

# **Buyer-Supplier Relationships in Service Procurement**

## **The Impact of Relationship Quality on Service Performance**

Inauguraldissertation zur Erlangung des akademischen Grades

Doctor rerum politicarum (Dr. rer. pol.)

an der WHU – Otto Beisheim School of Management

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**Vallendar, 28. Januar 2011**

# Dedication

The research process that leads to a finalized thesis can be both very exciting and tedious at times. Throughout these different times it is crucial to have the support of family, friends, and mentors. These supporters have been there to share the progress and to discuss the direction of next steps. They have been there to contemplate difficulties and to hunt for solutions together. They have been there when uncertainty was high and motivation was needed.

In the end, the research that led to this thesis was challenging and immensely interesting, and it yielded results that allow new approaches to procurement excellence. The topic of service procurement is relatively new to researchers and practitioners. While service procurement is increasingly moving into the strategic focus of companies, little research exists on key topics...

...key topics like the measurement of B2B Service Performance. Extant service quality approaches aim primarily at B2C services and are not quite applicable to complex B2B services. This thesis proposes a scientific approach to further the Service Performance measurement. While this performance measurement tool is scientific in its origin, its practical applications are already being tested by several companies to track their service providers' performance over time.

...key topics like the effect of relational aspects on Service Performance. While extant research often has viewed the relationship between a service provider and its customers as a marketing tool for the provider, this thesis hypothesizes that the ongoing relationship can provide untapped potential for the customer company as well, helping it to improve the performance of the service provider.

...key topics like the existence of moderating factors. This thesis examines the connection between relationship quality and Service Performance by testing for moderating influences. Using moderating effects, this thesis can differentiate between different types of services and determine whether external influences on the hypothesized relationship exist.

Researching these aspects was fascinating but would have proven difficult, or even impossible, had I approached the research challenge alone.

Special thanks go to my doctoral supervisor and mentor, Professor Lutz Kaufmann. During the entire process he provided counsel, direction, and support for this research project. Without his commitment to research excellence, this research would never have reached its current level of intricacy and extensive conclusions. His insight and experience allowed us to find new solutions. Further, I would like to express my sincere thanks to Professor Jürgen Weber, my second doctoral supervisor, for sharing valuable knowledge and feedback with me. Professor Weber's excellent perception of research potentials and pitfalls helped to vastly improve this thesis.

Thanks also go to the BME e.V.—Germany's and Europe's leading procurement association. The BME e.V. supported this thesis from start to finish and provided extensive practical expertise from its sections on different fields of service procurement. Senior management, the press office, IT, and each and every member of the BME team involved were pillars of support that made it possible to further this research based on an internationally unique survey. While administrators and staff of the BME association made significant efforts to help with this thesis, it couldn't have succeeded without the BME members. These chief procurement officers offered their perceptions and their insights, which allowed the scientific process to bear fruit.

Perhaps the most important thanks go to my family. Even during challenging times of the research process, I could count on their all-out support. My narrations about research – even if sometimes confusing – were always welcomed with interest and comprehension. Especially my beloved wife accompanied me all the way and has always been the best partner I could have imagined.

In addition I want to thank the fellow researchers and friends who have kept me company via numerous means of modern communication and have provided a paragon of motivation during protracted periods of research.

Lukas Schönberger, Munich, 2010



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# List of Abbreviations

3PL	third-party logistics
AMOS	analysis of moment structures (program name)
AVE	average variance extracted
B2B	business-to-business
B2C	business-to-consumer
BATNA	best alternative to a negotiated agreement
BSR	buyer-supplier relationship
cf.	from Latin: confer (compare)
CFA	confirmatory factor analysis
CFI	comparative fit index
CR	composite reliability
df	degrees of freedom
e.V.	abbreviation for German: “eingetragener Verein” (registered association)
e.g.	from Latin: <i>exempli gratia</i> (for example)
EBSCO	EBSCO Information Services
EFA	exploratory factor analysis
et al.	from Latin: <i>et alii</i> (and others)
f	abbreviation for “following pages”
GDP	gross domestic product
GFI	goodness-of-fit index
i.e.	from Latin: <i>id est</i> (that is)
IT	information technology
KIBS	knowledge intensive business services
LISREL	linear, structural relationships
No.	number
OECD	organization for economic co-operation and development
p/pp	page/pages

PLS	partially least squares
RATER	reliability, assurance, tangibles, empathy, responsiveness (SERVQUAL dimensions)
RMSEA	root mean square error of approximation
SC	supply chain
SEM	structural equation model
SERVPERF	service performance
SERVQUAL	service quality
SIC	standard industrial classification
SLA	service level agreement
SRMR	standardized root means residual
SSRN	social science research network
TCA	transaction cost analysis
TLI	Tucker Lewis index
Vol.	volume
WZ	Klassifikation der Wirtschaftszweige

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# 1 Introduction

This introductory chapter gives insight into the research relevance of this dissertation in the first subchapter. In the second subchapter, its practical relevance is discussed. The third subchapter delineates this thesis's structure.

## 1.1 Research Relevance

Procurement issues are increasingly moving into the focus of both researchers and strategic management. In the 1990s researchers predicted an increasingly strategic role for the purchasing function. Ellram and Carr (1994, p10f) note that “purchasing has begun to play a more important role in the strategy of the firm than was true in the past.” They continue to predict based on Porter's Model of the competitive positioning of the firm (Porter (1980)) that “the purchasing function can play an instrumental role in supporting the firm's strategic positioning.”

These predictions about the increasingly important role of the purchasing function were proven correct in the subsequent years during which companies concentrated on core-competency-with-outsourcing strategies (Quinn (1999)) and thus saw an increasing need to professionally deal with the outsourcing partners. In spite of increasing research efforts supply management is still often seen as a largely under-researched topic (Kaufmann and Carter (2006)).

Vandaele et al. (2007, p237) recapitulate this development: “With firms concentrating on core competencies, more emphasis has been placed on outsourcing and dealing with external sourcing agents. This has led to a stronger academic focus on buyer-seller exchanges and the corresponding mechanisms for governing those exchanges.” According to Vandaele et al. (2007) the buyer-seller relationship is one of these governance mechanisms. Watts and Hahn (1993) note likewise that linking purchasing to corporate strategy requires a new buyer-supplier relationship characterized by partnership elements.

These relational elements are sometimes linked to the performance of the purchasing company or of the purchasing department. Carter and Ellram (1994) ascertain a positive effect of interor-

ganizational alliances on supplier quality. Carr and Pearson (1999) conclude that strategically managed long-term relationships with key suppliers can have a positive effect on financial performance. Prahinski and Benton (2004) observe the effects of communication and buyer-supplier relationship on supplier performance.

While this direction of research has been pursued for the procurement of tangible products (Carter and Ellram (1994); Prahinski and Benton (2004); Fynes et al. (2005a, 2005b, 2005c); Hsu et al. (2008)), the effect of buyer-supplier relationships on performance has been unexplored for the procurement of B2B services. The only extant research on this specific topic addresses it from a marketing point of view. Webster (1992), Srivastava et al. (1999), Grönroos (2000), and Knemeyer and Murphy (2004) see the marketing potential of relationships to increase customer retention. Grönroos (1997, 1998) treats service quality as a marketing tool, and both Cronin and Taylor (1992) and Taylor and Baker (1994) see service quality as a means to increase customer satisfaction.

This lack of research is surprising in light of service procurement's being both a relatively new and yet a high-impact subtopic of supply chain research. Service procurement is a subsequent necessity of strategic outsourcing decisions. Ngwenyama and Bryson (1999) discuss the implications of information systems outsourcing. They come to the conclusion that the "boundaries of the firm" are changed by the outsourcing decision and that there are several risks attached to this change. After a firm outsources a service, the internal service provision changes into an external transaction with the service being the object of transaction. Managing this transaction and controlling the above-mentioned risks is the task of service procurement. Thus, service procurement enables the transition from "make" to "buy" (Coase (1937)) and maintains the "efficient boundaries of the firm" decided by the top management (Williamson (1981)). In doing so procurement can ensure "service performance," which in turn has a direct positive effect on overall "business performance" (Burca et al. (2006)).

