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DRIVERS OF GROUP PURCHASING ORGANIZATION (GPO) EFFECTIVENESS
AND EFFICIENCY: THE ROLE OF ORGANIZATIONAL COLLABORATION
TYPES

by

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DRIVERS OF GROUP PURCHASING ORGANIZATION (GPO) EFFECTIVENESS
AND EFFICIENCY: THE ROLE OF ORGANIZATIONAL COLLABORATION
TYPES

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University of Nebraska, 2016

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Collaborative purchasing, the sharing of aspects of the purchasing function among two or more buyers, has been utilized for many years and is applied in a variety of industries including healthcare. Third party collaborative purchasing involves a third party organization that helps purchasing organizations by aggregating volume, negotiating lower prices, and providing other value added services such as benchmarking and market knowledge. Extant literature has examined the broad form of collaborative purchasing, but has neglected the individual differences in how purchasing organizations choose to work with the third party. In order to help fill this gap in the literature and better understand the relationship between purchasing organizations and third party collaborators, the author conceptualizes collaboration type as being multi-dimensional, comprising process, maximization, and relational aspects. These dimensions form the basis for two primary types of collaboration: Transactional collaboration (transactional, value-maximization focus) and Strategic collaboration (partnerships, group-maximization focus). A conceptual model is hypothesized that examines the antecedents and consequences of collaboration type. The hypotheses are tested with a sample of 123 hospitals across the United States. The results show that (1) there are differences in how purchasing emphasis and dependence management factors impact collaboration type, (2)

transactional collaboration positively impacts purchasing effectiveness while strategic collaboration positively impacts both purchasing effectiveness and efficiency, (3) buying center factors play a unique role in moderating the impact of collaboration type on purchasing effectiveness and purchasing efficiency, and (4) post hoc analysis indicates that GPO satisfaction has an important role in the link between collaboration type and purchasing effectiveness and efficiency. The results provide insight for purchasing managers, third party collaborators, and sales organizations.

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CHAPTER ONE **– INTRODUCTION –**

Purchasing plays a critical, sometimes strategic, role in firm performance (Janda and Seshadri 2001) especially in the business-to-business context where it often has control over half or more of the firm's total costs (e.g., Carter 2000; Noordewier, John, and Nevin 1990). Organizations are pressured to streamline purchasing processes in an attempt to lower costs and inventory, and improve product quality (Johnson 1999). Collaboration is one way of accomplishing this goal. Although collaboration can occur at three levels (internal, vertical, and horizontal), this dissertation is primarily focused on the horizontal, or buyer-to-buyer, collaboration also known as collaborative purchasing.

Broadly, collaborative purchasing relates to a relationship between two or more buyers that bring together aspects of the purchasing function (Bakker, Walker, and Harland 2006; Bakker et al. 2008). At a deeper level, collaborative purchasing is defined as the sharing of purchase volumes, information, or resources by two or more organizations that form a purchasing group (Schotanus and Telgen 2007). Although collaborative purchasing has been around for many years, and has been utilized heavily in industries such as food services, healthcare, retailing, and the public sector (e.g., Chen and Roma 2011; Nollet and Beaulieu 2003), it has received relatively little attention in the literature (Geyskens, Gielens, and Wuyts 2015; Schotanus and Telgen 2007).

Collaborative purchasing provides two primary types of benefits: 1) improving efficiency (through the ability to lower transaction costs and gain economies of scale), and 2) improving effectiveness (through the ability of the organization to learn from other organizations) (Jost, Dawson, and Shaw 2005). The primary purchasing efficiency related

benefit is cost reduction which is an important benefit as firms face the need to tighten operational budgets (Gulati, Nohria, and Wohlgezogen 2010; Walker et al. 2013). Other benefits include efficiencies through decreased workload, staff reductions, product standardization, and improved processes (Aylesworth 2003; Johnson 1999). The second benefit, purchasing effectiveness, includes the sharing of expertise, skills, technology, and other resources available to one or more of the organizations (Jost, Dawson, and Shaw 2005), and can result in many benefits such as better negotiation, supplier information, and benchmarking (e.g., Aylesworth 2003; Faes, Matthyssens, and Vandembemt 2000; Tella and Virolainen 2005).

Extant literature on collaborative purchasing has also identified certain keys to the success of this collaborative process. Primarily, organizations need to be able to manage purchasing groups effectively, through factors such as allowing voluntary participation, ensuring cooperation of group members, communication, commitment, and the alignment of objectives (Doucette 1997; Schotanus, Telgen, and de Boer 2010). Developing a sense of commitment and trust are also keys to success (Doucette 1997; Jost, Dawson, and Shaw 2005). Research has also examined how purchasing groups develop and subsequently evolve over time (e.g., Johnson 1999; Nollet and Beaulieu 2003; Schotanus et al. 2011).

There are two broad categories of collaborative purchasing, the member-owned informal and virtual organizations and third-party collaborators (Bakker, Walker, and Harland 2006; Bakker et al. 2008). The third party collaborator is the primary focus of the current research. Third party organizations facilitate collaboration through a primary

focus on aggregating volume and providing purchasing services and other marketplace expertise that individual purchasing organizations may not be able to obtain on their own. Group Purchasing Organizations (GPOs) are a primary example of a third party collaborator.

GPOs play a very significant role, for instance, in the healthcare industry with 72-80% of hospital purchasing costs in the acute-care setting processed through a GPO and over 90% of the healthcare systems in the U.S. belonging to one (Hu and Schwarz 2011; Neil 2005). They can be member owned, but primarily tend to be independent organizations that work with healthcare facilities. GPOs provide medical devices and other supplies to healthcare facilities through the leveraging of volume in order to lower prices from suppliers (U.S. Government Accountability Office 2002). They may also work with suppliers to bundle products. However, the volume purchases and bundling of products may limit choice and flexibility in the hospital selection of products and suppliers (Roark 2005). With the competitive nature of the GPO process, GPOs offer different pricing structures and other value-added services in order to separate themselves from other GPOs (Kaldor, Kowalski, and Tankersley 2003; Malloch 2001). Some of the primary differences among GPOs, such as the availability of custom contracting (Page 2007) and the level of support they provide (Meyer 2007), help to allow for flexibility and increased choice among healthcare entities.

RESEARCH OBJECTIVES

Although the extant literature has examined the primary categories of collaborative purchasing, such as third party collaboration, it has not explored how purchasing organizations participate in that collaboration (e.g., Bakker et al. 2008; Schotanus and Telgen 2007). As GPOs differ in terms of flexibility, pricing, and other value-added services, it is important to understand how purchasing organizations utilize these alternatives and what drives the way in which they collaborate. As such, the primary purpose of this dissertation is to provide a better understanding of how purchasing organizations collaborate or participate with third party collaborators in a collaborative purchasing setting and how collaboration type drives purchasing effectiveness and efficiency.

This dissertation seeks to fill the gap in the literature by exploring, through the lens of resource dependence theory (RDT), the drivers and conditions that impact a purchasing organization's collaboration type. This dissertation also examines how a purchasing organization's collaboration type may impact both purchasing effectiveness and purchasing efficiency differently, and how this relationship is impacted by other conditional factors. Conceptualizing and empirically testing for collaboration types among purchasing organizations, the author attempts to understand and capture key components of third party collaborative processes that have previously not been examined in the literature. Thus, this dissertation addresses two different sets of research questions.

In the context of the antecedents to organizational collaboration type, I seek to address the following questions: a) How do purchasing organizations participate in, or collaborate with, third party collaborators (specifically GPOs)?, b) What types of collaboration are conducted?, c) How do different purchasing emphases impact the use of different collaboration types?, and d) What conditions impact the effect of purchasing emphases on utilization of a particular collaboration type?

In relation to the drivers of purchasing efficiency and effectiveness, I seek to address the following questions: a) How does a particular purchasing collaboration type impact purchasing effectiveness and purchasing efficiency?, b) How do buying center characteristics such as cohesiveness and complexity impact the relationship between collaboration type and purchasing effectiveness and purchasing efficiency?, and c) How do third party factors, such as third party involvement and third party adaptability, impact the relationship between collaboration type and purchasing effectiveness and purchasing efficiency?

CONCEPTUAL MODEL

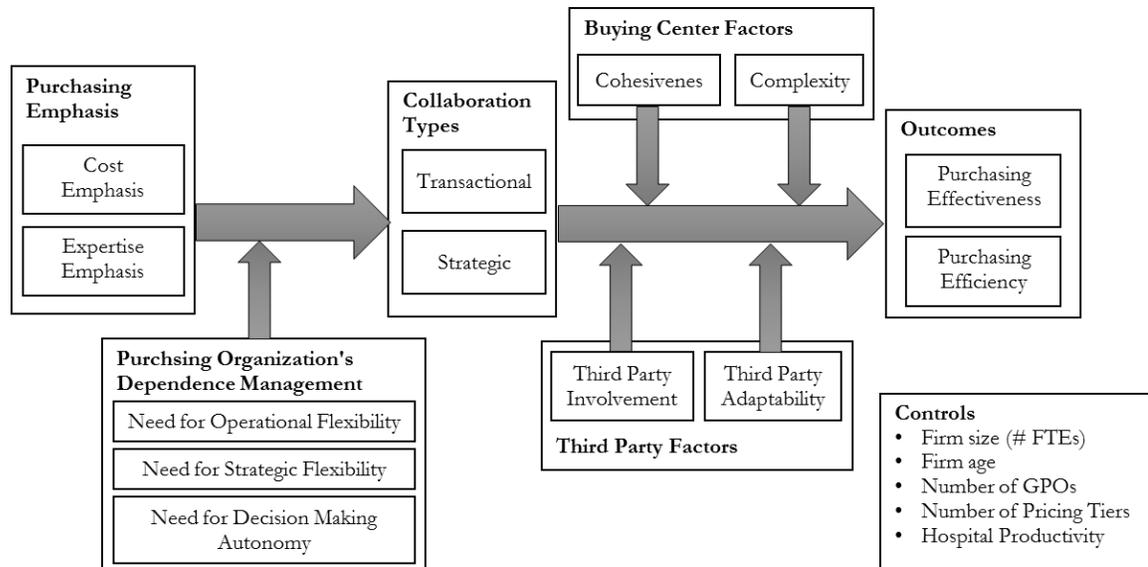
Purchasing organizations are faced with a situation of dependence on suppliers for many needed supplies and equipment (Neil 2005; Rodriguez 2009). In order to alleviate the dependence on suppliers, many purchasing organizations are turning to third party collaborators, such as GPOs. However, this creates another situation of dependence in which the purchasing organization is dependent on the GPO for help. Based on theory (Grewal et al. 2015; Pfeffer and Salancik 1978; Spekman and Carraway 2006) and qualitative fieldwork, two primary ways (or collaboration types) have been identified to

help purchasing organizations manage this dependence, viz. *Transactional collaboration* and *strategic collaboration*. *Transactional collaboration* has a focus on transaction by transaction processing and value-maximization, while *strategic collaboration* has a focus on building strategic partnerships and group-maximization¹ through aggregate spend.

In order to better understand what drives these collaboration types and how they impact purchasing effectiveness and purchasing efficiency, a comprehensive conceptual model is developed (Figure 1 below). The left-hand side of the model is comprised of both drivers and conditions impacting collaboration type (derived from both theory and qualitative fieldwork). The right-hand side of the conceptual model is comprised of collaboration type and its impact on purchasing effectiveness and purchasing efficiency, and the moderating factors that impact this relationship. The theoretical rationale and hypothesized relationships are explored in greater depth in Chapter 3: Collaborative Purchasing – Antecedents and Consequences of Collaboration Types.

¹ Group-maximization occurs when organizations are willing to take a financial hit in the present in order to stay on contract with the GPO for purposes of aggregate spend knowing that in the long-run the group will be better off for it.

Figure 1: Conceptual Model of Collaboration Types



INTENDED THEORETICAL CONTRIBUTIONS

The intent of this dissertation is to contribute to theory in multiple ways. First, this research provides additional insight and meaning into the process of collaborative purchasing broadly in relation to third party collaborators, and more specifically to GPOs. This research helps highlight the importance of collaboration type as a driver of purchasing effectiveness and purchasing efficiency, two important ways of measuring performance in the purchasing function (Janda and Seshadri 2001).

Second, two collaboration types (transactional and strategic) are conceptualized, defined, and measured empirically with both reliability and validity. The addition of this concept to the literature will help to provide increased understanding on how purchasing organizations collaborate with third party collaborators, as well as how these differences impact performance.

Third, the research highlights differences between the two collaboration types in terms of the primary driver or purchasing emphasis, as well as in dependence management factors such as the need for strategic flexibility and the need for decision making autonomy. The research also adds empirical insights into both the moderators and consequences of collaboration types by investigating conditions under which purchasing effectiveness and purchasing efficiency may be enhanced or weakened.

INTENDEND MANAGERIAL CONTRIBUTIONS

This research also provides some practical managerial implications across multiple audiences. First, this research provides guidance for purchasing and materials managers in business-to-business purchasing organizations. By highlighting the two types of collaboration with third party collaborators, as well as different factors that impact the collaborative approach, this research provides managers with a better understanding of collaboration in general. It also provides a better understanding of how the choice of collaboration type drives purchasing effectiveness and purchasing efficiency. This may be very helpful for purchasing managers in evaluating how their organization collaborates, especially with managers who are considering collaborative third party purchasing for the first time.

Second, this research provides several insights for sales managers and salespeople in the business-to-business context. For example, this research provides insights that can help the sales team understand that not all organizations seek to collaborate, and those that do may not collaborate in the same way or for the same purpose. Understanding how

the collaboration approaches differ can provide guidance to the sales team on how best to approach purchasing organizations when trying to procure business.

Finally, this research provides practical insight and guidance for the third party collaborators. It helps to explain how organizational collaboration differs, and how RDT plays a role in these collaborations. The research highlights the importance that a purchasing organization's need for autonomy plays in impacting collaboration type.

OVERVIEW OF RESEARCH

The remainder of this research is organized as follows. Chapter 2 provides a review of the relevant literature on purchasing. It includes a brief discussion on each of the three types of collaboration (internal, vertical, and horizontal). Chapter 3 examines the conceptual model of the antecedents and consequences of collaboration type. Chapter 4 contains the research methodology. This chapter discusses the qualitative research, data collection and sample characteristics, and construct measurement. Chapter 5 presents the data analysis including measure purification, model estimation, and hypothesis testing. Chapter 6 provides a discussion of the results, as well as contributions and limitations of the research. Finally, a list of references is provided, followed by an Appendix with the depth interview guide, findings from the qualitative fieldwork, construct definitions and measures, and survey documentation.

CHAPTER TWO
– ORGANIZATIONAL BUYING AND COOPERATIVE PURCHASING –
OBJECTIVES OF THE CHAPTER

The primary purpose of this chapter is to review the extant literature regarding organizational buying and collaboration related to the purchasing function. There are three levels of collaboration that relate to purchasing: Internal, vertical, and horizontal. As such, a broad review of existing purchasing literature was conducted, including the following specific areas:

- 1) *Internal collaboration*: This section reviews the literature on organizational buying behavior. It includes key topics such as models of organizational buying behavior, buying center structure and participation, influence and decision making within the buying center, and conflict. This is a key area of review as it identifies how the internal buying center members function and relate to one another.
- 2) *Vertical collaboration*: In this section, a high-level scan of buyer-seller relationships is conducted, primarily focused on issues related to relationship marketing. This includes a brief description of factors such as commitment, trust, power, influence, and dependence. This area has been widely researched, and provides a base from which one can examine the next form of collaboration, horizontal.
- 3) *Horizontal Collaboration*: This section focuses on collaborative purchasing in general, and then moves more specifically into the use of third

party collaborators. The section ends with a review of GPOs, one form of third party collaborators utilized in collaborative purchasing.

The review of this literature is designed to identify gaps in the purchasing (specifically cooperative or group purchasing) area that this research aims to fill.

LITERATURE REVIEW

Purchasing is a critical function in the business-to-business context, often controlling over half of the firm's overall costs (e.g., Carter 2000; Noordewier, John, and Nevin 1990). As such, it can play a strategic role in firm profitability and creation of shareholder wealth (Janda and Seshadri 2001). This creates a pressure to lower costs and inventory, improve quality of products, and shorten lead times on product development, leading organizations to streamline purchasing processes and find ways to enhance competitive advantage (Johnson 1999). One way of accomplishing this task is through cooperation or collaboration.

There are three levels of cooperation or collaboration identified in the supply chain literature: 1) internal (buyer level), 2) vertical (buyer-seller), and 3) horizontal (buyer-buyer) (e.g., Cagnazzo et al. 2009; Huber, Sweeney, and Smyth 2004). Internal cooperation relates to individuals from different functional units working together as part of the buying center toward a common buying decision. Collaboration (both vertical and horizontal) involves two or more organizations coming together for a common purpose (Wang and Archer 2004), and typically takes a longer-term perspective that includes a focus on lowering costs, both acquisition and operating (Corsten and Kumar 2005).

The remainder of this chapter is organized as follows. First, with a focus on internal cooperation, the literature on organizational buying behavior will be reviewed, touching on issues related to the structure of the buying center, participation, influence, and conflict. Each of these areas relate to how an organization internally functions in accomplishing the purchasing role. Next, with a focus on vertical collaboration, the literature on buyer-seller relationships will be briefly discussed. Finally, the focus will shift to the primary area of the current research, horizontal collaboration. The literature on group or collaborative purchasing will be reviewed, with a focus primarily on third party collaboration and GPOs.

Internal Cooperation - Organizational Buying and Buyer Behavior

The literature on organizational buying and buyer behavior covers many different aspects of the internal working and cooperation of the organizational purchasing function. This section reviews the literature on several specific topics related to this area. I begin by defining organizational buying behavior and discussing several models of organizational buying behavior that have been discussed in the extant literature. Next, I review literature on several other key topics. The first related topic is the *structure* of the buying center and individual participation in the center. The second topic is *influence* within the buying center and related research on decision making. I end this section with a brief review of the literature on *conflict* in the buying center.

Organizational buying has been defined as a decision making process that involves identifying, evaluating, and choosing among alternative products and services in order to meet the needs of an organization (Kotler and Keller 2012; Webster and Wind

1972). It includes interactions between individuals within and between organizations, and is influenced by organizational budgets, costs, and profit goals (Webster and Wind 1972). The buying process includes eight major stages: problem recognition, need description, product specification, supplier search, proposal solicitation, supplier selection, order-routine specification, and performance review (Kotler and Keller 2012). As such, organizational buying behavior is a time consuming and complex process that involves potential conflict, influence attempts, and the participation of multiple members. In order to understand the process of organizational buying, one must investigate both individual and organizational decisions (Webster 1965; Weigand 1968). Several approaches, or models, have been proposed in the literature.

Models of Organizational Buying Behavior. One of the most comprehensive models (Fortin and Ritchie 1980) is that proposed by Webster and Wind (1972), which identifies several characteristics of organizational buying behavior. First, the authors identify four different categories of variables that impact organizational buying: 1) individual (personality, motivation, learning, and cognition), 2) social (individual goals, personal characteristics, leadership, structure of group, tasks performed), 3) organizational (organizational goals, and financial, technological, and human resources), and 4) environmental (physical, technological, economic, political, legal, and cultural). Second, the authors define the *buying situation* as that which is created when a need or problem is identified that can be solved through some form of purchasing action. A *buying center* comprises all members of an organization involved in the buying process, where members can perform roles such as user, influencer, decider, buyer, and

gatekeeper. In addition, the *buying process* involves both task (directly related to buying process) and non-task (those extending beyond buying process) components.

A second model of organizational buying behavior is presented by Sheth (1973). This model consists of three distinct aspects. The first is the psychological aspect. Sheth acknowledges that the organizational buying process involves many individuals, all with different psychological influences, such as individual backgrounds, information sources, search processes, and expectations. These differences can lead to differing levels of conflict between members of the group. The second aspect is the social aspect, or that which precipitates joint decisions. Here the author identifies six factors that help to determine whether decisions will be made jointly or individually. These factors are: perceived risk, type of purchase, time pressure, company specific factors, company orientation, company size, and degree of centralization. The final aspect is the process of joint decision making, which includes initiation of the decision to buy, evaluation of alternative suppliers, and resolving conflict among all parties involved.

Another model of organizational buying behavior is based on the idea that buying behavior can best be understood as work behavior. As such, work motivation may be a key component to understanding organizational buying behavior (Anderson and Chambers 1985). The authors present two models of buying behavior. The first is the motivational model, which is based on the concepts of reward and measurement systems. The second is the group consensus model, which includes consensus formation, social influences, coalition formation, hierarchical decision making, and group rewards.

Finally, a simpler, or more practical, model of organizational buying behavior was proposed by Robinson, Faris, and Wind (1967). This model provides testable propositions that bring intuitive appeal to many (Anderson, Chu, and Weitz 1987). This model, the *buyclass framework*, is built on three dimensions: information needs, consideration of alternatives, and newness of task. The result is a set of three buying situations that vary on each of these three dimensions. The *straight rebuy* is low on all three dimensions and tends to be the most common situation. It is characterized by routine purchases and a focus on delivery and performance. The *new task* is high on all three dimensions and is relatively rare. It is characterized by larger buying centers, higher dollar value purchases, and a minor role for the purchasing agent. Finally, the *modified rebuy* has a mix of features, and is moderate on all three dimensions. It is characterized by a somewhat larger buying center than a straight rebuy, and a little less purchasing agent influence than the new task.

Several key issues derive from these models and the review of extant literature. First, the buying center structure varies widely from organization to organization, and across buying situations. Second, the relative influence of the purchasing agent, or other members of the center, also fluctuates across organizations and buying situations, as does the buying responsibility and the decision making process. Finally, conflict may arise due to both participation and influence. Each of these topics will be briefly discussed next.

Buying Center Structure and Participation. The buying center is the set of members involved in the buying process (Webster and Wind 1972). Although the buying roles tend to remain steady, the participants vary from purchase to purchase (Johnston

and Bonoma 1981) and from organization to organization. Participants can include members from different functional areas such as purchasing, engineering, production, finance, and R&D. Although no two companies follow the same procedures, and no two decisions are likely to be the same, there are general patterns to be found (Johnston and Bonoma 1981) both in how organizations structure their buying centers and how individuals participate within the buying process.

To help examine these general patterns, Johnston and Bonoma (1981) identified five dimensions of the buying center that they believe could be measured: vertical involvement (number of levels of an organizational hierarchy exercising influence), lateral involvement (number of departments or divisions in the buying center), extensivity (number of individuals involved in the buying process), connectedness (how linked members of the buying center are), and centrality (degree to which the purchasing agent is involved in the process) (Johnston and Bonoma 1981). However, they propose that both organizational factors and the purchase situation itself may impact these dimensions, and participation in general, differently. For example, they found that organizational factors (such as centralization and formalization) impacted extensivity, lateral involvement, vertical involvement, and connectedness, but not centrality of the purchase manager.

In looking at the purchase situation, several studies have examined the impact of factors such as novelty, complexity, and importance on buying center structure and participation (e.g., Johnston and Bonoma 1981; McQuiston 1989). Novelty relates to the newness of the purchase to the organization. Complexity relates to how much

information is needed to make an accurate product evaluation. Importance is defined as the level of impact the purchase has on the organization's profit and productivity.

Johnston and Bonoma (1981) examined the impact of these factors on the buying center structure and found that purchase situation factors impacted only extensivity and lateral and vertical involvement. When looking at participation in terms of the amount of communication offered to others, McQuiston (1989) found that both novelty and importance were positively related to participation, while complexity had no impact on the amount of communication or participation taking place.

Other research has examined the impact of purchase situation on buying center structure using factors such as buyclass (straight rebuy, modified rebuy, and new task), purchase importance, and purchase uncertainty. Utilizing a meta-analytic technique, Lewin and Donthu (2005) find that the buying center size is positively predicted by both buyclass and purchase importance. They also find that buying center centralization is positively impacted by purchase uncertainty. Lateral involvement is related positively to buyclass, product type, and purchase importance, complexity, and uncertainty. Vertical involvement is positively influenced by buyclass, purchase importance, and purchase uncertainty.

Finally, other research has investigated buying center structure and participation based on environmental factors such as environmental uncertainty. Spekman and Stern (1979) investigate the structure of the buying center in terms of centralization, specialization, formalization, and overall participation in decision making under varying levels of environmental uncertainty. They find that firms faced with higher environmental

uncertainty tend to have higher participation in the decision making process. All other variables (centralization, specialization, and formalization) had no impact.

Influence and Decision Making Within the Buying Center. Another set of issues within the organizational buying literature is buying responsibility, influence, and the decision making process. Individual responsibility for a given purchase has been said to be a function of both individual factors (such as product-specific knowledge of the individual, and the individual's centrality to the production process) and product factors (purchase importance and technical complexity of the product) (Webster 1965). In addition, Webster also notes that an individual's influence on the purchase is related directly to the responsibility given to the individual by the organization. Influence within the buying center has received considerable attention in the literature, including examination of how it varies across buying center components, and how participation, power types, and information control can impact the level of influence.

In one study, influence was found to vary across buying center components (or members) (Fortin and Ritchie 1980). In addition, the authors found that the dominant influence differed based on the decision being made, such that individuals with more knowledge or expertise in a specific area had more influence in decisions related to that area. McQuiston (1989) also found variations in influence in terms of how the communication offered from one individual affects the actions of others. He found that the greater the level of individual participation the greater the level of influence that individual had on the decision. He also found that influence was higher when the purchase was deemed to be important to organizational profit and productivity.

Other research has taken a broader approach and looked at the organizational buying system as the unit of analysis instead of the buying center. Exploring the patterns of repeated interactions within an organization, Ronchetto, Hutt, and Reingen (1989) find that individual influence is increased by the individual's centrality, or the degree to which the member is centrally located in the system. They also find that formal rank positively impacts an individual's influence. Influence is negatively impacted by the distance between the individual and a dominant reference group, or one that has decision making authority. Finally, departmental membership can impact the level of influence a member has on the buying process.

Research has also examined the impact of types of power on influence and influence strategies within the buying center. Kohli (1989) examined manifest influence, or the level of change in purchase decisions based on the opinions and behavior of buyer center members resulting from the decision maker's participation in the center. Investigating different types of power (reward, coercive, referent, legitimate, expert, information, and departmental power), he found that expert power has the largest impact on influence, followed by reinforcement power. It was also found that an individual's influence effectiveness varied with buying center size, viscosity (how members work together as a team), time pressure, and strength of influence attempts. For example, Kohli (1989) finds that expert power is stronger in larger centers that are viscous, with little time pressure. Reinforcement power, however, is stronger in smaller centers that do not work together as a team, primarily when under time pressure.

Taking another approach to the impact of power types on influence, Venkatesh, Kohli, and Zaltman (1995) examine how different types of power impact the type of strategy utilized. The six influence strategies are requests, information exchange, recommendations, promises, threats, and legalistic please. They are categorized based on coercive intensity, task orientation, and instrumentality. The authors find that the types of power are indeed related to the strategy utilized. For example, individuals with referent power tend to use threats and legalistic pleas (hard coercive strategies) less, while those with coercive power tend to use requests less. The authors also investigate the impact of viscosity, familiarity, and group size on these relationships. They find that viscosity (or team work) leads to less use of requests, threats, and legalistic pleas, while familiarity reduces the level of recommendations and size lessens the use of threats.

Finally, extant research also examines how information control impacts influence and power within the buying process (Dawes, Lee, and Dowling 1998). Two primary reasons why some individuals have more information control are proposed: 1) stakeholding (the level of participation in purchase decision), and 2) innovative orientation. As with Kohli (1989), Dawes, Lee, and Dowling (1998) examine manifest influence. They find that buying center members with higher control of information will have greater influence. Going a little deeper into the participation, influence, and information control relationships, the authors also find that members who participate more have higher control of information and influence. In addition, members with higher originality (or innovative orientation) also have higher control of information and influence.

Related to the level of influence within a buying center is the concept of decision making. Extant literature has examined when buying decisions are made by individuals versus by groups (Patton, Puto, and King 1986), how individual group member's prior decision frames can impact the buying group choice (Stoddard and Fern 2002), buying decision approaches (Bunn 1993), and individual buyer decision making styles (Wilson 1971).

Despite the amount of research conducted on participation and influence within the extant organizational buying literature, concern has arisen within the literature regarding the reliability of measures of influence and participation in the buying group (Silk and Kalwani 1982), as well as the use of single informants (Wilson and Lilien 1992). Findings indicate a lack of consensus regarding individual influence across multiple respondents (Silk and Kalwani 1982), however the predictive accuracy of multiple informants consistently performs better than single informants when examining group buying situations related to new and non-new task situations.

Conflict. Given the varying levels of participation and influence within the buying process, as well as the different functional units involved, it is not surprising that conflict may arise from differing goals and perceptions (March and Simon 1958; Sheth 1973) within the buying center. However, not all interdepartmental conflict is bad and may depend on the conflict resolution. As such, Sheth (1973) identifies and discusses several methods of conflict resolution: problem-solving, persuasion, and bargaining. Other literature on conflict within the buying center has focused on conflict as it relates to a

specific decision making instance and investigates the impact of both the role of the decision maker and the organizational context.

Decision-specific (or task) conflict is that which arises from the different roles the decision maker assumes across different decisions (Barclay 1991; Ryan and Holbrook 1982) and has been the primary focus of conflict research within the buying center. This conflict arises based on the role that an individual assumes in relation to the decision making process. Three roles identified in the literature that an individual can assume across different decisions are: 1) joint decision maker, 2) sole decision maker, and 3) information source (Ryan and Holbrook 1982). The joint decision maker role is characterized by higher levels of conflict with only partial levels of responsibility for the decision. The sole decision maker role is described by lower conflict and complete decision making responsibility. Finally, the information source role is characterized by lower conflict and no responsibility for the decision.

Investigating how the organizational context impacts interdepartmental conflict, Barclay (1991) finds that specialization within an organization and centralization are related to increased conflict, while formalization actually attenuates conflict. Other factors that positively impacted conflict were suboptimizing incentives, task related frustration, jurisdictional ambiguity (or lack of clarity about departmental responsibilities), and communication barriers.

Each of the issues discussed above (structure, participation, influence, decision making, and conflict) indicate that organizations differ, both in terms of how they structure the buying center, and in how their members behave within the buying process.

It shows that organizations have the need to be flexible, by allowing members to come in and out of the buying process as needed. It also shows that there is a varying need for control within the organization, as evidenced by attempts to influence or the resulting conflicts that arise. The above discussion also highlights the importance of the social or group nature of organizational buying behavior. Each of these issues are important aspects of the organizational buying process that indicate how an organization will relate to and work with outside organizations. It is important to understand and examine these other collaborations in order to get a better understanding of the entire buying process.

Vertical Cooperation - Buyer-Seller Relationships

The discussion above highlights the internal complexities involved in the organizational buying process. However, organizations must also learn to manage their business-to-business relationships in order to help improve the efficiency and effectiveness of their business processes (Kotler and Keller 2012), as the critical resources a firm has may reach beyond the borders of the firm (Dyer and Singh 1998). Building buyer-seller relationships can be a key component of creating competitive advantage (Day 2000). This is accomplished by creating mutually beneficial outcomes for both buyers and sellers (e.g., Jap 1999), through processes such as shared knowledge and combining resources (Barringer and Harrison 2000). Research also shows that developing supplier relationships can help buyers lower acquisition and operating costs (Cannon and Homburg 2001). As such, this section examines the literature on buyer-seller relationships, specifically focusing on relationship marketing and key factors that impact the performance of these relationships.

Relationship marketing, defined as the activities involved in establishing and maintaining successful relational exchanges (Morgan and Hunt 1994) has received considerable attention in the marketing literature over the past several decades. It moves beyond the more traditional discreet transaction based way of doing business into a longer-term, ongoing process view (Dwyer, Schurr, and Oh 1987; Morgan and Hunt 1994). Looking toward the interpersonal relationship literature on marriage, Dwyer, Schurr, and Oh (1987) provide a framework that identifies five stages of relationship development including awareness, exploration, expansion, commitment, and dissolution. Each stage provides a key transition in how buyers and sellers relate to one another. For example, the exploration phase includes the initial attraction, may include some trial purchases, and communicating and bargaining. This phase is also identified by a period of power and justice, and norm and expectation development. The next phase, expansion, is characterized by an increase in benefits through the continuation of processes begun in the exploration phase. However, this phase is also characterized by increases in satisfaction and a desire to maintain the relationship into the future. The framework presented by Dwyer, Schurr, and Oh (1987) introduces many concepts of interest in the relationship marketing literature, such as commitment and satisfaction, that may impact the effectiveness of these relationships.

However, research relating to the performance of buyer-seller relationships has been mixed. As such, Palmatier et al. (2006) conducted a meta-analysis of relationship marketing literature in order to better understand what factors impact the performance of relationships. They find that commitment positively impacts expectation of continuity,

word of mouth, customer loyalty, seller objective performance, and cooperation.

Likewise, trust has the same relative positive impact. Relationship satisfaction increases expectation of continuity, customer loyalty, objective performance, and cooperation.

Finally, relationship quality impacts customer loyalty, and objective performance.

In another study of relationship performance, Palmatier (2008) finds that customer relationship value derives from relationship quality. The author conceptualizes quality as comprised of commitment, trust, reciprocity, norms, and exchange efficiency. He also finds that contact density and authority both have a positive impact. Another study examined the impact of buyer factors, such as buyer's relationship orientation, exchange inefficiency, and trust in salesperson as drivers of seller outcomes (Palmatier et al. 2008). Powers and Reagan (2007) found that mutual goals, adaptation, trust, satisfaction, cooperation, commitment, and structural bonds have a positive impact on performance, especially in later stages of the relationship. Finally, Ganesan (1994) found that perceived dependence, credibility, and satisfaction with past outcomes impacted a vendor's long-term orientation in a vendor-retailor relationship. The predominant view in the above studies is related to the seller side of the relationship performance or outcomes.

Important Factors in Buyer-Seller Relationship Research. There are several aspects of buyer-seller relationships that inform the current research. Commitment is one that is highlighted above as a driver of relationship performance. It has been defined as a belief that a relationship is so important that effort must be made to maintain it and ensure it continues on indefinitely (Morgan and Hunt 1994). Commitment can be seen as having three components: 1) input, or affirmative action, 2) attitudinal, or enduring

intention, and 3) temporal, or long-term orientation (Gundlach, Achrol, and Mentzer 1995). Multiple types of commitment have been identified and utilized within the literature, for example: calculative and affective (Ganesan et al. 2010), and attitudinal comprised of calculative and loyalty (Gilliland and Bello 2002). In addition to its importance in relationship performance noted above, commitment has been shown to positively impact cooperation and negatively impact propensity to leave (Morgan and Hunt 1994), to effect the type of enforcement mechanism employed (Gilliland and Bello 2002), and to have either a buffering or amplifying effect when relationships are strained (Ganesan et al. 2010). Commitment can be enhanced through termination costs, relationship investment, shared values, trust, relationship benefits, dependence, and communication (e.g., Morgan and Hunt 1994; Palmatier et al. 2006).

Another important factor is the notion of trust. Trust has generally been described as confidence in the reliability and integrity of a partner (Morgan and Hunt 1994), and as a willingness to rely on a partner due to that confidence (Moorman, Deshpandé, and Zaltman 1993). It has been shown to positively impact expectation of continuity, word of mouth, customer loyalty, objective performance, cooperation, functional conflict, and reduce uncertainty, and can be fostered by shared values, communication, relationship benefits, dependence, relationship investments, expertise, and decreased opportunistic behavior (e.g., Morgan and Hunt 1994; Palmatier et al. 2006). Among other things, research has examined the trust at different levels of the organization (e.g., between firms, between firm representatives, etc.) (Fang et al. 2008), as well as how the buyer's

trust of supplier firm and supplier firm salespeople impacts purchase choice (Doney and Cannon 1997).

Other key factors in the buyer-seller relationship literature include dependence, power and influence or control. Each factor will be discussed briefly in the remainder of this section. Dependence refers to the value of resources one partner provides to another, for which few alternatives are available (Hibbard, Kumar, and Stern 2001; Kumar, Scheer, and Steenkamp 1995; Kumar, Scheer, and Steenkamp 1998), stemming from a lack of self-sufficiency (Pfeffer and Salancik 2003). It can positively affect commitment and trust (Palmatier et al. 2006), as well as impact the nature of response to a destructive act performed by a partner (Hibbard, Kumar, and Stern 2001). Scheer, Miao, and Garrett (2010) identify two types of dependence, cost-based and benefit-based) and find that benefit-based helps to impact relational loyalty while cost-based dependence increases insensitivity to competitive offers. The different pattern of effects for the two types of dependence indicate a potential need to study dependence as a multi-dimensional variable. Additionally, research has shown that dependence impacts organizational performance primarily through the quality of the relationship and cooperation (Scheer, Miao, and Palmatier 2014).

Other critical concepts such as power, influence, and control are all related to each other. Power has a long history in the literature on channel management (Gaski 1984) and refers to the ability one organization has to control or influence the behavior of another organization and can be generally categorized as coercive and non-coercive (Hunt and Nevin 1974). It includes multiple sources such as reward, expert, referent, and

legitimate that may interact with each other (Gaski 1986). However, much of the research on power has not distinguished between the firm's possession of power and its use of that power, or influence and control (e.g., Frazier and Antia 1995; Frazier and Summers 1984). As such, research has identified several general influence approaches – strategies that are based on altering perceptions regarding the intended behavior (such as information exchange and recommendations) and strategies that are not based on perceptual change (such as promises, threats, and legalistic strategies) (Frazier and Summers 1984).

Horizontal Cooperation – Collaborative Purchasing

The final type of cooperation in purchasing is horizontal, also known as collaborative purchasing. Although this form of collaboration has been around for many years, it has received relatively little attention in the literature (Schotanus and Telgen 2007). In this section, I define what collaborative purchasing is, discuss the benefits of collaborative purchasing, identify factors that are important for collaborative purchasing to be successful, and briefly discuss the evolution or development of purchasing groups. Finally, I discuss the different types of collaborative purchasing, followed by a description of the GPO, one form of collaborative third party purchasing that has gained wide-spread use throughout the U.S. healthcare system.

In a broad sense, collaborative purchasing indicates a relationship between two or more buyers in order to bring together (or pool) aspects of the purchasing function (Bakker, Walker, and Harland 2006; Bakker et al. 2008). In a more detailed sense, collaborative purchasing is defined as the joining together of two or more organizations

into a purchasing group through the sharing or bundling together of one or more of the following – purchase volumes, information, or resources (Schotanus and Telgen 2007). Collaborative purchasing is also known as group buying, collaborative procurement, cooperative purchasing, consortium purchasing, collective purchasing, joint purchasing, bundled purchasing, etc. (e.g., Cagnazzo et al. 2009). In comparison to cooperation in other areas, it is characterized by a larger possible membership, a greater possibility of dissimilarity between members, and a focus on the purchasing perspective (Schotanus and Telgen 2007). The practice of collaborative purchasing has gained much traction in industries such as food services, healthcare, retailing, and the public sector (such as educational and governmental systems) (e.g., Chen and Roma 2011; Nollet and Beaulieu 2003).

