Mechanisms to avoid physicians bypassing purchasing departments in hospitals

Author: Silvio Ruis
University of Twente
P.O. Box 217, 7500AE Enschede
The Netherlands

ABSTRACT

The aim of this research is to find mechanisms that can avoid physicians from bypassing purchasing departments in hospitals to directly negotiate with suppliers. This study is a qualitative case study of different hospitals located in The Netherlands. 10 structured interviews were held with respondents from 9 different hospitals. They were asked questions on general purchasing, relationships between purchasing departments and physicians, and relationships between purchasing departments and suppliers. In this study, it became clear that there are indeed various mechanisms in place to avoid physicians from directly negotiating with suppliers, and improving hospital-physician relationships. Some examples of mechanisms are trust, communication, digital purchasing systems, purchasing boards, and (de)centralizing purchasing departments. Newly found data and literature were compared and discussed to see if these are in accordance or if there are differences between the findings and researched literature. Limitations of the study can be that only hospitals in The Netherlands are researched and interviewed, and that the sample size of the study is 10 interviews. The study might provide different findings if the sample size is increased or if the research is conducted in other geographical areas in the world.

Graduation Committee members:

Dr. Carolina Belotti Pedroso
Dr. Frederik Vos

Keywords

PPIs, Purchasing, Purchasing department, Physicians, Hospital-physician relationship, Hospital-supplier relationship, Mechanisms

1. INTRODUCTION

A fundamental part of healthcare provided by hospitals is the acquirement of sufficient medical supplies and equipment. Procurement of medical supplies comes second in the largest cost categories for hospitals and is important to be able to deliver good quality healthcare for patients (Abdulsalam & Schneller, 2017). However, aligning hospital-physician relationships and procurement efficiency can be quite difficult which makes healthcare purchasing a very complex process (Nyaga et al. 2015).

Traditionally, the influence of physicians on supplier selection and purchasing of medical equipment has been large, which has decreased the influence of the purchasing department throughout the whole purchasing process (Van Raaij, 2016). This has caused the relationship between physicians and the purchasing departments of hospitals to be difficult to manage because physicians develop very strong relationships with the supplier itself. When this is the case, physicians tend to negotiate about medical equipment directly with the supplier without the involvement of the designated purchasing department, which is problematic since they undermine the purchasing department's decision-making when purchasing medical equipment (Nyaga et al. 2018). As Burns (2008) describes, physicians have clear preferences for specific medical equipment, but they don't take into mind costs or input from the purchasing department. The effect of this is that hospitals have a larger net expense if hospitals follow the physician demands, and pay much more for medical devices. Burns (2008) states the following about this phenomenon jeopardizing purchasing strategies: "the net effect of high or rising device prices is a reduction in consumer welfare, which may translate into lower efficiency in the economy as a whole and may reduce total welfare in the economy (including the welfare of hospital workers and device-makers stockholders and employees)". Hospital healthcare as a whole declined due to the financial effects of high device prices. However, current healthcare systems are shifting towards favoring the collaboration between physicians and hospitals, because systems are requiring all stakeholders, including physicians, that are involved in healthcare to take into mind costs across the whole purchasing process (Page et al. 2013).

The main goal of this study is to research the dynamic between physicians, suppliers, and the purchasing departments of hospitals. The study focuses on the issue of physicians bypassing purchasing departments of hospitals, and negotiating directly with suppliers about purchasing medical equipment, and what mechanisms can be used to avoid this from occurring. Furthermore, this research contributes to already existing knowledge for hospitals on how to manage and monitor relationships with their physicians and suppliers, and create appropriate purchasing strategies. The research will also investigate how hospitals are currently tackling the issue of physicians bypassing the purchasing departments when acquiring medical supplies, and see if there are differences in strategies between hospitals. Therefore, the research question of this study is:

Which mechanisms can be adopted to avoid physicians bypassing the Purchasing department in hospitals and negotiating directly with the suppliers?

The research paper is structured as follows. The second section will introduce the reader to the general concept of Healthcare Purchasing and the relationships between hospitals, suppliers, and physicians as stated in the literature. The third section will explain the methodology and data collection methods used, and how these are structured and executed. Section four will include the data analysis and results of the research, and section five provides a discussion of the findings, with a critical discussion of the results. The sixth section will give the conclusion and implications of the research. Section 8 is the bibliography, and section 9 contains the appendices.

2. LITERATURE REVIEW

This section contains an evaluation of the literature and relevant theories that are used in the research. The first part focuses on relevant general information about healthcare purchasing, and the second part focuses more specifically on the research problem, which is the dynamic between suppliers, physicians, and hospitals in healthcare purchasing.

2.1 General Knowledge Of Healthcare Purchasing

2.1.1 The Main Characteristics Of Purchasing In The Healthcare Sector

The healthcare industry is seen as the leading global industry in terms of budget, employees, and customers (Ahmadi et al., 2017). The authors also state that the healthcare industry must cope with different challenges such as inflation in healthcare costs, waste of time and useful resources in supply, and failure to protect the availability of necessary supplies. Therefore, purchasing management is considered to be the most important aspect of supply chain management since it influences many aspects of organizational performance. The definition of purchasing and supply management used in the research paper is described as follows: "The design, initiation, control, and evaluation of activities within and between organizations aimed at securing inputs from suppliers at the most favourable conditions" (Van Raaij, 2016, p. 3).

According to Monczka et al. (2011), the purchasing process consists of six different phases:

- Forecast and plan requisites
- Clarifying the needs of the organization
- Identification and selection of appropriate supplier
- Engaging in contract/purchase
- Obtaining ordered materials/products
- Payment of order and measuring performance

The authors add to this that these phases may differ in different organizations based on whether the purchase of a product is new or routine. Through the efficient allocation of financial assets, purchasing in healthcare organizations has the goal to improve healthcare performance. (Busse, 2007).