On this foundation this thesis is able to define its unit of analysis. According to Williamson's (1981) transaction cost approach, "a transaction occurs when a good or service is transferred across a technologically separable interface." Williamson (2008) continues to define the trans-



action as the basic unit of analysis. Hence, the service transaction is chosen as the unit of analysis with the service as the object of transaction.

To examine the service transaction, this thesis follows a three-step approach.

In the first step a measurement framework for the object of transaction is developed and tested in order to allow effective service performance measurement and to serve as a foundation for the other research questions. The measurement of a service as the object of transaction is considered difficult. Grönroos (1998) observes a “case of a missing product” and Allen and Chandrashekar (2000, p27) develop a framework of differences between the outsourcing of manufacturing and services. On this foundation they conclude that “developing metrics for measuring Service Performance requires research.”

While there are several extant approaches to measuring service quality, these approaches often stem from a marketing background (Grönroos (1984), Brown and Swartz (1989), Taylor and Baker (1994), Berry and Parasuraman (1991), Srivastava et al. (1999)) and/or were developed for B2C services (Parasuraman et al. (1985, 1988, 1990, 1991a), Brown (1997), Bitner (1990)).

Thus, the majority of extant approaches falls short for evaluating the service transaction in a B2B context. This conclusion is in line with criticism concerning these measurement approaches (Smith (1995)). Brown et al. (1993) and Coulthard (2004) address problems with the “difference score” of expectations versus perceptions used in most measurement metrics existing at that time. In spite of attempts to rebut this criticism (Parasuraman et al. (1991b)), deficits like the B2C focus and the lack of transactional dimensions (e.g., price) remain. Even Parasuraman (1998, p312), one of the original drivers of service quality research, admits the lack of a B2B focus: “Much of the extant literature on service-quality assessment is based on research involving end consumers rather than business customers.”

More current studies are picking up these recommendations. Newer composite models employ the term service “performance” (Westbrook and Peterson (1998), Vandaele (2004)), instead of service “quality,” and they have dropped the difference scores in favor of measuring only perceptions, which yields superior results (Brown et al. (1993)). These service performance meas-

ures are significantly better suited to a B2B service context and to a transaction-oriented approach due to neutrality toward marketing or procurement perspectives and the inclusion of relevant service dimensions, such as financial or strategic aspects.

In spite of these developments in this field, an empirically tested and comprehensive performance measurement approach to B2B service performance does not exist outside this dissertation project. This framework has been developed to answer this thesis's first research question:

**How can “Service Performance” in a B2B service context be measured?**

In the second step, the effect of the procurement relationship on the performance of the object of transaction is explored in order to better understand the B2B service transaction. This exploration of “the performance implications of [...] particular forms of relationships are virtually undocumented in extant literature” (Dowlatshahi (1999, p28)) and will take place upon the foundation of both Transaction Cost Theory and Game Theory. These two theories were selected to complement each other. Transaction Cost Theory helps to understand the BSR as a safeguarded, hybrid form of governance between hierarchy and market (Dowlatshahi (1999)). Game Theory helps to further the understanding how cooperation can emerge in a BSR in spite of the “relentless logic of the prisoners’ dilemma” (Williamson (1985, p204)). The application of both theories to the context of the B2B service transaction will also allow a better understanding of the rationality assumptions of “New Institutional Economics” and “Neoclassical Economics.”

The Transaction Cost Theory considerations follow Williamson’s (2008) assessment of supply chain management from a transaction cost perspective. Williamson explains that the transaction characteristics, “incomplete contracts” and “complexity,” can make an ongoing exchange (i.e., an exchange relationship) more beneficial than a spot exchange. In this case an intermediary form of organization in between market and hierarchy emerges. Williamson specifies two different hybrid outcomes between hierarchy and market. The first outcome is characterized by a hybrid form with unrelieved hazards. The second outcome is called “hybrid contracting,” in

which case the hazards are (at least partially) relieved by “safeguards.” These safeguards reduce transactional hazards for both parties involved. Williamson (2008, p9) concludes that reaching the second hybrid outcome is beneficial.

To reach this beneficial outcome, Williamson identifies three approaches.

The first approach is termed “muscular” and is based on power as the key concept. It relies on specifying the requirements and subsequently demanding the best price. Williamson considers this approach viable if contracts are complete, assets are unspecific and transactions are simple. In any other case he criticizes the approach as “myopic and inefficient”.

The second approach is called “benign” and relies on trust as the key concept. The benign approach assumes that on the foundation of continuity, cooperation will reliably develop and allow for mutual gains. A potential pitfall of the benign approach is the handling of outliers. If a situation arises in which one party can benefit from adhering to the “letter of the contract” instead of the “spirit of the contract,” the benign approach lacks the ability to respond. The benign approach assumes that trust will always be reciprocated and that negative reputation effects will deter defection.

The third approach is termed “credible contracting” and builds on credible commitments as the key concept. Credible contracting assumes that both transaction parties try to foresee potential hazards and to jointly mitigate these hazards by adapting the contractual design. Thus, cooperation emerges as a form of joint problem solving. The main critique to this approach is that the relationship will “spin out of control,” thus ceasing to provide cost-effective governance.

The transaction characteristics mentioned by Williamson—“incomplete contracts” and “complexity,” “which lead to an “ongoing exchange”—also apply to the majority of B2B services (Allen and Chandrashekar (2000)). This allows the conclusion, by analogy, that most B2B service transactions are also taking place in a hybrid setup between market and hierarchy.<sup>1</sup> The

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<sup>1</sup> It has to be noted that selected, very simple B2B services (e.g. cleaning) could take place equally well under market governance, if service level agreements are sufficiently complete.

different approaches used to relieve hazards and to reach beneficial outcomes correspond to different aspects of the procurement relationship. Thus, Transaction Cost Theory allows the conclusion that the procurement relationship can have a positive effect on the transaction and subsequently on the received performance of the object of transaction. Transaction Cost Theory also grants insights into different aspects and antecedents of the procurement relationship, which will be presented after the Game Theory considerations.

The Game Theory considerations start out with the basic prisoner's dilemma: two players pitted against each other in an interrogation situation. The players are interrogated separately and are unable to communicate or to perceive the other's decision. Each player is given the opportunity to either confess or deny unspecified crimes committed by the two players. If both players confess, both end up with a medium sentence. If both remain silent, both end up with a minor sentence. If one confesses and the other remains silent, the confessing player goes free while the other faces a longer sentence. Thus, both would have an interest in remaining silent, with the outcome of "silent-silent" promising the best single payoff. But if each player looks at his utility expectations, "confessing" is the numerically superior choice. This dilemma leads to an "inefficient equilibrium" (Norman and Trachtmann (2008)), where both players confess.

This inefficient outcome becomes less likely if the game is repeated over several rounds, given the players are patient enough to allow for new equilibria to develop (Norman and Trachtmann (2008)).<sup>2</sup> This point about patient players leads to the question about the ideal player characteristics. This question is partially answered by Axelrod's tournament (1994). This tournament included an iterated prisoner's dilemma setup. Each contestant could hand in a program specifying his strategy in advance. The emerging winner was Professor Rapoport's "Tit for Tat" strategy, which, simply put, starts out nicely in round one and then just copies the behaviour of the

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<sup>2</sup> Repetition by itself does not lead to the efficient outcome. The chain store paradox introduced by Reinhard Selten uses backward induction to show that, in a finite number of games, cooperation will not emerge by game theoretical standards. Repetition is thus necessary but not sufficient for cooperation.

opponent in the previous round. This goes to show that, in the end, a “nice, provokable, and forgiving” player (Jarillo and Ricart (1987)) will receive a superior outcome over time. Thus, if the parties involved in repeated interactions (i.e., the procurement relationship) show sufficient patience and have the right attributes, a more beneficial outcome can be achieved for both players.

In the next step this thesis explores which relationship antecedents and relationship aspects will be considered, along with their possible effect on the performance of the object of transaction.

