R7 rows indicate that they are not relevant, as they are not purchasers themselves but experts in the field.

Table 5: Methods of documenting savings by respondents

Respondent	Documentation of savings
R1	Excel sheets
R2	Purchasing administration software
R3	ERP-system
R4	None
R5	Used excel in the past, discontinued
R6	-
R7	-

6.1.4 Contextual factors influencing the effectiveness of methods

The interviews show that it is difficult to quantify savings. There are many factors that influence the price and negotiations. Another factor that increases the difficulty as compared to the private sector is pointed out by a respondent:

> *"Working in the healthcare sector is very different [from private sector, red.]. By default there is a reactivity and short-term thinking, while in the private sector there's more of a long-term view and a more simple model: Quadruple aim in healthcare versus simply optimizing profit in the private sector. The last one is a simple calculation you can make in Excel. While it's very difficult to quantify the importance of the four parts of the quadruple aim, and without quantifying that you can't do that simple calculation." – R7*

All this may make it more difficult, but this is not an insurmountable problem. Finding agreement on the importance of the four aims, or analyzing them separately, may be a solution.

Creating categories in which the spend can be effectively tracked can be a good way to manage spend. However, it is important to give context around the bare numbers.

> *"I don't know whether organizations look at collective purchasing as the solution to savings. Moreover, I don't think that money is the biggest motive at the moment, as you said yourself just now. It is coming more and more though, certainly with the societal debate on healthcare. And then, how to measure savings: You just look at what you spend and what someone else*

spends. How much is that per Euro of revenue, per treatment X or per patient, that is how you can compare." – R7

This would be a way for organizations to keep track of their spend and consequently, their savings. The question then arises whether this is feasible for the average VVT-organization, since it would require a system to keep track of spend in a very specific way

While most respondents pointed at difficulties and problems that arise with quantifying savings, one sole respondent gave the following answer:

I: *"It's funny that you say easily: It's not that difficult, you should do it like X. What I hear a lot is that it is very difficult, time consuming or impossible even."*

R: *"Yeah that really is nonsense [laughs]. It's all in the bookkeeping."*

7. Discussion

This section contains a discussion of results and their link to literature, as well as conclusions drawn from answering the research question. Furthermore, it contains a section on the strengths and limitations of the study, as well as advice for further research.

7.1 Discussion of results

Prior to data collection, expectations were that there would be a great interest in insights in the savings that were achieved. Since oddly enough there were not many studies that managed to give those insights, it was expected that there were many difficulties involved in doing such an analysis. This was corroborated by the fact that many studies pointed out challenges and did not offer many options for analyzing savings. In the interviews it became clear that respondents, while having an interest in insights in their savings due to collective procurement, the challenges and constraints involved were too big to overcome easily.

There were several challenges and constraints named in interviews. The main ones were that in a small purchasing department of 1 or 2 purchasers, there was simply not enough time to keep a detailed record of realized savings. Furthermore, it was mentioned by respondents 2, 3, and 7 that many factors can change, making analysis even harder. For instance, when a scarcity of resources to make gloves happens and gloves become more expensive, this could look like a worse purchasing result. Even though this is not caused by the collective purchasing but external factors. Such circumstances can paint a distorted picture.

Only a few of the contents of the framework that was constructed in figure 5 in chapter 4 were suggested by respondents, but most have not been suggested. The division of quantitative/qualitative methods and methods that differ in reliability seems to approximate reality, but the theory on tradeoffs by K. Weick might be a more fitting system, since he states there are three aspects and it is not possible to comply and be accurate, as well as general, as well as simple (Weick, 1999). Finding a method that can effectively determine the financial savings can benefit from this tradeoff triangle in determining the most important factors, which will probably be accurate and simple, meaning that the method will likely be not very general. This could mean that a method is easy to achieve, will give accurate results, but these results might not be well translated to other product categories.

Several methods in that were identified in literature as shown in figure 5 (chapter 4) can be possible in larger organizations, but during data collection it became clear that they are less viable for organizations without a (large) purchasing department. For instance, self-reporting, where organizations submit their savings to the researcher conducting a savings study. This is a method that required documentation of savings for the organization. During interviews it became clear that many small organizations do not document this extensively.