Benefits of Collaborative Purchasing. There are two primary categories of benefits related to collaboration, improving effectiveness and efficiency (Jost, Dawson, and Shaw 2005). The efficiency related benefits of collaborative purchasing stem from an ability to lower transaction costs and gain economies of scale through increased purchase volumes (Bakker et al. 2008). As such, the primary, and probably most sought after, benefit of collaborative purchasing is the ability to help lower costs through reduction in prices and other costs, such as administrative and logistical (Johnson 1999; Nollet and Beaulieu 2005; Tella and Virolainen 2005). The pursuit of cost reduction and control is an especially important benefit of collaborative purchasing as firms have faced the need to tighten operational budgets after the 2008 financial crisis (Gulati, Nohria, and Wohlgezogen 2010; Walker et al. 2013). It is generally believed that purchasing groups

can help generate savings between 10 and 15 percent (Nollet and Beaulieu 2005), although there may be a period of declining levels of cost savings (Johnson 1999).

However, there is more to the benefits of collaborative purchasing than simply the purchase price, as cooperative purchasing is about the pursuit of both purchase price and purchase process efficiencies (Aylesworth 2003). This indicates that although cost reduction is a primary motive behind collaboration in the purchasing realm, there are other benefits to be gained as well. These other benefits can come in the form of decreased workload, staff reductions, product and service standardization, and increased efficiencies in purchasing related processes (Aylesworth 2003; Johnson 1999). These increased efficiencies stem, at least in part, from the second category of benefits, effectiveness.

Effectiveness comes from the ability of organizations to learn from each other and more effectively utilize their resources (Bakker et al. 2008). This includes the sharing of expertise, skills, technology, and other resources available to one or more of the organizations (Jost, Dawson, and Shaw 2005). This provides the focal organization with access to better negotiation and contracting skills, flexibility in inventories, sharing of information regarding potential suppliers, synergy benefits from communication among members (e.g., Faes, Matthyssens, and Vandenbempt 2000; Tella and Virolainen 2005), improved quality and service, benchmarking or best practices (Aylesworth 2003), increased specialization in staff, and an expanded role of purchasing (Johnson 1999). In addition, access to this information and expertise provides the focal organization with the potential for increased knowledge about products and the marketplace, as well as access

to new and innovative technologies and solutions that are available (Kaldor, Kowalski, and Tankersley 2003; Neil 2005; Roark 2005)

Collaborative Purchasing Success. In order to gain the benefits observed above, there are two key factors that must be in place. First, purchasing groups must be managed properly. Schotanus, Telgen, and de Boer (2010) examined factors that led to successful management of purchasing groups. They found several factors that made a positive impact. For example, the most important success factor is “no enforced participation” indicating that participation and cooperating with the group is a completely voluntary decision. Other factors include cooperation of the group members, communication, commitment and internal support, common objectives, member influence, and appropriate allocation of both gains and costs.

Second, as with vertical collaboration, commitment is a key component to the success of horizontal collaboration. As such, Doucette (1997) investigates the factors that influence member commitment to purchasing groups. The author finds several factors that impact commitment. The most important factor is the commitment of other members, which speaks to the need for volume in order to secure the lower prices. Another factor positively impacting commitment is information exchange, including both individual needs and collective. Finally, suitability of alternatives had a negative impact on commitment, indicating that perceptions of alternative GPOs may influence a comparison that impacts commitment level.

In addition to the two key factors above, there are other factors that contribute to the success of collaborative purchasing. For example, in line with the findings of Morgan

and Hunt (1994), trust plays an important role allowing the organization to be willing to maintain the relationship over the long term (Jost, Dawson, and Shaw 2005). It also helps to foster commitment within the group (Doucette 1997). Other success factors include continuity of staff engagement, reconciliation of objectives, and team building (Jost, Dawson, and Shaw 2005).

Developing a Purchasing Group. Other research on collaborative purchasing has focused on how these collaborative groups are developed (e.g., Ellram 1995; Johnson 1999). For example, Ellram (1995) provides managerial guidelines for developing purchasing partnerships that includes five phases that partnerships must go through in order to be implemented. These phases include objectives related to identifying the need for partnership, identifying and screening potential partners, and establishing the relationship.

Nollet and Beaulieu (2003) develop a typology of how purchasing groups evolve that examines how eight different factors (such as nature of benefits, procurement strategy, nature of relationship with suppliers, structure, size, and relationships with members) change over the different phases of development (birth, growth, maturity and concentration). Taking things to a smaller, more detailed level, Schotanus et al. (2011) examine how purchasing groups develop at the early stages of their existence. They found that small scale problems tended to follow a pattern or path, but that organizations reacted to the problems in different ways.

Forms of Collaborative Purchasing. At its basic level, there are two forms of collaborative purchasing: member-owned (informal and virtual organizations) and third-

party (formal separate organizations) (Bakker, Walker, and Harland 2006; Bakker et al. 2008). In examining these two broad categories, Bakker, Walker, and Harland (2006) identified eight factors that may impact which of the two forms ultimately takes shape in a given circumstance. These factors include the size of the group (or number of members), the length of time the collaboration has been in existence, size differences among members, geographical scope of the members, differences and similarities in member requirements, procurement maturity, intensity of collaboration, and the number of shared activities among the group. Other factors may include technology and environmental factors.

At a deeper level, there are several forms that can be found as variations between the two basic types. For example, Schotanus and Telgen (2007) identify five forms of cooperative purchasing. First, piggy-backing, is an informal form of cooperative purchasing which has a goal to keep cooperation simple. Most often a larger organization negotiates the contract and a smaller one is allowed to use that contract. Second, third-party groups, is a long-term form of piggy-backing set up by external groups (either member owned or not). Third, lead buying groups, involve organizations outsourcing the functions of purchasing to another member of the group, usually the one most suitable for that particular function. Fourth, project groups, is intensive. It is usually set up for a one time project in order to learn from other members of the group while solving a common problem. Finally, program groups involve members of management teams of each of the member organizations that jointly influence decisions. There are other variations in the types of collaborative forms that can exist. For example Bakker et al. (2008) identify

seven types, splitting third party collaborators into third party advisory and third party purchasing.

The third party collaborators form of collaborative purchasing is the primary focus of the current research. This form of collaborative purchasing involves a third party that has the ability to do the actual procurement for its members. The third party can either be private (formed by a team of representatives from each member organization) or public (completely independent group of individuals) (Bakker, Walker, and Harland 2006; Schotanus and Telgen 2007). It can be either for-profit or non-profit, but typically focuses on aggregating volume for its members and providing purchasing services and expertise that the individual firms may not otherwise have access to. Third party collaboration does not require member organizations to communicate with each other, nor do the members have to be highly involved with each other, they only need to have a relationship with the third party collaborator (Schotanus and Telgen 2007). One primary example of a third party collaborator is the GPO.

Group Purchasing Organizations. Group Purchasing Organizations are third party collaborators that are either independent or member owned, for-profit or non-profit. GPOs have a long history, dating back as early as the 1800s and growing rapidly in the 1970's and 1980's in response to pressure on organizations to reduce costs (Hu, Schwarz, and Uhan 2012). GPOs play a significant role in the healthcare industry, with over 90% of the healthcare systems in the U.S. belonging to at least one GPO (Neil 2005). In addition, approximately 72–80% of hospital purchase costs (acute-care settings) are

processed through a GPO, with over 85% of those surveyed pushing 50% or more through their GPOs (Hu and Schwarz 2011).

According to a statement by the U.S. General Accounting Office (GAO) (2002), GPOs provide medical devices and other supplies to hospitals utilizing volume purchasing as a leveraging tool to negotiate lower prices from suppliers. They function by charging fees to suppliers based on the amount of hospital purchases made using GPO contracts. These fees may then be shared with member organizations in the form of rebates or other discounts. However, hospitals and GPOs are not the only ones to receive benefits. According to Rodriguez (2009), suppliers also see benefits in the form of increased revenue and decreased sales and marketing costs.

GPOs have been found to be effective at lowering prices, primarily when a high percentage of members participate and there are written contracts in place among the members (Cleverley and Nutt 1984). Group buys are the primary means utilized to lower prices. These group buys result from the interaction of hospital employees, GPO staff, and vendors as GPOs are able to aggregate the volume of equipment, supplies, and services needed and negotiate lower prices for the hospital members (Rodriguez 2009) by promising a certain level of volume to the individual supplier (Roark 2005). GPOs may also work with vendors to bundle similar items into sets of products. However, with this guaranteed level of volume and bundling of products often comes a concern over the variety of products available. It may be seen to limit hospital choice and flexibility in the purchasing function (Roark 2005).

However, not all GPOs are the same, and some offer different pricing and contract structures (providing flexibility and choice), while others may differ in the value-added services they offer (Kaldor, Kowalski, and Tankersley 2003; Malloch 2001). The entire process is very competitive, as there are more than 25 GPOs that represent over 6,000 hospitals and healthcare organizations in the U.S. (Malloch 2001). As such, GPOs utilize these pricing structures and value-added services to separate themselves from the rest of the pack. This is where evaluating a GPO becomes an important aspect of the member process.

How do GPOs differ? One of the primary ways is through the availability of custom contracting, which allows the negotiating skills of the GPO to be utilized in a local situation (Page 2007). Custom contracting can help provide flexibility and potentially increase savings for healthcare systems, however not all GPOs are on board. Some GPOs fear that custom contracting takes away from the effectiveness of contracting in general (Page 2007). Another difference is the level of support provided by the GPO. For example, some GPOs are highly involved in providing support, such as education, onsite personnel, vendor support, and benchmarking; other GPOs may never be seen by their member organizations (Meyer 2007).

Conclusion

Although extant literature has identified the primary categories of collaborative purchasing, with third party collaborators being one, it has not examined the differences in how organizations choose to participate with the third party collaborator. The differences highlighted above related to GPO flexibility, pricing, and value-added

services provides the healthcare organization with many alternatives, both in terms of utilizing specific GPOs and in terms of the manner in which they participate. These differences and alternatives makes this an interesting context in which to study how organizations participate with third party collaborators as a collaborative form of purchasing.

CHAPTER THREE – COLLABORATIVE PURCHASING – ANTECEDENTS AND CONSEQUENCES OF COLLABORATION TYPES –

OBJECTIVES OF THE CHAPTER

The primary purpose of this chapter is to understand the antecedents and consequences of collaboration types. As such, I first investigate the drivers and conditions that drive organizational collaboration types for its purchasing as it relates to participating with a third party collaborator (such as a GPO). Specifically, different forms of purchasing emphases are explored, as are conditions that impact the effects of purchasing emphasis, such as resource dependence management factors. Secondly, I examine how the two collaboration types (*transactional* and *strategic*) impact a purchasing organization's performance through purchasing effectiveness and purchasing efficiency. In addition, conditions that may affect the relationship between collaboration type and purchasing effectiveness and purchasing efficiency are explored. The chapter will be organized as follows. First, I briefly discuss the theoretical background, resource dependence theory. Next, I highlight the conceptual background, and present the full conceptual model. Then, I discuss the antecedents to collaboration type along with a detailed set of hypotheses. Finally, I discuss the consequences of collaboration type and provide a detailed set of hypotheses.

THEORETICAL BACKGROUND

The resource dependence theory (RDT) provides the theoretical background for the current research. RDT provides an explanation for interorganizational collaboration (Yan and Dooley 2014) and adds insights related to alliance terminations (Cui 2013),

interfirm governance (Heide 1994), and how interorganizational teams may help to increase operational effectiveness (Stock 2006). I believe it can also help bring further understanding to the use of different collaboration types when working with a third party collaborator such as a GPO.

The basic premise of RDT is the idea that purchasing organizations are rarely self-sufficient in regards to their critical resources and are therefore dependent on external sources for supply (Pfeffer and Salancik 1978). This dependence on other organizations creates a sense of uncertainty in decision making, as a purchasing organization's resource flows are not under the firm's control and lack predictability (Heide 1994). This results in a struggle for autonomy and discretion, as firms are confronted with the constraints of external control (Pfeffer and Salancik 1978). One way to manage this dependence, and ensure procurement of those critical resources, is to deliberately shape exchange relationships through links with other organizations (Chatterjee and Ravichandran 2013; Heide 1994; Pfeffer and Salancik 1978).

Given involvement with and dependence on external organizations, the purchasing organization has several options available to it. For example, purchasing organizations can attempt to comply with the demands of others, or they may take a more noncompliant approach and try to manage their dependence on others (Pfeffer and Salancik 1978). The noncompliance route has some benefits, such as maintaining discretion over decision making and flexibility in adapting to new opportunities that arise (Oliver 1991). Purchasing organizations can manage dependence in several ways. If the exchange is critical to the purchasing organization, it can attempt to extend its own

control into that area and alleviate the felt dependence. Alternatively, the purchasing organization might try to change its dependence by creating a situation in which the other organization becomes more dependent on it, creating a sense of interdependence (Pfeffer and Salancik 1978).

CONCEPTUAL BACKGROUND

Prior literature on interorganizational relationships has focused predominately on buyer-seller relationships. A review of this literature brings two important facets of relationships to the forefront that are worth keeping in mind when conceptualizing collaboration types in the context of purchasing organizations and third party collaborative purchasing. First, are the factors that are important for how organizations relate to one another. For example, commitment and trust are viewed as important relational factors that impact relationship quality and performance (e.g., Morgan and Hunt 1994; Palmatier et al. 2006). Research has also identified six relationship connectors that help identify how buyer-seller organizations are linked. These connectors are: 1) information exchange (expectation of open sharing of information), 2) operational linkages (such as organizational systems, procedures, and routines), 3) legal bonds (use of binding and detailed contractual agreements), 4) cooperative norms (working together to meet mutual goals), 5) relationship-specific adaptations by the seller, and 6) relationship-specific adaptations by the buyer (Cannon and Perreault Jr 1999). Organizations can also vary on how they govern their relationships, from market exchanges, to unilateral and bilateral exchanges (Heide 1994).

Second, buyer-seller organizations can utilize different types of relationships or be in different stages of relationship development. For example, Cannon and Perreault Jr (1999) find that organizations vary significantly on the six relational connectors they identified. As a result, the authors identify eight specific relationship types based on these varying levels. Other research has shown that organizations can utilize either discrete exchanges (one time purchases with little communication and no relational elements) or relational exchanges (longer-term purchases based on trust, planning, and other implicit and explicit assumptions) (Dwyer, Schurr, and Oh 1987). These relational exchanges evolve over time through a series of stages from awareness to commitment or possibly dissolution, with each phase providing key transitions and changes in how buyers and sellers relate to one another.

The buyer-seller relationship literature provides the starting point for the conceptualization of the collaboration types between purchasing organizations and third party collaborators (i.e., GPOs). It is important to note that the context of collaboration between purchasing organizations and these third parties is different from that of a single buyer-seller relationship in several important ways. First, a third party collaborator works with many members who are joined together for the common goal of creating purchasing volumes that can be leveraged to negotiate better prices from suppliers (e.g., Schotanus and Telgen 2007). This acts as a mechanism by which purchasing organizations begin to balance their dependence upon suppliers. Second, the third party helps to create a sense of community among purchasing organizations by creating opportunities for purchasing organizations to come together, discuss issues, work together, and learn from each other.

Finally, the third party organizations provide an increased level of knowledge dissemination by passing on information related to the market and a multitude of various suppliers and products.

Collaboration Types

In order to more fully understand the types of collaboration purchasing, I began with qualitative fieldwork. Interviews were conducted with 13 purchasing (or materials) managers of hospitals across the United States and with two GPO employees. Respondents were asked about the nature of their organization's relationship with their primary GPO, how GPO participation impacts the purchasing function, and the primary benefits of being part of a GPO. The findings from the qualitative fieldwork², along with the literature, helped in conceptualizing collaboration type.

For purposes of this research, I conceptualize *collaboration type* as the way that a purchasing organization participates and works with a third party collaborators (such as a GPO) for the purposes of collaborative purchasing. Similar to prior research (e.g., Cannon and Perreault Jr 1999; Heide 1994), I first identify the primary dimensions to collaboration inherent in the third party collaborative process. Through both the literature and qualitative fieldwork, I identify three such dimensions: 1) the *process* of collaboration, 2) the *maximization* goals of collaboration, and 3) *relational* aspects of collaboration.

The first dimension, *process*, has been discussed by Dwyer, Schurr, and Oh (1987) as an important set of factors that differentiate between the use of discrete versus

² The findings of the qualitative fieldwork are available in the Appendix A on page 171

relational exchanges. For instance, in the context of collaborative third party purchasing (such as with a GPO), process relates to the third party collaboration process and how the purchasing organization selects products and suppliers. This can either take the form of a more transaction by transaction approach, seeking to select products and suppliers for each purchase made. Or it can take the form of a more global approach, seeking to work with GPOs through GPO committees and providing feedback to GPOs to ensure that they are able to obtain the right products and suppliers.

The second dimension, *maximization*, focuses on how purchasing creates value for the purchasing organization through a focus on specific factors of the process. This dimension identifies the focus of the purchasing department and how that focus relates to the GPO process. For example, one organization may be focused on value-maximization, ensuring every purchase is at the lowest price possible or providing the most value for each purchase. Another organization may focus more on group-maximization. Group maximization occurs when organizations are willing to take a financial hit in the current period in order to stay on contract with the GPO for the purposes of aggregate spend knowing that in the long-run the group will be better off for it.

The final dimension, *relational*, focuses on how the purchasing organization relates to its GPOs. It indicates a level of commitment the purchasing organization has with the third party collaborator. Commitment is an important factor in interorganizational relationships and can impact both cooperation and the propensity to leave the relationship (Morgan and Hunt 1994). In the current context, commitment has several forms, such as being committed to the third party collaborator process, committed

to purchasing on contract, and committed to working with the third party collaborator to meet their mutual goals. Qualitative interviews indicated that some organizations were fully committed to their GPOs while others were not “wholeheartedly in it.” Some organizations view their GPOs as strategic partners, while others take more of an “arms-length” approach to the relationship.

These three dimensions of collaboration (i.e., process, maximization, and relational) were utilized to conceptualize two distinct collaboration types: 1) *transactional* and 2) *strategic*. Both collaboration types exhibit unique properties across the three dimensions, and are summarized in Table 1. For example, transactional and strategic collaboration types have a different focus of participation with third party collaborators. Transactional collaboration focuses more on the search process and selecting suppliers and contracts for each new search project, while strategic collaboration focuses more on involvement at the third party collaborator level and being involved in helping to select the vendors that are subsequently contracted with that third party collaborator. The two collaboration types are briefly described next.

The first collaboration type, *transactional collaboration*, utilizes a transaction by transaction approach (with the same or different third party collaborators) for each new purchase project and seeks to maximize the economic return on each transaction for the purchasing organization. Purchasing organizations utilizing *transactional collaboration* attempt to cope with dependencies on suppliers and third party collaborators by being as independent as they can be while still utilizing the third party collaborators for purposes of information and initial benchmarking. This results in a relatively low commitment to

the third party collaborators and a more “arms-length” approach. They also attempt to use affiliation with third party collaborators to influence suppliers through further negotiation, using the third party contract as a benchmark (or place to start negotiations). They deal with their own dependency on the third party by utilizing multiple collaborators, cherry picking contracts / transactions, and attempting to stay more independent.

Table 1
Collaboration Types

	Process	Maximization Goals	Relational
Definition	Relates to how the purchasing department selects products and suppliers.	Refers to how the purchasing organization creates value through a focus on price, contract compliance, etc.	Refers to the primary way in which an organization relates to its GPO.
Transactional	<ul style="list-style-type: none"> ▪ Focused toward an individual transactional level ▪ Selects contracts on a transaction by transaction basis to get the right products and suppliers 	<ul style="list-style-type: none"> ▪ Driven by economic value-maximization on each purchase through GPOs ▪ Searches for lowest price possible for each transaction 	<ul style="list-style-type: none"> ▪ Maintains “arms-length” relationship ▪ Low commitment to GPO ▪ Low dependence on any one GPO
Strategic	<ul style="list-style-type: none"> ▪ Focused toward the GPO level ▪ Participates in GPO committees and provides feedback to GPOs to ensure they are able to obtain the right products and suppliers 	<ul style="list-style-type: none"> ▪ Driven by group-maximization ▪ Focus on contract compliance to ensure aggregate spend, even if it means a financial hit now for benefit in the longer term 	<ul style="list-style-type: none"> ▪ Sense of strategic partnership – not just with GPO, but possibly with all members ▪ Higher commitment to and dependence on GPOs

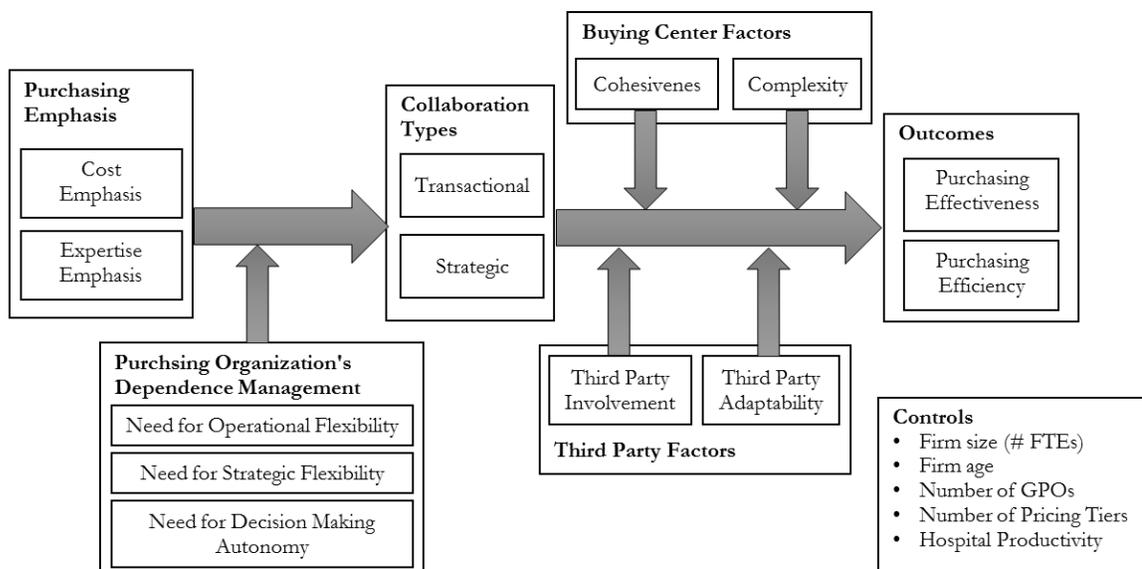
The second collaboration type, the *strategic collaboration*, utilizes a long-term strategic approach wherein purchasing organizations are highly involved in the

collaboration process and seek to build strategic relationships with one primary third party collaborator. Purchasing organizations utilizing *strategic collaboration* cope with dependencies on the suppliers by becoming involved in the third party collaborator aggregate spend and becoming a “larger organization” in the eyes of the supplier. As a result, purchasing organizations utilizing *strategic* collaboration tend to be high on commitment to the collaborator. These purchasing organizations cope with their high dependency on the collaborator by becoming a partner, sitting on their boards, etc. and making the third party collaborator more dependent on them in some way, thereby creating a sense of interdependence.

Conceptual Model

Building on the RDT and the two purchasing collaboration types (*transactional* and *strategic*) identified through both the literature and the qualitative fieldwork, I conceptualize a model of the antecedents and consequences of collaboration types. The antecedent portion of the model examines drivers of collaboration types and includes conditions that enable purchasing organizations to go with one type or another. The consequences part of the model examines how collaboration type impacts purchasing performance (purchasing effectiveness and purchasing efficiency). The relationship between collaboration type and purchasing performance is likely to be impacted by both buying center factors and third party factors. As such, included in the model are both the main effects of collaboration type and the conditional effects of both buying center and third party factors on purchasing performance. The full model is illustrated in Figure 1.

Figure 1: Conceptual Model of Collaboration Types



ANTECEDENTS OF COLLABORATION TYPE

The primary driver of collaborative purchasing is identified as the overarching *purchasing emphasis* of an organization. There are two such emphases, *cost emphasis* (focus on cost control and reduction) and *expertise emphasis* (focus on pursuit of product, market, and supplier knowledge and expertise). I argue that the organization's purchasing emphasis impacts the way in which an organization engages the third party collaborator.

However, the effect of purchasing emphasis on collaboration type is contingent on several moderating conditions. As such, following a review of the RDT, extant literature on third party collaborators and GPOs, and qualitative fieldwork, I include dependence management factors as key moderators. The dependence management factors are *need for operational flexibility* (ability to adapt to day-to-day operational changes), *need for strategic flexibility* (ability to adapt to long-term environmental changes that have significant impact on the organization), and *need for decision making autonomy* (extent

to which the purchasing organization seeks to maintain control over purchasing related decisions). These dependence management factors impact collaboration type by affecting how a purchasing organization is likely to respond to external control and attempt to manage dependence.

HYPOTHESES – ANTECEDENTS OF COLLABORATION TYPE

Purchasing Emphasis

An organization's purchasing emphasis indicates what the purchasing organization believes is the highest priority or focus in relation to the purchasing function. It can help to drive the purchasing organization toward a type of collaborative purchasing. However, it also helps to direct the manner in which the purchasing organization will interact with the third party collaborator by focusing organizational (and purchasing) attention on those aspects of collaboration that it deems to be most important (Ocasio 1997). Findings from qualitative fieldwork indicate that there are two primary emphases: cost emphasis and expertise emphasis.

The first purchasing emphasis is cost emphasis. *Cost emphasis* is defined as the extent to which the purchasing organization places a high priority (or emphasis) on the goal of cost control and cost reduction in the purchasing function. Cost reduction was highlighted frequently in the qualitative fieldwork as both a reason to join a GPO and a reason to switch GPOs. In addition, in this context many organizations indicated that given the current status of the healthcare industry, hospitals would not survive without continually finding ways to reduce the costs of supplies and other services, which can account for a significant amount of a hospital's operating budget (Roark 2005).

However, there are two primary ways in which a purchasing organization can attain the goal of cost reduction and control by their purchasing function – through lower prices or process improvements (Aylesworth 2003). Highlighted frequently in the qualitative fieldwork, these aspects of cost emphasis were identified as two important ways in which the purchasing function has direct control over cost reduction. As such, I conceptualize the notion of cost emphasis as a higher order factor comprised of both price emphasis and process emphasis. *Price emphasis* is defined as the extent to which a purchasing organization places a high priority on reducing and controlling costs specifically through price reductions and price discounts. This emphasis indicates that the purchasing organization is constantly seeking the best prices and will do so in every circumstance it faces. *Process emphasis* is defined as the extent to which a purchasing organization places a high priority on reducing or controlling costs through improving purchasing processes. This could take the form of cleaning up errors in invoices, improving negotiating processes, and streamlining purchase requisition processes. Improvement in these types of processes will help to lower costs such as transaction costs and staff costs (through lower workloads and staff reductions).

As an overarching purchasing emphasis, *cost emphasis* impacts collaboration type by providing the purchasing organization with a specific and measurable goal in terms of continued cost savings. Purchasing organizations with high cost emphasis are focused on lowering costs in any way they can, and on every purchase they make. This is likely to lead the purchasing organization to go through purchases transaction by transaction in search for the lowest price, even if it means shifting between contracts to do so. Firms

with a high cost emphasis are also likely to be concerned with improving processes, specifically those related to negotiating and purchase requisition processes, in order to further reduce costs. As such, a purchasing organization with a cost emphasis is likely to be positively related to a transactional approach to collaboration as it allows the purchasing organization to focus on economic value-maximization while utilizing the third party collaborator to provide services such as benchmarking from which it can seek to further reduce prices. Additionally, a purchasing organization with a cost emphasis is negatively related to a strategic collaboration type as the strategic approach may not be as consistent at delivering on costs savings, and may end up actually costing more with the purchasing organization paying higher fees for pursuing other value added services that under the transactional type would not be pursued. Therefore, I propose:

H1: *A purchasing organization emphasis on cost is (a) positively related to the use of a transactional collaboration type, and (b) negatively related to the use of a strategic collaboration type.*

The second purchasing emphasis, *expertise emphasis* is defined as the extent to which a purchasing organization places a high purchasing priority or emphasis on increasing access to expertise related to product markets, suppliers, and the environment. It indicates that a purchasing organization is focused more on understanding the marketplace and current trends, than on cost reduction itself, as they may be willing to pay more for these services. When working with a third party collaborator, a purchasing organization can gain access to information such as evaluations of new (or more sophisticated) supplies and equipment that enter the marketplace that it may not otherwise have had access to (Roark 2005). Expertise can also come through access to

education programs (Kaldor, Kowalski, and Tankersley 2003) or empirical evidence that help clinical staff understand the differences in products and make better product choices (Neil 2005). According to the results of the fieldwork, expertise can also come in the form of product safety information that a third party collaborator may have more ready access to than the purchasing organization has.

Expertise emphasis helps to drive collaboration type by providing a purchasing organization with a focus on increasing access to information and services that can help to improve its ability to make the right choices. Purchasing organizations with high expertise emphasis are likely to be more involved in the third party collaborator process, such as sitting on committees, that allow them more direct (and timely) access to product market and supplier information. These purchasing organizations are also more likely to take advantage of many of the value-added services a third party collaborator offers, such as education and training. As the purchasing organization is also focused on need recognition and solution provision, it is likely to look toward the third party collaborator as a strategic partner and build a relationship that allows the third party collaborator to understand the internal working of the purchasing organization that enable it to provide alternative solutions that are of benefit to the purchasing organization. As such, a purchasing organization's focus on expertise emphasis is likely to be positively related to the usage of a strategic collaboration type. On the other hand, this emphasis on expertise emphasis is likely to be negatively related to the usage of a transactional collaboration type. Transactional collaboration involves using multiple third party collaborators, conducting transaction by transaction searches, and has a focus on value-maximization,

all of which create a situation in which the purchasing organization would not be willing to pay the higher fees necessary for pursuing the other value added services that come with an expertise emphasis. Hence, I propose:

H2: *A purchasing organization emphasis on expertise is (a) negatively related to the use of a transactional collaboration type, and (b) positively related to the use of a strategic collaboration type.*

Moderators

Purchasing organizations are faced with a situation of dependence on their suppliers for many of their needed supplies and equipment. With inflationary pressures on the cost of acquiring these supplies and equipment (Neil 2005; Rodriguez 2009), their dependence only grows. To alleviate dependence on suppliers and deal with this rise in cost, many purchasing organizations are turning to third party collaborators (such as GPOs) for help. This potentially leaves the purchasing organizations in a situation of dependence on the third party collaborator. For example, the purchasing organization relies on the third party collaborator for help with price and contract negotiations and ensuring a low price through aggregate spend. As such, purchasing organizations are likely to find different ways to alleviate, or deal with, this new form of dependence.

Therefore, one objective of this research is to identify the conditions that may impact the collaboration consequence of a cost/expertise emphasis in purchasing.

Through both qualitative fieldwork and literature review, a set of dependence management factors emerged as potential moderators. These factors are those that dictate or influence how a purchasing organization manages its day-to-day operations and dependence on suppliers and other related organizations. It includes the need for

operational flexibility, the need for strategic flexibility, and the need for decision making autonomy. When purchasing organizations are faced with changes in the operational environment, they may seek both the ability to maintain control over their decision making process and the flexibility to adapt to the changes in the environment (Oliver 1991) in order to meet their goals and objectives. The remainder of this section outlines the hypotheses related to these three conditional factors.

Need for Operational Flexibility. Operational flexibility relates to a purchasing organization's ability to deal with or adapt to short-term variations in demand, labor, raw material shortages, or equipment failure (Fredericks 2005; Galbraith 1990). Strategies related to operational flexibility call for quick adjustments by selecting from a variety of day-to-day processes and plans (Fredericks 2005). Operational flexibility helps a purchasing organization to improvise and decrease the amount of time it takes to plan and implement strategies and changes (Johnson et al. 2003). It also helps to determine the speed and cost of response (Sethi and Sethi 1990). In the context of collaborative purchasing, *operational flexibility* is defined as the extent to which the purchasing organization has the ability to improvise and adapt to day-to-day changes in operations. A firm that has a high *need for operational flexibility* is faced with uncertainty in environmental demands and has the need to be able to react quickly, make adjustments, and improvise in relation to its daily operations.

A purchasing organization with a high emphasis on cost is focused on reducing costs in whatever way possible, for every purchase that is made. When a purchasing organization with a cost emphasis faces conditions of high need for operational

flexibility, it is likely to take a transaction by transaction approach in its collaboration, allowing it to maintain the ability to reduce costs, while increasing the ability to react quickly to operational changes. As an organization starts a new search for each purchase project it encounters, the organization has the ability to shift suppliers, products, and other factors (such as purchase terms) as daily operations require. This serves to reduce dependence on suppliers and related third party collaborators by allowing the organization to take control of the purchasing process (Pfeffer and Salancik 2003). These organizations (with high need for operational flex and a focus on cost emphasis) are also likely to seek to utilize multiple third party collaborators in order to enhance operational flexibility (and reduce dependence) while maintaining a cost reduction focus. As such, this is likely to strengthen the relationship between cost emphasis and the extent of the use of a transactional approach. However, as the need for operational flexibility goes up, the impact of cost emphasis on strategic collaboration gets worse because in addition to cost savings, the purchasing organization also needs to be flexible. A strategic approach is less able to be flexible and shift from process to process, or supplier to supplier, even when day-to-day operations require, because of its reliance on a single primary third party collaborator and its desire to be as contract compliant as possible. As such, I hypothesize:

H3: *The greater the need for operational flexibility, (a) the stronger the positive relationship between cost emphasis and the use of a transactional collaboration type, and (b) the stronger the negative relationship between cost emphasis and the use of a strategic collaboration type.*

A purchasing organization with a high expertise emphasis is driven by a focus on increasing access to information and other services that help to improve its ability to

make decisions. However, when the purchasing organization also faces a high need for operational flexibility it creates a situation of potentially conflicting needs or goals. An expertise emphasis is likely to drive the purchasing organization to develop stability and seek relationship with a single primary third party collaborator in order to increase understanding of the marketplace and other strategic aspects of purchasing. High need for operational flexibility, however, brings concerns about short-term fluctuations in demand, labor, and other operational activities (Fredericks 2005; Galbraith 1990) which requires the ability to adapt and improvise in the purchasing function. These potentially conflicting goals are likely to drive the purchasing organization to put more effort into a collaboration type that best allows both goals to be met. At the same time, the organizational need for operational flexibility is likely to outweigh the purchasing emphasis on expertise because operational activities are the backbone of the purchasing organization. Without the ability to adapt to fluctuations related to operational activities, the purchasing organization would be less able to meet its overall goal of providing services to its customers (e.g., Carlsson 1989; da Silveira 2006). The increased focus on operational flexibility is likely to attenuate the negative relationship between expertise emphasis and the use of transactional collaboration as the flexibility of the transactional approach makes it a not so undesirable approach under the need for operational flexibility. At the same time, the high focus on operational flexibility is likely to weaken the positive relationship between expertise emphasis and the use of strategic collaboration as this approach is less able to meet the organizational need for operational flexibility.

H4: *The greater the need for operational flexibility, (a) the weaker the negative relationship between expertise emphasis and the use of a transactional collaboration type, and (b) the weaker the positive relationship between expertise emphasis and the use of a strategic collaboration type.*

Need for Strategic Flexibility. Strategic flexibility relates to the organizational ability to adapt to the substantial and uncertain changes in the environment that have the ability to impact organizational performance in a meaningful and significant manner (Aaker and Mascarenhas 1984). It is initiated as a response to changing technologies and market opportunities and requires a purchasing organization to develop a clear set of strategic options related to competitive advantage while meeting organizational goals and objectives (Fredericks 2005). It also allows the purchasing organization to pursue both alternative courses of action and a variety of strategic options at the same time (Kortmann et al. 2014). It has also been examined in the context of strategic alliances through actions of both modification and exiting alliances (Young-Ybarra and Wiersema 1999).

Strategic flexibility is usually built through a flexible resource pool or a portfolio of strategic options that enable the organization to adapt to and manage uncertain markets (Grewal and Tansuhaj 2001). Strategic flexibility allows purchasing organizations to better manage their dependence by providing it with the ability to adapt to changes in the environment which can help alleviate some of the uncertainty and unpredictability in the market (Heide 1994). It also helps a purchasing organization to manage its strategic relationships which can further help control its dependence (Chatterjee and Ravichandran 2013). In the context of collaborating through third party collaborators, *strategic flexibility* is defined as the extent to which a purchasing organization has the knowledge and ability to create a set of options that allow it to adapt to changes in the marketplace

that impact its competitive advantage and strategic goals. A firm with a *need for strategic flexibility* understands the impact that changes to the marketplace can have on the performance of the purchasing organization and seeks to develop the ability to adapt to these changes.

A purchasing organization with a cost based purchasing emphasis is likely to seek to reduce costs on a transaction by transaction basis, however, when the need for strategic flexibility is high, this purchasing organization is faced with a dilemma. As such, the purchasing organization is likely to put more efforts into a collaboration type that will allow it to build a relationship with a third party collaborator and gain access to the technology, increased knowledge, and marketplace solutions that provide it with the ability to be strategically flexible. In addition, purchasing organizations with a need for strategic flexibility are likely to be more involved in the collaborative process at the third party collaborator level by participating in committees and giving input to supplier choice and contracts. This further enables the firm to obtain information related to the market that will help it to understand the options available to it. It also allows the purchasing organization to exercise a level of dominance over the third party collaborator by creating a situation of interdependence between the third party collaborator and the purchasing organization (Pfeffer and Salancik 2003). As such, a high need for strategic flexibility is likely to weaken the positive relationship between cost emphasis and the use of a transactional collaboration as the focus shifts from the individual transaction to a focus on understanding the marketplace. At the same time, the need for strategic flexibility is likely to attenuate the negative relationship between cost emphasis and the use of

strategic collaboration as the need for marketplace information and strategic partners may offset the focus on cost reduction. Therefore, I propose:

H5: *The greater the need for strategic flexibility, (a) the weaker the positive relationship between cost emphasis and the use of a transactional collaboration type, and (b) the weaker the negative relationship between cost emphasis and the use of a strategic collaboration type.*

A high expertise emphasis is focused on increasing access to information and other services that help the purchasing organization improve its ability to make the right product choices. When a purchasing organization has a purchasing emphasis on expertise, and also has a high need for strategic flexibility, it does not face the same dilemma as an organization with a cost emphasis. The expertise emphasis and need for strategic flexibility are synergistic motivations, because the drive to increase expertise related to products and markets provide the knowledge and ability the firm needs to be strategically flexible. This is likely to focus the purchasing organization on building the strategic partnership and allowing it to gain access to knowledge and insight on the marketplace. Although, prima facie, one might argue that building a strong relationship with a third party collaborator inhibits flexibility, it may actually allow the purchasing organization and third party collaborator to jointly get to know each other and increase the amount of information that is shared, thereby increasing the ability to make strategic decisions and see alternative product/market solutions. Therefore, when the need for strategic flexibility increases, the positive effect of expertise emphasis on the utilization of a strategic collaboration type increases as well. However, the high need for strategic flexibility focuses the organization on that strategic partnership with the third party

collaborator which is likely to exacerbate the negative relationship between expertise emphasis and the use of transactional collaboration. Therefore, I posit:

H6: *The greater the need for strategic flexibility, (a) the stronger the negative relationship between expertise emphasis and the use of a transactional collaboration type, and (b) the stronger the positive relationship between expertise emphasis and the use of a strategic collaboration type.*

Need for Decision Making Autonomy. The resource dependence theory states that organizations either comply with demands and requirements of other organizations, or they seek to manage the dependencies that constrain organizational action (e.g., Drees and Heugens 2013; Hillman, Withers, and Collins 2009; Pfeffer and Salancik 2003). This can create a struggle for autonomy in decision making and a quest for stability and certainty in resource exchanges. In the context of group purchasing, *need for decision making autonomy* is defined as the extent to which the purchasing organization seeks to shape or control its environment and maintain discretion over decision making related to the purchasing function. A critical task the purchasing organization is faced with is reducing the other organization's discretion while maintaining alignment with its own goals and interests (Pfeffer and Salancik 2003).