The first antecedent of relationship quality is the futuristic orientation of the relationship. In transaction cost approaches, both the continuity and the long-term reputation effects in the benign approach and the foresight of the credible contracting approach allude that a long-term orientation could foster a successful relationship. These correspond to Game Theory’s “shadow of the future” (Axelrod (1984)) and repeated games (Norman and Trachtmann (2008)), which are necessary to grow the relationship. Thus, we can conclude that futuristic orientation could foster the emergence of mutually beneficial relationships.

The second antecedent of relationship quality is communication. Although not explicitly mentioned in Williamson’s work, both the benign and the credible contracting approach rely on effective communication. Communication is also part of other assessments of the procurement relationship, which are founded on Transaction Cost Theory (Burca et al. (2005)). The ability to communicate is often an issue in Game Theory as well. The prisoners’ dilemma explicitly takes place in absence of the player’s ability to communicate and multi-round strategies like “penance” rely on communication (Norman and Trachtmann (2008)).

The first aspect of relationship quality is cooperation. Cooperation is expected in the benign approach, and it is the central goal in the credible contracting approach in Williamson’s work. In a game theoretical context, cooperation allows the players to avoid inefficient equilibria and to jointly optimize their decisions to maximize payoffs for both sides.

The second aspect of relationship quality is trust. From a transaction cost point of view, trust is a key concept in the benign approach in Williamson’s work. While the assumption that trust will

be predictably reciprocated might be questionable, trust is nonetheless seen as a key success factor for mutual gains. In Game Theory trust is not a commonplace concept in the modeling because it is, to a certain extent, irrational and thus contrary to the expected perfect rationality of Game Theory. In game theoretical models quantifiable payoffs dominate, not the psychological processes of determining whether the other player can be trusted to decide against his numerically superior expected utility and for a cooperative solution.

Thus, founded on a transaction cost perspective combined with game theoretical elements, this thesis explores which antecedents and aspects of B2B service procurement relationships allow for improved outcomes of the relationship (i.e., service performance). Different elements and antecedents of relationship quality will be developed, and their influence on service performance will be measured to answer this thesis's second research question:

**Does “Relationship Quality” have an impact on Service Performance?**

In the third step, a thorough analysis is conducted to determine whether the interrelation from the second step is moderated by additional factors. This test for moderation enables this thesis to differentiate between services with different attributes and to test whether external influences on the hypothesized relationship exist. Four moderating factors and their direct and indirect effects in this thesis's model are put to the test: complexity, dynamic, and the bargaining power of both buyer and supplier. These factors are also based on Transaction Cost Theory and Game Theory.

The complexity and the dynamics of the object of transaction stem from Transaction Cost Theory, in which there is a distinction between “complex environments” and “volatile environments” (Dahlstrom et al. (1996)).

In complex environments the need for additional safeguards to protect dedicated investments arises (Dahlstrom et al. (1996)). In addition, Kaufmann and Carter (2005) conclude, “Transaction Cost Theory suggests that transaction costs are lower when complex purchase items are

dealt with in long-term relationships.” Thus, the procurement relationship in its function as a safeguard could have a larger effect on performance for particularly complex services.

In volatile or dynamic environments companies face a bigger threat from the opportunism of trading partners (Dahlstrom et al. (1996)). Whether the individual model effects will be positively or negatively moderated by dynamics remains to be determined. On the one hand, relationship aspects like trust or cooperation could gain importance, thus proving the value of cooperation with trusted partners in an ever-changing environment. On the other hand, the development of long-term relationships could prove less effective if surroundings and alliances change rapidly.

The terms bargaining power of buyer and supplier are coined by Porter (1980). The bargaining power of buyer and supplier are two of Porter’s Five Forces and influence an industry’s competitiveness. Dowlatshahi (1999) builds on this foundation and concludes that bargaining power is to a large degree influenced by the ease with which the two parties can find a new partner should the procurement relationship have to be terminated. This definition of bargaining power leads to measuring the “freedom of choice” in a relationship, with the buyer’s and the supplier’s “best alternative to a negotiated agreement” (BATNA) as defined by Kaufmann (2002). From a Game Theory point of view, high BATNAs relate to the player’s ability to change the payoff matrix or to abandon an ongoing game for a new one. Concerning the BATNA’s moderating effect on procurement relationships and its effect on service performance, Zineldin (1995) discusses the effects of “dependence” in procurement relationships and concludes that—in the terms of this thesis—higher BATNAs lead to higher mobility, which in turn reduces the procurement relationship’s importance. Once again this thesis follows Brown et al. (1993) and Coulthard (2004) and evaluates the buyer’s and the supplier’s BATNA separately, rather than as a difference score (i.e., “procurement’s bargaining power surplus or deficit“ or “power gradient”).

This exploration of moderating effects also ensures that the model correlations are not spurious, with one of the moderators being the actual factor. For this reason both the moderating and the direct effects of the four moderators are tested answering this thesis’s third research question:

## **Do Moderating Factors exist that influence the impact of Relationship Quality on Service Performance?**

These three research questions are answered using a large-scale empirical survey and an AMOS-based structural equation model (SEM). The empirical survey constitutes a step forward in this field of research. Fynes et al. (2005a, p3303) note that “the impact of SC [supply chain] relationship quality on SC performance has received less attention in the literature. In addition, the development of scientific knowledge in the discipline is now at the stage where more rigorous empirical investigation is required.” The SEM will be modelled in AMOS because of the possibility of representing the service performance construct as a second order construct, as suggested in the literature (e.g., Cronin and Taylor (1992), Westbrook and Peterson (1998), or Vandaele and Gemmel (2004)). Also, AMOS allows the researcher to use state-of-the-art techniques modelling the moderating factors as latent constructs. This thesis uses the innovative approach of Little et al (2006) to include the moderating effects directly into the AMOS SEM.

Before this research agenda can be addressed, one point remains: The literature on B2B service transactions and procurement relationships lacks a common and consistent nomenclature. As a result, an array of necessary definitions is developed to define the relevant terms for this dissertation project.

Following the approach described, this thesis further develops the research insights into Transaction Cost Theory and Game Theory by applying them to the service transaction and the buyer-supplier relationship in a B2B service context.

## **1.2 Practical Relevance**

The growing importance of service procurement is recognized by practitioners, as well as the scientific community. Nordin et al. (2006, p1) state, “Business service sourcing is increasing in importance for firms, a trend met by significant research efforts among scholars.”



This development is backed by the increasing economic importance of B2B services. Leshner and Nordas (2006, p4), conducting an OECD study, state that B2B services “are catching up with manufacturing in terms of their contribution to GDP, demonstrating that business services have emerged as one of the most dynamic sectors in many OECD countries.” B2B services already accounted for 11.9 percent of the German GDP (in 2003). This share is almost triple the 3.7 percent that B2B services contributed to the German GDP in 1970. This significant increase is backed by the study’s finding that “a wider variety of business services improves productivity in manufacturing.”

In all of the OECD economies the range of GDP shares of B2B services (2002/2003) reaches from 3 percent in Greece to 12.7 percent in France. This puts Germany in the lead group for countries whose GDP includes a high share of business services. Germany’s place in the lead group also supports this thesis’s decision to draw its conclusions from a German-speaking sample. The results of the OECD study allow the conclusion that the importance of B2B services will continue to grow as the lead group further pursues this development and as the other OECD economies catch up with the lead group. This development is summed up by Leshner and Nordas (2006, p4): “Overall, business services are becoming increasingly important for OECD economies.”

This increasing economic relevance of B2B services is mirrored by the growing interest in the topic in companies’ procurement departments and industry associations. Service procurement is a relatively new topic for purchasing officers. Procuring B2B services has, in many cases, been added to the responsibilities of procurement departments only recently. This addition often resulted from increased service procurement volume. In addition, the procurement department’s role has become increasingly strategic in many companies,<sup>3</sup> absorbing new fields of procurement—fields like B2B services, which used to be purchased directly by the service consumers.