Van Raaij (2016) describes purchasing by means of two main areas: purchasing of care and purchasing for care. Purchasing of care lays the connection between healthcare purchasers (e.g. insurers) and healthcare providers (e.g. hospitals) while purchasing for care focuses on the relationships between healthcare providers and suppliers of medical equipment or resources. This type of purchasing is present in countries that have a clear separation between healthcare purchasers and healthcare providers (Figueras et al. 2005). Healthcare institutions have multiple ways of acquiring their supplies, they can purchase directly from a manufacturer or distributor, but can also make use of healthcare group purchasing organizations (GPOs) which generally results in a lower negotiated price, thus beneficial for hospitals part of the GPO (Schneller, 2009).

2.1.2 How the healthcare sector differs from the other industrial sectors

Compared to other industries, healthcare institutions have complex and disintegrated supply chains (which include purchasing) with little improvements in cost-efficiency and quality (Abdulsalam & Schneller, 2017). The authors also state that the healthcare industry finds fewer strategic advantages and benefits through its supply chains. According to Knight et al. (2017), purchasing practices in healthcare are overlooked and seen as less important in the strategic visions of healthcare organizations compared to other businesses. Another major difference between the healthcare sector and other industrial sectors is the influence that professionals have on purchasing decisions (Nyaga & Schneller, 2018). They researched six different factors between the healthcare and non-healthcare sectors: cost and quality, level of decision control, product committees/value-added tax (VATs), IT systems and data, product evaluation, and culture. Highlighting cost and quality, in non-healthcare sectors cost is an important aspect to consider in procurement, as opposed to the healthcare sector where cost is not one of the key considerations in purchasing but the focus rather lies on quality and clinical results.

2.1.3 The Main Challenge Faced In the Purchasing Field In the Healthcare Sector

Gorji (2018) states that current global reforms in terms of healthcare purchasing systems are leading to large changes within a hospital's organizational structure, and are causing problems in strategic purchasing. Strategic purchasing forms a large part of the purchasing process, which means that healthcare purchasing is highly affected by this. Purchasing in hospitals is a complex system, and there is a lot of variation and unpredictability among the users of care, which are the patients (Ageron et al., 2018). Combined with the high demand for healthcare service, this is a big challenge for hospitals to cope with, and requires efficient and effective supply chain management within hospitals. Ageron et al. (2018) also state "Patient management incorporates several multidisciplinary and interdependent medical and administrative steps that require controlled interconnection and synchronization to avoid problems with wait times, misuse of medical resources etc.". So, this is a complex process which requires a lot of expertise of efficient purchasing and supply management.

Anoher big challenge in healthcare purchasing is the lack of price transparency between healthcare institutions and suppliers (Pauly & Burns, 2008). Some medical equipment is sold in competitive markets, but specialized and more high-priced equipment is often sold in oligopolistic markets with few competitors resulting in suppliers determining the prices and buyers not paying equal prices for the same products. First, devices that are similar can vary in price greatly due to differences in features of items made by different companies. Price increases can also come from patents, which means the supplier needs to increase the price to cover costs and still make a profit. Hospitals often do not have sufficient information about markets and products, which could also result in them paying more than necessary (Pauly & Burns, 2008).

2.2 Hospital-physicians-supplier Relationship

2.2.1 Physician Preference Items And Their Importance

In the healthcare sector, an important part of supply management and purchasing are physician preference items (PPIs) (Nyaga & Schneller, 2018). PPIs are items for which physicians have strong preferences and influence decisions in healthcare purchasing (Montgomery & Schneller, 2007). Physicians develop these preferences due to their experience with the items, direct relationships with the suppliers based on loyalty and product development, and believe that the products will produce a higher quality of life for patients. (Burns et al., 2008) add to this that PPIs support surgeons in their proficient role as representatives of patients, thus influencing purchasing decisions. Now it is interesting to further research the dynamic between physicians, and the hospital's purchasing department. Nyaga and Schneller (2018, p.13) state that "professionals assume the role of surrogate buyers, who make decisions based on their expertise on behalf of the buyer or consumer". This indicates that physicians act as intermediaries between patients and purchasing departments, as well as between purchasing departments and suppliers. Physicians believe they are professionally independent which causes tensions between them and hospital purchasing management (Atilla et al., 2018).

2.2.2 Problems in purchasing PPIs

The hospital-physician relationship is often defined as interdependent and complex, and agency theory can be used to describe this relationship (Trybou et al., 2011). Agency theory defines that when a principal engages an agent for a service, the interests of both parties can differ as the agent might have different objectives than the principal (Eisenhardt, 1989). In the hospital-physician relationship, the hospital is the principal, and the physician is the agent. Since the interests of both agent and principal are different, this can result in issues and clashing of both parties.

Nyaga and Schneller (2018) define some issues during the procurement of PPIs. Physicians are resistant to changes in medical equipment, due to their experience with the items or relationship with the supplier. Burns et al. (2018) claim physicians value relationships with suppliers and personal experience with items more than product costs, and state that physicians think "contracts with vendors are important for the development and delivery of safe and effective products and surgical techniques". In the physician-hospital relationship, there are also different interests between both parties. Where physicians' interest comes from new sources of revenue and providing good care, hospitals' interests come from decreasing costs of healthcare, and sufficiency in physicians' business (Burns et al, 2007).