One method was identified to be the most promising method: calculating changes in spend for a category per Euro of revenue or per patient. This is a very interesting method that can be seen as an addition on the actual spend data in the upper right quadrant of figure 5 in chapter 4. This addition makes it a more accurate and interesting method.

7.2 Conclusion

This study's main research question was:

"What are possible ways for effectively determining financial savings of group purchasing by healthcare organizations in Nursing, Care and Homecare (VVT)?"

The results show a nuanced answer, that did not conclude a perfect methodology to effectively determine financial savings. However, it did show aspects that are important in creating such a research design and it showed a suggestion for a method. For an organization to be able to do a spend analysis, it is paramount that detailed overviews are available on the spend. What are the conditions of contracts, are discounts achieved, what were expectations prior to purchasing?

As described in chapter 3 and 4, the analysis to find the benefits of collective procurement that is most likely to yield reliable evidence is a spend analysis where organizations that do engage in collective procurement are compared to organizations that do not or when an organization analyzes their spend before and after becoming a GPO member or starts purchasing collectively.

This way of doing a spend analysis was found to be the most reliable way of finding out what financial benefits are achieved with collective procurement. A way to correct for organizational differences such as number of patients or budget, an important factor in spend analysis could be to calculate spend on a certain category per Euro of revenue or per patient. More ways were identified from literature but were not as potentially reliable as the method mentioned above.

The results and conclusion of this study do not show one clear method that can be applied in all cases to find the financial savings achieved by collective procurement. This is as expected, since many factors influence savings: products may change, suppliers may change, needs may change, prices may change, more expensive products may have been purchased for better quality or vice versa. The method of calculating spend of certain categories per Euro of revenue also has certain flaws, since it corrects for some organizational differences, it does not correct for all possible differences. It will be necessary to explain the results of such a study thoroughly, since an organization could spend less on for instance IT, because the infrastructure is sub-par. This can give a wrong image of reality. Another challenge that was even bigger than initially expected is time constraints in small organizations with one purchaser.

7.3 Strengths and limitations

Firstly, one of the limitations of this study was the low number of respondents. Seven respondents, of which five were purchasers, made it difficult if at all possible, to generalize results. Since there was a low amount, the possibility that other explanations or methods exist that can help to find financial benefits of collective procurement.

A second limiting factor was the lack of detailed studies into quantifying savings due to collective procurement in healthcare. This meant that studies from other sectors had to be used which might be difficult to translate to healthcare. Relevant literature on methods used was either out of scope, dated or not focused on healthcare. This leaves much to be researched still.

A strength of this study is the theoretical basis of the research is extensive. Furthermore, the fact that this study was done amid a global pandemic meant that face to face interviews were out of the questions. This opened up possibilities to interview respondents that were not concentrated in one region but led to respondents being spread around the country.

7.4 Societal and academic implications

One of the benefits of this study is the fact that it bundled the sparse knowledge that is available about quantifying financial benefits of collective procurement. It gives an overview of possible methods to do this and their benefits and drawbacks.

Furthermore, it helped steer research on the topic towards better methods of quantifying savings. Better insights in savings achieved by collective procurement can help organizations to start intensifying their engagement in collective procurement and work towards a more efficient procurement policy to be more cost-efficient. Increasing the very low percentage of spend that is purchased collectively can greatly improve the buying power of healthcare organizations and for the smaller ones in the VVT-sector alleviate some of the high workload.

7.5 Further research

Further research should focus on validating and testing the proposed method of quantifying savings of quantifying spend per category per Euro spent on purchasing. Finding out whether more knowledge on savings does in fact help improve procuring collectively would also be very interesting. When savings can be achieved and these can be quantified, the incentive for organizations and purchasing departments to invest in relationships with a GPO or other organizations for collective purchasing might be bigger, leading to more cooperation and eventually more savings. Not to minimalize costs, but to maximize value for patients and citizens.

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Appendix I (Interview scheme (strategic/tactical) purchaser)

Bedanken voor deelname, uitleggen waar het onderzoek over gaat, vragen voor opname, anonimiteit uitleggen, vermoedelijke lengte van het gesprek is 30 minuten.