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<sup>3</sup> This is stated by, for example, Schaefer (2004, p3), the global leader of IBM’s “Business Transformation Outsourcing” unit, which is responsible both for strategic outsourcing decisions and for service procurement. He notes that procurement is moving away from the traditional

This development has provided procurement departments with new opportunities. If managed correctly, professional service procurement allows not only for additional savings and the acquisition of external knowledge but in fact enables and maintains top management's outsourcing decisions.

Because of the relative novelty of the challenges offered by service procurement, both practitioners and the relevant industry associations are eager to increase their knowledge. This thesis is supported by the main German association for material management, purchasing, and logistics (BME e.V.). The association currently faces numerous demands from purchasing professionals who are actively looking for ways to better manage the procurement of services and the resulting relationships. The association sees this thesis as a way to produce new insights into this topic, whose importance is described as very high by the association's top management and involved chief procurement officials.

This dissertation project develops a measurement framework for service performance, enabling companies to better evaluate the service providers' efforts over the duration of the relationship. In addition, this thesis brings to light the relationship aspects and antecedents that influence the different dimensions of service performance. These lines of influence will, in the case of conclusive results, allow companies to adapt and tailor their relationships to service providers to achieve strong relationships and increased service performance.

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function, which is "to run competitive bids, award business, and move on to the next purchase." Says Schaefer, "the traditional role neglects the real value proposition of long-term supplier relationships and the potential to integrate suppliers into the fabric of the supply chain"; instead, a more strategic alignment is necessary.

## 1.3 Chapter Layout of this Thesis

Following the discussion of research and practical relevance in this chapter, the second chapter picks up the issue of consistent terminology and puts forth a “Definition of Terms.”

The third chapter, “Literature Review and Research Gap,” gives an overview of existing literature and locates the research gap that this thesis intends to fill.

The fourth chapter, “Development of Research Questions,” builds upon the results from the literature review and elaborates on the three research questions.

The fifth chapter sets the “Theoretical Foundation” of this thesis. Both Transaction Cost Theory and Game Theory are briefly assessed, and specific issues as well as the contributions of this thesis toward both are elaborated.

The sixth chapter covers the “Methodology” of this dissertation project, including data collection and sample, data analysis, and model assessment.

The seventh chapter, “Model Development and Results,” discusses the model’s results concerning the three research questions. Each research question constitutes a subchapter, allowing distinct steps toward gradually assembling the final model.

The eighth and final chapter, “Summary and Implications,” provides a summary of the academic contributions and the practical implications of this dissertation. It also draws up an agenda for further research.



## 2 Definitions of Terms

The following definition of terms focuses on the key foundations of this thesis. In this chapter a very brief definition of the main concepts is given. These definitions are deemed a necessity because many of the concepts are either very broad in definition (e.g., services) or differently defined depending on the source (e.g., service quality and performance).

### 2.1 Services

In the following subchapter, this dissertation project puts forth its working definition of services. A clear definition is necessary because the service sector is, in general, seen as difficult to isolate beyond defining it as “everything except manufacturing and farming” (Ellram et al. (2004, p19)). While this distinction is a first step toward defining and understanding services, a more detailed definition is necessary. Analogous to the work of Barry et al. (2008), this thesis puts together its taxonomy of services as depicted in Figure 1.

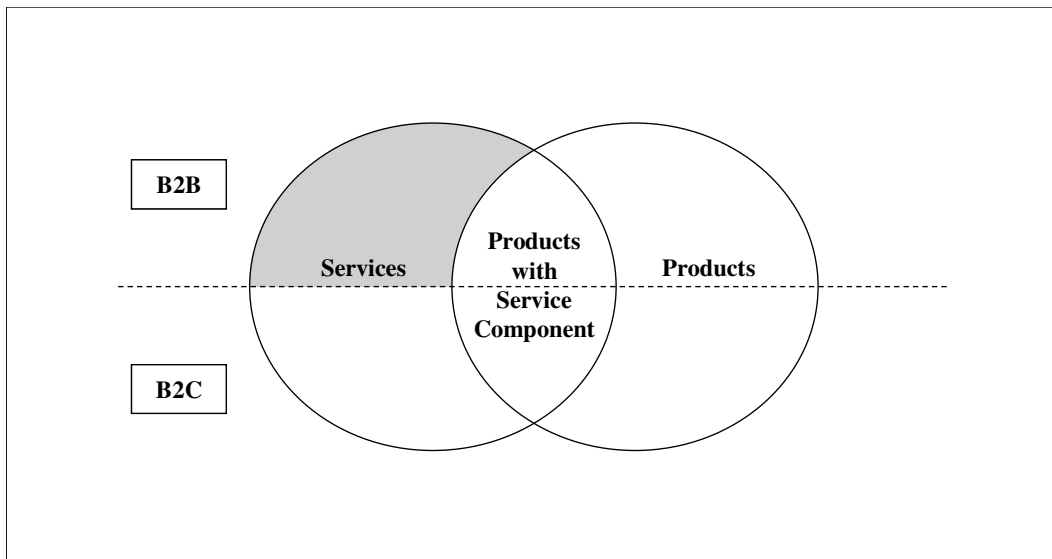


Figure 1: Service Definition

The first distinction of this thesis is between B2B and B2C services—the former represented by the upper half and the latter represented by the lower half of Figure 1. Barry et al. (2008) make a very similar distinction between services “delivered to individuals or groups of individuals” and “delivered to organizations.” This thesis focuses on B2B services (services delivered to organizations) for two main reasons.

The first is the services’ status as objects of transaction. B2C services are rarely the object of transaction because they are in most cases only an addendum to the transaction of a product. Services in this context are often treated as a marketing tool for the product (Grönroos (1984), Taylor and Baker (1994)).

The second reason is the procurement relationship. The procurement relationship as a hybrid form between market and hierarchy is widely recognized for B2B exchanges (Grönroos (1998), Grönroos (2002)). B2C services often lack recurring personal interactions between the service consumer and consistent actors on the service provider side (Carman (1990)). In addition, for B2C services the performance is often considered to be created in “moments of truth” (Carman (1990), Buttle (1996)) rather than over the course of repeated interactions.

The second distinction of this thesis is between products and services. The “Products” sphere in Figure 1 is similar to the “manufacturing and farming” definition provided by Ellram et al. (2004). By definition, this sphere is not part of this thesis’s considerations because its unit of analysis is specifically the service transaction. The reasons for this exclusion are the fundamental differences between product and service procurement covered by Maltz and Ellram (1997) and between product and service characteristics as addressed by Allen and Chandrashekar (2000):

The *expectations* for a product can be precisely specified, whereas service level agreements (SLAs) for services only serve as an approximation. This key aspect of contractual incompleteness links the B2B service transaction directly to Williamson’s (2008) transaction cost considerations.

The *quality* of products can be specified in advance and tends to be precisely measurable. Service quality can be measured on certain scales like the SERVQUAL instrument (Parasuraman et al. (1988)) but lacks a common definition and is perceived subjectively and user-dependently.

The *predictability of demand* for products can be based on forecasts and be backed up by safety stocks. The predictability of services can vary depending on the project scope. Stocks do not apply to services; instead, the capacity to perform the service is the bottleneck.

The *cost* for products can be pre-negotiated and calculated per unit whereas the cost of services is subject to the varying scope and requirements of the project.

The *verification of contract completion* for products is physically sealed with shipment and the quality control of the delivery. The project completion of a service project tends to depend just on the internal sign-off by the project manager.

The *payment* for products is directly linked to the receipts that arrive simultaneously with the delivered goods. A bill for a delivered service on the other hand is submitted after project completion and without tangible evidence.

The third distinction of this thesis is to exclude transactions consisting of both product and service elements. The “Products with Service Component” intersection (cf. Figure 1) has captured significant scientific interest as researchers postulate that most physical products have a service component that should be developed and managed (Neu and Brown (2008), Ballantyne et al. (1995)).

Barry et al. (2008) define three types of services delivered by manufacturing companies that accompany the purchase of a product. The first type of service is “pre-purchase services,” which are provided in advance of the purchase of a product (e.g., engineering of the product). The second type of service is “services delivered at purchase,” which accompany the delivery and/or the commissioning of the product (e.g., training of operations staff). The third type of

service is “after-sales services,” which include the continued support of the product (e.g., technical maintenance).