2.2.3 Hospital-physician alignment

Burns et al. (2009) provide several solutions for hospitals to deal with the problem of physicians not cooperating with purchasing departments. The authors found the following solutions: setting price limits on purchases, limiting the number of suppliers, gain sharing, and active competitive bidding. Especially gain sharing is increasing in popularity, and they define gain sharing as "the hospital works with physicians to reduce total service line costs and then splits the savings (gains) with them.". Atilla et al. (2018) also provide solutions to avoid physicians from bypassing supply managers of hospital to directly negotiate with suppliers. They found that hospital need to be transparent with newly hired physicians about the products that the hospital uses. The hospital's purchasing department should then analyze what product preferences these physicians have themselves and conduct a clear cost-quality analysis. The second solution they provide is leveraging the relationship between physicians and suppliers. The hospital

needs to show them what negative side-effects their direct relationship with the supplier has, providing them with external data on supplier prices and performance.

Lingg et al. (2017) found that end-users (e.g. physicians) should be actively involved in the purchasing process and decisions. Purchasing decisions should be made based on the short-term and long-term impact and performance of the product. Rivers et al. (1997, p.91) state "In conclusion, conflicts between hospitals and physicians can be resolved in two ways: (1) by avoiding controversial decisions that might threaten the powers and prerogatives of professional groups; and (2) by agreeing to decisions that hold something for everyone involved in the hospital-physician power relationship.". Van Biesen et al. (2017) find that physicians, whose interests are not aligned and are not involved with the hospital, have way more reasons to resist new purchasing systems. Physicians who are involved seem more satisfied with their work environment and are willing to change and even lead the change. Collaborative partnerships between physicians and hospital are beneficial for physicians as well as the hospital itself, as this clinical/economic trade-off results in purchasing departments of the hospital being able to keep costs relatively low while fulfilling the wishes of surgeons to use medical equipment that they want (van Biesen, 2017). This is in accordance with Page et al. (2013) who state that there is a clear shift in healthcare that is going towards value-based care, where hospitals see the need of aligning interests with those of physicians. This comes with a shared responsibility that further encourages alignment between hospital and physician. Collaboration is an important aspect of the physician-hospital relationship, and one can argue that this forms the basis of good purchasing processes (Van Biesen, 2017).

3. METHODOLOGY

This section of the paper will explain how the data for this research was collected and what criteria were used to determine useful and suitable data to use in the research. The method of research will be a case study, to generate an in-depth insight into the complexity of healthcare purchasing and specifically the relationships between suppliers, physicians, and purchasing departments of hospitals.

3.1 Selection Of Companies

Suitable healthcare organizations to collect data are selected based on specific criteria. The healthcare organizations need to be hospitals that perform surgery because the research focuses on what preferences physicians have for specific medical equipment, no matter the price, and how purchasing departments tackle this issue. The hospital needs to have multiple surgery departments (at least 3), so that potential interviewees have experience with different specialists and departments. Selected hospitals with corresponding interviewees can be found in table 2 in section 3.5.

3.2 Contacting Healthcare Organizations

The healthcare organizations were contacted in multiple ways. The primary form of contacting organizations was through email, which were available online on the hospital websites. On these websites, there was an email address available to ask questions for specific departments, which gave the possibility to get in contact with the purchasing department of the hospital. On some websites, there was no email address available but the option to fill in a short form where you could ask to get in contact with the purchasing department. Another way of contacting hospitals was through the telephone. All hospitals that were approached had available telephone numbers, which were used if email addresses and forms were not available on the website. The following table provides information on how each hospital was contacted.

Table 1: Hospitals with the method of contacting

Organization	Method of contacting
Hospital A*	Email
Hospital B	Email
Hospital C	Email
Hospital D	Telephone
Hospital E	Email
Hospital F	Telephone
Hospital G	Email
Hospital A*	Email
Hospital H	Email
Hospital I	Email

***Same hospital but different interviewees**

3.3 Development Of Interview Questions

The interview questions (Appendix A) were created based on the research question, and information from the literature review. The questions were developed so that the answers would provide results to answer the research question. The first block of questions is about general healthcare purchasing in the specific hospital. The interviewee is asked to give a general introduction of themselves and explain what their general work day looks like. The next block of questions specifies on what role physicians play in the purchasing process and how much influence they have. It is asked whether it occurs that physicians bypass the purchasing department, and how that is solved by the hospital (or solved in the past). The cooperation between physicians and the purchasing department is investigated, and the interviewee is asked whether they are satisfied with this cooperation and how this could be improved.

3.4 Data Gathering Period

The data-gathering period started on the 20th of April and ended on the 7th of June 2022, based on when the first and last interview occurred. There is one outlier which is an interview planned on the 13th of June. The length of the interviews was on average 30 minutes but varied from 20 to 40 minutes. One outlier was a short interview via telephone which was 12 minutes. The difference in length can be explained by how the interviewee answered the questions. In this research, all interviews provided useful data and the length of the interview did not relate to insufficient data.

3.5 Selection Of Interviewees

Data collection is done via interviews with a specific sample group in selected hospitals (that must perform surgery as previously mentioned). The sample group consists of:

- Purchasing managers of hospitals
- Hospital employees directly involved in the purchasing process (preferably purchasers)

The criteria for choosing the right interviewees are as follows. The interviewees must be directly involved in the purchasing

process of the hospital as they need to have experience working with both suppliers and physicians. Since the subject of the research is based on time and experience in the work field of healthcare purchasing, interviewees should have at least 2 years of work experience in this field. Previous to the interview, interviewees need to be asked whether they can provide relevant information concerning the research by shortly introducing them to the topic (via email or telephone).

The following table will provide information about what type of employee was interviewed for each hospital.