A purchasing organization that emphasizes a cost emphasis and has a high need for decision making autonomy has a greater need for control over decisions that directly impact the goal of cost reduction. As such, the purchasing organization is likely to put more efforts into a transaction by transaction approach in order to process decision making through a focus on value-maximization and cost reduction. This will result in an attempt to decrease reliance on the single exchange (or single third party collaborator) through a process of cherry picking contracts and utilizing multiple third party

collaborators. As such, this is likely to enhance the positive relationship of cost emphasis on the use of transactional collaboration. In addition, a high need for decision making autonomy focuses the purchasing organization on making decisions that are most beneficial to the organization, whether those decisions result in contract compliance or not. As such, this is likely to pull the organization further away from a strategic approach and thereby exacerbate the negative relationship between cost emphasis and the use of strategic collaboration. Therefore, I propose:

H7: *The greater the need for decision making autonomy, (a) the stronger the positive relationship between cost emphasis and the use of a transactional collaboration type, and (b) the stronger the negative relationship between cost emphasis and the use of a strategic collaboration type.*

When an organization has an expertise emphasis, it focuses on building a strategic partnership with its third party collaborator in order to gain access to market information. However, a higher need for decision making autonomy is likely to shift this focus. When the need for decision making autonomy is low, the purchasing organization is likely more willing to give up some autonomy and control to seek out and listen to the expertise of the third party collaborator, especially when that information is of importance to the purchasing organization (e.g., Pfeffer and Salancik 1978). However, when the purchasing organization has a high need for decision making autonomy, it has a high need to control decisions related to the purchasing function (such as supplier and product choice) because it does not want to be dictated to, especially in relation to current and future product choices. Purchasing organizations, by their very nature, have some base level of expertise and are likely to believe they can pull off the correct decisions, especially when their need for decision making autonomy is high. As such, a high need for decision making

autonomy is likely to weaken the negative relationship between expertise emphasis and the use of a transactional approach in order for the organization to increase its ability to maintain discretion over its decisions. It is also likely to weaken the positive relationship between expertise emphasis and the use of a strategic approach. Therefore, I propose:

H8: *The greater the need for decision making autonomy, (a) the weaker the negative relationship between expertise emphasis and the use of a transactional collaboration approach, and (b) the weaker the positive relationship between expertise emphasis and the use of a strategic collaboration approach.*

CONSEQUENCES OF COLLABORATION TYPE

The significance of purchasing to overall firm performance makes it important for managers to understand how different purchasing approaches can be effective and / or efficient (Janda and Seshadri 2001). However, as Janda and Seshadri (2001) note, purchasing performance has been primarily measured with accounting metrics and ratios such as purchasing operating expense to sales revenue. Although these are good measures, a purchasing department has the choice to focus on either efficiency or effectiveness, or attempt to do both. The concern with the latter approach is that these two performance measures may not converge, and may even have opposing forces in the short run which may lead to differential effects between these two focuses (Vorhies and Morgan 2003).

Additionally, in general, organizational effectiveness has been described as an external standard that reflects the organization's ability to produce acceptable outcomes and actions, and is viewed as an assessment of how useful the firms actions and outcomes are to those external to the organization (Pfeffer and Salancik 1978). Another, somewhat

related, view is that effectiveness relates to the extent to which organizational goals are met (Vorhies and Morgan 2003). Effectiveness is typically defined through intangibles such as good supplier relations, and quality of items received (Janda and Seshadri 2001). As such, for the purposes of this study, *purchasing effectiveness* is defined as the degree to which organizational purchasing goals have been achieved. It reflects the extent to which the purchasing function is meeting organizational goals that may be impacted by collaboration with a third party collaborator such as quality of items, procuring items with the desired specifications, and achieving cost reduction goals.

Efficiency, on the other hand, is referred to as more of an internal standard of performance that reflects how well an organization is utilizing its resources (Pfeffer and Salancik 1978). It is often described as the ratio between organizational resources consumed (or inputs) and the outcomes achieved (Janda and Seshadri 2001; Vorhies and Morgan 2003). In this context, *purchasing efficiency* is defined as the ratio of purchasing inputs consumed to purchasing outcomes achieved. It is captured through items reflecting the extent to which organizations have been able to improve efficiency, such as reducing transaction costs and discrepancies.

In this section I examine how collaboration types impact both purchasing effectiveness and purchasing efficiency. In line with Vorhies and Morgan (2003), I believe there is likely to be differential effects between the two performance measures. However, as highlighted in the qualitative fieldwork, the effect of collaboration type on both purchasing effectiveness and purchasing efficiency is likely to be impacted by both buying center factors and third party factors. As such, I examine two buying center

factors, *buying center cohesiveness* (degree of familiarity and teamwork in buying center) and *buying center complexity* (degree to which buying center is composed of more individuals than is optimal) and two third party factors, *third party involvement* (degree to which third party is routinely involved in the purchasing organization's day-to-day operations) and *third party adaptability* (ability of the third party organization to be flexible to the needs of the purchasing organization).

Buying Center Factors. The buying center consists of all the members involved in the buying process within an organization (Webster and Wind 1972). Although there are general patterns of structure and participation across organizations, they are not likely to follow the same procedures (Johnston and Bonoma 1981). The structure of the buying center, along with the level of internal cooperation, can have a significant impact on purchasing performance, especially in conjunction with collaboration with a third party collaborator, due to both the complexity of the buying center and how well it works together.

Buying center cohesiveness is defined as the extent to which individuals within the buying center are familiar with each other, get along, and work as a team. It is comprised of two factors: *viscidity* and *familiarity*. *Viscidity* reflects the degree to which members of the buying center work together, as a team, and are not hostile to each other (Kohli 1989). When groups are highly viscid, they are able to work together in pursuit of the best possible decisions for the group and the organization (Kohli 1989) and have developed a sense of trust, respect, and cooperation (Venkatesh, Kohli, and Zaltman 1995). *Familiarity* is defined as the extent to which buying center members are familiar

with or known to each other (Kohli 1989; Venkatesh, Kohli, and Zaltman 1995). It captures the idea that group members have known each other for a long time, and know each other's likes and dislikes, and work patterns.

Buying center complexity is defined as the extent to which a purchasing organization's buying center is composed of more individuals than is optimal. Buying center complexity is based on the idea of extensivity. Extensivity is defined as the total number of individuals that are involved in and participate in the purchasing process (Johnston and Bonoma 1981). This research adopts a more relative measure of *extensivity*. As such, *buying center complexity* is defined as the extent to which the purchasing organization's buying center is composed of more individuals than is optimal. Complexity in a buying center can make the entire decision making and buying process more cumbersome and difficult for the team.

Third Party Factors. Third party factors may also impact the effect of collaboration type on purchasing effectiveness and purchasing efficiency. A third party is an outside organization through which the collaboration happens. One primary factor that was identified through qualitative fieldwork was third party involvement. In this context, *third party involvement* is defined as the extent to which the third party (in the case of this study, a GPO) is routinely involved in the purchasing organization's day-to-day purchasing operations. It captures the level to which the third party provides onsite personnel to help with questions and operational processes, helps the purchasing organization with vendor issues, and works with the purchasing organization to streamline processes, such as through the use of technology integration.

Another third party factor that impacts the relationship between collaboration type and purchasing effectiveness and purchasing efficiency is third party adaptability. *Third party adaptability* is defined as the extent to which the third party (in the case of this study, a GPO) is able to adjust to the needs of member organizations through actions such as custom contracting, or the allowance of off-contract spend. When a third party collaborator is low on adaptability, it presents a “one size fits all” approach to collaborative purchasing that is extremely structured. When high on adaptability, the third party collaborator is less structured and able to provide increased flexibility to the purchasing organization.

HYPOTHESES – CONSEQUENCES OF COLLABORATION TYPE

Transactional Collaboration Type

The *transactional collaboration* type is focused primarily on a transaction by transaction search on each new purchase in order to value maximize the return on each transaction. This purchasing approach likely includes trying to either circumvent the third party collaborator or use multiple third party collaborators in order to cherry pick contracts that can achieve the lowest price possible. Oftentimes this mean that the purchasing organization is utilizing the third party collaborator contract as a base point from which to further negotiate prices. As such, *transactional collaboration* is characterized by lower commitment and dependence on the third party collaborator.

Effectiveness

A purchasing organization utilizing a *transactional collaboration* approach is processing purchases on a transaction by transaction basis. This allows the buying center

the ability to identify the best course of action, such as the best product or supplier, for each individual purchase that the organization faces. As this takes place, the buying center has the ability to be flexible in order to select those products or suppliers that specifically meet organizational goals related to purchasing, such as quality and item specifications. In addition, by having the ability to be flexible the buying center is more able to utilize multi-sourcing which can help reduce stock-outs and other issues that may impact its ability to meet its goals. The transaction by transaction, value-maximization nature of transactional collaboration also provides the buying center with the ability to achieve cost savings in line with objectives. Therefore, transactional collaboration is likely to enhance purchasing effectiveness.

Buying center cohesiveness. Buying center cohesiveness allows the buying center to work together closely in order to make the best possible decisions for the group (Kohli 1989). It also allows groups to know best how to work with each other, and cultivates a sense of trust and cooperation (Kohli 1989; Venkatesh, Kohli, and Zaltman 1995). I argue that an emphasis on transactional collaboration as a purchasing approach is positively associated with purchasing effectiveness; under conditions of high cohesion, the effectiveness of the transactional collaboration gets stronger because the team has the ability to communicate clearly and work together smoothly, allowing for improvement in need identification and parsing out of quality issues. This means that for each new transaction or purchase search, the team can work together to ensure that the purchase meets organizational goals. As such, cohesion brings consistency to the transactional collaboration type, even as they jump from purchase to purchase, and transaction to

transaction. When cohesiveness is low, however, the team is not communicating well. It is also not working together smoothly. This may lead to miscommunication of goals, specifications, and product needs. Individuals that are given the responsibility for each new purchase search may be more interested in meeting their own goals and needs, and may result in the individual satisficing on the purchase instead of maximizing it. As such, buying center cohesiveness is likely to increase the positive impact of transactional collaboration on purchasing effectiveness.

Buying center complexity. When buying centers are complex, they spread across many different departments and include many individuals. This can create a process that is cumbersome and difficult to maneuver within, especially related to decision making. As a purchasing organization utilizing a transactional collaboration is having to make decisions on each and every new transaction, this complexity can make the buying process extremely slow. It also can make it more difficult for the team to ensure that organizational goals related to purchasing (such as turnaround time from requisition approval to requisition purchase, third party collaborator compliance, and maintaining good supplier relations) are being met. At the same time, complexity in the buying center will make identifying and communicating specific needs more difficult and reduce the ability of the team to understand and meet its objectives, such as quality and item specifications, especially as the organization is attempting to do so for each new purchase search. As such, buying center complexity will likely weaken the positive impact of transactional collaboration on purchasing effectiveness.

Third party involvement. When a third party collaborator is highly involved, it is attempting to impact the day-to-day operations of the purchasing organization through actions such as onsite personnel, vendor relationship management, and technology integration (e.g., Meyer 2007; Neil 2005). The high third party collaborator involvement allows the transactional collaboration purchasing organization more ready access to information that can help them better meet their objectives, such as price, costs, and product specifications. Access to information also provides the purchasing organization a better platform from which it can negotiate prices and make better decisions related to each purchase it makes. Therefore, third party involvement is likely to strengthen the positive impact of transactional collaboration on purchasing effectiveness.

Third party adaptability. When a third party collaborator is highly adaptable, it provides additional flexibility to the purchasing organization through the use of custom contracts and the allowance of off-contract spend. The high adaptability works synergistically with the transactional collaboration purchasing organization by providing the flexibility to continually seek out the best suppliers and products for its organization. This allows the transactional collaboration purchasing organization to better meet the goals and objectives of the organization related through better flexibility in conducting its transaction by transaction search process. As such, third party adaptability is likely to strengthen the positive impact of transactional collaboration on purchasing effectiveness.

Therefore, I propose:

H9: *An emphasis on transactional collaboration as a purchasing approach is (a) positively associated with purchasing effectiveness, and its effectiveness (b) increases as the level of buying center cohesiveness increases, (c) decreases as the level of buying center*

complexity increases, (d) increases as the level of third party involvement increases, and (e) increases as the level of third party adaptation increases.

Efficiency

As a purchasing organization utilizes a *transactional collaboration* approach, it is processing purchases on a transaction by transaction basis looking for the best course of action on each purchase it processes. This is likely to have a positive impact on effectiveness, as discussed above. However, there are likely trade-offs to this approach. Processing each transaction as it comes is likely to put the organization in a situation where it is creating requisitions more frequently, and potentially with more vendors. This will serve to increase, rather than decrease, order processing costs as it results in more invoices, with more vendors. In addition, with fewer purchases on each purchase order, it also results in more shipments. At the same time, as a purchasing organization utilizing a transactional collaboration approach is likely working with more vendors and is processing more transactions, there is a higher likelihood of discrepancies in the processing of these transactions. This is also likely to increase the time it takes to process and correct errors as there is more information for the buying center to sift through. Therefore, the transactional collaboration is likely to decrease purchasing efficiency.

Buying center cohesiveness. Cohesive buying centers are familiar with each other and work together as a team, and have developed a sense of trust and cooperation (Kohli 1989; Venkatesh, Kohli, and Zaltman 1995). Highly cohesive teams allow the purchasing organization utilizing a transactional collaboration approach to work together more closely in order to streamline processes, correct errors, and make purchase decisions.

This will help to decrease the resources the buying center consumes per transaction by allowing them to process purchases in a timelier manner. It also allows the buying center to focus on combining or collapsing purchase orders, even on a transaction by transaction basis, across buyers or departments instead of each member handling their own purchase orders separately, helping to reduce order processing costs. When a team is low on cohesiveness, each member is more focused on their own needs and goals. As such, the streamlining of process likely does not happen, especially if a buyer is focused on increasing the number of purchase orders or lines on a purchase order that they process. Therefore, buying center cohesiveness is likely to weaken the negative impact of transactional collaboration on purchasing efficiency.

Buying center complexity. Complex buying centers are widespread and large, creating a complex purchasing process that makes the transactional collaboration process more difficult to manage. When a purchasing organization with a transactional collaboration focus faces high buying center complexity, it creates a situation in which there are many individuals in the process, and many hands touching each purchase transaction. This is likely to increase the number of purchase orders and invoices that are processed due to the transactional focus of transactional collaboration. The increased number of transactions processed is likely to increase the number of discrepancies or errors that are made, thereby increasing the amount of time and effort that must be put into cleaning up discrepancies. This will likely impact the number of purchase orders that are able to be processed unless the number of individuals working on those orders is increased. Due to the increased time and cost to process orders and the decreased output

in terms of purchase orders, buying center complexity is likely to strengthen the negative impact of transactional collaboration on purchasing efficiency.

Third party involvement. A third party collaborator that is highly involved is likely to help the purchasing organization with many day-to-day operational tasks through the expertise it can bring to the table in both streamlining processes and in technology integration. When a purchasing organization using a transactional collaboration focus has a third party collaborator that is highly involved in the process, it has the ability to work with the third party collaborator to learn how to better streamline processes related to the purchase orders, error corrections, and technology (EDI compliance). This is likely to help reduce input costs such as labor and order processing costs by allowing the purchasing organization to process more orders, reduce the number of purchase orders being processed, and eliminating errors that would otherwise have to be dealt with. As such, third party involvement will likely weaken the negative impact of transactional collaboration on purchasing efficiency.

Third party adaptability. Third party adaptability provides additional flexibility to the purchasing organization which may help to attenuate the negative impact of transactional collaboration on purchasing efficiency. When a third party collaborator is adaptable, it allows the purchasing organization to work off custom contracts, and is able to provide flexibility, the transactional collaboration organization is likely able to streamline processes by narrowing search parameters, combining purchase orders by vendor, and more fully utilizing the services provided by the third party collaborator.

This can help to reduce order processing and search costs, and help the organization with processes such as EDI and its compliance. Therefore, I propose:

H10: *An emphasis on transactional collaboration as a purchasing approach is (a) negatively associated with purchasing efficiency, and this negative impact on efficiency (b) decreases as the level of buying center cohesiveness increases, (c) increases as the level of buying center complexity increases, (d) decreases as the level of third party involvement increases, and (e) decreases as the level of third party adaptability increases.*

Strategic Collaboration Type

The *strategic collaboration* type has a different focus than the *transactional collaboration* type. The *strategic collaboration* purchasing approach is highly involved in the collaborative process through activities such as sitting on third party collaborator committees and attending third party collaborator meetings. These organizations seek to build strategic partnerships with a primary third party collaborator in order to drive group-maximization and focus on aggregate spend. As such, *strategic collaboration* is characterized by compliance to contracts, monitoring vendors, and higher commitment and dependence.

Effectiveness

As a purchasing organization utilizes a strategic collaboration approach, it focuses on being contract compliant and building a partnership with its primary third party collaborator. However, the focus on contract compliance may leave the purchasing organization with little flexibility or choice in product and supplier selection (Roark 2005). As such, the purchasing organization may lose some of its ability to effectively meet organizational goals such as quality of items and product specifications. The lack of flexibility and choice may also negatively impact objectives such as reducing stock-outs

as the purchasing organization may be limited on supplier choice and not have the ability to participate in a more flexible multi-sourcing arrangement that it would otherwise need. In addition, the focus on contract compliance and resulting lack of flexibility can have a negative impact on supplier relations due to the nature of having “big brother” watching over the focal organization’s back. The supplier salespeople may not look kindly on the purchasing organization’s utilization of a third party collaborator, especially if they are not compensated for third party collaborator sales. Therefore, strategic collaboration will have a negative impact on purchasing effectiveness.

Buying center cohesiveness. Buying center cohesiveness allows the buying center the ability to work well together and work on making the best decisions possible (Kohli 1989) by creating an atmosphere of cooperation within the group (Venkatesh, Kohli, and Zaltman 1995). I argue that an emphasis on strategic collaboration will likely negatively impact purchasing effectiveness given that flexibility and choice of both suppliers and products may be limited when pursuing contract compliance and a partnership with the third party collaborator. However, a buying center with high cohesiveness brings with it a level of communication that stems from the team working closely together.

Communication holds an important role in the business-to-business context because it can help to transmit needed information and foster increased participation in decision making processes (Mohr and Nevin 1990). Communication can be especially powerful when there is a sense of trust between the communicating partners as this allows the information to be utilized more readily and more often (Maltz and Kohli 1996). As such, when the buying center cohesiveness is high, communication is able to

flow more freely in order to help alleviate some of the issues related to inflexibility and lack of choice. For example, as buyers are able to more effectively communicate the reasons for certain choices in products or suppliers that are being made, and users are able to communicate reasons that certain suppliers and products are not working, this may lead to some shifting and realignment of goals related to quality and item specifications. Also, when communication is flowing, it is likely to help the team have a system in place to counteract some of the issues related to the lack of multi-sourcing and stock-outs. As such, buying center cohesiveness weakens the negative impact on strategic effectiveness.

Buying center complexity. Complexity in the buying center is likely to have a minimal impact on the relationship between strategic collaboration and purchasing effectiveness. As the purchasing organization is focused on contract compliance it loses some ability to be flexible in regards to supplier choice and product choice. However, the buying process itself becomes fairly straightforward – utilize the contract whenever possible. The complexity of the buying center does not change this goal, and therefore has no impact on the loss of flexibility and choice in the purchasing decisions. Therefore, I propose that buying center complexity will have no impact on the relationship between strategic collaboration and purchasing effectiveness.

Third party involvement. A highly involved third party collaborator will help the effectiveness of the strategic collaboration approach by providing the purchasing organization with more ready access to information related to the products, markets, and suppliers available, as well as to new technological solutions that might benefit the

purchasing organization. As such, the purchasing organization is able to establish a better overall understanding of its needs with respect to product quality and specifications. This enables the purchasing organization to make more informed choices related to product quality and specifications, within the choice set available given its goal of contract compliance. In addition, involvement with the third party collaborator provides a platform from which the organization is better able to communicate with the third party collaborator regarding issues of product and supplier choice and may result in more flexibility over the long-run. As such, third party involvement is likely to decrease the negative impact of strategic collaboration on purchasing effectiveness.

Third party adaptability. Third party adaptability provides additional flexibility to the purchasing organization through custom contracts and allowing off contract spend. For a strategic collaboration purchasing organization this is likely to help bolster purchasing effectiveness by providing the purchasing organization the ability to find products and suppliers that are better suited for its needs while still maintaining its partnership with the third party collaborator. This allows the purchasing organization to increase its ability to meet its objectives surrounding product quality and specifications. In addition, the increased flexibility awarded to the purchasing organization from the third party adaptability may help with issues such as reducing stock-outs by allowing the organization access to additional suppliers and products. This may also increase the purchasing organization's ability to maintain supplier relations. As such, third party adaptability is likely to decrease the negative impact of strategic collaboration on purchasing effectiveness. Therefore, I propose:

H11: *An emphasis on strategic collaboration as a purchasing approach is (a) negatively associated with purchasing effectiveness, and this negative impact on effectiveness (b) decreases as the level of buying center cohesiveness increases, (d) decreases as the level of third party involvement increases, and (e) decreases as the level of third party adaptability increases.*

Efficiency

A strategic collaboration approach is focused on contract compliance and establishing a partnership with a primary third party collaborator. These purchasing organizations are also focused on monitoring compliance, monitoring vendors, and ensuring that correct pricing is being followed on invoices. This focus on contract compliance will likely result in the purchasing organization having a fairly steady (and perhaps small) set of suppliers that it utilizes for the majority of its purchases, especially those that are of a recurring nature. This allows the purchasers the ability to focus on aggregating purchase orders by vendor in order to decrease the number of orders being placed and increasing the dollar amount of each individual purchase order. This helps reduce costs of processing orders through lowering the number of invoices, decreasing shipping, and decreasing the amount of time it takes to process purchases. In some cases, blanket purchase orders may be created enabling the purchaser to work off the same order for a specified period of time or for a set volume. This reduces processing time and costs as well. In addition, a purchasing organization utilizing a strategic collaboration type works to ensure that vendors are complying with contract prices. As such, the organization is likely to have streamlined processes in place that help to reduce the number of errors and the amount of time it takes to correct those errors. Therefore, strategic collaboration has a positive impact on purchasing efficiency.

Buying center cohesiveness. Although highly cohesive buying centers tend to work together well, this may end up having a negative impact on the relationship between strategic collaboration and purchasing efficiency. Highly cohesive teams have developed a sense of trust and cooperation in their dealings with each other, and are very familiar with each other's work patterns and styles. When a third party collaborator partnership is created, the third party collaborator is constantly looking for new and better ways to improve and streamline processes. However, the highly cohesive team may have developed a sense of "but we have always done it this way," which may interfere with the ability of the group to work with the new technology or processes (Zhou and Wu 2010). As such, buyers may have a hard time saying no to user requests that may be contrary to new processes leading to increased processing costs (such as a higher number of purchase orders and invoices, longer processing time, and increased potential for error). Overall this will result in higher costs. Therefore, buying center cohesiveness is likely to weaken the positive impact of strategic collaboration on purchasing efficiency.

Buying center complexity. When a purchasing organization with a strategic collaboration faces a buying center that is complex, it creates a burdensome process from the efficiency standpoint that is likely to increase the number of errors or issues that are encountered due to the sheer number of individuals who are involved in the general process. It is also likely that complexity will increase the transaction costs as purchasers may be inclined to separate out purchase orders by departments in order to better track spending, even when utilizing the same set of vendors. In addition, the increased complexity is likely to increase the amount of time it takes to correct discrepancies as the

purchaser now has many individuals to work with and through in order to bring resolution. Taken together, complexity is likely to increase the costs and time spent on the purchasing process and will therefore decrease the positive impact of strategic collaboration on purchasing efficiency.

Third party involvement. Given the nature of the strategic collaboration approach, one could argue that third party collaborator involvement would be inherently high. However, that may not be the case as strategic collaboration may entail purchasing organizations getting involved at the third party collaborator level in order to build a relationship that enables them to have access to strategic information such as that related to products, the marketplace, and suppliers. This does not mean that the purchasing organization is as willing to give up control or allow the third party collaborator full access to the day-to-day operations. As such, a wide range of third party collaborator involvement is possible, even within the strategic collaboration approach.

When a strategic collaboration approach is coupled with high third party collaborator involvement, however, it provides the purchasing organization with more than just the strategic information related to products, markets, and suppliers. It also enables the purchase organization to have the ability to streamline processes related to areas such as correcting discrepancies or errors and improving EDI compliance. It helps to reduce the costs of inputs to these processes by decreasing the time it take for staff to complete tasks, and may even result in staff reductions in general. Therefore, third party involvement increases the positive impact of strategic collaboration on purchasing efficiency.

Third party adaptability. By providing additional flexibility to the purchasing organization, third party adaptability may actually have a detrimental impact on the relationship between strategic collaboration and purchasing efficiency. Third party adaptability may provide the purchasing organization with an increase in the choices available to it for each purchase that it makes. Increased choice may lead to an increase in order processing, search, and transaction costs, as the purchasing organization has the flexibility to work with an increased number of suppliers, resulting in an increased number of purchase orders and invoices. This also increases the chances of discrepancies in the purchase process and can lengthen the time it takes to correct those discrepancies. As such, third party adaptability is likely to weaken the positive impact of strategic collaboration on purchasing efficiency. Therefore, I posit:

H12: *An emphasis on strategic collaboration as a purchasing approach is (a) positively associated with purchasing efficiency, and its efficiency (b) decreases as the level of buying center cohesiveness increases, (c) decreases as the level of buying center complexity increases, (d) increases as the level of third party involvement increases, and (e) decreases as the level of third party adaptability increases.*

CHAPTER FOUR
– RESEARCH METHODOLOGY –
OBJECTIVES OF THE CHAPTER

The purpose of this chapter is to provide details of the research methodology that was used to test the hypothesized relationships in Chapter 3. The remainder of the chapter will be organized as follows. First, I will discuss the qualitative fieldwork that was conducted. Next, the measure and questionnaire development will be discussed, followed by a description of each construct in the model. Finally, I will provide details on the sampling frame and survey procedures.

QUALITATIVE FIELDWORK

The exploratory qualitative fieldwork consisted of semi-structured, in-depth interviews conducted with purchasing (or materials) managers at hospitals across the United States. This context was chosen because (a) collaborative purchasing has become a chosen strategy for many healthcare organizations (Chen and Roma 2011; Doucette 1997), and (b) third party collaborators are the predominant form of collaborative purchasing in the healthcare setting. Respondents were randomly selected from a list of U.S. hospitals obtained from a commercial marketing list provider (ReferenceUSA). Telephone calls were made to establish initial contact with the purchasing managers to request their participation in the study; voicemail messages were left when needed. Once initial contact was made, phone interviews were scheduled with those agreeing to participate, and the interviews were conducted at a time of convenience for the respondent. A total of fifteen interviews were completed, with an average length of approximately 32 minutes. All interviews were audio recorded and subsequently

transcribed verbatim, resulting in over 100 pages of transcripts. Table 2 provides a list of interview participants with demographic information.

Table 2
Qualitative Interview Participants

Alias	Job Title	Years With Organization	Years in Current Position	Industry	Description
Stan	Director of Strategic Sourcing	37	4	Health Care	Medical Center
Katie	Materials Director	14	14	Health Care	Community Hospital
Don	Director of Materials Management ** Contracted to Hospitals	6	6	Health Care	Group Purchasing Organization
Bob	VP of Supply Chain Management and Chief Procurement Officer	8	8	Health Care	Medical Center
Pam	Purchasing Coordinator	32	25	Health Care	Medical Center
Patrick	Contract Administrator	1	1	Health Care	Medical Center
Shelly	Director of Materials Management	36	12	Health Care	Medical Center
Jason	Executive Director of Materials Management	6	6 34 years of experience	Health Care	Outpatient Center
Tom	Network Director of Supply Chain Operations	1	1	Health Care	Medical Center
Tori	Supply Chain Director	14	8	Health Care	Medical Center
Ryan	Purchasing Manager	24	24	Health Care	Medical Center
Tonya	Director of Radiology, Materials, and Environmental Services	26	19	Health Care	Medical Center
Kathy	Materials Manager	26	26	Health Care	Community Hospital
John	Director of Materials Management	2	2	Health Care	Medical Center
Justin	Senior Director of Accounts	6	6	Health Care	Group Purchasing Organization

The objective of this fieldwork was two-fold in nature. First, the primary objective of the interviews was to better understand the different ways in which hospitals collaborated with GPOs. Prior research has focused on the broad forms of group purchasing in general, but has neglected to consider the varying collaboration types utilized by individual group members and the impact that the choice of these strategies has on efficiency and effectiveness related to participation. This data was used to help with the conceptualization of the two collaboration types. Second, interviews were conducted in order to obtain a better understanding of the process of collaborating with the GPO and to highlight the conditions that impact the efficiency and effectiveness of the purchasing function in relation to participating with a GPO. In addition, respondents were probed on how GPO participation impacts the purchasing function within their organizations, what the primary benefits are of being a part of a GPO, and any concerns that arise out of participating with a GPO. The resulting data provided an in-depth look at organizational differences in collaboration, the factors that impact the choice of collaboration type, and factors that drive the efficiency and effectiveness of purchasing within a collaborative purchasing context.

Given the exploratory objectives of the research, fieldwork began with an initial interview guide that included questions related to the broad topics of interest to the researcher. However, the structure was open ended and discovery oriented. A constant comparative method (Creswell 2013) was utilized to guide each new interview, such that, as interviews were conducted, notes were reviewed to identify themes and patterns in collaboration types and other topics of interest. This review was then utilized to structure

subsequent interviews and confirm concepts that were emerging from the data. In addition to the constant comparative method, transcripts were loaded into AtlasTI and coded into different themes as they emerged from analysis of the interviews. The interview guide and findings of the qualitative fieldwork are presented in Appendix A.

MEASURE DEVELOPMENT

Existing scales were adapted and utilized to measure constructs included in the hypothesized model wherever possible. New scales were created for all remaining constructs. Following established standards for construct development (Churchill 1979; Rossiter 2002), detailed definitions and domains of each construct were outlined first. Then item lists for each construct were developed through review of both qualitative interviews and existing literature (Nunnally and Bernstein 1994). Scales were reviewed by academics familiar with both marketing and survey methodology. Changes were made throughout all phases of the testing process (Churchill 1979).

The initial version of the online questionnaire was then reviewed by four academics for clarity of wording, match between questions and anchor points on the Likert type questions, and time taken to complete the questionnaire. Feedback from this initial review resulted in textual edits, changes in anchor point wording, and elimination of duplicate or unnecessary questions. The revised version of the questionnaire was then pretested with six hospital purchasing managers. During this stage of testing, the following facets of questionnaire completion were observed: 1) the time taken to complete the questionnaire and 2) issues arising with comprehension of the phrasing or wording of question stems and items. Several changes resulted from this stage of testing.

First, it was found that questions asking for respondents to fill in the blank with specific numbers (e.g., contract length) were being incorrectly filled out (i.e., inputting number of months instead of number of years). To help alleviate this issue, labels were added to the question response boxes indicating the unit required for the question (i.e., years). Second, it was indicated that for several multiple choice questions, the answer choices were inadequate. As such, an “other” option was added, with a text box available for the respondent for an open ended answer. Finally, it was found that some individuals, though knowledgeable about hospital participation with GPOs, did not have ready access to information specifically relating to contractual type questions or were not willing to share this information due to the potential sensitivity of these questions. As these questions were for classification purposes, a “don’t know” option was subsequently included.

All constructs in this study are considered reflective unless stated otherwise. Proposed measurement items for each construct are displayed in Appendix B, and screen shots of the actual online survey can be found in Appendix C. Definitions for each construct, and other details about how the constructs were measured, are provided next.

MEASUREMENT

Focal Construct

Collaboration type is the focal construct in the hypothesized model. Collaboration type is defined as the primary way that an organization participates and works with a third party collaborator (i.e., GPO) for the purposes of collaborative purchasing. Collaboration is comprised of three aspects: process, maximization goals, and relational. These three dimensions form the basis for the two primary types of collaboration,

transactional collaboration and *strategic collaboration*. Transactional collaboration is characterized by a transactional, value-maximization focus, while strategic collaboration is characterized by a partnership, group-maximization focus. Transactional and strategic collaboration are both formative (process + maximization + relational). Process, maximization, and relational are all reflective.

The collaboration types are considered formative for several reasons. First, the three dimensions help to “cause” the collaboration type as opposed to collaboration type causing each of the dimensions. Second, if any of the three dimensions increase, regardless of the level of the other two dimensions, then the use of the collaboration type increases. Finally, the dimensions are not interchangeable with any of the other indicators in accurately determining the level of use of a collaboration type (Diamantopoulos and Winklhofer 2001).

Transactional collaboration is captured by a total of 13 items, five items for transactional – process, four items for transactional – maximization, and four items for transactional – relational. Strategic collaboration is captured by a total 15 items, five items each for strategic – process, strategic – maximization, and strategic – relational. Both scales are new, 7-point Likert type scales ranging from ‘does not describe at all’ to ‘describes completely’.

Antecedent Variables

The primary driver of collaboration type is the organizational *purchasing emphasis*, which indicates what the purchasing organization believes to be the priority

focus in relation to the purchasing function. It is comprised of two types: *cost emphasis* and *expertise emphasis*.

Cost emphasis is the extent to which the purchasing organization places a high priority or emphasis on the goal of cost control and cost reduction in the purchasing function. In developing this scale, the Rust, Moorman, and Dickson (2002) study on revenue versus expense emphasis was reviewed. The authors focus on the primary emphasis related to quality initiatives, with items such as “The purpose of quality improvements is to reduce costs,” “Quality improvements should be differentiated by their degree of cost savings,” and “Quality improvements should always result in reduced costs.” Building on both literature and the qualitative fieldwork, two primary aspects of cost emphasis (price and process improvement) were identified as being important ways in which the purchasing function has direct control over cost reduction. Therefore, the current research focuses on these two areas of emphasis related to cost – price and process.

Cost emphasis, therefore, is a higher-order factor comprised of two reflective components: *price emphasis* and *process emphasis*. Price emphasis is defined as the extent to which the organization places a high priority on reducing and controlling costs through capturing price reductions and price discounts via the purchasing function. It is captured with a new 4-item, 7-point Likert scale ranging from ‘very low priority’ to ‘very high priority’. Process emphasis is the extent to which the organization places a high priority on reducing costs through improving purchasing processes in the purchasing

function. It is captured by a new 4-item, 7-point Likert scale ranging from ‘very low priority’ to ‘very high priority’.

Expertise emphasis is the extent to which the purchasing organization places a high priority or emphasis on increasing access to expertise in relation to product markets, suppliers, and the environment through the purchasing function. Expertise emphasis is therefore a higher-order factor that combines expertise related to products, suppliers, and the environment. In creating this scale, the literature on learning orientation and knowledge transfer was reviewed. The literature on knowledge transfer and knowledge stores is the most relevant to the intent of the expertise emphasis construct. The transfer of market knowledge captures the information that a manufacturer acquires from its distributor (Liu, Li, and Xue 2010) where knowledge stores are the collections of insights, beliefs, routines, procedures, and policies that an organization holds (e.g., Johnson, Sohi, and Grewal 2004). As such, scale items were adapted from Liu, Li, and Xue (2010) related to the transfer of market knowledge for both product and supplier related items. Items were also adapted from the Johnson, Sohi, and Grewal (2004) environmental knowledge store scale for the environmental items, due to its focus on knowledge that is external to the operating environment. Items were adapted to the current context by focusing on how much emphasis or priority the organization places on the different items. Product expertise emphasis, supplier expertise emphasis, and environmental expertise emphasis are each reflective and are captured by a 4-item, 7-point Likert type scale ranging from ‘very low priority’ to ‘very high priority’.

Moderating Variables

Operational flexibility is the ability to deal with the short-term fluctuations in demand, labor, and raw material shortages and/or equipment failures (Fredericks 2005). The *need for operational flexibility* is defined as the extent to which the purchasing organization needs the ability to improvise and adapt to day-to-day changes in operations. The literature on operational flexibility was reviewed while developing this scale. Unfortunately, no scales were found that were suitable to the *need for operational flexibility* construct. Therefore, after review of literature and qualitative fieldwork, a new 4-item, 7-point Likert scale ranging from ‘not at all accurate’ to ‘completely accurate’ was developed.

Need for strategic flexibility is defined as the extent to which a purchasing organization needs the ability to create a set of options that allow it to adapt to changes in the marketplace that impact its competitive advantage and strategic goals. Need for strategic flexibility is captured by a 7-item, 7-point Likert scale ranging from ‘not at all accurate’ to ‘completely accurate’ that was adapted from Grewal and Tansuhaj (2001).

Need for decision making autonomy is defined as the extent to which the organization seeks to shape or control its environment by maintaining discretion over decision making related to the purchasing function. In developing this scale, literature on both organizational decision making autonomy and salesperson autonomy were reviewed. Homburg and Prigge (2014) define the term desire for autonomy in terms of a subsidiary wanting to be granted more decision making authority related to marketing decisions. Menguc, Auh, and Chan Kim (2011) examine autonomy climate, which focuses on how

much discretion and opportunity for independence / freedom is given to salespeople related to how they do their job. Both types of autonomy are relevant here - one from an organizational desire for autonomy in decision making, the other from an individual level from which the organization strives to give individuals autonomy in their work. As such, items were adapted from both scales. The need for decision making autonomy is captured by a 5-item, 7-point Likert scale ranging from 'not at all accurate' to 'completely accurate'.

Buying center cohesiveness is defined as the extent to which individuals within the buying center are familiar with each other, get along, and work as a team. It is a higher-order construct comprised of: *viscidity* and *familiarity*. Viscidity and familiarity are both reflective. Viscidity is the extent to which buying center members work together as a team as opposed to being fragmented and hostile to each other (Kohli 1989). Viscidity is captured by a 4-item, semantic differential scale that was adapted from the viscosity scale Kohli (1989), which was originally adapted from Hemphill and Westie (1950). Familiarity is the extent to which members of a buying center are familiar with or known to each other (Kohli 1989). It is captured by a 4-item, semantic differential scale ranging that was adapted from Kohli (1989), which was originally adapted from Hemphill and Westie (1950).