While interesting from a general management point of view and definitely worthy of separate research, including this mixed product-plus-service offering would dilute this dissertation’s focus. Instead, this thesis focuses on transactions in which the service is the sole object of transaction.

On the foundation of these three distinctions, this thesis’s service definition follows Africk and Calkins’s (1994, p49) definition of third-party logistics. They describe the logistics transaction between a company “and a third party which, compared with basic services, has more customized offerings, encompasses a broader number of service functions, and is characterized by a longer-term [...] relationship.” Thus, we can approximate the current service definition in this dissertation project, which defines services in this way:

**“Services are external knowledge and skill without a product component provided by one company for another”**

During the development of this service definition, there was also the question how to deal with “knowledge intensive business services (KIBS),” as addressed by Freel (2006), Pardos et al. (2007), and Bagdoniene and Jakstaite (2008). The KIBS definition of Pardos et al. (2007) encompasses more sophisticated or complex services (e.g., consulting), leaving out simpler services (e.g., cleaning). While their distinction is considered valid, this thesis has no motivation to exclude some B2B services. Instead, moderation effects will be used to address the differences of the service categories. This way, the structural equation model can produce results for a wide range of B2B service categories and allow a differentiation between complex and simple, as well as dynamic and unvarying, services.



## 2.2 Service Performance

To put forward a working definition for how the attributes of the object of transaction (i.e., the service provided) can be measured, we first must distinguish between the concepts of quality and performance.

The term “service quality” is often associated with the works of Parasuraman et al. (1985, 1988, 1990, 1991a, 1993), who coined the “SERVQUAL” approach to measure the service’s attributes. His efforts professionalized the field of measuring the qualitative value (i.e., the non-financial performance) of services. But these approaches neglected financial elements of the transaction (e.g., price). This lack of financial aspects is surprising from a purchasing point of view, as “balancing quality and price” (Maltz (1994)) is identified as a key task of the purchasing function. Maltz (1994) continues to elaborate that “costs” are among the key concerns for outsourcing decisions, while “service quality” (or lack thereof) is one of the main reasons for internalizing previously outsourced service categories. Thus, both cost and quality determine the boundaries of the firm. Subsequently we can, from a Transaction Cost Theory point of view, conclude that this thesis approach to measuring the service attributes must include both non-financial and financial aspects.

The term “service performance” is coined by measurement approaches moving away from the SERVQUAL scale. These include financial aspects (Cronin and Taylor (1994)) to measure the price-performance-ratio of a service (Westbrook and Peterson (1998), Vandaele and Gemmel (2004)). These newer approaches, as well as some of the older ones (e.g. Cronin and Taylor (1992)), define service performance as a second-order construct. A second-order construct, according to the definition of Brown (2006, 320ff), is an element of a higher order factor analysis that is measured by several dimensions, or first-order factors. Based on extant measurement approaches, five dimensions are selected to be tested in this thesis: reliability, geographical presence, price, interpersonal skills, and service competence. This topic is addressed in detail in the model chapters.

On this foundation this thesis defines Service Performance as follows:

**“Service Performance is a multi-faceted construct encompassing non-financial (quality) and financial (price) Service Performance dimensions”**

## 2.3 Buyer-Supplier Relationships

The buyer-supplier relationship (BSR) and its effect on service performance is one of the key research aspects of this thesis. To define the BSR this thesis takes a two-step approach. In the first step, the defining relationship characteristics are presented. In the second step, the potential benefits of BSRs are addressed.

To take a first step toward defining BSRs, this thesis provides an overview of the characteristics of the relationship between buyer and supplier.

According to Williamson (2008) the BSR constitutes a form of hybrid contracting by providing safeguards that relieve transactional hazards. “Hybrid contracting” in this definition lies between an “unassisted market” and the “hierarchy.” This view is backed by Jarillo and Ricart (1987, p90), who conclude that “relationships [...] are neither arm’s-length nor purely internal.”

Concerning other relationship characteristics, Dwyer et al. (1987, p11) criticize that “research has largely neglected the relationship aspect of buyer-seller behavior while tending to study transactions as discrete events.” On this foundation they develop a framework describing the efforts to build and maintain buyer-supplier relationships within an interfirm network. Building and maintaining “special relationships with the other members of the network” is considered costly but worthwhile (Jarillo and Ricart (1987, p84)) if the relationship constitutes a “non zero-sum game” and displays certain characteristics: “relatively unstructured tasks, long-term points of view, relatively unspecified contracts.”

This leads to the conclusion that buyer-supplier relationships take place outside the hierarchy but not in an unassisted market and are costly to build and to maintain. Still the involved parties

might reap benefits greater than the cost if certain conditions (unstructured tasks, long-term orientation, and incomplete contracts) are present.

Taking a second step toward a definition of BSRs, this thesis addresses the potential benefits of these relationships.

In the first step the relationship's benefits outweighing its cost are mentioned. This is possible because successful BSRs "allow the participants to enjoy many of the benefits of vertical integration without the commensurate risks of ownership" (Dowlatshahi (1999, p28)). Some of these benefits involve "coordinating activities and resources" (Eriksson et al. (1996)) and managing and maintaining external knowledge (Gavious and Rabinowitz (2003)). Thus, building and maintaining BSRs can effectively make the involved companies more competitive. This notion is picked up by Blancero and Ellram (1997, p616), who state that "relationships position participants to be more competitive in the marketplace." Dahlstrom et al. (1996, p110) sum up the possibilities provided by successful BSRs: "Bilateral alliances have potential to provide firms with long-term satisfaction, superior performance, and competitive advantage." Fynes et al. (2008) empirically confirm the effect of "supply chain relationship quality" on "supply chain performance" for products.

This allows the conclusion that buyer-supplier relationships provide the involved parties with the potential to reap superior benefits from the transaction and subsequently increasing their company's overall competitive position.

These characteristics and benefits of BSRs are combined with elements from the work of Jarillo and Ricart (1987), as well as Jarillo (1988), for this thesis's definition of BSRs:

**“Buyer-supplier relationships are long-term arrangements among for-profit organizations which take place between hierarchy and unassisted market. Buyer-supplier relationships are costly to build and to maintain but allow the involved companies to achieve superior transactional performance and thus gain or sustain competitive advantage.”**

To assess the BSR this thesis follows the examples of Parsons (2002) and Gulati and Sych (2007) and takes the buying company as the focal company and the procurement officer as the focal company's representative. This approach is backed by practitioner interviews conducted in cooperation with the BME e.V., revealing that the relationship to service providers is directly managed by the responsible procurement officer.

## 2.4 Relationship Quality: Aspects and Antecedents

To assess the effects of the BSR, a working definition of what constitutes a high- or low-quality BSR is necessary. In contrast to service performance, and with significant overlapping content of the different approaches, the quality of relationships has been assessed in many different contexts, and definitions vary greatly. As Burca et al. (2005, p62) put it: "While numerous characteristics of relationship quality are proposed in the literature, there does not seem to be any real consensus regarding the conceptualization of relationship quality." This notion is picked up by Huntley (2006, p713), who states, "Although researchers have made considerable advances in relationship theory, the marketing discipline still struggles with an incomplete, operational definition of quality in buyer-seller relationships."

To achieve a workable definition of relationship quality, this dissertation project follows the approaches of Heide and Miner (1992) and Grandori and Soda (1995), who differentiate between a cooperative relationship and its antecedents. Both a futuristic orientation and communication are considered to be antecedents of relationship quality, supporting the emergence of both cooperation and trust. Cooperation and trust are the two aspects of relationship quality that are, in turn, supposed to enable increased service performance.

For purposes of this thesis, we considered including many additional antecedents and aspects of relationship quality; but these aspects either overlapped with the chosen constructs or were rejected because they failed to match with the theoretical background and research focus of this

thesis<sup>4</sup>. The remaining two antecedents and two aspects of relationship quality constitute a mutually exclusive and collectively exhaustive selection of relationship attributes in a Transaction Cost Theory and Game Theory context.