Table 2: Interviewed organizations with the corresponding function of interviewees

Organization	Function of interviewee	Interviewed via
Hospital A*	Purchasing Manager	Teams
Hospital B	Purchaser	Teams
Hospital C	Purchasing Manager	Teams
Hospital D	Purchasing Manager	Teams
Hospital E	Purchasing Manager	Teams
Hospital F	Purchasing Manager	Telephone
Hospital G	Purchasing Manager	Teams
Hospital A*	Purchaser	Teams
Hospital H	Purchasing Manager	Teams
Hospital I	Purchasing Manager + Purchaser	Teams

***the same hospital but different interviewees**

In total 10 interviews are conducted. 9 interviews are done via Teams and 1 via telephone. In the last interview, there were 2 interviewees who will be considered as 1 respondent in the results.

4. RESULTS

This section of the paper will provide an analysis of the gathered data for this research. For the analysis of the data gathered from the interviews, a specific method of coding will be used, which is inductive coding. For this inductive coding, a hybrid of descriptive and structural coding will be implemented to properly categorize and structure the data (the coding scheme can be found in Appendix B). Since a form of inductive coding is used, the coding scheme is based on the data found in de interviews.

4.1 Types of medical supplies

There is a clear difference between University medical centers and general hospitals when it comes to purchasing medical supplies. University medical centers are financed by the government while general hospitals are not. This influences the hospital's total expenses and what medical supplies the hospital needs. University medical centers often offer more specialized and complicated treatments than general hospitals, which means that medical equipment for these treatments is often more expensive. However, all hospitals purchase the same types of medical equipment, namely PPEs (personal protective equipment), disposables (e.g. syringes), pharmaceuticals, and medical equipment such as machinery and hospital beds. Respondent 8 states: "It varies a lot, one time I am busy with acquiring a little plastic connector that costs 10 Eurocent, while another time I am in the process of purchasing ventilators or anesthesia devices, which often costs around 1 million". This statement summarizes how other respondents also answered.

4.2 Purchasing Process In Hospitals

4.2.1 Size of department

The size of purchasing departments varies between hospitals and is dependent on the size of the hospital itself. From the data gathered, University medical centers have three teams active in the purchasing department: operational purchasing, initial purchasing, and contract and supplier management. In general hospitals, the number of purchasing teams varies from one to three based on the size of the hospital. These teams are initial, operational, tactical, and communication teams. Respondent 3 states: "We have 3 teams, one for contract and supplier management, one for initial purchasing, and one for operational purchasing. My team consists of 11 people.".

4.2.2 Type of purchases

Respondent 3 mentions that their hospital (a university medical center) is obligated to regulate large expenses through European tenders. A tender starts with the announcement that the hospital wants to receive certain products and asks suppliers to submit a quotation for this specific order. Based on these quotations, the hospital can choose which supplier offers the best price/quality ratio and decide which product is optimal for future healthcare. Tenders offer all interested suppliers an equal chance to get the order, which means that the supplier with the best offer will get the order. On the other hand, you have regular purchases which are done by smaller hospitals. This indicates that a request of a quotation is offered to a supplier, instead of the other way around. Respondent 7 mentions: "We are not obligated to follow European tender regulations, so we regularly purchase our medical equipment. This varies a lot but sometimes we do very small purchases, while other times we do large purchases. Selecting the correct supplier in this is essential.". So between hospitals, purchasing procedures vary a lot.

4.2.3 Involvement of different parties in the purchasing process

In the purchasing process of hospitals, multiple parties have an influence on decision-making within purchasing. The most prevalent party is the purchasing department itself which regulates and is responsible for the purchasing process from beginning to end. All respondents mentioned that specialists such as physicians are also involved in this process. Respondent 3 states that: "The purchasing department constructs a project group for each purchasing procedure that consists of a purchaser, a project leader, a specialist which is an end-user, and above those parties a committee that is responsible and has authority for making the final decision.". Respondent 7 adds to this: "healthcare technologists or clinical physicists are also involved to check if products are complying with legal requirements. The process often also

involves the logistics department, since transportation of medical supplies is also something to take in mind.". So, looking at these statements it is clear that a purchasing procedure is not an easy process and depends on insights from various parties. Adding to these findings, respondent 10 mentions it really depends on the kind of purchase, which parties and expertise are being involved.

4.3 Influence of Physicians in the Purchasing Process

4.3.1 Physician influence in the past

The influence of physicians in the purchasing process used to be larger than it is in current times. Physicians were not directly employed through the hospital, which meant that they didn't have a direct relationship with the particular hospital that they were operational at. Since this relationship was not in place, physicians didn't necessarily care about the potential costs of medical equipment and cooperation with purchasing departments to find an optimal supplier. Respondent 8 had an interesting take on this: "A physician is good at cutting, purchasers are good at purchasing. In the past, physicians and purchasers would go against each other, and each separate party tried to buy products from the suppliers. Nowadays, physicians, purchasing departments, and even suppliers try to cooperate to find the best solution. And this goes very well.". in all other interviews the respondents had the same opinion.

4.3.2 Physician influence in current times

Some hospitals still face the issue of physicians bypassing the designated purchasing departments to directly negotiate with suppliers. In the hospitals where this is still an issue, physicians often undertake too many steps themselves during the purchasing process and start to sign agreements or request quotes from suppliers without discussing this with the purchasing department. They come into contact with these suppliers via conferences and develop a relationship with this supplier or the product they deliver. Suppliers also visit hospitals to directly contact physicians about their products.

However, more and more hospitals have physicians that are directly employed through the hospital, which means that physicians benefit from cooperating with purchasing departments since physicians are affected by hospital expenses (e.g. amount and quality of medical supplies or devices). Hospitals are aware that the physicians and specialists are much more knowledgeable about medical equipment, so hospitals involve the specialists in the purchasing process. All respondents are in agreeance about this except for respondent 6 who mentions: "At this moment, physicians are still in direct contact with suppliers a lot, which is not optimal. Physicians just bypass you, like you are not there. I think this can be solved by looking at how purchasing and the purchasing department can be better organized.". So, there are still examples where physician influence or power is till (too) big.