- Algemeen
  - Kunt u me meer vertellen over uw functie en uw werkzaamheden?
- Inkoop
  - Zijn er producten of diensten die uw organisatie collectief inkoopt?
  - Zijn er overeenkomsten tussen deze producten/diensten?
    - Bijvoorbeeld in het gemak waarmee het gezamenlijk kan worden ingekocht, zijn er hoge of lage marges op het besparen, zijn het voornamelijk medische of niet-medische producten, etc.
  - Kunt u inschatten of het collectief inkopen voordeliger is voor uw instelling?

- Nu volgen twee scenario's waarin ik benieuwd ben naar uw aanpak:
  - Stel dat u meer zou willen besparen en daarvoor collectief inkopen als methode selecteert. Hoe zou u meten hoeveel geld u bespaart met deze methode?
    - Wat voor methode zou u gebruiken?
      - Heeft u systemen waar dit wordt bijgehouden?
      - Kunt u me iets meer vertellen over dat systeem?
        - Wat voor informatie wordt daar opgeslagen?
        - Wat voor informatie kunt u opvragen?
      - Worden er periodiek overzichten gemaakt van uitgaven/besparingen buiten het jaarverslag om?
    - Zou u zich in het bijzonder focussen op bepaalde producten/diensten?
  - Stel, u wilt weten hoeveel geld u met uw organisatie op dit moment bespaart door collectief in te kopen. Hoe zou u dit aanpakken?

- *[Stel de methode van spend analyse wordt niet genoemd als voorbeeld:]*
  - Denkt u dat een vergelijking van uitgaven van uw organisatie met die van organisaties die niet collectief inkopen waardevol kan zijn?
    - Hoe verhoudt zich dat tot de door u voorgestelde methode?
  - Denkt u dat uw handelswijze vergelijkbaar is met andere organisaties in het land?

- Bij welke soort producten en diensten verwacht u de grootste winst te kunnen behalen?
  - Bijvoorbeeld medicijnen/medische producten zoals bijvoorbeeld naalden/dingen die niet met zorg te maken hebben maar wel essentieel zijn zoals beveiliging, energie, afvalverwerking, gas, etc.?

- In hoeverre hebt u inzicht in eventuele voordelen/besparingen van het collectief inkopen?
    - Wordt dit bijgehouden?
    - Op welke manier?
    - Is het mogelijk om dit te vergelijken met historische data?

-

- Zijn er zaken die we niet besproken hebben, maar die wel zouden kunnen bijdragen aan mijn onderzoek?
- Zou u me in contact kunnen brengen met concullega's?

Appendix II (Interview scheme purchasing experts)

- Algemeen
  - Kunt u me iets vertellen over uw huidige functie en werkzaamheden?
  - Wat is uw visie ten aanzien van collectief inkopen in de VVT-sector?

- Supply Value
  - Wat zijn de meest voorkomende dingen op het gebied van inkoop waar u organisaties mee helpt?
  - Ik zie op uw websites dat u organisaties helpt met het maken van een spend analyse. Gebeurt dit ook op het gebied van collectieve inkoop?

- Intrakoop
  - Op welke manier wordt bij Intrakoop gedocumenteerd welke contracten er lopen, wat de details van die contracten zijn en of er besparingen zijn?
  - Rapporteert Intrakoop dit soort informatie naar leden?

- Documentatie van besparingen bij instellingen
  - Hebt u inzicht in eventuele besparingen door collectief inkopen bij zorgorganisaties?
  - Hebt u inzicht in of en hoe deze eventuele besparingen worden gemeten en gedocumenteerd?
  - Ik heb in meerdere gesprekken gehoord dat organisaties het in een Excel sheet noteren, denkt u dat dat een gangbare manier is van documenteren?
  - Hoe denkt u dat besparingen het beste kunnen worden gemeten?
  - In een gesprek met een manager inkoop van een grote zorggroep kwam naar voren dat ze gebruik maken van een ERP-systeem voor hun inkoopafdeling. Denkt u dat dat realistisch is voor een middelgrote instelling voor ouderenzorg?
- Denkt u dat het waardevol is om financiële besparingen te kunnen meten voor zorginstellingen? En denkt u dat het invloed kan hebben op het zorglandschap in Nederland?

- Zijn er zaken die we niet hebben besproken, maar waarvan u denkt dat ze een bijdrage kunnen leveren aan mijn onderzoek?