On this foundation, this thesis defines relationship quality as follows:

**“Relationship Quality consists of relationship aspects and their antecedents which allow to evaluate the functionality and efficiency of the modus operandi between the two parties involved in the relationship.”**

## 2.5 Complexity

The complexity in this thesis stems from the “complex environments,” mentioned in transaction cost literature (Dahlstrom et al. (1996)), that can increase the uncertainty of the transaction (Kaufmann and Carter (2006). Complexity comes from the Latin “complexus,” which signifies “entwined” or “twisted together.” Edmonds (1996) adds to this definition that a complex item is required to consist of two or more components. In the case of this thesis, these components are the different processes that are part of the service provision (Grönroos (1998)). Concerning the assessment of the complexity, this thesis measures both the absolute perceived complexity of a service and the relative complexity compared with other procured services, as proposed by Gulati and Sytch (2007).

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<sup>4</sup> For example, the “information sharing” construct of Hsu et al. (2008) was not mutually exclusive with this thesis’s latent variable communication. Psychological constructs like “personal similarity” (Smith (1998)) of buyer and supplier (e.g., age, family situation, attractiveness, sex) were rejected because of limited applicability to the context of the B2B service transaction. Marketing constructs like “repurchase intention” or “recommendation intention” (Taylor and Baker (1994), Huntley (2006)) were rejected because of their onesided focus. This topic is addressed in detail in the model chapters (Chapter 7.2.2).

This allows for a working definition of complexity:

**“Complexity denotes the degree to which the exchanged service and its service components are intricate and entwined both in an absolute sense and in comparison with other services procured by the focal company.”**

## 2.6 Dynamics

The dynamics in this thesis stem from the “volatile environments,” mentioned in transaction cost literature (Dahlstrom et al. (1996)), which can increase the uncertainty of the transaction (Kaufmann and Carter (2006)). The term “volatile environments” must be interpreted for this thesis’s service context; Allen and Chandrashekar (2000) provide insight as to how it can be applied to a B2B service transaction.

On the one hand, there is the volatility of demand. For the procurement of products, this problem can be alleviated by building up safety stocks. But as Allen and Chandrashekar (2000) state, stocks do not apply to services; instead, the capacity to perform the service is the bottleneck. Thus, the relevant indicator for service dynamics is the required capacity. On the other hand, there is the volatility of requirements. While requirements can be precisely specified for products, service procurement has to rely on approximations like SLAs.

On this foundation this thesis defines dynamics as follows:

**“Dynamics describe the degree to which the procured capacity as well as the requirements and specifications of the exchanged service and its service components are prone to changes over time.”**

## 2.7 BATNA

In this thesis bargaining power is defined as analogous to the “best alternative to a negotiated agreement” (BATNA), as defined by Kaufmann (2002). The BATNA allows for the measurement of the “dependence” (Zineldin (1995), Gulati and Sytch (2007)) of the two parties involved in the exchange relationship and the “competitive intensity” between the two (Fynes et al. (2005a)). Because the BATNA of buyer and supplier are measured separately (and not as a difference score), this thesis defines BATNA as follows:

**“The BATNA of the buyer (supplier) denotes how easily the buyer (supplier) can substitute its current exchange partner with a new one and which costs and efforts would be needed for this changeover.”**





## 3 Literature Review and Research Gap

According to Hart's definition (1998, p. 13), the review of relevant literature consists of the "available documents (both published and unpublished) on the topic." As each of these documents is "written from a particular standpoint to fulfill certain aims or express certain views on the nature of the topic and how it is to be investigated," the studies have to be clustered according to their perspectives and to the way they address their topic. This way, the "information, ideas, data, and evidence" in the studies can be used as an appropriate foundation for this dissertation project.

For this reason this thesis's literature review consists first of the identification and collection of relevant literature and second of a structured assessment of the selected studies.

### 3.1 Criteria for Literature Review

To identify relevant publications, a selection of keywords is created. Because the keywords for this thesis's three research questions only overlap by a small margin, this task was divided into three parts. The first part revolved around the quality assessment of services<sup>5</sup>; the second part approached the topic of BSRs, including their antecedents, aspects, and outcomes<sup>6</sup>; and the third part considered factors that moderate the dependencies between antecedents, aspects, and outcomes of the BSR<sup>7</sup>. Because of the diverse nature of the three research questions and the limited range of studies existing for some of the topics, an *ex ante* journal selection was decided against.

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<sup>5</sup> Keywords comprise service quality / servqual, service assessment, and service measurement.

<sup>6</sup> Keywords comprise supplier relationships, supplier exchange, supplier cooperation, supply/supplier networks, and supplier partnering.

<sup>7</sup> Similar keywords as in the second part, but with moderation or moderating effects added.

Subsequently, the three lists of keywords were run through online databases for published (e.g., EBSCO) and unpublished (SSRN) articles. After the first search effort, the keyword list was revised and a few adaptations were made; for example “service performance” was added to the search profile. During the research process, researchers in the especially lean field of “B2B service quality research” were also contacted personally, to gain access to working papers not available online.

In the end the acquired articles were clustered according to the following criteria:

**Primary Theoretical Focus:** The articles are sorted according to the primary theoretical lens they apply (e.g., Transaction Cost Theory, network theory).

**Unit of Analysis:** The studies are classified according to the primary entity being analyzed.

**BSR Focus:** A first distinction is made as to whether BSRs are part of the study’s considerations.

**Antecedents, Aspects, or Outcomes of the BSR:** Studies are classified according to the way they cover the three main factors of the BSR.

**Service Performance Focus:** A second distinction is made as to whether service quality/performance issues are addressed in the study.

**Perspective of the Focal Company:** In transaction or relationship contexts, most studies adapt either the perspective of the buying (procurement perspective) or selling company (marketing perspective). Thus, studies are also classified depending on their perspective.

**B2B or B2C Focus:** Many articles on relationships or service quality/performance are written from a B2C perspective, making this both a necessary and a relevant distinction.

**Product or Service Focus:** The studies are classified according to their focus on manufacturing or service industries.

**Type of Analysis:** While primarily empirical studies are included in this literature review, a few articles use different types of analysis. In addition, a distinction is made here as to whether the studies use a sample consisting of dyads.

## 3.2 Overview of Existing Studies

The overview of relevant publications is structured according to the three research questions of this thesis. This approach is expedient because a highly relevant article on the measurement of “service performance” doesn’t necessarily have any common ground with an important article on the antecedents of “relationship quality.”

### 3.2.1 Studies on Service Performance

Within the past 25 years, the research on the topics of service quality/performance,<sup>8</sup> respectively, has developed significantly. Service quality research has its origins in the 1980s, when marketing scholars increasingly discovered the quality of services provided as a marketing tool

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<sup>8</sup> In accordance with the definitions, this thesis uses the wording “service performance” for two reasons. First, it better fits the notion of a “price-performance ratio” prevalent in more recent publications (Westbrook and Peterson (1998), Vandaele (2004)), thus satisfying the demand for both financial and non-financial service characteristics; both are seen as relevant from a purchasing point of view (Maltz (1994), Skjoett-Larsen (2000)). Second, the measurement model of this thesis uses the perception-based assessment of service characteristics proposed by Cronin and Taylor (1992, 1994) under the title of SERVPERF. In this chapter both “quality” and “performance” are used according to the wording used in the article under discussion.

in B2C contexts (Grönroos (1984)). But it was primarily the work of Parasuraman et al. (1985) that acted as a “primer<sup>9</sup>” for the subsequent service quality research.

Parasuraman et al. (1985) proposed and tested a comprehensive measurement framework for B2C service quality: SERVQUAL. Key aspects of this framework are its 10 original dimensions comprising 34 total items. These items were measured as a difference score expressing the gap between the expected and the perceived service quality. In the following years Parasuraman et al. refined their SERVQUAL scale and introduced the first update in 1988. This update included the reduction of the original 10 dimensions by means of scale and item purification. In a first step, the expectations and perceptions for 97 items (new items were generated for the purification), structured using the 10 original dimensions, were taken from 200 respondents using B2C services. Of the original 10 dimensions, the five RATER dimensions (i.e., Reliability, Assurance, Tangibles, Empathy, Responsiveness) with a total of 22 items were retained. The resulting RATER scale was then further tested by Parasuraman and his research team: The different “gaps” were refined (Parasuraman (1991a)), and the model’s practical application was discussed (Parasuraman et al. (1990)).