4.4 Collaboration Between Physicians and Hospital

To the question if there is a clear form of collaboration or cooperation between purchasing department and physician, all respondents confirm that collaboration is present. Respondent 4 says: "There is a clear form of collaboration between the purchasing department and physicians. The department has proven that with correct strategies, both needs of the purchasing department and physicians can be satisfied. So, it is a win-win situation. Physicians also recognize this.". This is clearly a form of collaboration based on trust, which is a concept that is discussed in section 4.5. On the other hand, respondents 10 think that the purchasing department still lacks leadership in purchasing procedures: "I think that there should be a bigger focus on the purchasing department taking the lead in the purchasing process, and a more pro-active attitude in the process, also in regard to cooperation between other departments". So, this is an example where collaboration is not optimal yet, which means there is a lot of room for improvement. All respondents are in agreement there is room for improvement in their hospital. Respondent 8 says: "Yes there is always room for improvement, but I think that it currently goes well in this hospital. Almost daily there is a discussion between the purchasing unit, heads of the intensive care, and the surgery rooms about what their needs are. So, collaboration is good and we need each other to provide the best help for patients.". It can be concluded that the satisfaction and amount of collaboration between physicians and purchasing departments still vary between hospitals where there is plenty of room for improvement.

4.5 Mechanisms To Avoid Physicians Directly Negotiating With Suppliers

4.4.1 Trust and communication

The hospital needs to prove to physicians that they are capable of purchasing adequate and sufficient equipment for physicians to use. From the gathered data, it is clear that physicians take a lot of value out of trust and good communication with the purchasing department. Respondent 1 states: "We have to earn that trust. We have to show that we bring added value as a department. And that doesn't only work in relation to physicians, but also for ICT or other departments. We have to show that it helps to involve us in the process so that we can negotiate good contract and delivery terms. It is in our system that we think about this. For this, the collaboration between physicians and purchasing department is of essential importance.".

Purchasing departments often base their selection of supplies on price/quality ratios, an aspect that physicians are not necessarily interested in. Physicians base their opinion of medical supplies on quality and how familiar they are with products, and take costs less in regard. If purchasing departments are able to prove that, in cooperation with the physicians, the purchasing strategy works and sufficient medical supplies can be bought, physicians show more acknowledgment and trust in the cooperation with the purchasing department. Communication is an important aspect of this cooperation, as this directly involves physicians in the thought process and ultimately the selection of medical supplies. Respondent 5 says: "Communication is the key to a good working relationship. Physicians will not undermine the purchasing department if there is no need for this. So, when the purchasing department communicates well and properly involves the physicians in the purchasing process, this will decrease the negative influence of physicians

As mentioned in section 3, the involvement of physicians in the purchasing process is essential since they possess knowledge and expertise about medical products, information that purchasing departments often don't possess. On the other hand, physicians become more aware of other aspects of purchasing that are not directly noticeable to them (e.g. costs). Most interviewed hospitals mention that the communication between physicians and purchasing department is still a work in progress and not optimal yet. However, it is much better than in the past as the distance between both parties has been greatly reduced.

4.4.2 Digital Purchasing Systems

Hospitals have incorporated digital systems for all their expenses and purchases, which makes it difficult for physicians to directly negotiate with suppliers about medical supplies. If a contract is sent from a supplier, and that supplier is not in the system, the purchasing department will be immediately aware of this and can take action right away. This mechanism is deducted from interview 4 where the respondent also says this: "Physicians can't negotiate with suppliers about price, quality, terms, because we are very strict with supplier selection. Other suppliers can't deliver here. If there is no official contract under it, we haven't made the order or negotiated for this. This is not possible here.". All purchases, contracts, and requested quotations with suppliers are documented, so the purchasing department has full control of the purchasing process. This does not indicate that physicians have no influence in this process but rather indicates that physicians can't sign contracts with suppliers one on one without discussing it with the purchasing department.

4.4.3 Purchasing Board

Another mentioned mechanism is the use of a purchasing board. Respondent 5 states that: "Physicians need to go by a purchasing board when they want products that deviate from the regularly bought products. The purchasing board consists of purchasers and physicians or specialists from different departments. The purchasing board will question the physician why they need a product that differs from what product is previously supplied. This is effective because specialists from other departments know when a future product has the potential to be successful from their own experience. Specialists from different departments can properly discuss between themselves if a new product is necessary and beneficial for future work, and share their views with the purchasers who can then make a decision concerning the request of the physician.". This mechanism seems effective because it offers the physician room to explain why he wants a certain product while also being critically evaluated. Even though the physician might not get the product that is wanted, both parties need to eventually submit to the decision taken which means that there will be little to none disagreement in the end.

4.4.4 Central and decentral purchasing

Another mechanism mentioned in the interviews, is that there should be a clear distinction between central and decentral purchasing. Central purchasing is purchasing regulated through a single (or very few) department(s), while decentral purchasing is purchasing regulated through multiple departments (or all departments in the hospital). Respondent 2 says: "There should be a distinction between central and decentral purchasing in the hospital. When decentralizing purchasing decisions, purchasers need to present at each different department to stay in contact with specialists. This also divides responsibility and risk among different departments.". Central purchasing can be more effective because there is one general purchasing department that handles all purchases and expenses of the hospital. Decentral purchasing can be more efficient since purchasers will be on-site at all different departments. This also gives more room for communication between end-users of bought products (e.g. physicians) and purchasers. Respondent 6 mentions: "There should be a central purchasing department, to make the puchasing process more effcicient and effective.". It is worth noting that respondent 2 is from a larger hospital than respondent 6 which can explain the difference in views. From the findings of the interview, it is clear that central purchasing would fit more with smaller hospitals to maximize the effectiveness of the purchasing department, while decentral purchasing would work better in the larger hospitals since they have a larger amount of purchases and expenses. Decentral purchasing could in this case improve the efficiency of the purchasing process.