Buying center complexity is defined as the extent to which a purchasing organization's buying center is composed of more individuals than is optimal. Scale items were adapted from the extensivity concept from Johnston and Bonoma (1981).

Buying Center Complexity is captured by a new 3-item, 7-point Likert scale ranging from ‘not at all accurate’ to ‘completely accurate’.

Third party involvement is defined as the extent to which a third party (GPO) is routinely involved in the purchasing organization’s purchasing operations, both at a strategic (relational) and an operational (functional) level. In developing this scale, multiple streams of literature were reviewed, including areas such as consumer behavior, product involvement, brand involvement, and purchase involvement. However, none of these scales were found to be relevant to the aspects of involvement occurring in the purchasing organization – GPO relationship. Next, research on work groups and team involvement were reviewed. This research was relevant to the first aspect of involvement in this context, strategic. Finally, literature related to supplier involvement, supply chain involvement, and supplier integration was reviewed. This research was relevant to the second aspect of involvement, operational. Third party involvement is formative (strategic + operational). Strategic involvement and operational involvement are both reflective. Involvement is captured with a total of nine items, five for operational and four for relational involvement, adapted from these streams of literature (i.e., Flynn, Huo, and Zhao 2010; Hobman, Bordia, and Gallois 2004). All items are 7-point Likert type ranging from ‘never’ to ‘always’.

Third party adaptability is defined as the extent to which a third party (GPO), is able to adjust to the needs of member organizations through actions such as custom contracting, or the allowance of off-contract spend. It is captured by a new 5-item, 7-point Likert scale ranging from ‘very ineffective’ to ‘very effective’.

Outcome Variables

Purchasing effectiveness is defined as the degree to which the desired organizational purchasing goals have been achieved. It is a formative scale that is captured by asking respondents to report whether the purchasing organization has achieved a lower or higher level of outcome as compared to organizational expectations. The scale is based on eight purchasing effectiveness goals identified by research (Janda and Seshadri 2001) and the qualitative fieldwork, such as quality of items, procuring items with desired specifications, and achieving cost reduction goals. It is captured by a new 8-item, 7-point Likert-type scale ranging from ‘significantly lower than expectations’ to ‘significantly higher than expectations’.

Purchasing cost efficiency is defined as the ratio of purchasing inputs consumed to purchasing outputs achieved (Janda and Seshadri 2001; Vorhies and Morgan 2003). It is a formative scale assessing organizational improvement of cost efficiencies over the past 12 months with items identified by both literature (Janda and Seshadri 2001) and the qualitative fieldwork. It is captured by a new 7-item, 7-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’.

Control Variables

Firm size refers to the number of full-time equivalents employees in the organization. It is captured by asking respondents to select one of a set of possible ranges in a multiple choice type question. *Firm age* refers to the number of years the organization has been in existence. It is captured by an open ended question asking the year the organization first came into existence.

GPOs utilized refers to how many GPOs the organization participates with. It is captured by asking the respondents to identify the exact number of GPOs their organization currently participates with via an open-ended question. Number of pricing tiers in contracts refers to the average number of pricing tiers (quantity or size) that is included in the contract with the organization's primary GPO. It is captured via an open-ended question.

Hospital productivity reflects various measures of productivity that are important in the healthcare setting, such as economic growth rate, patient satisfaction, and average length of stay. It is captured by a new, 7-item, 7-point Likert type scale ranging from 'very poor' to 'excellent'.

Questionnaire Development

The Qualtrics online platform was utilized to conduct the survey. The final version of the questionnaire utilized for data collection totals 33 computer pages in length. Included in this total is a one page cover, two screening questions pages, transition pages, 26 pages of survey questions, and a closing page. Sections were organized such that questions specific to the purchasing organization's primary GPO (the GPO utilized for the majority of the organization's purchases) were separated from questions related to GPOs in general. Specifics related to the data collection procedures are provided in the following section.

Common method variance (CMV) is the variance among the constructs that is due to the use of a single method of measurement rather than that due to the construct of interest (Podsakoff et al. 2003). Several procedural methods, through questionnaire

design, were utilized to reduce the potential for CMV. First, multiple question formats were utilized and alternated throughout the survey whenever possible. A total of four different question formats were utilized, including Likert type, semantic differential, open-ended text boxes, and multiple choice formats. In addition, scale anchors were adapted to the different scales, eliminating the consistent use of one set of scale anchors. For example, the anchors “does not describe at all” to ‘describes completely’ were utilized for the collaboration type constructs, while the anchors ‘very low priority’ to ‘very high priority’ were utilized for the purchasing emphasis constructs. Second, respondents were assured of anonymity and informed that there are no right or wrong answers to the survey questions, helping to reduce apprehension and socially desirable responses (Podsakoff et al. 2003).

SAMPLING FRAME AND SURVEY PROCEDURES

This research has two objectives. First, it empirically examines the approaches purchasing organizations utilize to collaborate with third party collaborators, as well as the factors that impact a purchasing organization’s choice of collaboration type. Second, this research examines the factors that impact the efficiency and effectiveness of the purchasing function under a third party collaboration approach. Given the nature of these objectives, the sampling frame consisted of purchasing or material managers of purchasing organizations that utilize at least one third party collaborator.

The healthcare industry was selected as the research context for this research as it is one in which group purchasing has become a chosen strategy for many organizations (Chen and Roma 2011; Doucette 1997), primarily in hospitals and nursing homes

(Dobson et al. 2014). According to the most recent National Health Expenditure (NHE) fact sheet (2014) maintained by the Centers for Medicare and Medicaid Services, national healthcare expenses rose by 3.6% during 2013 to \$2.9 trillion (17.4% of the U.S. Gross Domestic Product), with hospital expenditures accounting for \$936.9 billion.

Expenditures were projected to increase by 5.7-6.0% per year through 2023, indicating that healthcare is an important industry in the U.S. and will continue to be so for many years to come. In a report for the Healthcare Supply Chain Association (HSCA), it was estimated that 30.4% of hospital expenditures were non-labor, or approximately \$284.8 billion per year (Dobson et al. 2014) that is subject to purchase through collaborative purchasing initiatives. It has also been estimated that 96-98% of hospitals utilize GPO contracts (Dobson et al. 2014).

Due to the rising costs of healthcare over the past 50 years, many hospitals have joined group purchasing programs in order to help offset these costs (Hahn and Hardy 1972; Hu, Schwarz, and Uhan 2012). However, over time the utilization of GPOs and the growth in the number and size of GPOs has resulted in a competitive arena (Malloch 2001), one in which GPOs must vie for member organizations. As such, the GPO process has evolved into one that is more collaborative, more partnership oriented, with GPOs helping to provide information, education, and other value added services (Neil 2005). Although there are many unique aspects to the healthcare industry, it is not so unique from the business-to-business supply chain setting that the findings of the current research cannot be generalized to other sectors, such as industrials and materials, especially those such as food service, retailing, and the public sector, that already

extensively utilize group purchasing (e.g., Chen and Roma 2011; Geyskens, Gielens, and Wuyts 2015; Nollet and Beaulieu 2003).

Several steps were taken in data collection to ensure high quality responses. First, a list of hospitals (SIC Code - 8062) was acquired from a commercial marketing list provider (ReferenceUSA). The list contained the contact information for 3,690 hospitals across the United States, and served as the sampling frame for this research.

Second, extensive telephone prescreening was conducted to ensure that the correct key informants (Campbell 1955) were reached and to obtain buy-in for completing the survey. Preliminary qualitative interviews suggested that respondents with the job titles of *Materials Management Directors* and *Purchasing Directors* were the most knowledgeable about organizational participation in GPOs. To assist with the prescreening, two undergraduate senior students were hired for 10-15 hours per week to help make telephone screening calls, utilizing a prepared script. Each call began by the caller asking the hospital operator for either the Materials Management or Purchasing Director. Once connected, the script then introduced the study to the respondent, asked if they were the most knowledgeable about the topic, discussed the incentives offered, and asked for their help in completing the research. Over the course of 2.5 months, all 3,690 hospitals were contacted. Of the calls made, messages were left for 1,972 individuals, with 37 individuals returning the message and agreeing to participate, while 603 individuals either refused to participate or their organizations did not qualify. Those who refused to participate cited either lack of time or hospital policy as the primary reason. Organizations who did not qualify were either non-hospital organizations that

inadvertently made it on the list (nursing homes, etc.) or did not have a purchasing department at their location.

Individuals agreeing to help with the survey were immediately sent an email containing the informed consent form (Appendix C), the respondent's unique respondent ID, and a link to the Qualtrics online survey. The respondent IDs were entered by the respondent on the first screen of the survey. These IDs were used to track those who had completed the survey in order for reminder emails to be sent to individual respondents who had not yet completed the survey. Tracking numbers were managed in an Excel database that included the name and email address of each respondent who received a survey, the date the survey was sent, reminder email dates, and other various information related to the survey incentives. Reminder emails were sent every 7-8 days for two months following the initial survey sent date.

A total of 407 surveys were electronically sent. Overall, seven emails bounced back and were considered undeliverable, 30 individuals emailed and refused to participate during the two months of follow-up emails, 71 individuals started the survey but did not complete it, and 18 screened out. There were two reasons most often cited from respondents indicating why they had not completed the survey. First, several respondents had technical issues where the survey locked up and they were unable to continue. Many tried a second time and then gave up due to time constraints. Second, other respondents considered the survey too long and would not continue as they were preoccupied. In all, a total of 123 surveys were completed and usable, an effective response rate of 30.2%.

Respondents were offered two specific incentives for completing the survey. The first incentive was a \$20 Amazon electronic gift card. This form of incentive was selected after discussing various options with six hospital purchasing directors. The second incentive offered was an executive summary of the results of the study. At the end of the survey, respondents were asked to provide an email address for the gift card (or were given the option to opt out of this incentive). They were also asked to indicate whether or not they wished to receive the executive summary. Of the 123 completed surveys, 40 individuals opted out of the gift cards, while 37 opted out of the executive summary.

Non-response bias concerns were addressed by utilizing the extrapolation method (Armstrong and Overton 1977). Respondents were categorized as either early or late respondents based on the time elapsed between the date the survey was sent and the date the survey was completed. T-tests were conducted comparing the two groups across all variables of interest. None of the t-tests were significant at the $p = 0.5$ level, indicating non-response bias is likely not an issue. Table 3 displays the univariate t-tests for key indicator differences between the early and late groups. Information related to respondent and firm profiles is presented in Table 4.

Table 3
Non-Response Bias

Construct	Mean Score (Early)	Mean Score (Late)	Difference (at $\alpha = .05$)
Cost Emphasis	12.164	11.633	Not Significant
Expertise Emphasis	15.410	14.984	Not Significant
Transactional Collaboration	8.990	10.096	Not Significant
Strategic Collaboration	14.053	13.787	Not Significant
Need for Operational Flexibility	4.353	4.297	Not Significant
Need for Strategic Flexibility	4.584	4.464	Not Significant
Need for Decision Making Autonomy	4.207	4.169	Not Significant
Purchasing Effectiveness	5.679	5.410	Not Significant
Purchasing Efficiency	4.729	4.853	Not Significant
Buying Center Cohesiveness	11.431	11.000	Not Significant
Buying Center Complexity	2.770	2.963	Not Significant
Third Party Involvement	6.130	6.175	Not Significant
Third Party Adaptability	4.790	4.750	Not Significant

Table 4
Respondent and Firm Profile

	Frequency	Percent of Total
Gender		
Male	67	54.5%
Female	56	45.5%
Firm Size: Full Time Equivalent (FTEs)		
Less than 100	8	6.5%
100 to 199	22	17.9%
200 to 499	33	26.8%
500 to 699	10	8.1%
700 to 999	10	8.1%
1,000 to 5,000	30	24.4%
Greater than 5,000	10	8.1%
Single Versus Multiple GPOs		
Single	88	61.1%
Multiple	56	38.9%
Nature of Organizational Structure		
Stand-alone hospital	44	36.4%
Part of a conglomerate of hospitals	77	63.6%
Ownership Interest in GPO		
Some ownership interest	92	67.2%
No ownership interest	45	32.8%
Profit Orientation		
For-Profit	27	22%
Non-Profit	96	78%

CHAPTER FIVE
– DATA ANALYSIS –

OBJECTIVES OF THE CHAPTER

The objectives of this chapter are to provide details related to the analysis of the collected data, including measure validation and testing the hypotheses presented in Chapter 3. To accomplish this, I first present information related to reliability and validity, ensuring the quality of the data collected. Next, hypothesis testing, utilizing multiple regression, is discussed. Finally, I present the results of some post hoc analyses.

RELIABILITY AND VALIDITY

Reliability

The reliability of scales is an important factor, especially when creating new scales, as it indicates that there is less error in the measure and that the construct consistently captures what it is supposed to. Reliability of the constructs was tested by two methods. First, an explanatory factor analysis was used to evaluate coefficient alphas, assessing that they were above the recommended value of 0.70 (Nunnally 1978). Second, confirmatory factor analyses (CFAs) were completed for groups of constructs, with reflective first order constructs loaded into one CFA for their respective higher order constructs. In addition, dependence management factors were loaded into one CFA, buying center factors into another CFA, and third party factors in a separate CFA. The CFAs were used to calculate composite reliabilities and average variance extracted (AVE). Reliability is indicated by large composite reliabilities and AVEs greater than 0.50 (Fornell and Larcker 1981). Scales not meeting these conditions were evaluated and items dropped from further analysis. One construct (Transactional – Process) had less

than optimal reliability, but was included in the analysis. CFA fit statistics, composite reliabilities, and AVEs are reported in Table 5. Cronbach's alpha and standardized factor loadings are reported in Tables 6-25. Overall, the constructs were found to have very good reliability, making them acceptable for using in testing the model.

Table 5
Confirmatory Factor Analysis Results

Measurement Model	Standardized Factor Loadings	Composite Reliability	AVE	RMSEA	CFI	SRMR	X ² (df, p value)
Transactional Collaboration Type				0.072	0.944	0.058	64.747 (37, .003)
Process	0.603 - 0.774	0.704	0.445				
Maximization	0.593 - 0.851	0.811	0.522				
Relational	0.538 - 0.793	0.805	0.514				
Strategic Collaboration Type				0.073	0.953	0.058	114.956 (69, .000)
Process	0.686 - 0.827	0.829	0.550				
Maximization	0.651 - 0.864	0.856	0.547				
Relational	0.786 - 0.927	0.944	0.773				
Cost Emphasis				0.072	0.968	0.038	33.476 (19, .021)
Price Emphasis	0.824 - 0.966	0.937	0.790				
Process Emphasis	0.742 - 0.883	0.887	0.664				
Expertise Emphasis				0.079	0.947	0.062	91.120 (48, .000)
Product Emphasis	0.582 - 0.889	0.871	0.633				
Supplier Emphasis	0.763 - 0.862	0.892	0.674				
Environmental Emphasis	0.744 - 0.882	0.876	0.639				
Dependence Management Factors				0.054	0.974	0.041	137.392 (101, .009)
Need for Operational Flexibility	0.869 - 0.934	0.949	0.825				
Need for Strategic Flexibility	0.855 - 0.933	0.964	0.843				
Need for Decision Making Autonomy	0.892 - 0.969	0.974	0.883				
Buying Center Factors				0.081	0.951	0.058	67.073 (37, .002)
Cohesiveness - Viscidity	0.557 - 0.855	0.824	0.545				
Cohesiveness - Familiarity	0.738 - 0.989	0.933	0.779				
Complexity	0.747 - 0.885	0.852	0.659				
Third Party Factors				0.067	0.956	0.054	115.580 (73, .001)
Involvement - Operational	0.668 - 0.801	0.847	0.528				
Involvement - Relational	0.810 - 0.860	0.904	0.702				
Adaptability	0.780 - 0.922	0.928	0.720				

Table 6
Transactional Collaboration - Process

Scale Type: Seven-point Likert type scale ranging from:
Does Not Describe at All to Describes Completely

Scale for Transactional Collaboration – Process	Source (New Scale)		
	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
When thinking of all of the purchases made by your organization over the past 12 months, please indicate the degree to which each of the following statements describe your organization: Our organization...			
1. Begins a new supplier search for purchases, regardless of existing GPO contracts.	0.583	0.453	0.774
2. Takes a transaction by transaction approach for new purchase interactions with GPOs.	0.473	0.603	0.603
3. Is willing to work with many different GPOs to meet transactional purchasing needs.	0.419	0.674	0.611
FINAL COEFFICIENT ALPHA	0.676		

Table 7
Transactional Collaboration - Maximization

Scale Type: Seven-point Likert type scale ranging from:
Does Not Describe at All to Describes Completely

Scale for Transactional Collaboration – Maximization	Source (New Scale)		
	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
When thinking of all of the purchases made by your organization over the past 12 months, please indicate the degree to which each of the following statements describe your organization: Our organization...			
1. Is likely to take the search process outside the GPO to search for lower prices directly from suppliers.	0.562	0.843	0.851
2. Views GPO pricing as a benchmark for negotiations with suppliers.	0.769	0.746	0.681
3. Utilizes GPO pricing to further direct negotiations with suppliers.	0.716	0.773	0.593
4. Believes a transaction by transaction approach provides the best value for each purchase.	0.639	0.806	0.740
FINAL COEFFICIENT ALPHA	0.837		

Table 8
Transactional Collaboration – Relational

Scale Type: Seven-point Likert type scale ranging from:
Does Not Describe at All to Describes Completely

Scale for Transactional Collaboration – Relational	Source (New Scale)		
When thinking of all of the purchases made by your organization over the past 12 months, please indicate the degree to which each of the following statements describe your organization: Our organization...	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Seeks to be minimally committed to any one GPO.	0.621	0.761	0.793
2. Seeks to be independent from the GPO(s) we utilize.	0.662	0.743	0.791
3. Maintains an arms-length relationship with our GPO(s).	0.548	0.810	0.538
4. Purposefully limits GPO participation in our long term plans.	0.704	0.727	0.715
FINAL COEFFICIENT ALPHA	0.808		

Table 9
Strategic Collaboration – Process

Scale Type: Seven-point Likert type scale ranging from:
Does Not Describe at All to Describes Completely

Scale for Strategic Collaboration – Process	Source (New Scale)		
When thinking of all of the purchases made by your organization over the past 12 months, please indicate the degree to which each of the following statements describe your organization: Our organization...	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Is engaged in the primary GPO through interactions with other GPO members.	0.586	0.851	0.686
2. Is committed to having our employees involved with committees within the primary GPO.	0.722	0.793	0.717
3. Works diligently with our primary GPO committees to screen products / suppliers.	0.750	0.780	0.729
4. Participates often in our primary GPO group meetings.	0.696	0.804	0.827
FINAL COEFFICIENT ALPHA	0.848		

Table 10
Strategic Collaboration – Maximization

Scale Type: Seven-point Likert type scale ranging from:
Does Not Describe at All to Describes Completely

Scale for Strategic Collaboration – Maximization	Source (New Scale)		
	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
When thinking of all of the purchases made by your organization over the past 12 months, please indicate the degree to which each of the following statements describe your organization: Our organization...			
1. Is committed to monitoring compliance to our primary GPO contracts in order to ensure aggregate spend.	0.606	0.870	0.864
2. Is highly concerned about the aggregate spend within the primary GPO.	0.712	0.844	0.788
3. Is willing to take a higher price in the short term in order to meet aggregate spend.	0.619	0.867	0.651
4. Views meeting aggregate spend as a process that yields long-term benefit.	0.805	0.821	0.704
5. Believes that following aggregate spend is the right strategic approach for purchasing.	0.782	0.829	0.668
FINAL COEFFICIENT ALPHA	0.873		

Table 11
Strategic Collaboration – Relational

Scale Type: Seven-point Likert type scale ranging from:
Does Not Describe at All to Describes Completely

Scale for Strategic Collaboration – Relational	Source (New Scale)		
	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
When thinking of all of the purchases made by your organization over the past 12 months, please indicate the degree to which each of the following statements describe your organization: Our organization... 1. Seeks to develop a relationship with our primary GPO. 2. Views the primary GPO as a strategic partner. 3. Views the primary GPO relationship as central to our purchasing department. 4. Is highly committed to our primary GPO. 5. Expects primary GPO participation in our long term plans.	0.790	0.923	0.863
FINAL COEFFICIENT ALPHA	0.932		

Table 12
Cost Emphasis – Price Emphasis

Scale Type: Seven-point Likert type scale ranging from:
Very Low Priority to Very High Priority

Cost Emphasis – Price Emphasis	Source (New Scale)		
In relation to purchases made through your organization's purchasing department over the past 12 months, please indicate the level of priority your organization places on the following: The goal of our purchasing department is to...	Item-to- Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Obtain the lowest price possible on purchases.	0.810	0.930	0.824
2. Achieve price discounts for purchases.	0.855	0.915	0.889
3. Generate price reductions on purchases.	0.915	0.895	0.966
4. Reduce the price paid for purchases.	0.823	0.926	0.870
FINAL COEFFICIENT ALPHA	0.936		

Table 13
Cost Emphasis – Process Emphasis

Scale Type: Seven-point Likert type scale ranging from:
Very Low Priority to Very High Priority

Cost Emphasis – Process Emphasis	Source (New Scale)		
	Item-to- Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
In relation to purchases made through your organization's purchasing department over the past 12 months, please indicate the level of priority your organization places on the following: The goal of our purchasing department is to:			
1. Optimize purchase requisition process in order to lower costs.	0.703	0.868	0.742
2. Optimize processes related to negotiation in order to lower costs.	0.813	0.829	0.883
3. Optimize product search process in order to lower costs.	0.773	0.842	0.858
4. Optimize vendor billing / invoicing processes to minimize errors in order to lower costs.	0.710	0.866	0.767
FINAL COEFFICIENT ALPHA	0.884		

Table 14
Expertise Emphasis - Product

Scale Type: Seven-point Likert type scale ranging from:
Very Low Priority to Very High Priority

Expertise Emphasis - Product	Source (Adapted from Liu, LI, and Xue 2010)		
In relation to purchases made through your organization's purchasing department over the past 12 months, please indicate the level of priority your organization places on the following: The goal of our purchasing department is to...	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Gain knowledge related to new products.	0.808	0.814	0.889
2. Increase knowledge related to existing products.	0.749	0.838	0.883
3. Enhance our ability to assess how various product alternatives can meet organizational needs.	0.786	0.823	0.790
4. Increase our ability to effectively select among alternative products.	0.610	0.888	0.582
FINAL COEFFICIENT ALPHA	0.878		

Table 15
Expertise Emphasis - Supplier

Scale Type: Seven-point Likert type scale ranging from:
Very Low Priority to Very High Priority

Expertise Emphasis - Supplier	Source (Adapted from Liu, LI, and Xue 2010)		
In relation to purchases made through your organization's purchasing department over the past 12 months, please indicate the level of priority your organization places on the following: The goal of our purchasing department is to...	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Gain knowledge related to new suppliers.	0.794	0.866	0.837
2. Increase knowledge related to existing suppliers.	0.727	0.890	0.818
3. Enhance our ability to assess how various supplier alternatives can meet organizational needs.	0.842	0.849	0.862
4. Increase our ability to effectively select among alternative suppliers.	0.753	0.880	0.763
FINAL COEFFICIENT ALPHA	0.900		

Table 16
Expertise Emphasis - Environmental

Scale Type: Seven-point Likert type scale ranging from:
Very Low Priority to Very High Priority

Expertise Emphasis - Environmental	Source (Adapted from Liu, LI, and Xue 2010; Johnson, Sohi, and Grewal 2004)		
In relation to purchases made through your organization's purchasing department over the past 12 months, please indicate the level of priority your organization places on the following: The goal of our purchasing department is to...	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Gain knowledge related to market conditions that affect buying.	0.725	0.837	0.782
2. Increase knowledge related to competitors' purchasing behaviors.	0.716	0.842	0.782
3. Enhance our ability to follow laws and regulations relevant to supplier relationships.	0.657	0.862	0.744
4. Increase our ability to evaluate the competitive landscape.	0.813	0.800	0.882
FINAL COEFFICIENT ALPHA	0.872		

Table 17
Need for Operational Flexibility

Scale Type: Seven-point Likert type scale ranging from:
Not at All Accurate to Completely Accurate

Need for Operational Flexibility	Source (New Scale)		
Please indicate the extent to which each of the following statements are accurate: Our organization needs to...	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Be more flexible regarding day-to-day changes in operations.	0.850	0.942	0.869
2. Enhance our flexibility to respond to changes in operational requirements.	0.886	0.931	0.920
3. Be more flexible in our daily functioning.	0.881	0.933	0.908
4. Be more flexible in our processes to respond to operational issues.	0.894	0.929	0.934
FINAL COEFFICIENT ALPHA	0.949		

Table 18
Need for Strategic Flexibility

Scale Type: Seven-point Likert type scale ranging from:
Not at All Accurate to Completely Accurate

Need for Strategic Flexibility	Source (Adapted from Grewal and Tansuhaj 2001)		
Please indicate the extent to which each of the following statements are accurate: Our organization needs to...	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Be more flexible in strategic actions in response to changes in the marketplace.	0.886	0.963	0.908
2. Enhance our strategic flexibility to create options in relation to new market needs.	0.911	0.961	0.931
3. Improve our strategic flexibility to better respond to new market opportunities.	0.913	0.961	0.933
4. Increase our strategic flexibility to create alternative responses to new market threats.	0.875	0.964	0.901
5. Enhance our strategic flexibility in order to benefit from opportunities that arise from changes in the environment.	0.909	0.961	0.916
6. Be more strategically flexible in order to benefit from diversity in the environment.	0.844	0.966	0.855
7. Be more strategically flexible in our response to competitor moves.	0.862	0.965	0.874
FINAL COEFFICIENT ALPHA	0.968		

Table 19
Need for Decision-Making Autonomy

Scale Type: Seven-point Likert type scale ranging from:
Not at All Accurate to Completely Accurate

Need for Decision-Making Autonomy	Source (Adapted from Homburg and Prigge 2014; Menguc, Auh, and Chan Kim 2011)		
Please indicate the extent to which each of the following statements are accurate: The purchasing department in our organization has expressed the need for...	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Greater control over purchasing related decisions.	0.912	0.969	0.937
2. More decision-making authority with respect to purchasing activities.	0.946	0.964	0.961
3. To increase autonomy over decision-making processes in purchasing.	0.954	0.963	0.969
4. Greater discretion over decision-making related to purchasing activities.	0.929	0.967	0.938
5. More opportunities for freedom and independence in how our purchasing agents complete their jobs.	0.879	0.974	0.892
FINAL COEFFICIENT ALPHA	0.974		

Table 20
Cohesiveness - Viscidity

Scale Type: Semantic Differential Scale

Cohesiveness – Viscidity	Source (Adapted from Kohli 1989)		
<p>Please use the scale provided to select the appropriate circle to indicate your opinion on how each of the following statements characterize (or describe) your organization's buying group (i.e., all individuals involved in purchase decisions):</p> <p>Members of our organization's buying group...</p>	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Do not work together as a team...Work together as a team.	0.661	0.827	0.855
2. Often engage in conflict...Do not engage in conflict.	0.572	0.864	0.557
3. Do not work together cooperatively...work together cooperatively.	0.791	0.769	0.781
4. Do not agree on issues...Agree on issues.	0.770	0.785	0.726
FINAL COEFFICIENT ALPHA	0.853		

Table 21
Cohesiveness - Familiarity

Scale Type: Semantic Differential Scale

Cohesiveness – Familiarity	Source (Adapted from Kohli 1989)		
Please use the scale provided to select the appropriate circle to indicate your opinion on how each of the following statements characterize (or describe) your organization's buying group (i.e., all individuals involved in purchase decisions): Members of our organization's buying group...	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Do not know each other's mindsets...Know each other's mindsets.	0.706	0.911	0.888
2. Have known each other for a short time...Have known each other for a long time.	0.675	0.925	0.738
3. Are not familiar with each other's ways of working...Are familiar with each other's ways of working.	0.914	0.837	0.989
4. Do not know each other's work related strengths/weaknesses...Know each other's work related strengths/weaknesses.	0.894	0.845	0.898
FINAL COEFFICIENT ALPHA	0.908		

Table 22
Buying Center Complexity

Scale Type: Seven-point Likert type scale ranging from:
Not at All Accurate to Completely Accurate

Buying Center Complexity	Source (New Scale)		
Please indicate the extent to which each of the following statements are accurate: When thinking about the buying group (i.e., all individuals involved in purchase decisions) within our organization, our organization...	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Has a greater number of individuals involved in the purchasing process than similar organizations in our industry.	0.683	0.827	0.747
2. Has too many individuals involved in the purchasing process.	0.719	0.793	0.798
3. Has a complex buying group involving many functions and teams.	0.765	0.747	0.885
FINAL COEFFICIENT ALPHA	0.851		

Table 23
Third Party Involvement – Functional / Operational

Scale Type: Seven-point Likert type scale ranging from:
 Never to Always

Third Party Involvement – Functional / Operational	Source (Adapted from Flynn, Huo, and Zhao 2010)		
Please indicate the frequency with which your organization's current, primary GPO does the following:	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Our primary GPO is involved in the day-to-day purchasing operations within our organization.	0.647	0.821	0.668
2. Our primary GPO is involved in our organization by providing onsite personnel to help with contract questions.	0.637	0.823	0.696
3. Our primary GPO is involved in streamlining processes such as technology integration (i.e., item master and charge master updates).	0.638	0.823	0.682
4. Our primary GPO is involved in helping to find solutions related to issues arising with vendors.	0.678	0.812	0.775
5. Our primary GPO is involved in exchanging important information with our organization related to daily operations.	0.689	0.809	0.801
FINAL COEFFICIENT ALPHA	0.849		

Table 24
Third Party Involvement – Relational / Strategic

Scale Type: Seven-point Likert type scale ranging from:
Never to Always

Third Party Involvement – Relational / Strategic	Source (Hobman, Bordia, and Gallois (2004))		
Please indicate the frequency with which your organization's current, primary GPO does the following:	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Our primary GPO is involved in strategic discussions with our organization.	0.802	0.888	0.860
2. Our primary GPO is involved with our organization's purchasing department by listening to what it says related to strategic issues.	0.732	0.912	0.810
3. Our primary GPO is involved with our organization as a valuable member of the team that makes strategic decisions.	0.843	0.874	0.839
4. Our primary GPO is involved with our organization by providing input to the organization's long-term vision.	0.835	0.876	0.841
FINAL COEFFICIENT ALPHA	0.913		

Table 25
Third Party Adaptability

Scale Type: Seven-point Likert type scale ranging from:
Very Ineffective to Very Effective

Third Party Adaptability	Source (New Scale)		
Please indicate the effectiveness of your organization's primary GPO, over the past 12 months, with regard to:	Item-to-Total Correlation	Alpha if Deleted	Individual Std. Factor Loading
1. Adjusting to our organization's needs.	0.765	0.918	0.813
2. Providing our organization with increased flexibility through custom contracting.	0.761	0.919	0.780
3. Having a contract structure that is amenable to our organization's needs.	0.823	0.907	0.843
4. Willingly adapting its processes to help meet our organization's needs.	0.827	0.906	0.878
5. Improvising solutions that help our organization adjust to operational issues	0.868	0.898	0.922
FINAL COEFFICIENT ALPHA	0.927		

Validity

The results of the CFAs were used to test for both convergent and discriminant validity. Convergent validity was assessed through the requirements identified by Anderson and Gerbing (1988). Convergent validity is indicated by the following: standardized factor loadings that are (1) greater than 0.50, (2) highly significant, and (3) higher than twice the standard error for the same item. These standards held true for every scale. In addition, the AVE for all constructs (except transactional – process with an AVE of 0.445) are above the recommended minimum cutoff of 0.5, providing additional support for convergent validity (Bagozzi and Yi 1988; Fornell and Larcker 1981). Therefore, convergent validity is considered to exist for all constructs, with a low level of concern for the transactional – process scale.

Discriminant validity was tested following the approach of Anderson and Gerbing (1988), a nested model CFA approach. For each pair of constructs in the hypothesized model, two CFA models were conducted. The first, unconstrained model, allows the correlation between the pair of constructs to vary, allowing the CFA to solve for that correlation. The second, constrained model, sets the correlation between the pair of constructs to 1, which indicates no discrimination between constructs. For each model, a chi-square (X^2) measure of model fit was calculated. Discriminant validity is then established by a test of the differences between the X^2 values, with one degree of freedom. Significant tests, greater than 3.84 (using a probability of Type 1 error of 0.05), indicate that the constrained model fits the data worse than the unconstrained model, providing support for discriminant validity in that the two constructs are not equal. For all

pairs of constructs tested, the test of the differences between X^2 values was significant, indicating discriminate validity for each construct.

To further address the issue of CMV, Harman's one-factor test was utilized in addition to the procedural steps taken during questionnaire construction that were discussed above. Harman's one-factor test has been widely used in the literature as a means to address CMV (Podsakoff et al. 2003). All variables in the model were loaded into an exploratory factor analysis (with unrotated factors) to identify the number of factors needed to account for the variance in the model (Podsakoff et al. 2003). Four factors had an eigenvalue greater than 1.0, indicating that the different scales did not load onto a single construct. These four factors account for 59.364% of the variance, with the first factor only accounting for 25.717%. Next, all factors were put into a CFA to test whether a single factor accounts for all of the variance in the data, providing a more sophisticated test of the hypothesis (Podsakoff et al. 2003). The fit of the CFA model was poor, $X^2(135) = 353.377$, $p=.000$; CFI = 0.487; SRMR = 0.110; RMSEA = 0.120. This provides support that CMV is not likely an issue in the current study.

Validation of Formative Scales. Included in the model are two formative scales, purchasing effectiveness and purchasing efficiency. Validity was assessed for these two scales by addressing several issues outlined by Diamantopoulos and Winklhofer (2001). First, the domain of each construct was defined to ensure that it accurately captured the intent of the construct. Second, items were created for each scale to comprehensively capture the domain of the construct. Third, indicator collinearity was assessed for each construct, as excessive collinearity makes it difficult to separate the impact of each item

on the overall latent construct (Diamantopoulos and Winklhofer 2001). Multicollinearity was not an issue for either scale, indicated by VIF factors were all below the 10.0 threshold, with the highest value of 4.318. Finally, the steps taken during the literature review, qualitative fieldwork, and the pre-testing of items with both academics and purchasing managers help to provide further evidence of the validity of these scales.

MODEL ESTIMATION

The hypothesized model could be analyzed via two potential methods. The more robust method, structural equation modeling (SEM), is ideal in that it allows for testing of the entire model at one time. However, SEM requires a much larger sample to be collected, and this larger sample was not feasible to collect. As a result, multiple regression was utilized to analyze the results and test the hypotheses for each dependent variable individually.

Analysis began by creating composite scales for each construct once the measures were purified. The composites for higher-order formative constructs were calculated as the sum of the composites for their respective reflective components. Constructs were subsequently mean centered before interaction terms were created by multiplying each antecedent and moderator pair. Once all variables were calculated and formatted, MPlus Version 7.2 was utilized to perform the regression.

Regression Analysis and Results

The correlation matrix with descriptive statistics is displayed in Table 26, and the results of the regression models are displayed in Tables 27-30. Utilizing SPSS Version 23, variance inflation factors (VIF) scores were calculated for all explanatory variables,

including all interaction terms. All VIF scores were below the recommended 10.0 cutoff, with a highest value of 4.94, indicating multicollinearity is not an issue (Hair et al. 2009; Kleinbaum et al. 1998). The equations for the four regression models are illustrated next.

$$\begin{aligned} \text{Transactional Collaboration Type} = & \alpha + \beta_1\text{CSTE} + \beta_2\text{EXPE} \\ & + \beta_3\text{M}_1 + \beta_4\text{M}_2 + \beta_5\text{M}_3 \\ & + \beta_6\text{I}_1 + \beta_7\text{I}_2 + \beta_8\text{I}_3 + \beta_9\text{I}_4 + \beta_{10}\text{I}_5 + \beta_{11}\text{I}_6 \\ & + \beta_{12}\text{FrmSize} + \beta_{13}\text{FrmAge} + \beta_{14}\text{NumGPOs} \\ & + \beta_{15}\text{NumTiers} + \beta_{16}\text{HospProd} + \varepsilon \end{aligned}$$

In this model, β_1 represents the coefficient for a cost emphasis, while β_2 represents the coefficient for an expertise emphasis. The coefficients for moderator main effects (need for operational flexibility, need for strategic flexibility, and need for decision-making autonomy) are represented by β_{3-5} , while the coefficients for all six possible interaction effects are represented by β_{6-11} . Finally, β_{12-16} represent the control variables: firm size, firm age, number of GPOs utilized, number of pricing tiers in contracts, and hospital productivity.

$$\begin{aligned} \text{Strategic Collaboration Type} = & \alpha + \beta_1\text{CSTE} + \beta_2\text{EXPE} \\ & + \beta_3\text{M}_1 + \beta_4\text{M}_2 + \beta_5\text{M}_3 \\ & + \beta_6\text{I}_1 + \beta_7\text{I}_2 + \beta_8\text{I}_3 + \beta_9\text{I}_4 + \beta_{10}\text{I}_5 + \beta_{11}\text{I}_6 \\ & + \beta_{12}\text{FrmSize} + \beta_{13}\text{FrmAge} + \beta_{14}\text{NumGPOs} \\ & + \beta_{15}\text{NumTiers} + \beta_{16}\text{HospProd} + \varepsilon \end{aligned}$$

In this model, β_1 represents the coefficient for a cost emphasis, while β_2 represents the coefficient for an expertise emphasis. The coefficients for moderator main effects (need for operational flexibility, need for strategic flexibility, and need for decision-making autonomy) are represented by β_{3-5} , while the coefficients for all six possible interaction effects are represented by β_{6-11} . Finally, β_{12-16} represent the control variables:

firm size, firm age, number of GPOs utilized, number of pricing tiers in contracts, and hospital productivity.

$$\begin{aligned} \text{Purchasing Effectiveness} = & \alpha + \beta_1\text{TRANS} + \beta_2\text{STRAT} \\ & + \beta_3\text{M}_1 + \beta_4\text{M}_2 + \beta_5\text{M}_3 + \beta_6\text{M}_4 \\ & + \beta_7\text{I}_1 + \beta_8\text{I}_2 + \beta_9\text{I}_3 + \beta_{10}\text{I}_4 + \beta_{11}\text{I}_5 + \beta_{12}\text{I}_6 + \beta_{13}\text{I}_7 + \beta_{14}\text{I}_8 \\ & + \beta_{15}\text{FrmSize} + \beta_{16}\text{FrmAge} + \beta_{17}\text{NumGPOs} \\ & + \beta_{18}\text{NumTiers} + \beta_{19}\text{HospProd} + \varepsilon \end{aligned}$$

In this model, β_1 represents the coefficient for a transactional collaboration type, while β_2 represents the coefficient for a strategic collaboration type. The coefficients for moderator main effects (cohesiveness, complexity, third party involvement, and third party adaptability) are represented by β_{3-6} , while the coefficients for all eight possible interaction effects are represented by β_{7-14} . Finally, β_{15-19} represent the control variables: firm size, firm age, number of GPOs utilized, number of pricing tiers in contracts, and hospital productivity.

$$\begin{aligned} \text{Purchasing Efficiency} = & \alpha + \beta_1\text{TRANS} + \beta_2\text{STRAT} \\ & + \beta_3\text{M}_1 + \beta_4\text{M}_2 + \beta_5\text{M}_3 + \beta_6\text{M}_4 \\ & + \beta_7\text{I}_1 + \beta_8\text{I}_2 + \beta_9\text{I}_3 + \beta_{10}\text{I}_4 + \beta_{11}\text{I}_5 + \beta_{12}\text{I}_6 + \beta_{13}\text{I}_7 + \beta_{14}\text{I}_8 \\ & + \beta_{15}\text{FrmSize} + \beta_{16}\text{FrmAge} + \beta_{17}\text{NumGPOs} \\ & + \beta_{18}\text{NumTiers} + \beta_{19}\text{HospProd} + \varepsilon \end{aligned}$$

In this model, β_1 represents the coefficient for a transactional collaboration type, while β_2 represents the coefficient for a strategic collaboration type. The coefficients for moderator main effects (cohesiveness, complexity, third party involvement, and third party adaptability) are represented by β_{3-6} , while the coefficients for all eight possible interaction effects are represented by β_{7-14} . Finally, β_{15-19} represent the control variables: firm size, firm age, number of GPOs utilized, number of pricing tiers in contracts, and hospital productivity.