In the 1990s the first critical examinations of Parasuraman’s work emerged. Both Brown et al. (1993) and Buttle (1996) bring forward criticism of the difference scores. Brown et al. (1993) offer an empirically founded alternative: Their survey revealed that the SERVQUAL perception component actually outperforms the original difference scores and is more efficient (i.e., only half as many questions are needed). Westbrook and Peterson (1998) address changes to the SERVQUAL dimensions adding up to a total of 12 dimensions.

Parasuraman and his research team have addressed this criticism. Parasuraman et al. (1993) directly rebut the criticism of Brown et al. (1993), claiming that the problem was not the difference scores but instead the lack of adaptation of the SERVQUAL scale to the specific context.

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<sup>9</sup> Successive researchers like Buttle (1996) acknowledge that Parasuraman’s work acted as a foundation for most service quality research done in the 1980s and 1990s.

Parasuraman et al. (1998) also continued to defend the difference scores and retain the RATER dimensions.

In the late 1990s the research concerning service quality experienced a change of focus. Parasuraman et al. (1998), as well as Westbrook and Peterson (1998), began to address the topic of quality assessment of B2B services, moving away from the traditionally prevalent B2C focus. Also, Mentzer et al. (2001) focus on such a B2B context for logistics services.

In the early 2000s, another change of focus took place. While all research on service quality prior to 2000 had focal companies providing or selling the service (marketing focus), the majority of more recent research has focused on the companies buying business services (procurement focus). This trend from a marketing view on B2C service quality to a procurement view on B2B service quality is relatively recent but is intensifying. Allen and Chandrashekar (2000) address difficulties of service procurement, identifying fundamental differences between products and services and – on this foundation – stressing the demand for an approach to measuring B2B service quality. Subsequent research made early attempts to heed that call (Axelsson and Wynstra (2002), Vandaele and Gemmel (2004)), but thus far a comprehensive measurement framework for B2B service quality/performance has not been developed.

One aspect of service quality/performance that virtually all of the above-mentioned articles agree on is its status as a second-order construct. Although there is some discussion about dimensions and items, the higher order nature of service quality/performance is commonly accepted.

Table 1: Relevant Studies on Service Quality (1/2)

Author's (Year) Journal	Primary Theoretical Focus	Unit of Analysis	BSR Focus	Antecedents, Aspects, or Outcomes of the BSR	Service Performance Focus	Perspective of the Focal Company	B2B or B2C Focus	Product or Service Focus	Type of Analysis	Key Findings
Gronroos (1984) European Journal of Marketing	Service Quality/Performance Research	Service Quality	Yes.	BSR Outcomes	Yes.	Marketing	B2C	Services	Survey (N = 219)	<ul style="list-style-type: none"> <li>Service quality defined as a difference score (expectations versus perceptions).</li> <li>BSR ("Interactions") is seen as a central marketing tool.</li> </ul>
Parasuraman et al. (1985) Journal of Marketing	Service Quality/Performance Research	Service Quality	No.	n/a	Yes.	Marketing	B2C	Services	Interviews (N = 4 executives) and group discussions (N = 12)	<ul style="list-style-type: none"> <li>B2C service quality (Banking, Credit Card, Securities Brokerage and Product Repair and Maintenance) defined as a difference score (expectations versus perceptions).</li> <li>The ten original SERVQUAL dimensions are introduced.</li> </ul>
Parasuraman et al. (1988) Journal of Retailing	Service Quality/Performance Research	Service Quality	No.	n/a	Yes.	Marketing	B2C	Services	Survey (N = 200)	<ul style="list-style-type: none"> <li>Further develops the SERVQUAL measurement system. Introduction of the five RATER dimensions (Reliability, Assurance, Tangibles, Empathy, Responsiveness).</li> </ul>
Parasuraman et al. (1990) Marketing Research	Service Quality/Performance Research	Service Quality	No.	n/a	Yes.	Marketing	B2C	Services	Survey (N = more than 1,900)	<ul style="list-style-type: none"> <li>Difference scores (expectations versus perceptions) are recommended for measuring service quality of B2C services (Banking, Credit Cards, Repairs and Telephone).</li> <li>Managing services is challenging and success depends to a large degree on further research efforts in this field.</li> </ul>
Parasuraman (1991a) Human Resource Management	Service Quality/Performance Research	Service Quality	No.	n/a	Yes.	Marketing	B2C	Services	Survey (N = 1,936 customers, 728 employees and 231 managers)	<ul style="list-style-type: none"> <li>The SERVQUAL RATER framework is used to measure B2C service quality (Telephone, Insurance, and Banking) using difference scores (expectations versus perceptions).</li> <li>Three major "expectation/perception" gaps are identified.</li> </ul>
Brown et al. (1993) Journal of Retailing	Service Quality/Performance Research	Service Quality	No.	n/a	Yes.	Marketing	B2C	Services	Survey (N = 230)	<ul style="list-style-type: none"> <li>Criticism of the SERVQUAL approach, among other things of the difference scores.</li> <li>Difference scores are outperformed by their perception component.</li> </ul>

Table 1: Relevant Studies on Service Quality (2/2)

Author's (Year) Journal	Primary Theoretical Focus	Unit of Analysis	BSR Focus	Antecedents, Aspects, or Outcomes of the BSR	Service Performance Focus	Perspective of the Focal Company	B2B or B2C Focus	Product or Service Focus	Type of Analysis	Key Findings
Buttle (1996) European Journal of Marketing	Service Quality/ Performance Research	Service Quality	No.	n/a	Yes.	Marketing	B2C	Services	Literature Review	<ul style="list-style-type: none"> <li>Recognizes SERVQUAL as the primer for important research but criticizes its difference scores.</li> </ul>
Westbrook and Peterson (1998) Industrial Marketing Management	Service Quality/ Performance Research	Service Quality	No.	n/a	Yes.	Marketing	B2B	Services	Survey (N = 300)	<ul style="list-style-type: none"> <li>Test of the original SERVQUAL framework in a B2B service context.</li> <li>Several new dimensions are added, but the original SERVQUAL dimensions and difference scores remain.</li> <li>The result is a service quality framework with 12 dimensions.</li> </ul>
Parasuraman (1998) Journal of Business & Industrial Marketing	Service Quality/ Performance Research	Service Quality	No.	n/a	Yes.	Marketing	B2B	Services	Literature Review	<ul style="list-style-type: none"> <li>Significant differences between B2B and B2C service quality exist.</li> <li>B2B service quality is considered underresearched.</li> <li>Authors continue to use RATER with difference scores as a foundation.</li> </ul>
Allen and Chandrasekar (2000) Business Horizons	Transaction Cost Theory	Service Transaction	No.	n/a	Yes.	Procurement	B2B	Products and Services	Literature Review	<ul style="list-style-type: none"> <li>Significant differences between the procurement of products and services.</li> <li>Service quality measurement is very important, as is centralization of service procurement, which then can act as an organizational memory.</li> </ul>
Vandaele and Gemmel (2004) Working Paper, Universiteit Gent	Service Quality/ Performance Research	Service Quality	No.	n/a	Yes.	Procurement	B2B	Services	Survey (N = 197)	<ul style="list-style-type: none"> <li>Critique of SERVQUAL: difference scores and inadequate applicability to a B2B context.</li> <li>Development and test of a reliable and valid instrument for measuring B2B service quality with eight dimensions.</li> </ul>