4.5 Supplier-Hospital Relationships

An important aspect of the dynamic between physicians, suppliers, and purchasing departments, is the monopoly position of some suppliers. It occurs that suppliers have a monopoly position in a certain product market which has an effect on both costs and quality of healthcare in hospitals. Especially in niche markets (e.g. bariatric products), suppliers can put pressure on hospitals or purchasing departments to buy certain products for a price that is much higher than the previous market price or at least start negotiations with an extreme demand price. Hospitals sometimes don't have a choice but to buy these products, since they are strategically important to the hospital and essential for providing good healthcare for patients. Respondent 5 says: "I do not have much experience with this, but I think that it definitely can be possible. Suppliers and physicians sometimes meet each other, not on purpose but still, outside the hospital. I can imagine that sometimes a relationship will develop between the physician and suppliers, but I do not know if the supplier will exert any pressure. It is however definitely the case that a supplier, when it is a monopolist, can determine the price of a product. They hold all the power in that case, and they can pressure a purchasing manager. But I would not recommend them doing that, since they will lose clients fast.".

To tackle this issue, purchasing departments of hospitals set up clear purchasing policies with which the supplier has to comply. Since the larger hospitals are often important clients, suppliers don't want to lose them as they hold large value. In this case, the hospital will still be able to negotiate reasonable prices for medical products even in more expensive product categories. In the smaller hospitals, these purchasing policies will have less effect since the power dynamic between supplier and hospital is different and power lies more towards the supplier. Gathered data show that hospitals and physicians work together more to collectively try and move the supplier towards a more reasonable price.

5. DISCUSSION

In this section, the results of the research will be discussed, also in relation to the researched literature. This research was focused on finding mechanisms to avoid physicians from bypassing purchasing departments in hospitals and directly negotiating with suppliers. In order to gather and analyze data about this topic, 10 interviews were held with purchasing managers and purchasers of hospitals that perform surgery.

Firstly it is interesting to discuss the influence of physicians in the purchasing process. From the findings, 9 out of 10 respondents mentioned that the influence of physicians has decreased over the years. This does not mean that they are not involved in the purchasing process, what is meant is: how much power has the physician on deciding what product is bought. One of the respondents mentions that physicians are still negotiating behind the back of purchasing, which means they still have a large influence on purchasing. It is interesting to note, that papers from the literature from 2010 and further back, find that physicians still have a large influence on purchasing (e.g. Burns et al., 2008), while more recent papers are mostly focused on physician-hospital alignment and the improvement of this relationship (e.g. Ageron et al, 2018).

Now the different mechanisms will be discussed that can avoid physicians from bypassing purchasing departments of hospitals and directly negotiating with suppliers. The first mechanism that was found, was the process of gaining trust and improving communication between purchasing departments and physicians. In 8 out of 10 interviews, trust is mentioned as a very big factor in improving the hospital-physician relationship. In these cases, trust works as a mechanism to avoid physicians from undertaking their own purchasing decisions, and leaving these end decisions to the designated purchasing departments. This trust also develops through cooperation between physicians and purchasing departments, where physicians are involved in the purchasing process because of their expertise in medical equipment, and the purchasing departments make the purchasing decisions based on their expertise in purchasing. This finding is in accordance with found literature by Lingg et al. (2017) who state that the end-users of medical products should be actively involved in the purchasing process to maximize the short-term and long-term performance of products. However, the findings on the mechanism of trust go against the statements made by Nyaga & Schneller (2018) who state that physicians are resistant to changes in medical equipment. Based on the data found, physicians are not resistant to change at all but lay importance on good communication and cooperation. Once a purchasing department is able to prove to the physician that they are able to buy sufficient medical products according to the purchasing strategies, physicians will be open to this option and not show immediate resistance. Also from the side of the hospital, a shift in healthcare systems is encouraging the cooperation between physicians and hospital, and Page et al. (2013) mention that communication is a large part of this.

The second found mechanism was the use of digital systems, that have been incorporated in purchasing over the last years. With the use of digital systems, all purchases, expenses, contracts, and requested quotations can be documented. All suppliers are in this system, which makes it hard for physicians to bypass the purchasing department to buy medical supplies. This is in accordance with found literature by Burns et al. (2009) who state that suppliers should be limited because digital systems are very effective in this particular aspect. Suppliers can be analyzed and compared more easily with digital systems than manually, which makes it easier for the purchasing department to make purchasing decisions and avoid physicians from bypassing the department.

The third found mechanism was the use of a purchasing board. When there are standard suppliers and products in place, physicians need to go by a purchasing board when they want to use products that deviate from the standard. The purchasing board consists out of purchasers, and physicians/specialists from other departments that together determine if a new product should be bought based on the reasoning of the physician that wants that product. This is effective because specialists from other departments can be more critical and do a more in-depth evaluation of the newly desired product that purchasers can, since the specialists have expertise in medical equipment. Based on the request and evaluation of the request, the purchasers make the end decision whether or not the requested product will be ordered. This specific mechanism is not discussed in found literature, but corresponds with the idea of Rivers et al. (1997) who state "Avoiding controversial decisions that might threaten the powers and prerogatives of professional groups". Since professionals from different departments are directly involved in the decision, physicians can't blame a decision that they don't agree with on the purchasing department.