Table 26
Descriptive Statistics: Means, Standard Deviations, and Correlations

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1. Effectiveness	1.00																		
2. Efficiency	0.55**	1.00																	
3. Trans Collaboration	-0.08	-0.08	1.00																
4. Strat Collaboration	0.39**	0.34**	-0.38**	1.00															
5. Cost Emphasis	0.20*	0.23**	0.05	0.23**	1.00														
6. Expertise Emphasis	0.23*	0.26**	0.09	0.29**	0.67**	1.00													
7. Need for Oper Flex	0.13	0.28**	-0.02	0.17	0.17	0.20**	1.00												
8. Need for Strat Flex	0.19*	0.14	0.10	0.16	-0.05	-0.04	0.47**	1.00											
9. Need for Autonomy	0.18*	0.14	0.15	0.12	0.04	0.09	0.33**	0.34**	1.00										
10. Cohesiveness	0.32**	0.19*	-0.27**	0.27**	0.18	0.13	-0.15	0.01	-0.05	1.00									
11. Complexity	-0.08	0.14	0.14	0.01	0.10	0.18	0.23**	0.19*	0.24**	-0.17	1.00								
12. Involvement	0.23**	0.33**	-0.24**	0.52**	0.27**	0.35**	0.20*	0.11	0.04	0.17	0.19*	1.00							
13. Adaptability	0.38**	0.35**	-0.20*	0.50**	0.17	0.33**	0.09	0.18*	-0.03	0.29**	0.09	0.56**	1.00						
14. Firm Size	0.04	0.12	-0.09	0.15	-0.09	-0.08	0.13	0.19*	0.21*	-0.19*	0.10	0.13	0.12	1.00					
15. Firm Age	0.04	0.01	-0.02	0.05	0.04	-0.14	0.05	0.07	0.05	-0.04	-0.04	-0.02	-0.05	0.44**	1.00				
16. Number of GPOs	-0.04	0.08	0.33**	-0.02	0.10	0.09	0.13	0.04	0.17*	0.04	0.17	0.09	0.04	-0.07	-0.02	1.00			
17. Number of Tiers	0.01	-0.11	0.14	0.02	0.06	0.08	0.08	0.15	0.08	0.03	0.02	-0.05	0.01	-0.06	0.00	0.03	1.00		
18. Hospital Productivity	0.26**	0.28**	-0.08	0.27**	0.20*	0.10	0.02	0.08	0.00	0.40**	-0.03	0.22*	0.21*	-0.07	0.17	0.09	-0.04	1.00	
Mean	5.51	4.79	9.65	13.96	11.93	15.21	4.30	4.50	4.16	11.18	2.86	6.26	4.73	3.99 ^a	62.13	1.62	3.54	4.84	
Standard Deviation	0.87	0.99	3.74	3.77	1.91	3.46	1.47	1.37	1.83	2.40	1.59	3.02	1.29	1.84	38.86	1.12	1.64	1.01	

* $p \leq .05$, ** $p \leq .01$

^a Scale of 1 to 7, where 4 = 500 to 699 FTEs

Table 27
Multiple Regression Results – Transactional Collaboration

Explanatory Variable	Std Parameter Estimate	Unstandardized Parameter Estimate	Std Error	t-Value
Control Variables				
Firm Size	-0.102	-0.205	0.200	-1.024
Firm Age	0.008	0.001	0.009	0.082
Number of GPOs Utilized	0.343 ***	1.039 ***	0.214	4.856
Number of Pricing Tiers in Contracts	0.101	0.218	0.197	1.105
Hospital Productivity	-0.131	-0.495	0.321	-1.543
Main Effects				
Cost Emphasis (CSTE)	-0.003	-0.006	0.215	-0.026
Expertise Emphasis (EXPE)	0.058	0.064	0.138	0.461
Need for Operational Flexibility (NOF)	-0.111	-0.277	0.244	-1.133
Need for Strategic Flexibility (NSF)	0.140	0.381	0.291	1.308
Need for Decision-Making Autonomy (NDMA)	0.041	0.083	0.196	0.423
Interaction Effects				
CSTE x NOF	-0.012	-0.015	0.162	-0.090
CSTE x NSF	-0.243 *	-0.353 *	0.195	-1.812
CSTE x NDMA	-0.241 **	-0.250 **	0.107	-2.328
EXPE x NOF	-0.151	-0.091	0.094	-0.968
EXPE x NSF	0.210	0.155	0.124	1.256
EXPE x NDMA	0.156 *	0.080 *	0.047	1.731
R²			0.220	

* $p < .10$ (two tailed); ** $p < .05$; *** $p < .01$

Table 28
Multiple Regression Results – Strategic Collaboration

Explanatory Variable	Std Parameter Estimate	Unstandardized Parameter Estimate	Std Error	t-Value
Control Variables				
Firm Size	0.236 **	0.481 **	0.204	2.357
Firm Age	-0.059	-0.006	0.010	-0.578
Number of GPOs Utilized	-0.018	-0.057	0.277	-0.206
Number of Pricing Tiers in Contracts	0.022	0.048	0.201	0.239
Hospital Productivity	0.189 **	0.728 **	0.343	2.123
Main Effects				
Cost Emphasis (CSTE)	0.140	0.277	0.228	1.215
Expertise Emphasis (EXPE)	0.247 **	0.276 **	0.127	2.176
Need for Operational Flexibility (NOF)	0.122	0.308	0.286	1.076
Need for Strategic Flexibility (NSF)	0.030	0.084	0.319	0.264
Need for Decision-Making Autonomy (NDMA)	-0.057	-0.119	0.206	-0.576
Interaction Effects				
CSTE x NOF	0.053	0.064	0.180	0.357
CSTE x NSF	-0.116	-0.172	0.225	-0.765
CSTE x NDMA	0.203 *	0.214 *	0.110	1.955
EXPE x NOF	-0.146	-0.089	0.097	-0.919
EXPE x NSF	0.090	0.068	0.126	0.536
EXPE x NDMA	-0.187 *	-0.098 **	0.048	-2.059
R²			0.263	

* $p < .10$ (two tailed); ** $p < .05$; *** $p < .01$

Table 29
Multiple Regression Results – Purchasing Effectiveness

Explanatory Variable	Std Parameter Estimate	Unstandardized Parameter Estimate	Std Error	t-Value
Control Variables				
Firm Size	0.123	0.057	0.047	1.210
Firm Age	-0.004	0.000	0.002	-0.045
Number of GPOs Utilized	-0.163 *	-0.114 **	0.055	-2.080
Number of Pricing Tiers in Contracts	-0.037	-0.018	0.039	-0.474
Hospital Productivity	0.132	0.116	0.078	1.473
Main Effects				
Transactional Collaboration Type (TRANS)	0.156 *	0.036 *	0.022	1.677
Strategic Collaboration Type (STRAT)	0.292 **	0.066 **	0.028	2.337
Cohesiveness (COH)	0.142 *	0.051 *	0.029	1.771
Complexity (COM)	-0.096	-0.051	0.041	-1.245
Third Party Involvement (TPI)	-0.040	-0.012	0.035	-0.329
Third Party Adaptability (TPA)	0.241 **	0.156 **	0.078	1.988
Interaction Effects				
TRANS x COH	-0.168 **	-0.014 **	0.006	-2.395
TRANS x COM	-0.046	-0.007	0.011	-0.577
TRANS x TPI	0.028	0.002	0.009	0.220
TRANS x TPA	-0.015	-0.003	0.028	-0.095
STRAT x COH	-0.015	-0.001	0.008	-0.186
STRAT x COM	0.174 **	0.025 **	0.010	2.405
STRAT x TPI	-0.027	-0.002	0.011	-0.192
STRAT x TPA	-0.001	0.000	0.025	-0.011
R²			0.335	

* $p < .10$ (two tailed); ** $p < .05$; *** $p < .01$

Table 30
Multiple Regression Results – Purchasing Efficiency

Explanatory Variable	Std Parameter Estimate	Unstandardized Parameter Estimate	Std Error	t-Value
Control Variables				
Firm Size	0.177 *	0.090 *	0.046	1.949
Firm Age	-0.133	-0.003	0.002	-1.439
Number of GPOs Utilized	-0.058	-0.044	0.083	-0.533
Number of Pricing Tiers in Contracts	-0.123	-0.068	0.050	-1.363
Hospital Productivity	0.275 ***	0.265 ***	0.089	2.980
Main Effects				
Transactional Collaboration Type (TRANS)	0.154	0.039	0.025	1.563
Strategic Collaboration Type (STRAT)	0.297 ***	0.074 ***	0.028	2.668
Cohesiveness (COH)	0.014	0.005	0.042	0.131
Complexity (COM)	0.040	0.023	0.049	0.474
Third Party Involvement (TPI)	0.036	0.011	0.028	0.410
Third Party Adaptability (TPA)	0.150 *	0.107 *	0.063	1.686
Interaction Effects				
TRANS x COH	0.106	0.010	0.009	1.084
TRANS x COM	0.079	0.013	0.014	0.922
TRANS x TPI	-0.028	-0.002	0.008	-0.263
TRANS x TPA	-0.046	-0.009	0.022	-0.402
STRAT x COH	0.080	0.008	0.011	0.784
STRAT x COM	0.242 ***	0.038 ***	0.013	2.984
STRAT x TPI	0.025	0.002	0.012	0.184
STRAT x TPA	-0.017	-0.003	0.026	-0.128
R²			0.362	

* $p < .10$ (two tailed); ** $p < .05$; *** $p < .01$

HYPOTHESIS TESTING

A total of 35 hypotheses were tested across the four models previously discussed. The results of the hypothesis testing is discussed next, with a discussion of outcomes, contributions, and limitations presented in Chapter Six. In the following section, hypotheses are grouped according to their respective models instead of in the order in which they originally appeared in the third chapter. The hypothesized effects are shown in Figure 2, while Figure 3 shows the actual effects in terms of both significance and direction.

Figure 2: Hypothesized Effects of Collaboration Type Antecedents and Consequences

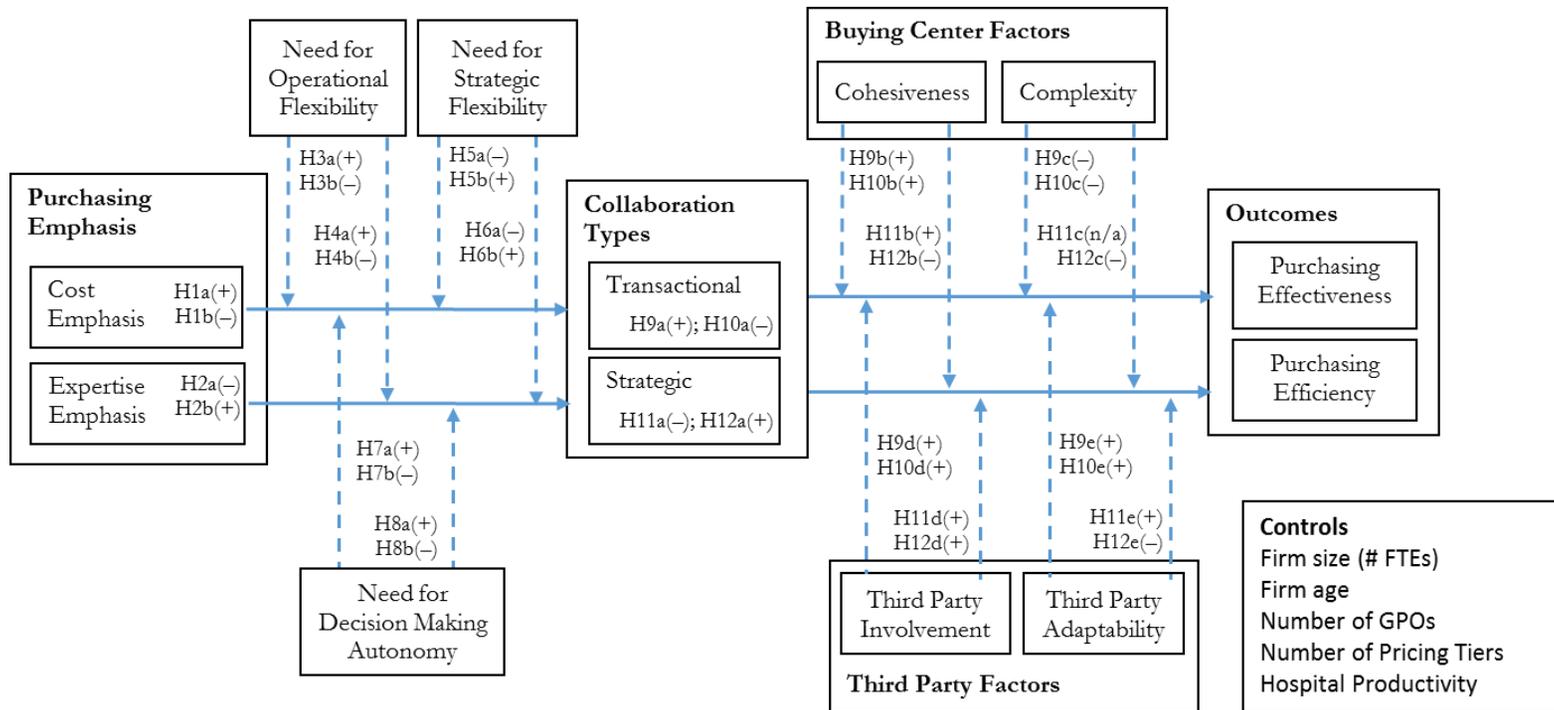
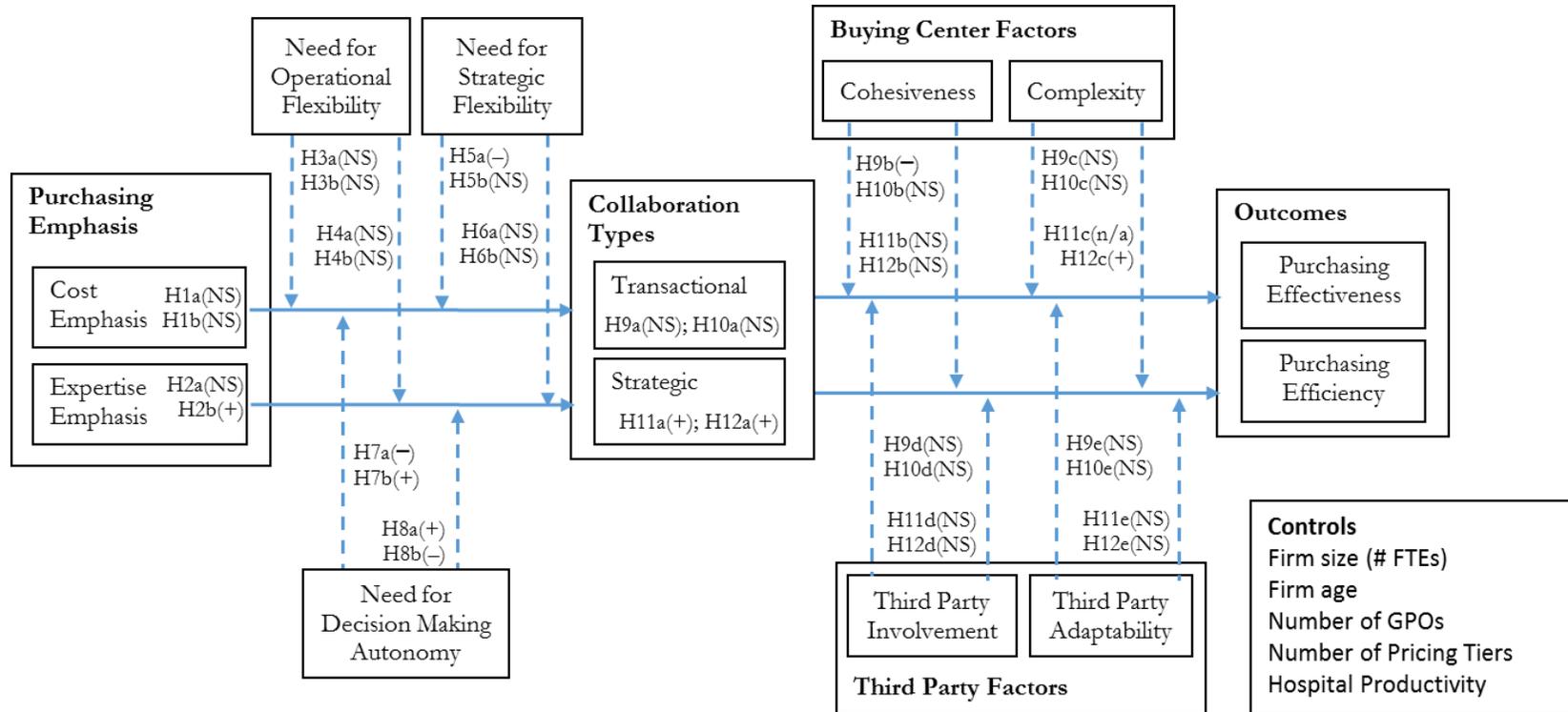


Figure 3: Actual Effects of Collaboration Type Antecedents and Consequences



Transactional Collaboration

Below are the main effect hypotheses for purchasing emphasis on transactional collaboration type. Neither of the main effect hypotheses, H1a and H2a, were supported ($\beta = -0.006, p > 0.10$ and $\beta = 0.064, p > 0.10$ respectively).

H1a: *A purchasing organization emphasis on cost is positively related to the use of a transactional collaboration type.*

H2a: *A purchasing organization emphasis on expertise is negatively related to the use of a transactional collaboration type.*

The moderating hypotheses related to how the various dependence management factors impact the use of a transactional collaboration type are listed below. It was found that the need for operational flexibility does not interact with either a cost emphasis, H3a ($\beta = -0.015, p > 0.10$) or an expertise emphasis, H4a ($\beta = -0.091, p > 0.10$). The need for strategic flexibility does interact negatively with a cost emphasis, H5a ($\beta = -0.353, p < 0.10$), but does not interact with an expertise emphasis, H6a ($\beta = 0.155, p > 0.10$). Finally, with a need for decision making autonomy, H8a ($\beta = 0.080, p < 0.10$) was found to be supported, while H7a ($\beta = -0.250, p < 0.05$) was found to be significant in the opposite direction than hypothesized. This indicates that a need for decision making autonomy positively interacts with an expertise emphasis while negatively interacting with a cost emphasis.

H3a: *The greater the need for operational flexibility, the stronger the positive relationship between cost emphasis and the use of a transactional collaboration type.*

H4a: *The greater the need for operational flexibility, the weaker the negative relationship between expertise emphasis and the use of a transactional collaboration type.*

H5a: *The greater the need for strategic flexibility, the weaker the positive relationship between cost emphasis and the use of a transactional collaboration type.*

H6a: *The greater the need for strategic flexibility, the stronger the negative relationship between expertise emphasis and the use of a transactional collaboration type.*

H7a: *The greater the need for decision making autonomy, the stronger the positive relationship between cost emphasis and the use of a transactional collaboration type.*

H8a: *The greater the need for decision making autonomy, the weaker the negative relationship between expertise emphasis and the use of a transactional collaboration type.*

Overall, there were three significant effects found in the transactional collaboration type model. Included in these effects are the negative interaction of the need for strategic flexibility with cost emphasis, the negative interaction of the need for decision making autonomy with cost emphasis, and the positive interaction of the need for decision making autonomy with expertise emphasis. A model of the effects of purchasing emphasis on transactional collaboration type is provided in Figure 4. This model includes the unstandardized parameter estimates and significance levels for each of the hypothesized effects. Figures 5-7 provide graphical representations of the interaction effects.

Figure 4: Effects of Purchasing Emphasis on Transactional Collaboration

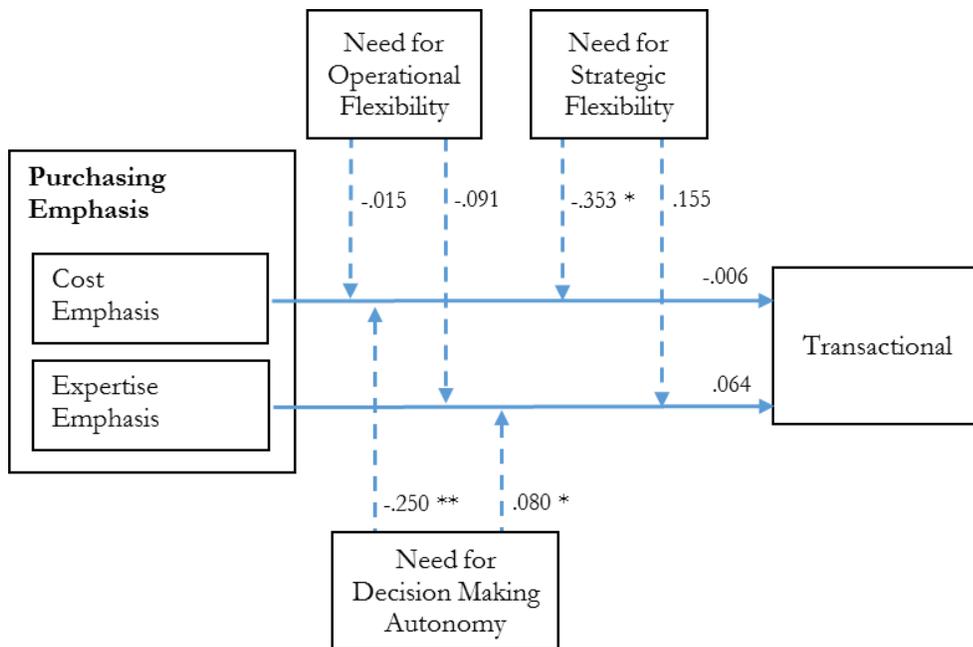


Figure 5: Interaction of the Need for Strategic Flexibility with Cost Emphasis

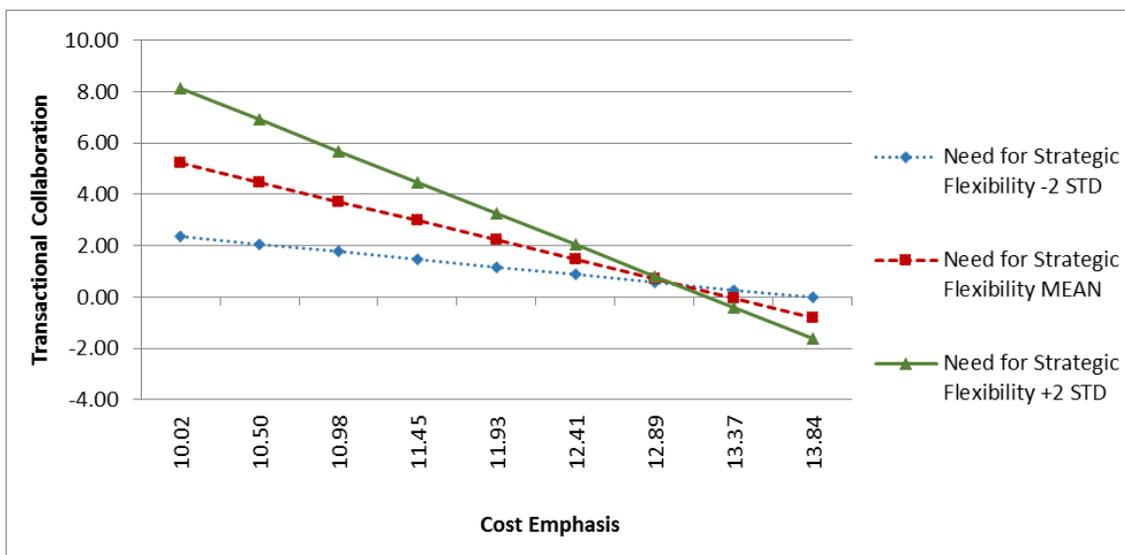


Figure 6: Interaction of the Need for Decision Making Autonomy with Cost Emphasis

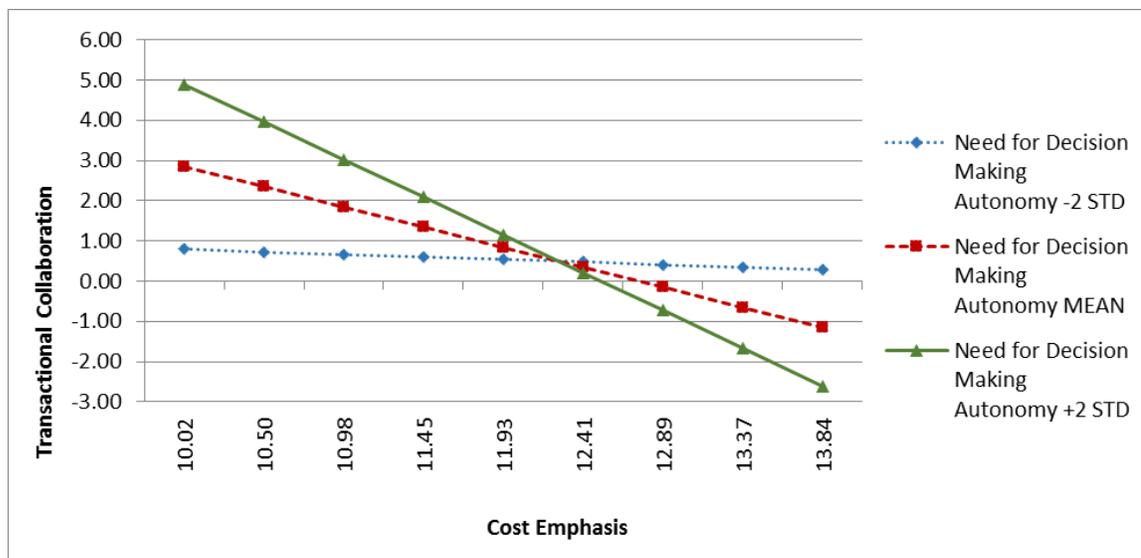
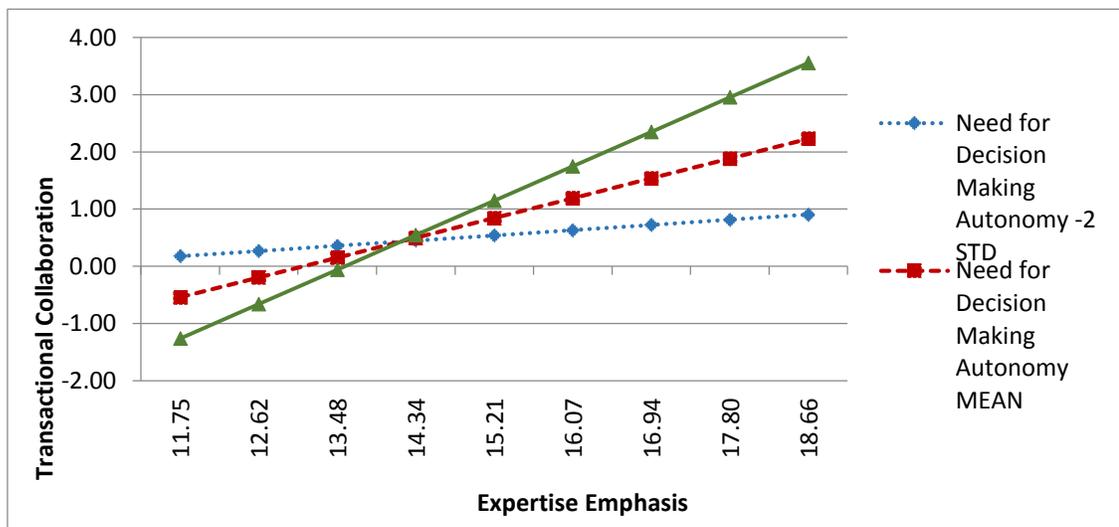


Figure 7: Interaction of the Need for Decision Making Autonomy with Expertise Emphasis



Strategic Collaboration

Below are the main effect hypotheses for purchasing emphasis on strategic collaboration type. Among the two main effect hypotheses, H2b ($\beta = 0.276, p < 0.05$)

was supported. Hypothesis H1b ($\beta = 0.277, p > 0.10$) was not supported. Therefore, a cost emphasis does not impact the use of strategic collaboration, while an expertise emphasis has a positive impact.

H1b: *A purchasing organization emphasis on cost is negatively related to the use of a strategic collaboration type.*

H2b: *A purchasing organization emphasis on expertise is positively related to the use of a strategic collaboration type.*

The moderating hypotheses related to how the various dependence management factors impact the use of a strategic collaboration type are listed below. Neither of the two moderating hypotheses related to the need for operational flexibility were supported, H3b ($\beta = 0.064, p > 0.10$) and H4b ($\beta = -0.089, p > 0.10$). Neither of the two hypotheses related to the need for strategic flexibility were supported, H5b ($\beta = -0.172, p > 0.10$) and H6b ($\beta = 0.068, p > 0.10$). The need for decision making autonomy had slightly different results. Of these hypotheses, H8b ($\beta = -0.098, p < 0.05$) was supported, while H7b ($\beta = 0.214, p < 0.10$) was found to be significant but in the opposite direction than hypothesized. This indicates that while the need for either operational or strategic flexibility do not impact the use of a strategic collaboration type, the need for decision making autonomy can have a positive or negative impact depending on whether the organization places an emphasis on cost or expertise.

H3b: *The greater the need for operational flexibility, the stronger the negative relationship between cost emphasis and the use of a strategic collaboration type.*

H4b: *The greater the need for operational flexibility, the weaker the positive relationship between expertise emphasis and the use of a strategic collaboration type.*

H5b: *The greater the need for strategic flexibility, the weaker the negative relationship between cost emphasis and the use of a strategic collaboration type.*

H6b: *The greater the need for strategic flexibility, the stronger the positive relationship between expertise emphasis and the use of a strategic collaboration type.*

H7b: *The greater the need for decision making autonomy, the stronger the negative relationship between cost emphasis and the use of a strategic collaboration type.*

H8b: *The greater the need for decision making autonomy, the weaker the positive relationship between expertise emphasis and the use of a strategic collaboration type.*

Overall, there were three significant effects found in the strategic collaboration type model, including the positive main effect of expertise emphasis on strategic collaboration, the positive interaction of the need for decision making autonomy with cost emphasis, and the negative interaction of the need for decision making autonomy with expertise emphasis. A model of the effects of purchasing emphasis on strategic collaboration type is provided in Figure 8. This model includes the unstandardized parameter estimates and significance levels for each of the hypothesized effects. Figures 9-10 provide graphical representations of the interaction effects.

Figure 8: Effects of Purchasing Emphasis on Strategic Collaboration

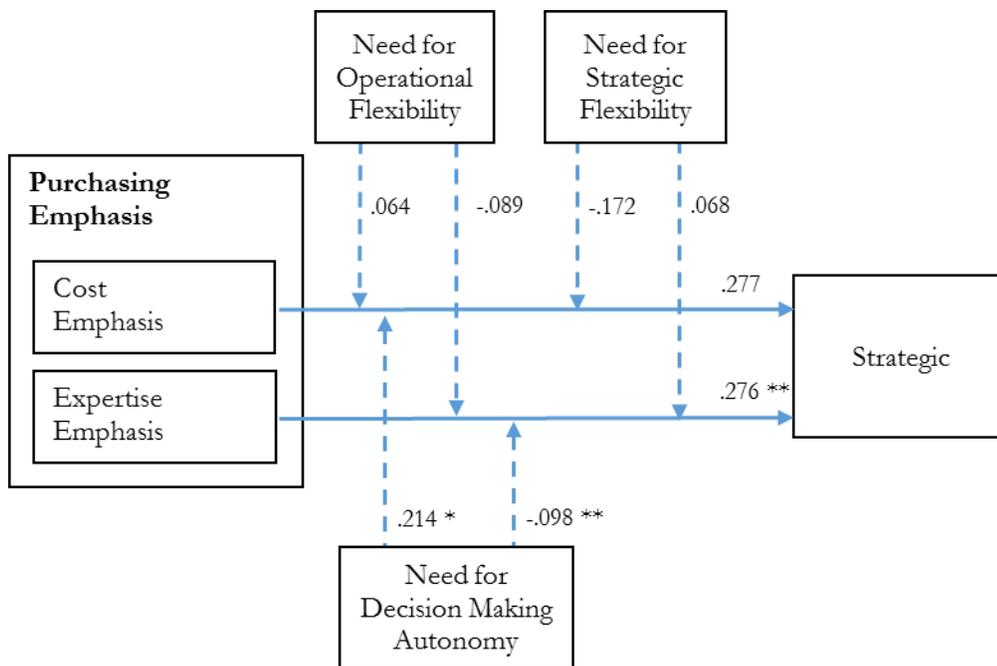


Figure 9: Interaction of Decision Making Autonomy with Cost Emphasis

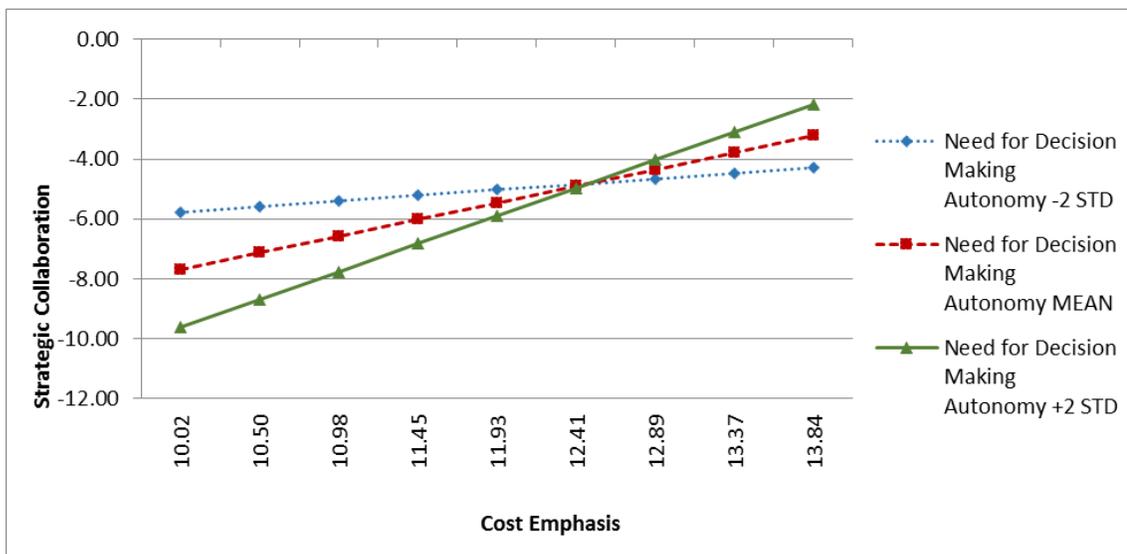
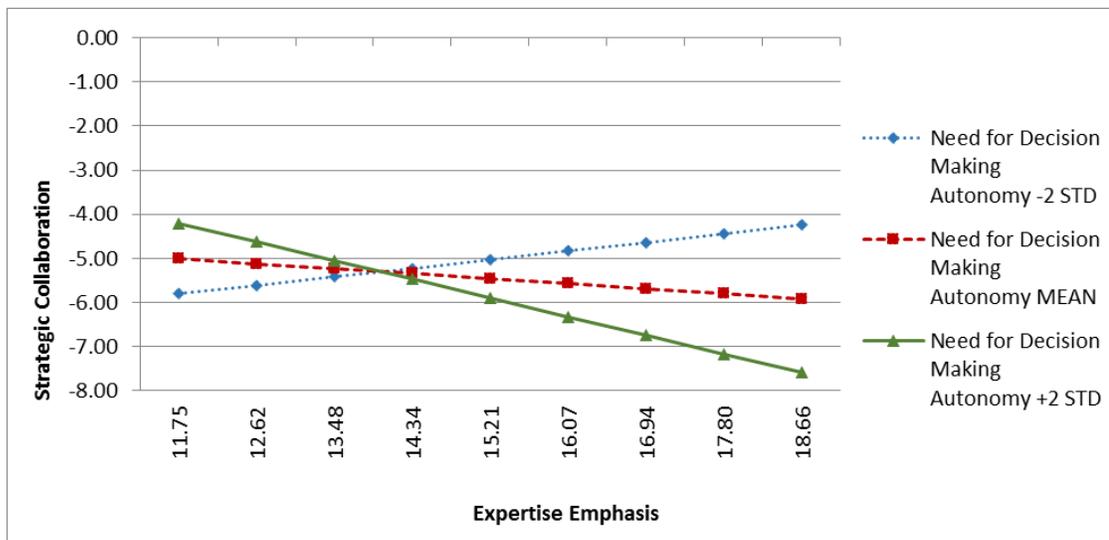


Figure 10: Interaction of Decision Making Autonomy with Expertise Emphasis



Purchasing Effectiveness

Below are the main effect hypotheses for collaboration type on purchasing effectiveness. In support of H9a, the main effect of transactional collaboration was significant, ($\beta = 0.036$, $p < 0.10$). The main effect of strategic collaboration was also found to be significant, H11a ($\beta = 0.066$, $p < 0.05$). However this significance was in the opposite direction than hypothesized.

H9a: *An emphasis on transactional collaboration as a purchasing approach is positively associated with purchasing effectiveness.*

H11a: *An emphasis on strategic collaboration as a purchasing approach is negatively associated with purchasing effectiveness.*

The moderating hypotheses for how buying center related factors impact purchasing effectiveness are listed below. Among the two hypotheses for buying center

cohesiveness, only H9b was found to be significant ($\beta = -0.014, p < 0.05$). However, this significance was in the opposite direction than hypothesized. The other hypothesis, H11b ($\beta = -0.001, p > 0.10$), was not supported. In relation to buying center complexity, the hypothesis was not supported, H9c ($\beta = -0.007, p < 0.10$). Although not hypothesized, the interaction of buying center complexity with strategic collaboration was found to be positively significant ($\beta = 0.025, p < 0.05$).