The fourth mechanism that was found, was making a clear distinction between central and decentral purchasing. Central purchasing is purchasing regulated through a single department, while decentral purchasing is purchasing regulated through all departments, where purchasers are on-site in different departments. This is a mechanism that has not been found in the literature and can be very effective because it offers a solution for small as well as large hospitals. Centralization will be working well in smaller hospitals and decentralization will be working best in larger hospitals. This could also be a great aspect of purchasing to further research and explore.

The last thing that will be discussed is reflection on the interviews. During the first couple of interviews, it became clear what questions would work and what questions needed to be clarified, specified, and improved. It is also important that you are able to improvise on the spot since there will sometimes be opportunities to ask further and gain information that was otherwise not acquired.

6. CONCLUSION

The main goal of this study was to find mechanisms that can avoid physicians from bypassing purchasing departments in hospitals by directly negotiating with suppliers. Based on the literature and data collection, it is clear that there is a plethora of improvement in the hospital-physician relationship and the involvement of physicians in the purchasing process. It is clear that all mechanisms found, are not excluding physicians from the purchasing process, but want them to be involved so that the best decisions regarding purchases can be found. Besides this, in each respective hospital, the mechanisms seem to be effective and work well. So, this research provides multiple methods for hospitals to better align their hospital-physician relationships and improve the purchasing process. So, it can be concluded that sufficient data was found to answer the research question.

There are some potential limitations to this study that may impact the results of this study. The first limitation is the sample size of this study, which can be considered smaller

than other sample sizes of research in the field of healthcare purchasing. A larger sample size could result in different findings. Generalization of the results can also be an issue since findings might not be applicable to all cases. An important uncertainty to take in mind is the sufficiency of the findings of the research. Beforehand, it is not clear if data collection will actually contribute to answering the research question, even when the data collection method is properly set up (uncertainty of interviewee answers and knowledge). In this study, multiple papers were used as literature that maybe can be seen as outdated (prior to the year 2000), and this can have influence on outcomes.

7. IMPLICATIONS

If the research is properly executed, it can contribute to finding solutions for hospitals that are experiencing problems with physicians, who are bypassing purchasing departments, and directly negotiating with suppliers about medical equipment. This study should provide these hospitals with different views on what the process should be to solve this problem. An expected outcome of this study, is that these solutions will positively influence hospital-physician relationships, and decrease costs in purchasing departments of hospitals.

8. ACKNOWLEDGEMENTS

I want to thank my supervisor Dr. Carolina Belotti Pedroso for her help, especially in the starting phase of the thesis. I would also like to thank the hospitals and interviewees for their time and effort to help me in my research.

9. REFERENCES

Abdulsalam, Y., Schneller, E. (2017). Hospital Supply Expenses: An Important Ingredient in Health Services Research. Medical Care Research and Review. 00(0). 1-13 https://doi.org/10.1177%2F1077558717719928

Ageron, B.,Benzidia, S., Bourlakis, M. (2018) Healthcare logistics and supply chain – issues and future challenges, Supply Chain Forum: An International Journal, 19:1, 1-3, https://doi.org/10.1080/16258312.2018.1433353

Ahmadi, A., Pishavaee, M. S., Torabi, S. A. (2018). Procurement Management in Healthcare Systems. International Series in Operations Research & Management Science. 262. 569-598. https://doi.org/10.1007/978-3-319-65455-3_22

Atilla, E. A., Steward, M., Wu, Z., Hartley, J. L. (2018). Triadic relationships in healthcare. Business Horizons. 61(2)/ 221-228. https://doi-org.ezproxy2.utwente.nl/10.1016/j.bushor.2017.11.004

Burns, L.R., Housman, M.G., Booth, R.E., & Koenig, A. M. (2009). Implant vendors and hospitals: Competing influences over product choice by orthopedic surgeons. 34(1). 2-18. https://doi.org/10.1097/01.hmr.0000342984.22426.ac

Burns, L.R., Housman, M.G., Booth, R.E., & Koenig, A.M., (2018). Physician preference items: what factors matter to surgeons? Does the vendor matter? Medical Devices: Evidence and Research, 11, pp. 39-49. http://dx.doi.org/10.2147/MDER.S151647

Burns, L. R., Nash, D. B., Wholey, D. R. (2007). The Evolving Role of Third Parties in the Hospital—Physician Relationship. American Journal of Medical Quality. 22(6). 402-409. https://doi.org/10.1177%2F1062860607307991

Burns, L. R., Lee, J. A. (2008). Hospital purchasing alliances: Utilization, services, and performance. Health Care Management Review. 33(3). 203-215. https://doi.org/10.1097/01.hmr.0000324906.04025.33

Busse, R. Figueras, J., Robinson, R., Jakubowski, E. (2007). Strategic Purchasing to Improve Health System Performance: Key Issues and International Trends. Healthc Pap. 8(1). 63-76. http://www.mig.tu-berlin.de/fileadmin/a38331600/2007.publications/HP_vol8_SpIssue_busse_purchasing.pdf

Eisenhardt, K. M. (1989). Agency Theory: An Assessment and Review. The Academy of Management Review, 14(1), 57–74. https://doi.org/10.2307/258191

Figueras, J., Robinson, R., & Jakubowski, E. (2005). Purchasing to Improve Health Systems Performance. Maidenhead: McGraw-Hill Education. https://www.euro.who.int/__data/assets/pdf_file/0004/98428/E86300.pdf

Gorji, H.A., Mousavi, S.M.S.P., Shojaei, A., Keshavarzi A., Zare, H. (2018). The challenges of strategic purchasing of healthcare services in Iran Health Insurance Organization: a qualitative study. Electron Physician. 10(2):6299-6306. https://doi.org/10.19082%2F6299

Knight, A. K., Blessner, P., Olson, B. A., Blackburn, T. D. (2017). Strategic sourcing and corporate social responsibility: Aligning a healthcare organization's strategic objectives. 23(2). 94-104. https://doi-org.ezproxy2.utwente.nl/10.1016/j.pursup.2017.01.002

Lingg, M., Merida-Herrera, E., Wyss, K., & Durán-Arenas, L. (2017). Attitudes Of Orthopedic Specialists Toward Effects Of Medical Device Purchasing. International Journal of Technology Assessment in Health Care, 33(1), 46-53. https://doi.org/10.1017/s0266462317000101

Monckza, R. M., Handfield, R. B., Giunipero, L. C., Patterson, J. L., (2009). *Purchasing and Supply Chain Management* (4th ed.) South-Western.