H9b: *The positive association between an emphasis on transactional collaboration and purchasing effectiveness increases as the level of buying center cohesiveness increases.*

H11b: *The negative association between an emphasis on strategic collaboration and purchasing effectiveness decreases as the level of buying center cohesiveness increases.*

H9c: *The positive association between an emphasis on transactional collaboration and purchasing effectiveness decreases as the level of buying complexity increases.*

The moderating hypotheses for how third party factors impact purchasing effectiveness are listed below. Neither of the hypotheses for third party involvement were supported, H9d ($\beta = 0.002, p > 0.10$) and H11d ($\beta = -0.002, p > 0.10$). Neither of the two moderating hypotheses for third party adaptability were supported, H9e ($\beta = -0.003, p > 0.10$) and H11e ($\beta = 0.000, p > 0.10$). This indicates that third party factors do not impact purchasing effectiveness.

H9d: *The positive association between an emphasis on transactional collaboration and purchasing effectiveness increases as the level of third party involvement increases.*

H11d: *The negative association between an emphasis on strategic collaboration and purchasing effectiveness decreases as the level of third party involvement increases.*

H9e: *The positive association between an emphasis on transactional collaboration and purchasing effectiveness increases as the level of third party adaptability increases.*

H11e: *The negative association between an emphasis on strategic collaboration and purchasing effectiveness decreases as the level of third party adaptability increases.*

Overall, there were four significant effects found in the purchasing effectiveness model. These effects include the positive main effect of transactional collaboration on purchasing effectiveness, the positive main effect of strategic collaboration on purchasing effectiveness, the negative interaction of buying center cohesiveness with transactional collaboration, and the positive interaction of buying center complexity with strategic collaboration. A model of the effects of collaboration type on purchasing effectiveness is provided in Figure 11. This model includes the unstandardized parameter estimates and significance levels for each of the hypothesized effects. Figures 12-13 provide graphical representations of the interaction effects.

Figure 11: Effects of Collaboration Type on Purchasing Effectiveness

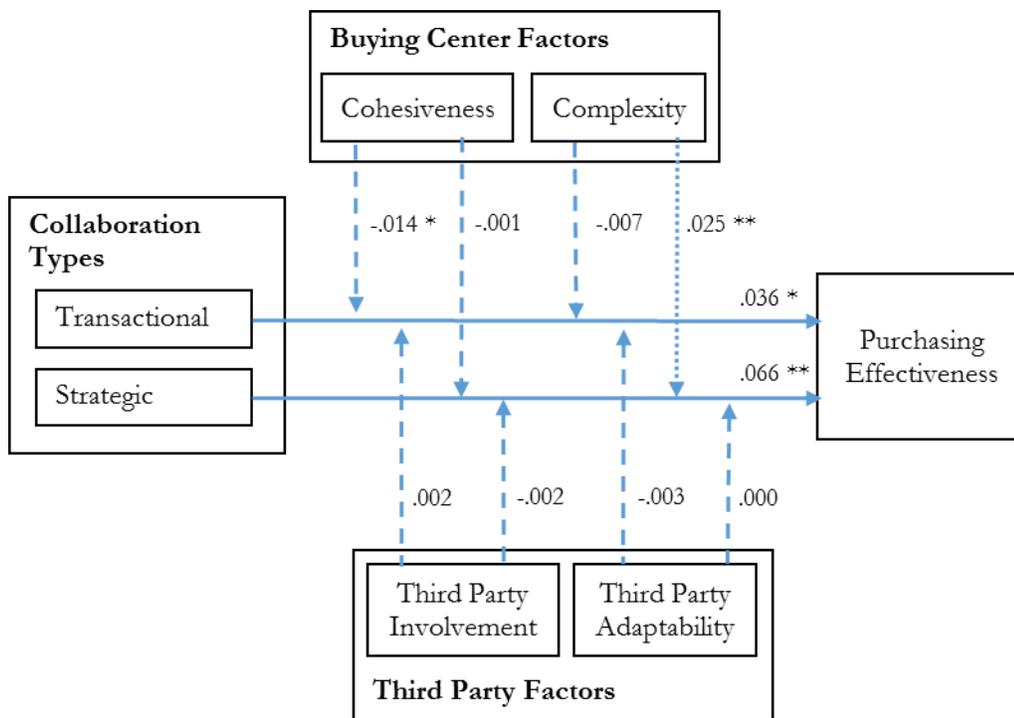


Figure 12: Interaction of Buying Center Cohesiveness with Transactional Collaboration

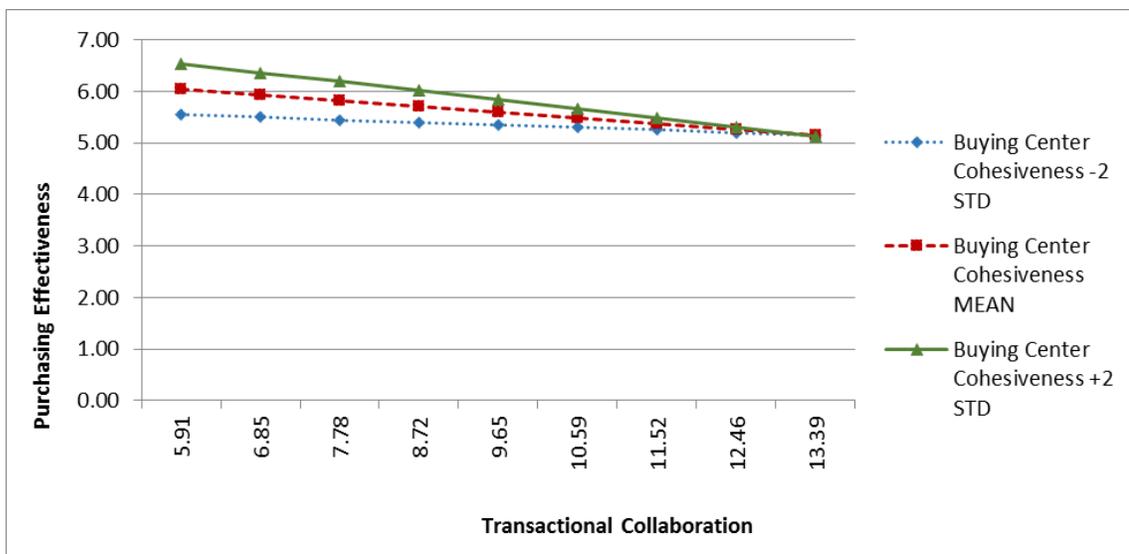
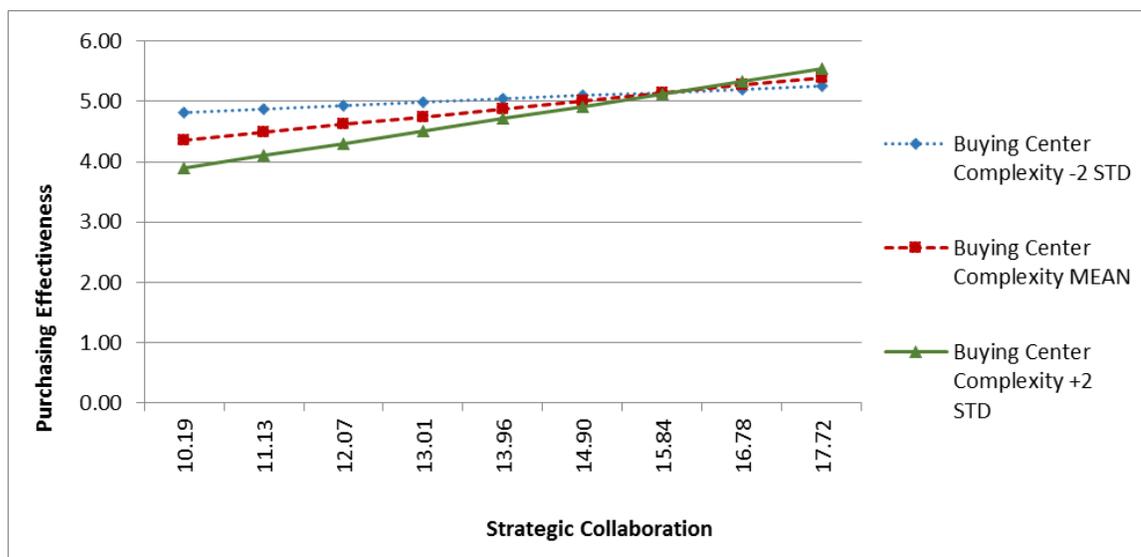


Figure 13: Interaction of Buying Center Complexity with Strategic Collaboration

Purchasing Efficiency

Below are the main effect hypotheses for collaboration type on purchasing efficiency. In support of H12a, the main effect of strategic collaboration was significant, ($\beta = 0.074, p < 0.01$). The main effect of transactional collaboration was not significant, H10a ($\beta = 0.039, p > 0.10$).

H10a: *An emphasis on transactional collaboration as a purchasing approach is negatively associated with purchasing efficiency.*

H12a: *An emphasis on strategic collaboration as a purchasing approach is positively associated with purchasing efficiency.*

The moderating hypotheses for how buying center related factors impact purchasing efficiency are listed below. Among the two hypotheses for buying center cohesiveness, neither hypothesis was found to be significant, H10b ($\beta = 0.010, p > 0.10$) and H12b ($\beta = 0.008, p > 0.10$). In relation to buying center complexity, hypothesis H12c

($\beta = 0.038, p < 0.01$) was found to be significant but in the opposite direction than hypothesized. Hypothesis H10c was not supported ($\beta = 0.013, p > 0.10$).

H10b: *The negative association between an emphasis on transactional collaboration and purchasing efficiency decreases as the level of buying center cohesiveness increases.*

H12b: *The positive association between an emphasis on strategic collaboration and purchasing efficiency decreases as the level of buying center cohesiveness increases.*

H10c: *The negative association between an emphasis on transactional collaboration and purchasing efficiency increases as the level of buying center complexity increases.*

H12c: *The positive association between an emphasis on strategic collaboration and purchasing efficiency decreases as the level of buying center complexity increases.*

The moderating hypotheses for how third party factors impact purchasing efficiency are listed below. Neither of the hypotheses for third party involvement were supported, H10d ($\beta = -0.002, p > 0.10$) and H12d ($\beta = 0.002, p > 0.10$). Neither of the two moderating hypotheses for third party adaptability were supported, H10e ($\beta = -0.009, p > 0.10$) and H12e ($\beta = -0.003, p > 0.10$). This indicates that third party factors do not impact purchasing efficiency.

H10d: *The negative association between an emphasis on transactional collaboration and purchasing efficiency decreases as the level of third party involvement increases.*

H12d: *The positive association between an emphasis on strategic collaboration and purchasing efficiency increases as the level of third party involvement increases.*

H10e: *The negative association between an emphasis on transactional collaboration and purchasing efficiency decreases as the level of third party adaptability increases.*

H12e: *The positive association between an emphasis on strategic collaboration and purchasing efficiency decreases as the level of third party adaptability increases.*

Overall, only two significant effects were found in the purchasing efficiency model. These include the positive main effect of strategic collaboration on purchasing efficiency and the positive interaction of buying center complexity with strategic collaboration. A model of the effects of collaboration type on purchasing efficiency is provided in Figure 14. This model includes the unstandardized parameter estimates and significance levels for each of the hypothesized effects. Figure 15 provides graphical representations of the interaction effects.

Figure 14: Effects of Collaboration Type on Purchasing Efficiency

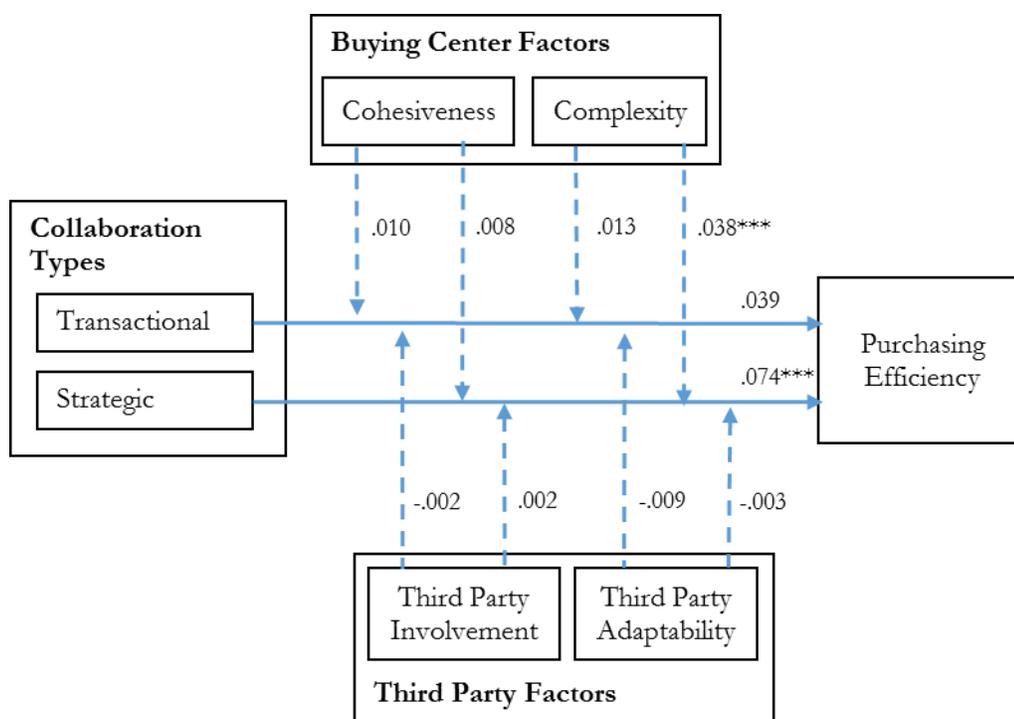
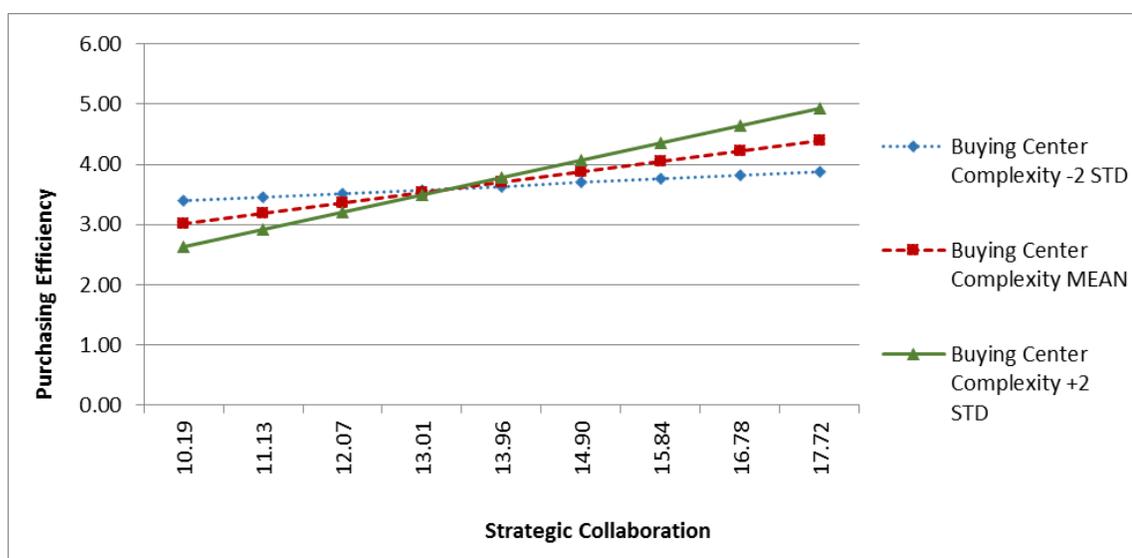


Figure 15: Interaction of Buying Center Complexity with Strategic Collaboration



POST HOC ANALYSIS

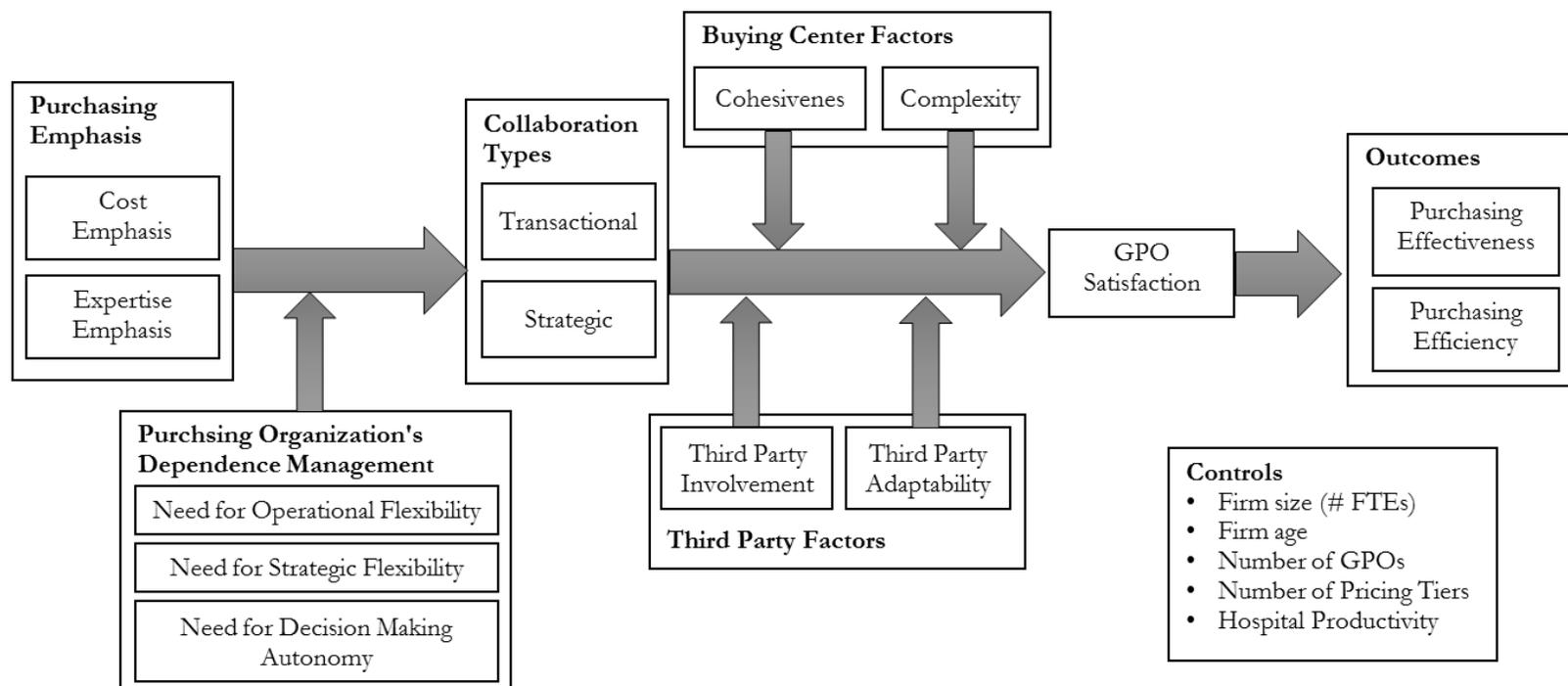
Over the course of this study, purchasing organization satisfaction with the GPO emerged as an important factor in the context of purchasing organization collaboration with GPOs. Due to the importance of satisfaction in the buyer – seller literature (e.g., Geyskens and Steenkamp 2000; Geyskens, Steenkamp, and Kumar 1999; Palmatier et al. 2006) and its potential impact on the success of buyer seller relationships, this GPO satisfaction was added to the survey and additional analyses relating to satisfaction with the GPO has been conducted.

Within a traditional buyer / seller relationship, satisfaction is often defined as an affective state that results from one organization's appraisal of its overall working relationship with another firm (Geyskens, Steenkamp, and Kumar 1999). Satisfaction has been shown to be an important factor in creating successful relationships by creating trust and commitment (e.g., Geyskens, Steenkamp, and Kumar 1999; Narayandas and Rangan 2004), as well as by bringing a sense of continuity to the relationship (Geyskens, Steenkamp, and Kumar 1999). Satisfaction is purported to be linked to higher morale, better cooperation, and lower voluntary contract termination (Hunt and Nevin 1974) and has been shown to help reduce conflict in relationships (Geyskens, Steenkamp, and Kumar 1999). Finally, satisfaction has been positively linked to objective performance outcomes (Palmatier et al. 2006). As such, it is an important factor to consider in the relationship between collaboration type and purchasing effectiveness and purchasing efficiency.

In the literature, satisfaction has been examined in terms of both economic and non-economic components (Geyskens and Steenkamp 2000; Geyskens, Steenkamp, and Kumar 1999). Economic satisfaction is defined in terms of the organization's valuation of outcomes that are economic in nature, such as sales volume and discounts (Geyskens and Steenkamp 2000). Non-economic satisfaction is more social in nature, deriving from an evaluation of the actual interaction experiences an organization has with its partner (Geyskens and Steenkamp 2000). Both economic and non-economic factors were included in the GPO satisfaction construct.

GPO satisfaction is defined as the extent to which the purchasing organization is satisfied with their relationship with the GPO. It is a new scale adapted to the current context. It includes economic factors related to price reductions and discounts, as well as non-economic factors related to GPO involvement in resolving vendor issues and GPO adaptability. GPO satisfaction is formative and is captured by a 9-item, 7-point Likert type scale ranging from 'very dissatisfied' to 'very satisfied'. Given the importance that satisfaction has on performance outcomes, I propose the revised conceptual model presented in Figure 16.

Figure 16: Conceptual Model with GPO Satisfaction



Post Hoc Results

Post hoc analysis began by ensuring the validity of the construct. Validity was assessed in the same manner as the other two formative constructs. First, the domain of the construct was defined to accurately capture the intent of the construct. Second, items were created to capture the defined domain. Third, multicollinearity was assessed for the items in the model. VIF factors were well below the 10.0 threshold. Finally, procedural steps were taken during the literature review, qualitative fieldwork, and pre-testing of items to provide further evidence of validity of this scale. After assessing validity, a composite score was calculated by averaging the scores for each item and utilized in the model testing. Multiple regression was utilized to analyze the post hoc model by estimating the following regression equations:

$$\begin{aligned} \text{GPO Satisfaction} = & \alpha + \beta_1\text{TRANS} + \beta_2\text{STRAT} \\ & + \beta_3\text{M}_1 + \beta_4\text{M}_2 + \beta_5\text{M}_3 + \beta_6\text{M}_4 \\ & + \beta_7\text{I}_1 + \beta_8\text{I}_2 + \beta_9\text{I}_3 + \beta_{10}\text{I}_4 + \beta_{11}\text{I}_5 + \beta_{12}\text{I}_6 + \beta_{13}\text{I}_7 + \beta_{14}\text{I}_8 \\ & + \beta_{15}\text{FrmSize} + \beta_{16}\text{FrmAge} + \beta_{17}\text{NumGPOs} \\ & + \beta_{18}\text{NumTiers} + \beta_{19}\text{HospProd} + \varepsilon \end{aligned}$$

In this model, β_1 represents the coefficient for a transactional collaboration type, while β_2 represents the coefficient for a strategic collaboration type. The coefficients for moderator main effects (cohesiveness, complexity, third party involvement, and third party adaptability) are represented by β_{3-6} , while the coefficients for all eight possible interaction effects are represented by β_{7-14} . Finally, β_{15-19} represent the control variables: firm size, firm age, number of GPOs utilized, number of pricing tiers in contracts, and hospital productivity.

$$\begin{aligned} \text{Purchasing Effectiveness} = & \alpha + \beta_1 \text{GPOSat} \\ & + \beta_2 \text{FrmSize} + \beta_3 \text{FrmAge} + \beta_4 \text{NumGPOs} \\ & + \beta_5 \text{NumTiers} + \beta_6 \text{HospProd} + \varepsilon \end{aligned}$$

$$\begin{aligned} \text{Purchasing Efficiency} = & \alpha + \beta_1 \text{GPOSat} \\ & + \beta_2 \text{FrmSize} + \beta_3 \text{FrmAge} + \beta_4 \text{NumGPOs} \\ & + \beta_5 \text{NumTiers} + \beta_6 \text{HospProd} + \varepsilon \end{aligned}$$

In both of the performance models, β_1 represents the coefficient for GPO satisfaction. The control variables are represented by β_{2-6} and relate to the following: firm size, firm age, number of GPOs utilized, number of pricing tiers in contracts, and hospital productivity. The results of the regression models are displayed in Tables 31-33.

Table 31
Multiple Regression Results – GPO Satisfaction

Explanatory Variable	Std Parameter Estimate	Unstandardized Parameter Estimate	Std Error	t-Value
Control Variables				
Firm Size	-0.106	-0.058	0.041	-1.392
Firm Age	0.057	0.001	0.002	0.876
Number of GPOs Utilized	0.146 ***	0.120 ***	0.041	2.914
Number of Pricing Tiers in Contracts	-0.065	-0.038	0.038	-0.987
Hospital productivity	0.000	-0.001	0.064	-0.006
Main Effects				
Transactional Collaboration Type (TRANS)	-0.171 **	-0.046 **	0.021	-2.179
Strategic Collaboration Type (STRAT)	0.195 ***	0.052 ***	0.019	2.683
Cohesiveness (COH)	0.040	0.017	0.025	0.661
Complexity (COM)	-0.020	-0.013	0.032	-0.401
Third Party Involvement (TPI)	0.013	0.004	0.025	0.174
Third Party Adaptability (TPA)	0.600 ***	0.454 ***	0.058	7.841
Interaction Effects				
TRANS x COH	-0.175 ***	-0.017 ***	0.005	-3.443
TRANS x COM	-0.114 **	-0.019 **	0.008	-2.439
TRANS x TPI	-0.161 **	-0.013 **	0.006	-2.372
TRANS x TPA	0.122	0.025	0.018	1.405
STRAT x COH	-0.086 *	-0.009 *	0.005	-1.853
STRAT x COM	-0.006	-0.001	0.007	-0.133
STRAT x TPI	-0.322 ***	-0.030 ***	0.007	-4.134
STRAT x TPA	0.174 **	0.037 **	0.018	2.076
R ²			0.690	

* $p < .10$ (two tailed); ** $p < .05$; *** $p < .01$

Table 32
Multiple Regression Results – Purchasing Effectiveness

Explanatory Variable	Std Parameter Estimate	Unstandardized Parameter Estimate	Std Error	t- Value
Control Variables				
Firm Size	0.103	0.048	0.045	1.071
Firm Age	-0.033	-0.001	0.002	-0.307
Number of GPOs Utilized	-0.130 *	-0.091 *	0.048	-1.903
Number of Pricing Tiers in Contracts	0.049	0.024	0.040	0.610
Hospital Productivity	0.199 **	0.174 **	0.087	2.013
Main Effects				
GPO Satisfaction	0.305 ***	0.260 ***	0.087	2.970
R²			0.171	

* $p < .10$ (two tailed); ** $p < .05$; *** $p < .01$

Table 33
Multiple Regression Results – Purchasing Efficiency

Explanatory Variable	Std Parameter Estimate	Unstandardized Parameter Estimate	Std Error	t- Value
Control Variables				
Firm Size	0.246 ***	0.125 ***	0.046	2.709
Firm Age	-0.154	-0.004	0.002	-1.549
Number of GPOs Utilized	0.020	0.015	0.076	0.200
Number of Pricing Tiers in Contracts	-0.067	-0.037	0.066	-0.550
Hospital Productivity	0.301 ***	0.289 ***	0.089	3.235
Main Effects				
GPO Satisfaction	0.240 ***	0.225 ***	0.079	2.850
R²			0.214	

* $p < .10$ (two tailed); ** $p < .05$; *** $p < .01$

The results of the post hoc analysis indicated that GPO satisfaction plays an important role in the current context. Both collaboration types have a significant impact on GPO satisfaction, with transactional collaboration having a negative impact ($\beta = -0.046$, $p < 0.05$) and strategic collaboration having a positive impact ($\beta = 0.052$, $p < 0.01$) on satisfaction.

The results also indicate six significant moderation effects. The first three significant effects are for buying center factors. Buying center cohesiveness exacerbates the negative impact of transactional collaboration on satisfaction ($\beta = -0.017, p < 0.01$) while weakening the positive impact of strategic collaboration on satisfaction ($\beta = -0.009, p < 0.10$). Buying center complexity is also found to negatively moderate the relationship between transactional collaboration and satisfaction ($\beta = -0.019, p < 0.05$), but has no impact on the relationship between strategic collaboration and satisfaction ($\beta = -0.001, p > 0.10$).

The remaining three significant effects are for third party factors. Third party involvement exacerbates the negative impact of transactional collaboration on satisfaction ($\beta = -0.013, p < 0.05$) while weakening the positive impact of strategic collaboration on satisfaction ($\beta = -0.030, p < 0.01$). Finally, third party adaptability strengthens the positive relationship between strategic collaboration and satisfaction ($\beta = 0.037, p < 0.05$), but has no impact on the relationship between transactional collaboration and satisfaction ($\beta = 0.025, p > 0.10$).

The results also provide support for a positive relationship between satisfaction and performance. GPO satisfaction is found to have a positive impact on both purchasing effectiveness ($\beta = 0.260, p < 0.01$) and purchasing efficiency ($\beta = 0.225, p < 0.01$).

CHAPTER SIX – DISCUSSION –

OBJECTIVES OF THE CHAPTER

The objective of this chapter is to discuss the results of the study and outline the theoretical and managerial implications. First, the results of the hypothesized model are interpreted. This is followed by a discussion of the results of the post hoc analysis. Next, both theoretical and managerial contributions are offered. Finally, limitations of the study and areas for future research are presented.

DISCUSSION

The purpose of this dissertation was to provide a better understanding of how purchasing organizations collaborate or participate with third party collaborators and how collaboration type drives purchasing performance in terms of both effectiveness and cost efficiency. The primary motivation behind this research was to better understand what drives performance in a collaborative purchasing setting in order to help purchasing organizations understand the impact that their actions and decisions are having on the organization. To do so, the following research questions were examined: a) How do purchasing organizations participate in, or collaborate with, third party collaborators (specifically GPOs)?, b) What types of collaboration are conducted?, c) How do different purchasing emphases impact the use of different collaboration types?, d) What conditions impact the effect of purchasing emphases on utilization of a particular collaboration type? e) How does a particular purchasing collaboration type impact purchasing effectiveness and purchasing efficiency?, f) How do buying center characteristics such as cohesiveness and complexity impact the relationship between collaboration type and purchasing

effectiveness and purchasing efficiency?, and g) How do third party factors, such as third party involvement and third party adaptability, impact the relationship between collaboration type and purchasing effectiveness and purchasing efficiency?

Main Effects of Purchasing Emphasis on Collaboration Type

The results provide some critical insights that help in understanding what drives purchasing organizations to utilize transactional and/or strategic collaboration. The results show that an expertise emphasis has a positive impact on strategic collaboration type while it has no impact on the use of a transactional collaboration. The positive impact on strategic collaboration is in line with the hypothesis and indicates that when a purchasing organization is focused on increasing expertise related to products, suppliers, and the external environment, they are more likely to reach out to a third party collaborator to help provide the insight they are lacking. The fact that expertise emphasis has no impact on transactional collaboration may indicate that the transactional approach does not deliver what the purchasing organization is seeking (e.g., expertise related to new products on the market). In other words, it may be that GPOs do not invest time in purchasing organizations who simply transact and therefore organizations seeking expertise do not utilize the transactional approach.

The results also indicate that cost emphasis has no impact on collaboration type, whether it is transactional or strategic. The lack of significance of cost emphasis is not too surprising when one takes into consideration the overall goal of working with a third party collaborator – to aggregate spend and reduce costs. Many organizations emphasize cost in their purchasing departments, indicating that cost reduction is an extremely

important part of the purchasing process. However, the importance of a cost emphasis alone does not appear to be enough to persuade an organization to utilize a specific collaboration type. It is possible, that despite a high emphasis on cost, purchasing organizations are able to achieve their cost reduction goals regardless of the type of collaboration they choose to utilize.

Moderators of Purchasing Emphasis

There were three moderating variables in the antecedent model – the need for operational flexibility, the need for strategic flexibility, and the need for decision making autonomy. The results of each of these moderators, along with potential conclusions to be drawn from each, are discussed next.

Need for Operational Flexibility. It was expected that the need for operational flexibility would have a positive interaction effect with both cost and expertise emphasis on transactional collaboration while having a negative interaction effect with both cost and expertise emphasis on strategic collaboration. However, the results of all four moderation effects were non-significant. This indicates that although organizations may have a need to be operationally flexible, purchasing organizations may not view collaboration types as a way to fulfill this need. In other words, organizations believe they can meet the need through other processes and thereby feel free to choose whichever collaboration type they want to utilize regardless of the flexibility need. Alternatively, it may be that organizations tend to prefer a higher level of rigidity in operations in order to maintain a steady set of suppliers and products. This may help in a variety of ways, such

as creating consistency with physician preference items or helping purchasing employees maintain supplier relations and knowledge of the purchasing processes.

Need for Strategic Flexibility. Of the four moderating hypotheses, only one interaction effect was significant – the need for strategic flexibility negatively moderates the relationship between cost emphasis and transactional collaboration. However, the need for strategic flexibility does not positively impact the relationship between cost emphasis and strategic collaboration as expected. This indicates that when an organization is focused on costs, yet realizes their need for strategic flexibility, the organization is likely to shift away from a transaction by transaction approach in order to gain more understanding of the marketplace through a variety of other means. In other words, the purchasing organization is more willing to allow the GPO to become involved in the organization's long-term, strategic plans, lowering the desire to maintain an arms-length relationship. However, the willingness to become more involved in the third party collaborative relationship does not appear to be strong enough to shift the organization toward a strategic partnership that is inherently involved in a strategic collaboration approach.

It was expected that the need for strategic flexibility would enhance the positive relationship between expertise emphasis and strategic collaboration while exacerbating the negative relationship between expertise and transactional collaboration. This does not appear to be the case. This may be because purchasing organizations with a high need for strategic flexibility find that their needs are sufficiently met with whatever purchasing arrangement they already have in place. In other words, a purchasing organization does

not feel the need to dig deeper into the strategic partnership as it already has what it needs from existing relationships. Alternatively, a high need for strategic flexibility may indicate that purchasing organizations are more willing to look outside of their strategic partnership to gain market knowledge and flexibility in other areas. For example, a strategic collaboration organization may believe they are missing out on potential market information and flexibility options by sticking with their main strategic partner. As such, the organization may choose to begin working with separate third party collaborators in order to obtain additional information. However, this may not be enough to shift the organization to the complete arms-length approach in its relationships with third parties that is inherent in a transactional collaboration approach.

Need for Decision Making Autonomy. The results indicate that the need for decision making autonomy has the most impact on the relationship between purchasing emphasis and collaboration type, with all four moderation effects being significant. This indicates that purchasing organizations are taking into consideration how much autonomy they are willing to give up (or desire to take back) when making decisions about third party collaboration.

It was expected that the need for decision making autonomy would strengthen the relationship between cost emphasis and transactional collaboration. Although this effect is significant, it is in the opposite direction than anticipated. This may indicate there is a conflict in goals between the purchasing organization's priority for the purchasing department and what the purchasing department needs within itself. For example, although the transactional approach is likely to lead to lower prices on purchases, it may

be a cumbersome process for the purchasing department to carry out. As such, when the purchasing department has a high need for decision making autonomy, the cost emphasis priority lessens, allowing the purchasing department to maintain control over the purchasing process. In other words, the purchasing department is able to streamline search processes, without constantly looking for the lowest price possible or beginning a new search for every purchase, likely reducing the utilization of a completely transactional approach.

However, the need for decision making autonomy positively moderates the relationship between cost emphasis and strategic collaboration. This indicates that though a high need for decision making autonomy may lead to a cost emphasis organization pulling away from a transactional approach, it may help to drive organizations to a strategic approach. This may indicate that purchasing organizations with a high need for decision making autonomy and a high cost emphasis realize that a strategic approach to collaboration offers benefits to the organization beyond what a transactional approach could offer. For example, digging into a strategic relationship with a third party organization and increased participation in third party committees / meetings may be seen as providing the purchasing department with greater influence on product and supplier related decisions which can be highly beneficial to the organization. In addition, creating a strategic partnership with a third party collaborator may free up purchasing department time by giving it access to information and technologies it might not otherwise have. This allows the department to spend more time strategizing and planning out strategic directions that can help the organization save time and money.

The results also indicate that a need for decision making autonomy positively moderates the relationship between expertise emphasis and transactional collaboration. The positive moderation indicates that an organization with an expertise emphasis and high need for decision making autonomy is likely to utilize more of a transactional approach. It may indicate that organizations view the need for decision making autonomy to outweigh the expertise emphasis, thereby choosing to take a transaction by transaction approach to collaborative purchasing. Alternatively, organizations may realize that a transaction by transaction approach provides the best of both worlds. In other words, the transactional approach allows the organization to maintain autonomy over decisions while at the same time gaining information related to the market and suppliers from multiple, different sources.

Finally, the results also indicate that, as hypothesized, a need for decision making autonomy weakens the relationship between an expertise emphasis and strategic collaboration. This indicates that the need for decision making autonomy instills the organization with a high need to control product and supplier choice without allowing the third party collaborator to fully dictate these decisions. These organizations begin to rely on their own level of expertise to help with these decisions.

Purchasing Performance

The performance models resulted in mixed results. The main theme to emerge from the analysis is the success of the strategic collaboration approach. Although it was expected that strategic collaboration would be more efficient and less effective, it was found that the approach was beneficial in increasing both efficiency and effectiveness.

This shows the importance of the strategic approach – not only does it help with streamlining processes, but it does not hinder the organization from meeting its goals.

This could indicate that organizations focusing on contract compliance and strategic partnership are very aware of the choices they have available to them, thereby helping them to set realistic organizational goals that are in-line with the strategic approach.

Alternatively, it could indicate that third party collaborators have become more adept at providing the flexibility and choice that purchasing organizations require.

It was expected that a transactional approach would have a positive impact on effectiveness and a negative impact on efficiency. The results indicate that a transactional approach is indeed effective. This indicates that organizations utilizing a transaction by transaction approach are indeed paying attention to organizational goals while making each purchase decision. In other words, by selectively choosing contracts, searching for lower prices on each transaction, and working with multiple GPOs, the purchasing organization is able to better meet their needs by selecting purchases that help to provide the right items, reduce stock outs, and achieve annual cost savings. This leads to an increase in effectiveness.

The interesting finding is that a transactional collaboration approach does not impact efficiency negatively as expected. This indicates that though a purchasing organization is taking on a transaction by transaction search for new purchases, it is not having a negative impact on efficiency through an increased number of purchase orders, working with more vendors, or dealing with an increase in discrepancies. In other words, although a purchasing organization who utilizes the transactional approach may never

become truly efficient given the nature of the approach, the purchasing department becomes skillful enough in handling the potentially excess requisitions and vendors that it does not negatively impact efficiency.