Montgomery, K., Schneller, E. S. (2007). Hospitals' Strategies for Orchestrating Selection of Physician Preference Items. 85(2). 307-335. https://doi.org/10.1111/j.1468-0009.2007.00489.x

Nyaga, G. B., Schneller, E. (2018). Physician Preference Items Management: Challenges, Opportunities, and Strategies. Arizona State University.

Page, A.E., Butler, C.A. & Bozic, K.J. (2013). Factors Driving Physician-Hospital Alignment in Orthopaedic Surgery. Clinical Orthopaedics Related Research. 471. 1809–1817. https://doi.org/10.1007/s11999-012-2730-8

Pauly, M. V., Burns, L. R. (2008). Price Transparency For Medical Devices. Health Affairs. 27(6). 1544-1553. https://doi.org/10.1377/hlthaff.27.6.1544

Rivers, P.A., Woodard, B., Munchus, G.(1997). Organizational Power and Conflict regarding the Hospital—Physician Relationship: Symbolic or Substantive? Health Services Management Research. 10(1-2). 91-106. doi:10.1177/095148489701000110

Schneller, E. S. (2009). The Value of Group Purchasing: Meeting the Needs for Strategic Savings. Health Care Sector Advances. Retrieved from https://www.supplychainassociation.org/wp-content/uploads/2018/05/schneller.pdf

Trybou, J., Gemmel, P. & Annemans, L. (2011). The ties that bind: an integrative framework of physician-hospital alignment. BMC Health Serv Res. 11(36). https://doi.org/10.1186/1472-6963-11-36

Van Biesen, T., Weisbrod, J., Brookshire, M., Coffman, J., Pasternak, A. (2017). Why involving doctors can help improve US healthcare. Front Line of Helathcare Report 2017. Retrieved from https://www.bain.com/insights/front-line-of-healthcare-report-2017/

Van Raaij, E. M. (2016). *Purchasing Value: Purchasing and Supply Management's Contribution to Health Service Performance.* Erasmus Research Institute of Management.

10. APPENDIX

10.1 Appendix A: Interview questions

*** These questions form the basis of the interview structure, the actual interview questions sometimes differ from the following proposed questions**

English version:

- Could you explain what your daily work looks like and what your tasks are?

- How long have you been working at your current job?

- What types of medical supplies does your hospital buy?

- Is there a difference in delivery time between different medical supplies? (e.g. disposables vs. medical devices)

- Could you explain how the purchasing process is regulated in your hospital?

- Which parties are involved in the purchasing process?

- What is the role or influence of physicians in the purchasing process?

- Is there cooperation between the purchasing department and physicians? If yes, are there any barriers for his cooperation? Are you satisfied with this cooperation?

- Literature often states that physicians bypass purchasing departments and directly negotiate with suppliers, is that also the case in your hospital? If yes, how is this solved/regulated? Are these methods effective?

- Suppliers can have a monopolistic position for a certain medical product, how much can they pressure physicians or the purchasing department? And how does this affect costs?

Dutch version:

- Kunt u uitleggen wat u precies dagelijks voor werk doet en wat uw taken zijn?

- Hoelang werkt u daar al?

- Wat voor medische goederen en benodigdheden wordt er gekocht door het ziekenhuis?

- Is er verschil in levertijd tussen verschillende medische goederen? (bv. Disposables vs. Apparatuur)

- Zou u kunnen uitleggen hoe de inkoop precies geregeld is in het ziekenhuis?

- Welke partijen zijn er allemaal betrokken bij de inkoop van medische benodigdheden?

- Wat is precies de rol van artsen tijdens inkoop?

- Wordt er samengewerkt met artsen om kosten te besparen? Zo ja, zijn er bepaalde barrières voor deze samenwerking? Tevreden over deze samenwerking?

- In de literatuur wordt vaak aangegeven dat artsen soms direct met leveranciers onderhandelen omdat ze sterke voorkeuren hebben voor bepaalde apparatuur of goederen, is dit bij uw ziekenhuis ook het geval? Zo ja, hoe wordt dit opgelost? Zijn deze manieren effectief?

- Leveranciers hebben soms een monopolie (kosten), in hoeverre kunnen zij druk zetten op artsen/inkoop?

10.2 Appendix B: Data coding scheme

Category	Description/specified codes
Type of medical supplies	- **PPEs** - **PPIs** - **Pharmaceuticals** - **Medical devices**
Purchasing process of hospital	- **Size of department** - **Types of purchases** - **Parties involved in purchasing process**
Hospital-physician relationship	- **Physician influence in the past** - **Physician influence in current times** - **Decreasing influence**
Collaboration between physicians and purchasing department	- **Good Collaboration** - **Bad Collaboration** - **Room for improvement in collaboration**
Mechanisms to avoid physicians bypassing purchasing departments	- **Trust and communication** - **Digital Purchasing Systems** - **Purchasing Board** - **(De)centralizing purchasing department**
Hospital-supplier relationship	- **Monopoly of supplier** - **Issues with suppliers** - **Tackling issues with suppliers**

10.3 Appendix C: Interview Transcriptions

Not available.