Of the sixteen moderating hypotheses included in the model, only three significant effects were found. The results indicate that third party factors do not play a role in the direct relationship between collaboration type and purchasing effectiveness and purchasing efficiency. However, buying center factors do have a minor role to play in purchasing effectiveness and purchasing efficiency when coupled with collaboration type. For example, buying center cohesiveness reduces the positive impact of transactional collaboration on effectiveness. This indicates that a well-oiled buying center machine may actually be a hindrance when coupled with a transactional approach. This may indicate that individuals in the purchasing department have a hard time saying no to others in the buying center who request certain products or suppliers that may not be in line with the organizational goals.

The lack of support for moderating effects in the purchasing performance models may indicate that the connection between collaboration type and purchasing effectiveness and purchasing efficiency may be too much of an intellectual leap, especially when considering the complete lack of significance with third party factors. As third party factors were important ideas brought out in both the literature and the qualitative fieldwork, it appears there might be some additional factor that is lacking. As such, post hoc analyses were conducted. These results are discussed next.

Post Hoc Analysis

The primary goal of the post hoc analysis was to better understand the results of the consequences model - especially the lack of findings for third party involvement. When conceptualizing third party involvement, it appeared likely that there was another factor that might be involved, namely GPO satisfaction. GPO Satisfaction is defined as the extent to which the purchasing organization is satisfied with their relationship with the GPO. The results of the post hoc analysis indeed indicate that GPO satisfaction is an important missing link in the originally hypothesized model, providing a significant connection between collaboration type and purchasing performance.

Main Effects. There are two significant main effect findings of interest in this study. First, transactional collaboration has a significant negative effect on GPO satisfaction. This indicates that when a purchasing organization is taking a transaction by transaction approach they are less likely to be satisfied by what their primary GPO does for them. It could be that the organization has higher expectations related to price / value discounts or the adaptability of the GPO due to the nature of their collaboration and therefore is less easily satisfied. Alternatively, the transactional collaboration organization may not be seeing the results they hope for, simply due to the arms-length nature of the collaboration approach. In other words, without the purchasing organization becoming a more strategic partner with the GPO, the GPOs arms are tied as to the level of value they can actually provide.

The other main effect of importance is the highly significant positive impact that strategic collaboration has on GPO satisfaction, it is worth noting that purchasing

organizations who build strategic relationships with their GPOs tend to be happier with the level of service that is being provided in relation to price / value, vendor relations, and adaptability. For example, when a purchasing organization views their GPO as a strategic partner, involving the GPO in long term plans, the GPO itself has the ability to better understand the purchasing organization's needs and provide a higher level of flexibility to the purchasing organization. Additionally, a purchasing organization that is committed to group-maximization and contract compliance will be more satisfied with the level of benefits the GPO is providing through discounts and lower prices.

Moderating Effects. There are eight moderating paths in the revised model. Of those, six are significant effects. Buying center factors account for three of the significant results. The results indicate that in general, cohesiveness has a negative moderating impact on GPO satisfaction, regardless of the collaboration type involved. This may be due to the sense of trust and cooperation that is built through the familiarity and viscosity inherent in the cohesiveness (Venkatesh, Kohli, and Zaltman 1995). This cohesiveness may interfere with changes or new processes the GPO brings to the table. In other words, a cohesive team may be less likely to try new processes, technologies, or products and suppliers and thereby be less satisfied with the GPO outcomes.

The results also indicate that buying center complexity exacerbates the negative relationship between transactional collaboration and GPO satisfaction. A complex buying center has more individuals involved in the purchasing process than would otherwise be optimal. Coupled with a transaction by transaction approach to collaboration, a complex buying center slows the system and creates more work for the purchasing organization in

terms of invoices and discrepancies. A purchasing organization in such a scenario may have too high expectations for what the GPO can accomplish, or may expect more adaptability given its complexity. However, a GPO working in this situation may have difficulty keeping up with vendor issues or maintaining its flexibility in light of the complexity of the situation. As a result, satisfaction in the GPO is lessened.

Third party factors account for the other three significant effects in the revised model. First, third party involvement appears to have a negative impact, regardless of the collaboration type. From a transactional collaboration viewpoint, it could be that the purchasing organization wants the benefits of the collaboration (i.e., access to information and processes) without the feeling of being dictated to. The organization may view the involvement as too intrusive or infringing on its desire to maintain distance from the GPO. This could lower GPO satisfaction. From a strategic collaboration viewpoint, the results indicate that the strategic organization views increased involvement in negative light. In other words, although an organization utilizing a strategic collaboration may appreciate some aspects of third party involvement (such as relational / strategic involvement), having a GPO highly involved in both relational and functional aspects of the organization may be viewed as too excessive. As such, although the organization seeks to be partners with the GPO, it may not truly appreciate the impact that third party functional involvement can have on day-to-day operations, thereby lowering satisfaction with the GPO.

Finally, third party adaptability significantly impacts the relationship between strategic collaboration and GPO satisfaction. An organization that views the GPO as a

strategic partner and seeks to be contract compliant still has times where it needs flexibility in the purchases it makes. A GPO who can provide that flexibility may help to lower costs, be more able to help solve vender issues, and provide the alternatives that the organization needs. This helps to increase GPO satisfaction.

Performance. Both main effects of GPO satisfaction on purchasing effectiveness and purchasing efficiency are highly significant and positive. This indicates that GPO satisfaction is important to the collaborative process by helping to enhance purchasing performance in the form of both effectiveness and efficiency. This supports findings in extant research linking satisfaction to performance (Palmatier et al. 2006).

CONTRIBUTIONS

Theoretical Contributions

This dissertation contributes to theory in multiple ways. First, this research provides additional insight and meaning into the process of collaborative purchasing broadly in relation to third party collaborators, and more specifically to GPOs. This research helps highlight the importance of collaboration type as a driver of purchasing effectiveness and purchasing efficiency, two important ways of measuring performance in the purchasing function (Janda and Seshadri 2001). The research also adds to the literature on satisfaction by highlighting how collaboration type impacts GPO satisfaction and linking satisfaction to purchasing effectiveness and purchasing efficiency.

Second, collaboration types (transactional and strategic collaboration) are conceptualized, defined, and measured empirically with both reliability and validity. The addition of this concept to the literature will help to provide increased understanding on

how purchasing organizations collaborate with third party collaborators, as well as how these differences impact performance. The increased understanding will provide a platform from which further research can be conducted.

Third, the research highlights differences between the two collaboration types in terms of the primary driver or purchasing emphasis, as well as in dependence management factors such as the need for strategic flexibility and the need for decision making autonomy. Since purchasing organizations can choose to manage their dependence in different ways (Pfeffer and Salancik 1978), it is important to better understand the impact these emphases and needs have on the purchasing organization. The research also adds empirical insights into both the moderators and consequences of collaboration types. The research investigates conditions under which purchasing effectiveness and purchasing efficiency may be enhanced or weakened. Thus, the proposed analysis provides a better understanding of the impact that collaborative purchasing can have on organizational objectives. While it is likely that other factors play an important role in the third party collaborative context, this dissertation provides a starting point for examining collaboration and better understanding its impact on the relationship between purchasing organizations and third party collaborators.

Managerial Contributions

This study also provides actionable managerial implications across multiple audiences. First, this research provides guidance for purchasing and materials managers in business-to-business purchasing organizations. By highlighting the two types of collaboration with third party collaborators, as well as different factors that impact the

collaborative approach, this research provides managers with a better understanding of collaboration in general. It also provides a better understanding of how collaboration drives purchasing effectiveness and purchasing efficiency, both through a direct route, as well as through GPO satisfaction. Purchasing managers should consider taking a strategic approach to collaboration, as this approach helps increase purchasing efficiency and effectiveness, even when very complex buying centers are involved. Managers should also focus on factors that help increase GPO satisfaction, such as third party adaptability, as this will also help to increase purchasing effectiveness and purchasing efficiency. Purchasing managers that attempt to utilize a transactional approach should be aware that although it may help with purchasing effectiveness, or meeting organizational goals, it has a negative impact on GPO satisfaction, an important factor involved in purchasing effectiveness and purchasing efficiency.

Second, this research provides several insights for sales managers and salespeople in the business-to-business context. For example, this research provides insight that can help the sales team understand that not all organizations seek to collaborate in the same way or for the same purpose. Understanding how the collaboration approaches differ can provide guidance to the sales team on how best to approach purchasing organizations when trying to procure business from the organization. For example, if a purchasing organization is transactional, the sales team must understand that they are competing for every transaction, and that they may need to view the third party collaborator as a competitor of sorts. At the same time, the sales organization must learn how to build long-term relations with the third party collaborators in order to reach out and connect

with those purchasing organizations utilizing a strategic approach. Also, if the organization has a primary emphasis on expertise, the sales team should present more information related to the benefits of their products, how it differs from other products on the market, and how their organization is different. If the organization has a primary emphasis on cost, the sales team should focus on providing information related to the cost and value of their product.

Finally, this research provides practical insight and guidance for the third party collaborators. It helps to explain how organizational collaboration differs, and how resource dependence factors play a role in these collaborations. For example, the research highlights the importance that a purchasing organization's need for decision making autonomy plays in decisions related to how the organization collaborates. This indicates that third party collaborators need to think about the options they offer that allow the organization to maintain discretion over their activities. For example, third party collaborators should ensure that they are adaptable to organizational needs. Not only will this help purchasing organizations maintain autonomy in their decision making processes, it has the added benefit of helping to bolster satisfaction with the third party, and ultimately purchasing effectiveness and efficiency. In addition, given the negative moderating impact of third party involvement, third party collaborators should consider the depth to which they are involved in both the functional and relational aspects of each organization that participates with it. Understanding that too much involvement can be a bad thing will benefit both the third party collaborator (through increased satisfaction of the purchasing organizations) and the purchasing organization.

LIMITATIONS AND FUTURE RESEARCH

The current research conceptualizes and examines the impact of collaboration type on purchasing performance, as well as the antecedents to collaboration type. The research utilizes a cross-sectional survey approach across a single industry, healthcare. The methodological approach used in this dissertation possesses limitations. Perhaps the most important limitation is sample size. Though the response rate was very good (30.2%), the total sample size of 123 responses prohibits the use of SEM in analyzing the data. In addition to sample size, the study utilized a single industry context limiting generalizability, measure validation included only a single sample, and the transactional – process scale had an AVE of 0.45, which is below the minimum cutoff value of 0.50. These are all limitations to the current study.

Another limitation is the use of a cross-sectional survey. This prohibits the ability to assess if and how collaboration type changes over time, as well as how the impact on performance changes. A longitudinal study could help to provide additional insight on these issues and help managers better understand the impact that collaboration has over the long term.

This dissertation is also limited in that all variables are measured from the purchasing organization's viewpoint, and all variables are perception-based. Future research could examine collaboration type from the GPO perspective (i.e., examining how the GPO responds to the different types of collaboration). Future research could also bring in secondary objective measures of performance to compliment or replace the perceived data.

Additionally, future research should examine more closely the relationship between collaboration type and performance. Identifying other factors, in addition to GPO satisfaction, that impact performance may be helpful to organizations truly seeking to understand their performance.

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APPENDIX A: QUALITATIVE INTERVIEW GUIDE AND FINDINGS

1. What is your current position and title? For how many years have you been in this position?
 - a. For how many years have you been with this company?
2. Company:
 - a. How big is your company? (# of beds, number of employees or FTEs)
 - b. How big is your purchasing function (number of employees)?
 - c. What GPO(s) does your company participate with? How big is the GPO?
3. Participation in GPO:
 - a. How long has your company participated in a GPO?
 - b. Why did your organization choose to join a GPO?
 - c. How often do you purchase through a GPO?
 - d. What types of products / services do you purchase through a GPO?
 - e. Please describe the nature of your participation with the GPO.
Probes: Do you monitor prices negotiated? Do you request custom contracts?
 - f. How involved are you (and your company) in the process? How involved is the GPO in your company?
 - g. Is your company committed to the GPO?
4. Benefits:
 - a. What benefits do you see as a result of your participation with the GPO? (Probe further regarding specific issues identified.)
Probes: Financial? Time? Other areas?
 - b. How has participation in a GPO impacted the efficiency and effectiveness of your purchasing department?
 - i. Are there factors that impact and help to increase the efficiency or effectiveness of purchasing as it relates to GPO participation?
If so, what are they?
 - c. How do you measure the benefits that you see accruing as a result of participation in a GPO?
5. Concerns:
 - a. Are there any issues or concerns that arise with participation in a GPO? If so, please describe them. (Probe further regarding specific issues identified.)
 - b. How do you handle or address these concerns?
6. What is the nature of your relationship with suppliers, as a participant in a GPO?
7. Any other issues that you can think of that are related to participating with a GPO?

FINDINGS OF QUALITATIVE FIELDWORK

In this Appendix, the key findings of the in-depth interviews are presented. First, development of the GPO collaboration types will be analyzed, beginning with the identification of three dimensions of collaboration (process, maximization goals, and relational) and followed by a description of the two collaboration types: 1) *transactional*, and 2) *strategic*. Second, conditions are identified, such as organizational flexibility and the need for decision making autonomy, that can impact the choice of collaboration types. Finally, other significant findings will be discussed, such as identified reasons for joining a GPO, benefits of participation, and ways that participation may impact the effectiveness and efficiency of the purchasing function.

COLLABORATION TYPES

Three primary dimensions to collaboration types were identified within the interviews: 1) process, 2) maximization goals, and 3) relational. The first dimension relates to the GPO process and how the purchasing organization selects its products and services, an important function in any healthcare organization. A company that is highly involved in the process actively works toward meeting organizational goals, whether that comes through selectively choosing contracts and negotiating new ones at a transactional level or through being as involved in GPO committees and providing feedback to allow for preferred products and suppliers to be provided in GPO contracts. These differences can be seen in the following quotes:

“But a lot of our contracting, especially in the clinical areas of physician preference and clinical preference, we self-contract.” (Bob, VP of Supply Chain Management)

“So the goal is to use a contracted supplier through (GPO) 100% of the time. But obviously there’s physician preference, and other areas in the market that kind of deter us from basically doing that, and there’s an exception process in place for that.” (Patrick, Contract Administrator)

“We basically, if it’s a vendor we use, a contractor item that we use, and the pricing is better than we can do locally, on a local contract, we utilize them for that. So we don’t utilize the (GPO) contract just because it’s our GPO.” (Stan, Director of Strategic Sourcing)

“Well, like I said, I sit on the board of two different organizations within the (GPO). And so I’m very vested in, in what’s going on. I would say... you know... when I go to these meetings, I have a say so in who we’re gonna pick for the distributor... ” (Katie, Materials Director)

The second dimension, maximization goals, focuses on creating value for the purchasing organization through different maximization focuses. It can be seen as what drives the motivation behind organizational participation. For example, some purchasing organizations are driven more by value-maximization, ensuring that purchases are at the lowest price or best value for the organization. Such is the case with Stan:

“So we don’t utilize the (GPO) contract just because it’s our GPO. If we can do better, we do it. Not something they want to hear, but we’ve been pretty up front with them on it. We definitely utilize it where we feel it’s in our best interest to utilize it.” (Stan, Director of Strategic Sourcing)

Katie, Materials Director for a small Midwestern hospital notes that in the past she was more selective and value-maximization focused:

“I’ll be the first one to admit, I would use all three of ‘em (GPOs), and I would cherry pick the ones that worked best for my facility.” (Katie, Materials Director)

Katie, goes on to state: *“But I wasn’t involved in the aggregation of spend. I was just at that point, on my own, getting just the tier one, from each individual GPO that I was dealing with.”* Once she started to pay closer attention to aggregate spend, her habits and focused changed to be driven more by a sense of group-maximization. She says:

“However, when you get into the contracts at the depth that we’re in, it makes more sense to stay within the contracts, because the more you build up that aggregated spend, the better spend that comes down for everybody.” (Katie, Materials Director)

The third dimension relates to the relationship the purchasing organization has with the GPO, and indicates the level to which the organization is committed to the.

When asked the level of commitment from their organizations, responses ranged from not really committed to fully committed to the process.” Evidence for this was quoted by

Tom and Stan, Materials Managers:

“Well I would tell you we’re all in. And the reason why we’re all in is back when I was telling you, we have our agreement is also for Premier to save over a 5 year period, a very large amount a money. And so we have to be jointly together on all these projects. We can’t be out doing our own thing, because, we have agreed with them to, to work that together.” (Tom, Network Director of Supply Chain)

“There’s no obligation, so it’s not a committed program. We’re probably 50% committed as an organization. We’re not wholeheartedly in it... I mean it’s voluntary.” (Stan, Director of Strategic Sourcing)

Respondents also talked about organizations viewing their GPO’s as strategic partners versus seeking to leverage multiple GPO’s:

“And depending on the particular hospital, some hospitals have chosen to identify a strategic partner and really leverage that partner, and those are, those are ones where they have just one GPO relationship. Other organizations have decided that they’re gonna

leverage one GPO relationship primarily, and then have, you know, a secondary or multiple secondaries for additional contract coverage or, or additional programs.” (Justin, Senior Director of Accounts for a GPO)

Another respondent, when asked about commitment, notes:

“Well, I think we, I think it depends. You know, I, I, again, I go back to the model that we have in contracting. I think if, you know, if I had, if they’d invested in the kinds a talent you see in industry in the supply chain side, we probably wouldn’t need a GPO. But I don’t have the resources available to me, to be able to handle all the content, all the work that needs to be done within supply chain from an administrative support side to really have that kind of a robust, you know, division - and to be able to enable the kinds of strategies that I wanna deploy. So, I figure I’m always gonna have some... you know involvement with the GPO’s on, on some end. So, you know, we’ll see where it ends up.” (Bob, VP of Supply Chain Management)

Bob notes that there are reasons he has to work with a GPO, but has more of a hands-off approach where he utilizes the GPO for those aspects of the work that he doesn’t have resources to handle but not does not have a deep involvement such as would be found with a strategic partner.

Interviews were analyzed both across organizations and within organizations, allowing for differences to emerge in organizational collaboration with GPOs. As the analysis progressed, it was evident that these three dimensions form the basis for the two primary collaboration types: 1) *transactional* and 2) *strategic*. Both collaboration types are a unique in terms of the three dimensions, as summarized in Table 1. For example, although both transactional and strategic collaboration types are more involved in the process aspects of participating with a GPO each has a different focus of that involvement. Transactional collaboration focuses more on the search process and selecting suppliers and contracts for each search project, while the strategic collaboration

focuses more on involvement at the GPO level and being involved in helping to select the vendors that are subsequently contracted with the GPO. The collaboration types will be described in more detail in the following section.

Table 1
Collaboration Types

	Process	Maximization Goals	Relational
Definition	Relates to how the purchasing department selects products and suppliers.	Refers to how the purchasing organization creates value through a focus on price, contract compliance, etc.	Refers to the primary way in which an organization relates to its GPO.
Transactional	<ul style="list-style-type: none"> ▪ Focused toward an individual transactional level ▪ Selects contracts on a transaction by transaction basis to get the right products and suppliers 	<ul style="list-style-type: none"> ▪ Driven by economic value-maximization on each purchase through GPOs ▪ Searches for lowest price possible for each transaction 	<ul style="list-style-type: none"> ▪ Maintains “arms-length” relationship ▪ Low commitment to GPO ▪ Low dependence on any one GPO
Strategic	<ul style="list-style-type: none"> ▪ Focused toward the GPO level ▪ Participates in GPO committees and provides feedback to GPOs to ensure they are able to obtain the right products and suppliers 	<ul style="list-style-type: none"> ▪ Driven by group-maximization ▪ Focus on contract compliance to ensure aggregate spend, even if it means a financial hit now for benefit in the longer term 	<ul style="list-style-type: none"> ▪ Sense of strategic partnership – not just with GPO, but possibly with all members ▪ Higher commitment to and dependence on GPOs

Transactional Collaboration Type

Purchasing organizations adopting a transactional collaboration type tend to be very process oriented from the standpoint of the individual transaction. They are highly focused on each transaction (or purchase request) as it comes and identifying the best course of action for that particular purchase. As such, these purchasing organizations are likely to initiate a new search process for each new purchase project they face and “cherry pick” those contracts that offer the most benefit to the organization, often

resulting in custom contracts or in-house contracts (e.g., Neil 2005; Page 2007) as needed. Katie, Materials Director, admitted that in a previous GPO relationship she would “*cherry pick the ones (contracts) that worked best for my facility. But I wasn’t involved in the aggregation of spend.*” Selecting contracts on a transaction by transaction basis provides the purchasing organization with a flexibility in the choice of products used or suppliers chosen that would otherwise be limited by the GPO requirements (Roark 2005).

The transactional strategy is characterized by a sense of continuously seeking the best route for the company at any given point in time, regardless of what contract the GPO would recommend or offer. This indicates that these purchasing organizations tend to be driven by a sense of value-maximization on each search they initiate, resulting in a lower commitment to the GPO they work with, even to the point of bouncing from GPO to GPO, or from GPO to internal contracts. Ryan, Purchasing Manager, commented:

“We go to the group contract as a starting point. If we’re negotiating again an orthopedic implant, we go the posting, the contract; we look at that contract, and we make a determination whether or not we want to go further with the vendor on our own, or use the group contract.”

As a result of the transactional, purchase by purchase, nature of this strategy, organizations tend to utilize multiple GPOs (e.g., Neil 2005) and maintain an arms-length relationship with any one GPO. With the use of multiple GPOs, these purchasing organizations tend to be characterized by a lower dependence on the GPO.

Strategic Collaboration Type

The second collaboration type, strategic, is characterized by high involvement in the collaborative process. For these purchasing organizations, however, the involvement reaches beyond a transactional nature. Individuals from purchasing organizations with a strategic collaboration type tend to be highly involved at the GPO level, whether by sitting on committees or attending annual meetings. As Katie, Materials Director for a small Midwestern hospital, states:

“Well, like I said, I sit on the board of two different organizations within the GPO. And so I’m very vested in, in what’s going on. And I would say, when I go to these meetings, I have a say so in who we’re going to pick for the distributor, and why this distributor should bring their markup down to meet things. Without the GPO, I wouldn’t have that kind of autonomy” (Katie, Materials Director)

As indicated by this statement, involvement at the GPO level helps purchasing organizations to have a sense of autonomy in selecting suppliers and products at a global level, instead focusing on these issues at a transactional level. As a result, purchasing organizations are freed up to focus attention on monitoring compliance to contracts and ensuring that suppliers are entering the correct prices on invoices.

In a strategic collaboration type there is also a sense of partnership or teamwork, as evidenced by the following statements:

“We have a weekly meeting with Premier, where its 3 hours long, and they go over every initiative that they’re working with us on. And they’re working on our item master, they’re working on our contracts. And remember, we’re working with them.” (Tom, Network Director of Supply Chain Operation)

“Strategically, we’re looking at what can we do to make, to get more contract compliance, but then they’re also working with us where they’re asking our opinions. They’re our partners if we need them to be.” (Tori, Supply Chain Director)

This sense of partnership creates a higher level of commitment to the GPO within these purchasing organizations, especially as GPOs can help to provide value added services such as information, education and training (Neil 2005). This can also be evidenced by a consistent focus on compliance to GPO contracts within the purchasing organizations. As Patrick (Contract Administrator) commented, “*Sometimes we’re losing tens of thousands of dollars on particular contracts, but the focus is to be contract compliant.*” This shows that commitment to the GPO and ensuring that compliance is being reached as often as possible is a key aspect to this strategy, though it also creates a higher level of dependence on the GPO.

Another component of the strategic collaboration is a concern for more than simply the respondent’s organization. Strategic collaboration types are likely to be driven by group- maximization. For example, Katie (Materials Director) noted that when you are as involved in the contracts as her purchasing organization is, it makes more sense to stay on contract as the aggregated spend comes down better for everyone involved. Although this commitment to staying on contract helps to lower cost through aggregate spend (Rodriguez 2009), it also limits flexibility in product and supplier selection choices (Roark 2005).

OTHER SIGNIFICANT FINDINGS

In addition to the two collaboration types, there are a few other key findings that are worth noting, such as the reason purchasing organizations join GPOs, the primary benefits of collaborating with a GPO, and other factors that lead to successful outcomes

when collaborating with a GPO. Each of these topics will be discussed in the remainder of this section.

Reason for Collaboration

By and large the most predominate reason for joining a GPO is cost reduction.

Some respondents indicated that as a small hospital, they could not generate enough volume on purchases to gain the lower prices needed to survive. For example, Katie says:

“Being a 24 bed facility, we do not generate a lot of volume on purchases. So it’s pretty critical that we align ourselves with a GPO that will allow us to get into different tier groups where we’re going to be paying less money for products.” (Katie, Materials Director)

Others noted that joining a GPO gave them the ability to “leverage the buying power” of a large purchasing organization to gain better pricing structures, and to standardize products and reduce skews, which both lead to cost savings. Patrick says:

“The reason we joined (GPO) was to be able to leverage the buying power of a large organization, to essentially get us to a point where we have better opportunities for pricing structures and opportunities for standardization, opportunities for skew reduction.” (Patrick, Contract Administrator)

Other respondents were looking for additional incentives, such as increased rebates, that would help them to gain an increased level of savings. Stan (Director of Strategic Sourcing) said that his organization was looking for certain things, such as admin fee share back (rebates) and guaranteed savings, his previous GPO did not offer, so his organization switched to a new GPO. Finally, some purchasing organizations realized that there was more to the cost reduction than simply lower prices and increased rebates. Don notes, *“It’s not just about necessarily hard cost savings, but it’s also process improvement, soft costs.”* Others note that utilizing a GPO helps to save time and

improve processes through the use of different technologies, such as Electronic Data Interchange (EDI), and better negotiations.

Outside of cost reduction, the other primary reason for joining a GPO is due to the professional staff and expertise that a GPO can bring to the table. Stan indicated that his organization was looking for onsite support from the GPO that would help provide expertise and someone that he could go to for quick answers to questions. Another respondent, Bob (VP of Supply Chain Management) stated:

“It is the professional staff that they can bring to bear, for specific projects. As you may or may not know, I think hospitals have been extremely frugal in terms of investing in infrastructure and support systems, especially in the business areas, in talent, to be able to support and grow a robust supply chain. And that would be true I think in other areas too, it’s not analogous just to supply chain.”
(Bob, VP of Supply Chain Management)

In a similar vein as Bob, a GPO employee, Don, says:

“Healthcare, just by the near virtue of what does, and the kinds of work that it does each and every day, it doesn’t foster change. So you have a lot of people that get promoted in the positions that they never should have been promoted to. So they’re in roles that they’re really not best suited for, largely because they don’t have the skillset, they don’t have the background, they don’t have the education. So they’re, they’re not really bringing a lot a value. They’re keeping a chair warm, and they’re kind of keeping the department going I guess, but that’s not really management. That’s not really moving the organization forward and being innovative and creative in any way. And I think GPO’s have been able to come in behind and say, ‘well hey, we’ve got talent here that we could come and take care of all that for you. This here’s our track record; this is how we can do that.’” (Don, GPO Employee)

Don indicates that healthcare is not innovative and up on change, primarily in relation to its employees and management team. He then provides a reason for purchasing organizations to join a GPO, the talent that GPOs can bring to the table.

Other respondents indicated that the GPO was able to bring product knowledge and technology capabilities to the table. One respondent noted the ability to “*see what’s out in the marketplace*” related to new products. Another respondent was interested in information on quality and product safety. Justin also states:

“I think GPO’s tend to be fairly good at providing a filter for new technology. GPO’s, they don’t tend to get focused on the bright shiny ball. You know, they’re looking at things from a different perspective, though a different lens, and as a result they tend to filter out some technology that might not be tested, which I think generally is probably a pretty good thing for the majority of healthcare organizations.” (Justin, GPO Employee)

This statement by Justin indicates that GPOs have the ability to process and filter the information that is available and present it back to the purchasing organizations. This provides the GPO with the ability to offer alternative solutions to the purchasing organizations to help fill needs in a unique manner.

Benefits of Collaboration

Besides the primary cost savings, there are many other benefits identified by the respondents. One of the most highly cited benefits received by GPOs is the ability to benchmark prices and contracts. This was primarily of interest to those utilizing a transactional strategy, as it gave them a “starting place” from which to further negotiate and attempt to gain even better prices. This is shown in the following quotes:

“We use it as a benchmark. We go out and negotiate, and if we can do better than their pricing, we do. Sometimes we’ll write a contract to include custom pricing or local pricing, so that it’s still written on their, on the (GPO) terms and conditions. But it helps us know where the market is on certain product lines.” (Stan, Director of Strategic Sourcing)

“And normally I can use, normally I’d probably say 90% of the time I was able to take (GPO) contract pricing, and drive that down maybe 10-15%. Some cases I was, I was able to add another 20 to 30%. So, yeah, I look at that first, more like a benchmarking tool.” (John, Director of Materials Management)

As noted above, expertise is also highly cited benefit of GPOs. One respondent stated that *“Generally speaking, there’s a lack of that level and that type of talent within the healthcare systems”* (Don, GPO employee) indicating that the expertise provided by GPOs is a much needed asset to the organizations. One respondent indicated that the GPO’s market intelligence and consulting expertise were major benefits they received through participation. One aspect of expertise is the negotiation process that is handled by the GPOs - providing expertise in contracts. Tori comments on this:

“I don’t have to call nine different vendors to get pricing or anything like that. I can just trust that I’ve got a good price through this GPO. I don’t have to sign contracts, they’re already signed, they’ve already gone to a legal team, I don’t have to babysit that contract through legal; it’s already been done.” (Tori, Supply Chain Director)

Another benefit of interest is technology. GPOs are able to provide software for analyzing spend patterns, processing order placement, data mining, and EDI. One benefit that the technology brings to the table is integration across the hospital system, predominately in larger organizations that are comprised of multiple hospitals and locations.

“With (GPO), we have essentially a punch out, a universal identification number. And that information from the contract will integrate with our materials management information system. And it’ll actually populate our vendor agreements to the contract price. And that gives us a better level of visibility, to an exception process that we have within our organization.” (Patrick, Contract Administrator)

Another area of integration with technology comes from the ability of the GPO software and integration to do updates to and cleansing of the item master and charge masters.

Tom states:

“A lot of them have item master cleansing services. (GPO-x) has that, (GPO-y) has that. The GPO can help with content loading, and pricing activation and you know all those kind a things. They help with all that, because all of those that they get right into your system.” (Tom, Network Director of Supply Chain Operations)

This ability to have standardized and streamlined processes for cleaning and updating master files (such as item master and charge master) can save the purchasing organization a large amount of time and result in a significant cost savings.

Finally, the technology also allows purchasing organizations to gain access to information that is otherwise unavailable to the organization. Many purchasing organizations utilized this information to analyze spend, prices, savings, and to ensure that contracts and invoices are being issued with no errors or if errors were being committed, that they were being handled correctly and efficiently. Jason notes:

“So if you run that through your GPO, they’re EDI’ing that purchase order for you, it’s going through their system and they’re ensuring that you’re getting the best price on the spot. So if the price is wrong, they will immediately send a note back to your buyer that says, ‘Hey, you’re trying to buy this item at the wrong price.’ And that buyer can fix it and then resend it.” (Jason, Executive Director of Materials Management.)

Stan also states:

“I have a program set up through them where they go directly to the lab distributors that we are on contract with, and they actually make sure that the invoices are being paid as they’re supposed to be, that they’re on contract pricing. If they’re not on contract pricing, they go and fight that battle for me, and get the money put back into my

account, as opposed to me having to take that time to do it. (Stan, Director of Strategic Sourcing)

In addition to the technology and related information, this speaks to another benefit of GPOs - their involvement in fighting battles or standing up to vendors on behalf of the organization. This benefit is very evident in the following quote from Katie:

“The GPO standing behind me. I had a problem with a vendor, who changed their way of ordering. Long story short, I ended up with way more product than I needed, at a huge cost, and they wouldn’t take it back, and they wouldn’t credit me. And I spent a year, back and forth with these people, saying, ‘You know, you’re the ones who changed things. This was your fault on your order, and not mine.’ I have all my paperwork together; I mean we took it up the chain and down the chain. And after (GPO) got involved and said, ‘Look, number one, you changed your order process, number two, you’re not charging them the right price to begin with that they’re contracted with you through us.’ And you know, they helped resolve a situation that I myself could not resolve. So having a GPO stand behind, especially a smaller hospital, means a lot.” (Katie, Materials Director)

Finally, networking was another benefit that respondents identified. By participating in annual meetings or committees, respondents were able to correspond with others that are dealing with similar issues at other organizations. Through this networking, they gain access to other ways of doing things, as well as friendships that may last beyond their tenure at their current organization.

Other Factors

There are a few other factors that were highlighted in the qualitative interviews that are important when investigating both choice of collaboration type and the effectiveness and efficiency of purchasing. The first is the existence of a managerial team

that is supportive, or championing, the strategic purchasing initiatives related to GPOs.

One respondent noted:

“The administration at the hospital, they look at me and they’re like, ‘Okay, you’re gone 4 times a year (because I have to travel for the meeting). What are we getting out of it?’ Well, okay, you’re getting a cost minus in your pharmacy, you’re getting a cost plus that’s almost unheard of for a hospital our size...And the biggest thing is, administration is like – ‘Oh, those are just people that place orders. There’s not a whole lot of value in what they do; they’re not a revenue department.’ Well with us driving not only the prices down, but the markups down, that is a huge deal. I mean even if you’re getting down into you know, pennies, it is a lot a money.” (Katie, Materials Director)

Katie noted that administration was not 100% on board with the actions she was taking, but later she states, *“I really believe that they (GPOs) can do good things, if the people, such as myself, can make the administration understand that this is the way to go.”* One of the GPO employees interviewed also noted that administrative support was a key factor in allowing GPOs to make a difference in their organizations:

“From my experience, the organizations that are very proactive, the CFO’s are very engaged, very proactive. They are the ones that are involved every step of the way. They’re having the meetings, they’re having the dialogue, they’re asking the tough questions, they’re holding the GPO’s feet to the fire. And those are the ones that seem to, you know, the hospitals that seem to really leverage and benefit greatly from that relationship.” (Don, GPO Employee)

These quotes indicate the importance of having a top management team that is on board with the GPO process. In a related vein, another factor impacting the GPO collaboration is how much control the organization (or purchasing department) is willing to give up in regards to its decision making. Don goes on to say:

“You know, some hospitals don’t buy into the whole value analysis, they’re not really concerned about standardizing on medical

supplies. They just want cost control. I mean it's really, well it all kind of stems from in control, right. And it depends on who's sort of managing the organization, how much control they want to relinquish. So GPO's I think will take over as much as they're allowed to in so many ways. You know I've been in organizations where the CFO was very tight fisted on change, and the clinicians were very, very resistant to change. And value analysis committees were not well attended; they were not promoted. Their value was not realized in the organization. I think GPO's want to contribute as much as they possibly can, and are, ultimately are, allowed to. But that takes a lot of commitment from leadership, from executive leadership. And that takes a lot of support from them to make that happen." (Don, GPO Employee)

This quote is very enlightening. It indicates that the GPOs desire to be involved in the purchasing organization processes to the extent that they are allowed. However, not all organizations are willing to give up the control (or autonomy) necessary to make this happen.

Purchasing Efficiency and Effectiveness

Each of the benefits or factors listed above can have a positive impact on the effectiveness and efficiency of the purchasing function. For example, the expertise in contract negotiation and supplier selection along with the technology provided by the GPO helps to save the organization personnel time, freeing them up to perform other duties. Tom (Supply Chain Director) stated:

"I don't have to do all that background work. It saves me a lot of time. I can logon and see my price anytime I want to, for any item that's on contract. Or I can logon and someone asks for a certain item, I can go into that category and find 'em four different types that are on contract...so they do a lot of background work that I don't even have to worry about that I may have had to worry about 15 years ago."

The integration and utilization of technology also provides a positive impact on efficiencies and effectiveness. Some respondents noted that the technology allows them to more easily and quickly ensure that vendor pricing on invoices is consistent with contract prices. It also helps with the order process by allowing for EDIs that are quickly and efficiently passed from the organization to vendors. Finally, another efficiency derived from the integration of technology is the ease and quickness with which the item master and charge master are updated and kept consistent from organization to organization.

All of these factors impact GPO performance through effectiveness and efficiency, but there are many ways an organization can choose to assess (or measure) this performance. As such, respondents were asked how they measured GPO performance. From an effectiveness standpoint (or ensuring that organizational goals were being met) some of the key responses included annual cost savings captured through trending reports, and comparing purchases to budget in order to ensure they were meeting the savings goals. Others noted that ensuring they were receiving quality products at the best price was an important factor for their organizations. Finally some indicated that the turnaround time, from requisition approval until requisition purchase was an important metric. From an efficiency perspective, many respondents looked at items such as the number of purchase orders per month, the number of lines on each purchase order, average dollar of each purchase order, how many price exceptions or discrepancies occurred per month, and how long it takes to correct the exceptions. In addition to the hospital respondents, the GPO employee, Don, provided a list of key

metrics that they provide to their hospitals. This list included items such as inventory turns, excess inventory, no move inventory, EDI compliance, invoices without receivers, the number of open purchase orders, and total billings on contract.

As shown above, the qualitative fieldwork provided many insights into the GPO process, from highlighting the two collaboration types (transactional and relational) to providing insight into why an organization selects a GPO. It also provides insight into other factors that are important to the success of the GPO collaboration, such as top management support, and technology. Finally, the interviews provided a base for identifying how organizations measure the performance of their GPO collaboration.

APPENDIX B: CONSTRUCTS AND MEASURES

Collaboration Type: Is a measure of the primary way that an organization participates and works with a third party collaborator for the purposes of collaborative purchasing. Collaboration is comprised of three aspects: process, maximization goals, and relational. These three dimensions form the basis for the two primary types of collaboration, transactional collaboration and strategic collaboration. Transactional and strategic collaboration are both formative (process + maximization + relational). Process, maximization, and relational are all reflective. All items are 7-point Likert type ranging from ‘does not describe at all’ to ‘describes completely’.

- **Transactional Collaboration** (new; 1st order reflective, 2nd order formative): Is characterized by a transactional, value-maximization focus. It is comprised of process, maximization, and relational aspects. Process is the extent to which the organization’s GPO purchase process is focused toward an individual transactional level. Maximization is the extent to which the organization’s purchase focus is characterized by a sense of value-maximization for every purchase. Relational is the extent to which the purchasing organization lacks commitment to, or resists dependence on, GPO relationships.

When thinking of all of the purchases made by your organization over the past 12 months, please indicate the degree to which each of the following statements describe your organization:

Our organization...

Transactional - Process:

1. Begins a new supplier search for purchases, regardless of existing GPO contracts.
2. Takes a transaction by transaction approach for new purchase interactions with GPOs.
3. Selectively picks contracts from multiple GPOs for new purchases.
4. Organizes processes to follow a transaction by transaction approach for new purchases.
5. Is willing to work with many different GPOs to meet transactional purchasing needs.

Transactional - Maximization:

1. Is likely to take the search process outside the GPO to search for lower prices directly from suppliers.
2. Views GPO pricing as a benchmark for negotiations with suppliers.
3. Utilizes GPO pricing to further direct negotiations with suppliers.
4. Believes a transaction by transaction approach provides the best value for each purchase.

Transactional – Relational:

1. Seeks to be minimally committed to any one GPO.
2. Seeks to be independent from the GPO(s) we utilize.
3. Maintains an arms-length relationship with our GPO(s).
4. Purposefully limits GPO participation in our long term plans.

- ***Strategic Collaboration*** (new; 1st order reflective, 2nd order formative): is characterized by a partnership, group-maximization focus. It is comprised of process, maximization, and relational aspects. Process is the extent to which the organization's GPO purchase process, with its primary GPO, is focused toward the group level. Maximization is the extent to which the organization's GPO focus is characterized by a sense of group-maximization. Group-maximization occurs when organizations are willing to take a financial hit now in order to stay on contract with the GPO for purposes of aggregate spend knowing that in the long-run the group will be better off for it. Relational is the extent to which the purchasing organization views the GPO as a strategic partner.

When thinking of all of the purchases made by your organization over the past 12 months, please indicate the degree to which each of the following statements describe your organization:

Our organization...

Strategic - Process:

1. The extent to which the organization's GPO purchase process, with its primary GPO, is focused toward the group level.
2. Is engaged in the primary GPO through interactions with other GPO members.
3. Is committed to having our employees involved with committees within the primary GPO.
4. Works diligently with our primary GPO committees to screen products / suppliers.
5. Prefers to work with one or two primary GPOs to meet purchasing needs.
6. Participates often in our primary GPO group meetings.

Strategic – Maximization:

1. Is committed to monitoring compliance to our primary GPO contracts in order ensure aggregate spend.
2. Is highly concerned about the aggregate spend within the primary GPO.
3. Is willing to take a higher price in the short term in order to meet aggregate spend.
4. Views meeting aggregate spend as a process that yields long-term benefit.
5. Believes that following aggregate spend is the right strategic approach for purchasing

Strategic - Relational:

1. Seeks to develop a relationship with our primary GPO.
2. Views the primary GPO as a strategic partner.
3. Views the primary GPO relationship as central to our purchasing department.
4. Is highly committed to our primary GPO.
5. Expects primary GPO participation in our long term plans.

Cost Emphasis (new; first order reflective, second order formative): is the extent to which the purchasing organization places a high priority or emphasis on the goal of cost control and cost reduction in the purchasing function. It factor comprised of two reflective components: price emphasis and process emphasis. Price emphasis is defined as the extent to which the organization places a high priority on reducing and controlling costs through capturing price reductions and price discounts via the purchasing function. It is captured with a new 4-item, 7-point Likert scale ranging from ‘very low priority’ to ‘very high priority’. Process emphasis is the extent to which the organization places a high priority on reducing costs through improving purchasing processes in the purchasing function. It is captured by a new 4-item, 7-point Likert scale ranging from ‘very low priority’ to ‘very high priority’.

- ***Price Emphasis:***

In relation to purchases made through your organization’s purchasing department over the past 12 months, please indicate the level of priority your organization places on the following:

The goal of our purchasing department is to...

1. Obtain the lowest price possible on purchases.
2. Achieve price discounts for purchases.
3. Generate price reductions on purchases.
4. Reduce the price paid for purchases.

- ***Process Emphasis:***

In relation to purchases made through your organization's purchasing department over the past 12 months, please indicate the level of priority your organization places on the following:

The goal of our purchasing department is to...

1. Optimize purchase requisition processes in order to lower costs.
2. Optimize process related to negotiation in order to lower costs.
3. Optimize product search processes in order to lower costs.
4. Optimize vendor billing / invoicing processes to minimize errors in order to lower costs.

Expertise Emphasis (adapted; first order reflective, second order formative): is the extent to which the purchasing organization places a high priority or emphasis on increasing access to expertise in relation to product markets, suppliers, need assessment, and solution selection through the purchasing function. Expertise emphasis is a higher-order factor that combines expertise related to products, suppliers, and the environment. Scale items were adapted from Liu, Li, and Xue (2010) related to the transfer of market knowledge for both product and supplier related items. Items were also adapted from the Johnson, Sohi, and Grewal (2004) environmental knowledge store scale for the environmental items. Items were adapted to the current context by focusing on how much emphasis or priority the organization places on the different items. Product expertise emphasis, supplier expertise emphasis, and environmental expertise emphasis are each reflective and are captured by a 4-item, 7-point Likert type scale ranging from 'very low priority' to 'very high priority'.

In relation to purchases made through your organization's purchasing department over the past 12 months, please indicate the level of priority your organization places on the following:

The goal of our purchasing department is to...

Product Expertise:

1. Gain knowledge related to new products.
2. Increase knowledge related to existing products.
3. Enhance our ability to assess how various product alternatives can meet organizational needs.
4. Increase our ability to effectively select among alternative products.

Supplier Expertise:

1. Gain knowledge related to new suppliers.
2. Increase knowledge related to existing suppliers.
3. Enhance our ability to assess how various supplier alternatives can meet organizational needs.
4. Increase our ability to effectively select among alternative suppliers.

Environmental Expertise:

1. Gain knowledge related to market conditions that affect buying.
2. Increase knowledge related to competitors' purchasing behaviors.
3. Enhance our ability to follow laws and regulations relevant to supplier relationships.
4. Increase our ability to evaluate the competitive landscape.

Need for Operational Flexibility (new; reflective): the extent to which the purchasing organization needs the ability to improvise and adapt to day-to-day changes in operations. After review of the literature and qualitative fieldwork, a new 4-item, 7-point Likert scale ranging from 'not at all accurate' to 'completely accurate' was developed.

For the next set of questions, operational refers to things such as variation in demand, variation in supplies, and equipment failures.

Please indicate the extent to which each of the following statements are accurate:

Our organization needs to...

1. Be more flexible regarding day-to-day changes in operations.
2. Enhance our flexibility to respond to changes in operational requirements.
3. Be more flexible in our daily functioning.
4. Be more flexible in our processes to respond to operational issues.

Need for Strategic Flexibility (adapted; reflective): the extent to which a purchasing organization needs the ability to create a set of options that allow it to adapt to changes in the marketplace that impact its competitive advantage and strategic goals. Need for strategic flexibility is captured by a 7-item, 7-point Likert scale ranging from 'not at all accurate' to 'completely accurate' that was adapted from Grewal and Tansuhaj (2001).

For the next set of questions, strategic relates to those issues that have an impact on organizational competitive advantage and longer-term goals.

Please indicate the extent to which each of the following statements are accurate:

Our organization needs to...

1. Be more flexible in strategic actions in response to changes in the marketplace.
2. Enhance our strategic flexibility to create options in relation to new market needs.
3. Improve our strategic flexibility to better respond to new market opportunities.
4. Increase our strategic flexibility to create alternative responses to new market threats.
5. Enhance our strategic flexibility in order to benefit from opportunities that arise from changes in the environment.
6. Be more strategically flexible in order to benefit from diversity in the environment.
7. Be more strategically flexible in our response to competitor moves.

Need for Decision Making Autonomy (adapted; reflective): the extent to which the organization seeks to shape or control its environment by maintaining discretion over decision making related to the purchasing function. Items were adapted from both (Homburg and Prigge 2014; Menguc, Auh, and Chan Kim 2011) The need for decision making autonomy is captured by a 5-item, 7-point Likert scale ranging from ‘not at all accurate’ to ‘completely accurate’.

Please indicate the extent to which each of the following statements are accurate:

The purchasing department in our organization needs...

1. Greater control over purchasing related decisions.
2. More decision-making authority with respect to purchasing activities.
3. To increase autonomy over decision making processes in purchasing.
4. Greater discretion over decision making related to purchasing activities.
5. More opportunities for freedom and independence in how our purchasing agents complete their jobs.

Buying Center Cohesiveness (new; first order reflective, second order formative): the extent to which individuals within the buying center are familiar with each other, get along, and work as a team. It is a higher-order construct comprised of: viscosity and familiarity. Viscidity and familiarity are both reflective. Viscidity is captured by a 4-item, semantic differential scale that was adapted from the viscosity scale Kohli (1989), which was originally adapted from Hemphill and Westie (1950). Familiarity is the extent to which members of a buying center are familiar with or known to each other (Kohli 1989). It is captured by a 4-item, semantic differential scale that was adapted from Kohli (1989), which was originally adapted from Hemphill and Westie (1950).

Please use the scale provided to select the appropriate circle to indicate your opinion on how each of the following statements characterize (or describe) your organization's buying group (i.e., all individuals involved in purchase decisions):

Members of our organization's buying group...

Viscidity:

1. Do not work together as a team ... Work together as a team
2. Often engage in conflict ... Do not engage in conflict
3. Do not work together cooperatively ... Work together cooperatively
4. Do not agree on issues ... Agree on issues.

Familiarity:

1. Do not know each other's mindsets ... Know each other's mindsets
2. Have known each other for a short time ... Have known each other for a long time
3. Are not familiar with each other's ways of working ... Are familiar with each other's ways of working
4. Do not know each other's work related strengths/weaknesses ... Know each other's work related strengths/weaknesses

Buying Center Complexity (new; reflective): the extent to which a purchasing organization's buying center is composed of more individuals and departments than is optimal. Scale items were adapted from the extensivity concept from (Johnston and Bonoma 1981). Buying Center Complexity is captured by a new 3-item, 7-point Likert scale ranging from 'not at all accurate' to 'completely accurate'.

Please indicate the extent to which each of the following statements are accurate:

When thinking about the buying group (i.e., all individuals involved in purchase decisions) within our organization, our organization...

1. Has a greater number of individuals involved in the purchasing process than similar organizations in our industry.
2. Has too many individuals involved in the purchasing process.
3. Has a complex buying group involving many functions and teams.

Third Party Involvement (adapted; first order reflective, second order formative): the extent to which a third party (GPO) is routinely involved in the purchasing organization's purchasing operations, both at a strategic (relational) and an operational (functional) level. Third party involvement is formative (strategic + operational). Strategic involvement and operational involvement are both reflective. Involvement is captured with a total of nine items, five for operational and four for relational involvement,

adapted from these streams of literature (i.e., Flynn, Huo, and Zhao 2010; Hobman, Bordia, and Gallois 2004). All items are 7-point Likert type ranging from ‘never’ to ‘always’.

Please indicate the frequency with which your organization’s current, primary GPO does the following:

Operational / Functional:

1. Our primary GPO is involved in the day-to-day purchasing operations within our organization.
2. Our primary GPO is involved in our organization by providing onsite personnel to help with contract questions.
3. Our primary GPO is involved in streamlining processes such as technology integration (i.e., item master and charge master updates).
4. Our primary GPO is involved in helping to find solutions related to issues arising with vendors.
5. Our primary GPO is involved in exchanging important information with our organization related to daily operations.

Strategic / Relational:

1. Our primary GPO is involved in strategic discussions with our organization.
2. Our primary GPO is involved with our organization’s purchasing department by listening to what it says related to strategic issues.
3. Our primary GPO is involved with our organization as a valuable member of the team that makes strategic decisions.
4. Our primary GPO is involved with our organization by providing input to the organization’s long term vision.

Third Party Adaptability (new; reflective): the extent to which a third party (GPO), is able to adjust to the needs of member organizations through actions such as custom contracting, or the allowance of off-contract spend. It is captured by a new 5-item, 7-point Likert scale ranging from ‘very ineffective’ to ‘very effective’.

Please indicate the effectiveness of your organization’s primary GPO, over the past 12 months, with regard to:

1. Adjusting to our organization’s needs.
2. Providing our organization with increased flexibility through custom contracting.
3. Having a contract structure that is amenable to our organization’s needs.
4. Willingly adapting its processes to help meet our organization’s needs.
5. Improvising solutions that help our organization adjust to operational issues.

Purchasing Effectiveness (new; formative): the degree to which the desired organizational purchasing goals have been achieved. It is a formative scale based on eight purchasing effectiveness goals such as quality of items, procuring items with desired specifications, and achieving cost reduction goals. It is captured by a new 8-item, 7-point Likert-type scale ranging from ‘significantly lower than expectations’ to ‘significantly higher than expectations’.

Thinking about your organization’s expectations for the purchasing department, please indicate to what extent over the past 12 months your purchasing department has been higher or lower than these expectations on each of the following:

1. Procuring items with desired level of quality.
2. Procuring items with desired level of value.
3. Procuring items with desired price level.
4. Procuring items with desired specifications.
5. Maintaining good supplier relations.
6. Reducing stock-outs.
7. Achieving annual cost savings.
8. Turnaround time from requisition approval until requisition is purchased.

Purchasing Efficiency (new; formative): the ratio of purchasing inputs consumed to purchasing outputs achieved. It is a formative scale assessing organizational improvement of cost efficiencies over the past 12 months. It is captured by a new 7-item, 7-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’.

Please indicate the extent to which you agree or disagree with the following:

Over the past 12 months, our organization has improved cost efficiencies by:

1. Increasing the number of purchase orders per month per buyer.
2. Increasing the number of lines on each purchase order.
3. Increasing the average dollar size of each purchase order.
4. Decreasing the number of invoices without receivers.
5. Decreasing the number of open purchase orders.
6. Reducing the number of discrepancies in vendor invoices.
7. Decreasing the time it takes to correct discrepancies in purchase processes.

GPO Satisfaction (new, formative): is defined as the extent to which the purchasing organization is satisfied with their relationship with the GPO. It is a new scale adapted to the current context. It includes economic factors related to price reductions and discounts, as well as non-economic factors related to GPO involvement in resolving vendor issues

and GPO adaptability. GPO satisfaction is formative and is captured by a 9-item, 7-point Likert type scale ranging from ‘very dissatisfied’ to ‘very satisfied’.

Please indicate the extent to which your organization is satisfied with how your primary GPO performed, over the past 12 months, on the following:

1. Delivering price benefits
2. Providing price discounts
3. Providing the lowest prices possible
4. Helping correct vendor issues
5. Ensuring vendor issues are resolved in a time manner
6. Resolving vendor conflicts effectively
7. Being adaptable to our needs
8. Providing alternative solutions to meet changes in our needs
9. Being responsive to our requests for changes

Control Variables:

Firm Size: refers to the number of full-time equivalents employees in the organization. It is captured by asking respondents to select one of a set of possible ranges in a multiple choice type question.

Please indicate the number of Full Time Equivalent (FTEs) employees in your organization:

1. Less than 100
2. 100 to 199
3. 200 to 499
4. 500 to 699
5. 700 to 999
6. 1,000 to 5,000
7. Greater than 5,000

Firm Age: refers to the number of years the organization has been in existence. It is captured by an open ended question asking the year the organization first came into existence. Firm age was then converted from the year the organization began to age.

Year the organization began (YYYY): _____

Number of GPOs Utilized: refers to how many GPOs the organization participates with. It is captured by asking the respondents to identify the exact number of GPOs their organization currently participates with via an open-ended question.

How many GPOs does your organization currently work with? _____

Number of Pricing Tiers in Contracts: refers to the average number of pricing tiers (quantity or size) that is included in the contract with the organization's primary GPO. It is captured via an open-ended question.

Average number of pricing tiers (quantity or size) included in the contract with your primary GPO: _____

Hospital Productivity: reflects various measures of productivity that are important in the healthcare setting, such as economic growth rate, patient satisfaction, and average length of stay. It is captured by a new, 7-item, 7-point Likert type scale ranging from 'very poor' to 'excellent'.

Please rate the level of performance of your organization, over the past 12 months, relative to expectations, on each of the following:

1. Economic growth rate
2. Number of new patients
3. Patient satisfaction
4. Timely service to patients
5. Reduction in turnover
6. Reduction in patient complaints
7. Average length of stay

APPENDIX C: SURVEY DOCUMENTS

IRB# 20160215792 EX

Subject: Drivers of GPO Efficiency and Effectiveness Study

Dear <NAME>,

My name is Jenifer Skiba, I am a Ph.D. student at the University of Nebraska–Lincoln. I am researching the strategies that hospitals utilize when working with Group Purchasing Organizations (GPOs), as well as other factors important to the success of GPO participation. Per our phone conversation on <DATE>, you have been selected from a list of over 3,600 U.S. hospitals to receive this study. Participation in this study will require approximately 30-40 minutes of your time. If you choose to participate, you will do so by following the link below and completing the survey.

Please be assured that all information you provide is **ABSOLUTELY CONFIDENTIAL** and will be used only in summary form. In this study, you will not have any more risks than you would in a normal day of life. This survey will be conducted via Qualtrics. The Qualtrics Privacy Policy may be viewed using the following link: <https://qualtrics.com/privacy-statement/>. Any information obtained during this study which could identify you will be kept strictly confidential. Additionally, only members of the research team will have access to the survey data. The researchers will analyze data only in aggregate form. In addition, all records pertaining to the study will be kept securely locked within the principle investigator's office. Once the study is complete, everything concerning your survey will be destroyed.

Participation in this research is completely voluntary. If you decide to be in the study and change your mind, you have the right to drop out at any time. There is compensation for participating in this research. Upon completion of the **entire** survey you will be given an option to receive an Amazon gift card of \$20. If you choose to receive the gift card, it will be emailed to you via the email address provided at the end of the study. You may also choose to receive an executive summary of the results once the study is complete. The information obtained in this study may be published in academic journals or presented at academic meetings, however this will occur only in summary form. Furthermore, it will not be possible to match your name with your responses. If you choose to identify yourself in the survey, such information will be removed from the data and stored in a separate location.

Please call or e-mail Jenifer Skiba or Dr. Amit Saini (contact information below) if you have questions about this study. For panelist support, please direct requests to Qualtrics and qualtrics.com. Sometimes study participants have questions or concerns about their rights. In this case, please contact the University of Nebraska–Lincoln Institutional Review Board, telephone (402) 472-6965. By completing and submitting your survey responses via the attached link, you have given your consent to participate in this

research. Please keep this cover letter for your personal records. Thank you for your time and consideration.

Survey link: https://unlcba.az1.qualtrics.com/SE/?SID=SV_5aw7GmkNJMq0FXn

Respondent ID: <ID>

Sincerely,
Jenifer Skiba

Name and Phone number of investigator(s)

Jenifer Skiba, Principal-Investigator

Amit Saini, Ph.D., Secondary-Investigator

Cell: (269) 998-8553

Office: (402) 472-2344



Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

IRB Approval #: 20160215792 EX

You are invited to participate in this research study - drivers of GPO Efficiency and Effectiveness. The purpose of this study is to examine how hospitals collaborate with GPOs, and how collaboration impacts purchasing effectiveness and efficiency. The information gained from this study may help us to better understand strategies related to GPO participation and provide better insights into the overall contribution of GPOs to individual organizations.

By completing and submitting your survey responses, you have given your consent to participate in this research. Take as much time as you need. We are interested only in your opinions. There are no right or wrong answers. Please be assured that all information you provide is **ABSOLUTELY CONFIDENTIAL**. Any information you provide will be used only in summary form and will never be associated with you or your organization in any way. This survey should take approximately 30-40 minutes to complete.

Thank you for taking the time to complete this survey! As a thank you, we are offering a \$20 Amazon gift card upon completion of the survey. In addition, you will have the option to receive an executive summary of the results upon study completion.

NOTE:

You may stop and then continue the survey at your convenience as long as you use the same browser on the same device each time.

Please enter the respondent ID you received in your invitation to participate in this study (located in the line below or above the survey link):

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

Does your organization currently participate with a Group Purchasing Organization (GPO)?

- Yes
 No

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

Are you an employee of a Group Purchasing Organization?

- Yes
 No

<<

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

We will begin with questions regarding your organization's purchasing orientation. We will then move to questions related to your organization's participation with GPOs in general.

When asked about your organization, please respond for your individual location (hospital) even if your location is part of a larger conglomerate.

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

In relation to purchases made through your organization's purchasing department over the past 12 months, please indicate the level of priority your organization places on the following:

The goal of our purchasing department is to...

	Very Low Priority						Very High Priority
Obtain the lowest price possible on purchases.	<input type="radio"/>						
Achieve price discounts for purchases.	<input type="radio"/>						
Generate price reductions on purchases.	<input type="radio"/>						
Reduce the price paid for purchases.	<input type="radio"/>						
Optimize purchase requisition processes in order to lower costs.	<input type="radio"/>						
Optimize processes related to negotiation in order to lower costs.	<input type="radio"/>						
Optimize product search processes in order to lower costs.	<input type="radio"/>						
Optimize vendor billing / invoicing processes to minimize errors in order to lower costs.	<input type="radio"/>						





Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

In relation to purchases made through your organization's purchasing department over the past 12 months, please indicate the level of priority your organization places on the following:

The goal of our purchasing department is to...

	Very Low Priority						Very High Priority
Gain knowledge related to new products.	<input type="radio"/>						
Increase knowledge related to existing products.	<input type="radio"/>						
Enhance our ability to assess how various product alternatives can meet organizational needs.	<input type="radio"/>						
Increase our ability to effectively select among alternative products.	<input type="radio"/>						
Gain knowledge related to new suppliers.	<input type="radio"/>						
Increase knowledge related to existing suppliers.	<input type="radio"/>						
Enhance our ability to assess how various supplier alternatives can meet organizational needs.	<input type="radio"/>						
Increase our ability to effectively select among alternative suppliers.	<input type="radio"/>						
	Very Low Priority						Very High Priority
Gain knowledge related to market conditions that affect buying.	<input type="radio"/>						
Increase knowledge related to competitors' purchasing behaviors.	<input type="radio"/>						
Enhance our ability to follow laws and regulations relevant to supplier relationships.	<input type="radio"/>						
Increase our ability to evaluate the competitive landscape.	<input type="radio"/>						





Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

How many GPOs does your organization currently work with?

Approximately what percentage of your **total** annual purchase volume is made through GPOs?

%

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

When thinking about your organization's participation with GPOs, please read the following paragraphs and select the one that **best** describes the **primary** way your organization interacts with GPOs:

- Our organization tends to maintain an arms-length relationship with our GPOs. Our purchasing strategy is characterized by a transaction-by-transaction search for each new purchase to ensure proper products / suppliers are selected. Our organization is also likely to circumvent the GPO and selectively pick contracts to arrive at the lowest possible price.
- Our organization tends to build strategic partnerships with GPOs. Our purchasing strategy is characterized by a focus on GPO group participation (i.e., participating in committees and working with other group members) to ensure proper products / suppliers are selected. Our organization seeks to maximize contract compliance and aggregate spend.
- Our organization seeks to automate its interactions with GPOs. Our purchasing strategy is characterized by a focus on routinization and standardization. Our organization seeks to utilize GPO services for time savings, freeing up the purchasing department to complete other tasks.

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

When thinking about the purchases made by your organization over the past 12 months, please indicate the degree to which each of the following statements describe your organization:

Our organization...

	Does Not Describe at All							Describes Completely
Begins a new supplier search for new purchases, regardless of existing GPO contracts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Takes a transaction by transaction approach for new purchase interactions with GPOs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selectively picks contracts from multiple GPOs for new purchases.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organizes processes to follow a transaction by transaction approach for new purchases.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is willing to work with many different GPOs to meet transactional purchasing needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is likely to take the search process outside the GPO to search for lower prices directly from suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Views GPO pricing as a benchmark for negotiations with suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Utilizes GPO pricing to further direct negotiations with suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Believes a transaction by transaction approach provides the best value for each purchase.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Does Not Describe at All							Describes Completely
Seeks to be minimally committed to any one GPO.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seeks to be independent from the GPO(s) we utilize.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintains an arms-length relationship with our GPO(s).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Purposefully limits GPO participation in our long term plans.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

We will now move to questions related to your primary GPO. The primary GPO is the GPO your organization utilized for the majority of its GPO purchases over the past 12 months.

As a reminder, please respond specifically for your individual location (hospital) even if your location is part of a larger conglomerate.

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

What GPO does your organization primarily work with?

Please indicate how frequently your organization does the following:

	Not at All							Very Often
Participates in committees within your primary GPO.	<input type="radio"/>							

Approximately how many times over the past 12 months did your organization participate in committee meetings with your primary GPO?

Please indicate your organization's ownership interest in your primary GPO:

- Sole ownership
- Part of owner consortium
- None, the GPO has independent ownership
- Other, please explain:

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**Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study**

Please indicate:

- Amount of monthly administrative fees charged by your primary GPO (in dollars):

- Don't Know

Please indicate:

- Approximate length of the current contract with your primary GPO:

Number of years

- Don't Know

Average number of pricing tiers (quantity or size) included in the contract with your primary GPO:

Please indicate:

Percentage of your organization's annual purchase volume required by contract with your primary GPO:

 %

Percentage of your organization's annual purchase volume routed through your primary GPO:

 %

Average percentage of sales offered as rebates by your primary GPO:

 %

The agreements negotiated with your primary GPO are:

- Primarily sole-source
- Primarily dual-source
- Multi-source
- Other, please explain:

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Is committed to monitoring compliance to our primary GPO contracts in order to ensure aggregate spend.	<input type="radio"/>						
Is highly concerned about the aggregate spend within the primary GPO.	<input type="radio"/>						
Is willing to take a higher price in the short term in order to meet aggregate spend.	<input type="radio"/>						
Views meeting aggregate spend as a process that yields long-term benefit.	<input type="radio"/>						
Believes that following aggregate spend is the right strategic approach for purchasing	<input type="radio"/>						

	Does Not Describe at All						Describes Completely
Seeks to develop a relationship with our primary GPO.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Views the primary GPO as a strategic partner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Views the primary GPO relationship as central to our purchasing department.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is highly committed to our primary GPO.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Expects primary GPO participation in our long term plans.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Please indicate the frequency with which your current, primary GPO does the following:

	Never	Rarely	Occasionally	About Half the Time	Frequently	Usually	Always
Our primary GPO is involved in strategic discussions with our organization.	<input type="radio"/>						
Our primary GPO is involved with our organization's purchasing department by listening to what it says related to strategic issues.	<input type="radio"/>						
Our primary GPO is involved with our organization as a valuable member of the team that makes strategic decisions.	<input type="radio"/>						
Our primary GPO is involved with our organization by providing input to the organization's long term vision.	<input type="radio"/>						

Please indicate the effectiveness of your organization's primary GPO, over the past 12 months, with regard to:

	Very Ineffective	Ineffective	Somewhat Ineffective	Neither Effective nor Ineffective	Somewhat Effective	Effective	Very Effective
Adjusting to our organization's needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing our organization with increased flexibility through custom contracting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a contract structure that is amenable to our organization's needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Willingly adapting its processes to help meet our organization's needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improvising solutions that help our organization adjust to operational issues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

When thinking about the purchases made by your organization over the past 12 months, please indicate the degree to which each of the following statements describe your organization:

Our organization...

	Does Not Describe at All						Describes Completely
Utilizes repetitive purchase patterns when interacting with our primary GPO.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Utilizes standard ordering processes when working with our primary GPO.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has established processes in place for routine interactions with our primary GPO.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is concerned with increasing time savings for our purchasing department.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relies on our GPO(s) to provide services that help maximize time savings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Believes that utilizing GPO services to provide value through increased time savings is the best approach for purchasing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Does Not Describe at All						Describes Completely
Gives the primary GPO authorization to initiate routine interactions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Allows the primary GPO to automatically process purchases utilizing similar parameters.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relies on the automatic nature of our relationship with the primary GPO when processing purchases.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

Please indicate the extent to which you agree or disagree with the following statements regarding your primary GPO's community building efforts among its participating organizations (i.e., the community of participating suppliers and hospitals):

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree
Our primary GPO expends a lot of effort to build trust among its participating organizations (i.e., the community of participating suppliers, hospitals, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our primary GPO undertakes efforts to create a congenial atmosphere among its participating organizations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building a sense of community among its participating organizations is an important goal for our primary GPO.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our primary GPO tries hard to bring all its participating organizations on the same page.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

Please indicate the extent to which your organization is satisfied with how your primary GPO performed, over the past 12 months, on the following:

	Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Satisfied	Very Satisfied
Delivering price benefits	<input type="radio"/>						
Providing price discounts	<input type="radio"/>						
Providing the lowest prices possible	<input type="radio"/>						
Helping correct vendor issues	<input type="radio"/>						
Ensuring vendor issues are resolved in a timely manner	<input type="radio"/>						
Resolving vendor conflicts effectively	<input type="radio"/>						
Being adaptable to our needs	<input type="radio"/>						
Providing alternative solutions to meet changes in our needs	<input type="radio"/>						
Being responsive to our requests for changes	<input type="radio"/>						

Please indicate the extent to which your organization is satisfied with how your GPO contracted suppliers have performed, over the past 12 months, on the following:

	Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Satisfied	Very Satisfied
Delivery times	<input type="radio"/>						
Correct deliveries	<input type="radio"/>						
Short lead times	<input type="radio"/>						
Product Quality	<input type="radio"/>						

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

Please indicate the extent to which your primary GPO has provided inferior versus superior value over the past 12 months, as compared to non-GPO suppliers, on the following:

	Inferior						Superior
Delivering price benefits	<input type="radio"/>						
Providing price discounts	<input type="radio"/>						
Providing the lowest prices possible	<input type="radio"/>						
Helping correct vendor issues	<input type="radio"/>						
Ensuring vendor issues are resolved in a timely manner	<input type="radio"/>						
Resolving vendor conflicts effectively	<input type="radio"/>						
Being adaptable to our needs	<input type="radio"/>						
Providing alternative solutions to meet changes in our needs	<input type="radio"/>						
Being responsive to our requests for changes	<input type="radio"/>						

Please indicate the extent to which your GPO contracted suppliers have provided inferior vs superior value over the past 12 months, as compared to non-GPO suppliers, on the following:

	Inferior						Superior
Delivery times	<input type="radio"/>						
Correct deliveries	<input type="radio"/>						
Short lead times	<input type="radio"/>						
Product quality	<input type="radio"/>						



Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

We will now ask some questions related to your organization in general.

As a reminder, please respond specifically for your individual location (hospital) even if your location is part of a larger conglomerate.





Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

Thinking about your organization's expectations for the purchasing department, please indicate to what extent over the past 12 months your purchasing department has been higher or lower than these expectations on each of the following:

	Significantly Lower Than Expectations						Significantly Higher Than Expectations
Procuring items with desired level of quality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procuring items with desired level of value.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procuring items with desired price level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procuring items with desired specifications.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintaining good supplier relations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reducing stock-outs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Achieving annual cost savings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Turnaround time from requisition approval until requisition is purchased.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate the extent to which you agree or disagree with the following:

Over the past 12 months, our organization has improved cost efficiencies by:

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree
Increasing the number of purchase orders per month per buyer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increasing the number of lines on each purchase order.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increasing the average dollar size of each purchase order.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Decreasing the number of invoices without receivers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Decreasing the number of open purchase orders.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reducing the number of discrepancies in vendor invoices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Decreasing the time it takes to correct discrepancies in purchase processes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

For the next set of questions, the word 'operational' refers to things such as variation in demand, variation in supplies, and equipment failures.

Please indicate the extent to which each of the following statements are accurate:

Our organization needs to...

	Not at All Accurate						Completely Accurate
Be more flexible regarding day-to-day changes in operations.	<input type="radio"/>						
Enhance our flexibility to respond to changes in operational requirements.	<input type="radio"/>						
Be more flexible in our daily functioning.	<input type="radio"/>						
Be more flexible in our processes to respond to operational issues.	<input type="radio"/>						





Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

For the next set of questions, the word 'strategic' relates to those issues that have an impact on organizational competitive advantage and longer-term goals.

Please indicate the extent to which each of the following statements are accurate:

Our organization needs to...

	Not at All Accurate						Completely Accurate
Be more flexible in strategic actions in response to changes in the marketplace.	<input type="radio"/>						
Enhance our strategic flexibility to create options in relation to new market needs.	<input type="radio"/>						
Improve our strategic flexibility to better respond to new market opportunities.	<input type="radio"/>						
Increase our strategic flexibility to create alternative responses to new market threats.	<input type="radio"/>						
Enhance our strategic flexibility in order to benefit from opportunities that arise from changes in the environment.	<input type="radio"/>						
Be more strategically flexible in order to benefit from diversity in the environment.	<input type="radio"/>						
Be more strategically flexible in our response to competitor moves.	<input type="radio"/>						





Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

Please indicate the extent to which each of the following statements are accurate:

The purchasing department in our organization has expressed the need for...

	Not at All Accurate						Completely Accurate
Greater control over purchasing related decisions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More decision-making authority with respect to purchasing activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased autonomy over decision making processes in purchasing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Greater discretion over decision making related to purchasing activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More opportunities for freedom and independence in how our purchasing agents complete their jobs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

Please use the scale provided to select the appropriate circle to indicate your opinion on how each of the following statements characterize (or describe) your organization's buying group (i.e., all individuals involved in purchase decisions):

Members of our organization's buying group...

Do not work together as a team	○ ○ ○ ○ ○ ○ ○	Work together as a team
Often engage in conflict	○ ○ ○ ○ ○ ○ ○	Do not engage in conflict
Do not work together cooperatively	○ ○ ○ ○ ○ ○ ○	Work together cooperatively
Do not agree on issues	○ ○ ○ ○ ○ ○ ○	Agree on issues

Do not know each other's mindsets	○ ○ ○ ○ ○ ○ ○	Know each other's mindsets
Have known each other for a short time	○ ○ ○ ○ ○ ○ ○	Have known each other for a long time
Are not familiar with each other's ways of working	○ ○ ○ ○ ○ ○ ○	Are familiar with each other's way of working
Do not know each other's work related strengths / weaknesses	○ ○ ○ ○ ○ ○ ○	Know each other's work related strengths / weaknesses

Please indicate the extent to which each of the following statements are accurate:

When thinking about the buying group (i.e., all individuals involved in purchase decisions) within our organization, our organization...

	Not at all Accurate						Completely Accurate
Has a greater number of individuals involved in the purchasing process than similar organizations in our industry.	<input type="radio"/>						
Has too many individuals involved in the purchasing process.	<input type="radio"/>						
Has a complex buying group involving many functions and teams.	<input type="radio"/>						

On average, how many individuals are involved in purchase decisions?



Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

Please rate the level of performance of your organization, over the past 12 months, relative to expectations, on each of the following:

	Very poor						Excellent
Economic growth rate	<input type="radio"/>						
Number of new patients	<input type="radio"/>						
Patient satisfaction	<input type="radio"/>						
Timely service to patients	<input type="radio"/>						
Reduction in turnover	<input type="radio"/>						
Reduction in patient complaints	<input type="radio"/>						
Average length of stay	<input type="radio"/>						





Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

Now we'd like to ask you some questions for classification purposes.

Please Indicate:

Your current position:	<input type="text"/>
Number of years in your current position (rounded to nearest whole number):	<input type="text"/>
Number of years in organization (rounded to nearest whole number):	<input type="text"/>
Year the organization began (YYYY):	<input type="text"/>
Number of beds in your organization:	<input type="text"/>

Gender:

- Male
 Female

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

Please indicate the number of Full Time Equivalent (FTEs) employees in your organization:

- Less than 100
- 100 to 199
- 200 to 499
- 500 to 999
- 700 to 999
- 1,000 to 5,000
- Greater than 5,000

What is the primary nature of your organizational structure?

- Stand-alone hospital
- Part of a conglomerate of hospitals
- Other, please specify:

Our organization is:

- For-profit
- Non-profit

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

We're almost done - thank you again for your help.

For the next set of questions, please think about the primary product (i.e., largest \$ value over the past 12 months) your organization purchases through your primary GPO.

What is your organization's primary product?

When thinking about the nature of this product, please indicate the extent to which you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree
The market for this product is fast-changing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The overall environment for this product can be described as dynamic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The technology behind this product is evolving rapidly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This market can be described as turbulent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How knowledgeable is your organization regarding the following aspects of the market for such products:

	Not Knowledgeable						Very Knowledgeable
New product innovation and technology trends in the marketplace.	<input type="radio"/>						
Quality control and assessment procedures.	<input type="radio"/>						
Pricing, warranty, and credit terms.	<input type="radio"/>						
Procurement and purchase practices.	<input type="radio"/>						
Screening and managing suppliers.	<input type="radio"/>						
Emerging marketplace trends.	<input type="radio"/>						

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Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

When thinking about your primary product, who is the primary supplier of this product?

When thinking about this supplier, please indicate the extent to which you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree
This supplier is dependent on our primary GPO for selling this product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This supplier is highly reliant on our primary GPO for selling this product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If our primary GPO cancelled its sourcing agreement with this supplier, the supplier would have difficulty finding sufficient other outlets for selling this product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If our primary GPO cancelled its sourcing agreement with this supplier, the supplier would have a hard time replacing the volume purchases for this product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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For each item below, please indicate the supplier's general degree of responsiveness to your requests for changes (relative to initial agreements):

	Low Responsiveness				High Responsiveness	
Changes in product specification.	<input type="radio"/>					
Changes in quality assurance procedures.	<input type="radio"/>					
Changes in shipping dates.	<input type="radio"/>					
Changes in credit terms.	<input type="radio"/>					
Changes in order cycle times.	<input type="radio"/>					
Changes in order quantity.	<input type="radio"/>					
Order cancellations.	<input type="radio"/>					
Changes in other order terms.	<input type="radio"/>					

Please indicate the level of performance for this supplier as it relates to this product on the dimensions below. In making this evaluation, please judge the performance relative to the prevailing industry norm, or relative to what might be obtained from another contractor:

	Poor Performance		Average Performance		Good Performance	
Order fulfillment cycle.	<input type="radio"/>					
Order lead time.	<input type="radio"/>					
Order accuracy.	<input type="radio"/>					
Timeliness of deliveries.	<input type="radio"/>					
Adherence to specifications.	<input type="radio"/>					
Product availability.	<input type="radio"/>					
Shipping and insurance.	<input type="radio"/>					
Responsiveness to requests for change.	<input type="radio"/>					
Product quality.	<input type="radio"/>					
Product effectiveness.	<input type="radio"/>					
Product reliability.	<input type="radio"/>					
Price competitiveness.	<input type="radio"/>					
Quality control and procedures.	<input type="radio"/>					
Credit terms.	<input type="radio"/>					
Product warranty and maintenance.	<input type="radio"/>					
Product service.	<input type="radio"/>					
Product innovativeness.	<input type="radio"/>					



Please indicate the extent to which you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree
Our primary GPO monitors its suppliers closely to make sure that the suppliers do not take advantage of GPO members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our primary GPO takes complaints of opportunistic behavior on the part of its suppliers seriously.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our primary GPO diligently enforces supplier agreements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our primary GPO supervises suppliers closely.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Please indicate the extent to which you agree or disagree with the following:

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree
I am knowledgeable regarding GPO use within my organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am involved with GPO purchasing in my organization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





Drivers of Group Purchasing Organization (GPO) Efficiency and Effectiveness Study

We thank you for your participation and greatly appreciate your support for our research.

As a token of appreciation, \$20 Amazon gift cards will be awarded for fully completed surveys.

Please provide an email address below to which you would like the gift card to be sent.
If you choose to opt out of the gift card, please select the second option.

Enter Email address for gift card:

Opt out of gift card

Would you like to receive a copy of the executive summary upon study completion?

Yes

No

When you are finished, please click the next arrow to complete this survey.

A red button with a white double-left arrow symbol (<<).

A red button with a white double-right arrow symbol (>>).