Table 2: Relevant Studies on Service Performance

Author:s (Year) Journal	Primary Theoretical Focus	Unit of Analysis	BSR Focus	Antecedents, Aspects, or Outcomes of the BSR	Service Performance Focus	Perspective of the Focal Company	B2B or B2C Focus	Product or Service Focus	Type of Analysis	Key Findings
Cronin and Taylor (1992) Journal of Marketing	Service Quality/ Performance Research	Service Performance	No.	n/a	Yes.	Marketing	B2C	Services	Survey (N = 660)	<ul style="list-style-type: none"> <li>Service Quality is defined as a second-order construct.</li> <li>Perception measure of SERVQUAL outperforms SERVQUAL itself and is more efficient.</li> <li>Thus, the research introduces the performance-only SERVPERF measure instead of the difference-based SERVQUAL.</li> </ul>
Maltz (1994) Journal of Business Logistics	Relationship Marketing	Outsourcing Benefits	No.	n/a	Yes.	Marketing	B2B	Service	Survey (N = 105)	<ul style="list-style-type: none"> <li>Assessment of benefits achieved by outsourcing warehousing services.</li> <li>"Purchasing must balance quality and price."</li> <li>Service improvements are the main driver for the outsourcing of warehousing, price reduction also is a driver but less important.</li> </ul>
Cronin and Taylor (1994) Journal of Marketing	Service Quality/ Performance Research	Service Performance	No.	n/a	Yes.	Marketing	B2C	Services	Literature Review	<ul style="list-style-type: none"> <li>Research sums up reasons why the SERVPERF approach is to be preferred over SERVQUAL.</li> </ul>



### 3.2.2 Studies on Buyer-Supplier Relationships: Antecedents, Aspects, and Outcomes

In contrast to the limited research on service quality and performance, the extant research concerning relationships is vast. Almost every sociological discipline considers relationships and their attributes in one way or another. This is why this dissertation focuses on “buyer-supplier relationships” and thus on a B2B context as well as on articles that primarily use the BSR as the unit of analysis.

When looking at the development of studies on B2B BSR quality, the publications through the 1980s and up until the late 1990s either were written from a marketing perspective or stemmed from the context of “business networks.” Starting in the late 1990s, the B2B BSR quality has been increasingly investigated from a procurement perspective.

From a theory perspective, the extant studies employ a variety of theoretical lenses. The only two lenses that are used with a degree of regularity are Supply Chain Management (Ellram and Krause (1994), Ellram and Hendrick (1995), Knemeyer and Murphy (2004), Prahinski and Benton (2004), Ellram et al. (2004), Paulraj and Chen (2005), Fynes et al. (2005b), Hsu et al. (2008)) and Transaction Cost Theory (Carr and Pearson (1999), Skjoett-Larsen (2000)). Apart from that, there are a few studies founding their research on social theories (Social Exchange: Anderson and Weitz (1989), Griffith et al. (2006); Psychological Contract Theory and Organizational Justice Theory: Blancero and Ellram (1997); Commitment Trust Theory: Huntley (2006)) or marketing approaches (Relationship Marketing: Morgan and Hunt (1994), Smith (1998), Burca et al. (2005), Huntley (2006); Customer Relationship Management: Vickery et al. (2004)).

Before addressing the antecedents, aspects, and outcomes of B2B BSR quality and their interrelations, making a fundamental distinction is necessary: Relationship quality in this context is always researched on the foundation of one of three different approaches.

The first approach treats all aspects of BSR quality as equal first-order constructs, each of which independently influences the outcomes of the BSR. This approach is uncommon in B2B relationship research and is rarely found in recent publications; but it was used, for example, by Ellram and Hendrick (1995), who applied "futuristic orientation," "win-win/risk-sharing" (similar to cooperation), and "communication issues" for a dyadic assessment of relationship quality, as well as by Cravens and Nigel (1994), who addressed the BSR aspects of trust and cooperation.

The second approach treats BSR quality as a second-order construct measured by the different aspects of BSR quality as dimensions (first-order factors). Only the influence of the second-order construct on the outcomes is considered in this case. This approach is more common than the first and can be found in more recent publications. Burca et al. (2005) define BSR quality as a higher order construct measured by—among others—"communication," "trust," and "cooperation." Fynes et al. (2005a) model "supply chain relationship quality" as a second-order construct measured by the dimensions "trust," "communication," "cooperation," and "adaption." Huntley (2006) uses "trust," "cooperation," "goal congruity," and "commitment."

An inherent issue with this approach is that it treats both BSR antecedents and aspects as first-order constructs measuring the same higher order BSR quality construct, which then in turn influences the outcomes. This approach implies that BSR antecedents have a direct effect on the outcomes. This connection is questionable from a theoretical point of view and has been disconfirmed, for example, in the case of the direct effect of the "extendedness of the relationship" (similar to futuristic orientation) on the "non-financial performance" of the BSR by Kaufmann and Carter (2006).

The third approach distinguishes between antecedents and aspects of BSR quality. In this case, the antecedents have a direct influence on the BSR aspects, which subsequently have an effect on the outcomes. Thus, antecedents have an indirect effect only on the outcomes. This approach is by far the most common of the three, used both in marketing and procurement literature. A multitude of extant studies uses the combination of antecedents and aspects to assess BSRs: Dwyer et al. (1987, p212) define attraction, communication & bargaining, and power & justice

as well as norm and expectations development as “enabling subprocesses” (i.e. antecedents) for BSR development. Anderson and Weitz (1989) see provided support, goal congruence, cultural similarity, communications and age of relationship as antecedents of trust. Heide and Miner (1992, p265) view “anticipated open-ended future interaction” and “frequency of contact” as antecedents of cooperation. Smith (1998) measures personal similarity as an antecedent to the dimensional construct relationship quality, consisting of the dimensions trust, satisfaction and commitment. Knemeyer and Murphy (2004) assess specific investments, prior satisfaction, 3PL reputation, and communication as antecedents of the BSR aspect trust. Trust in turn has an effect on the outcomes channel and operations performance. Paulraj and Chen (2005) address communication and long-term relationships as antecedents of dyadic quality performance (i.e. BSR quality). Fynes et al. (2005b) see communication as an antecedent of trust and recognize the cooperation-building effect of trust as well as the performance outcome of trust and cooperation. Griffith et al. (2006) address long-term orientation as an antecedent of a high-quality supply chain relationship (measured in terms of satisfaction with the relationship). They go on to postulate, that high-quality BSRs have superior performance outcomes. Hsu et al. (2008) see the information sharing capability within a BSR as an antecedent of a high-quality BSR which has a measurable performance outcome (overall and financial performance).

This thesis will follow the abovementioned examples: Using the “antecedents-aspects-outcome” perspective, this literature review is structured in five parts:

The first part recapitulates which antecedents of BSR quality were chosen and why; the second part does the same for the aspects of BSR quality; the third part addresses extant research on the effects of BSR antecedents on the BSR aspects; the fourth part covers the interrelations of the BSR aspects; and the fifth part reviews the relevant studies for the effects of the BSR aspects on the BSR outcomes.

The antecedents of BSR quality in this thesis are futuristic orientation and communication. Futuristic orientation was picked both on Transaction Cost and Game Theory considerations, corresponding to the benign and credible contracting transaction approaches (Williamson (2008)) and to the “shadow of the future” (Axelrod (1984)) and repeated games (Norman and

Trachtmann (2008)) from Game Theory. Communication is an important aspect for the emergence of cooperation in Williamson's (2008) benign and credible contracting approach. The (in)ability to communicate is part of many Game Theory setups. Additional sources supporting these two BSR antecedents are provided in the third, fourth, and fifth parts of this subchapter.

The aspects of BSR quality in this thesis are cooperation and trust. Cooperation is a key factor in Williamson's (2008) transaction approaches and enables Game Theory players to avoid inefficient equilibria. Trust stems from Williamson's (2008) benign approach to transactions. Additional sources supporting these two BSR aspects are provided in the third, fourth, and fifth parts of this subchapter.

The effects of BSR antecedents on the BSR aspects have been covered extensively during the past two decades. This review first addresses the effects of futuristic orientation and then examines those of communication.

*Futuristic orientation* is often used as an antecedent of BSR quality, but it goes by different names. Heide and Miner (1992, p265) state that "anticipated open-ended future interaction, or extendedness [similar to futuristic orientation] [...] will increase the chances that a pattern of cooperative behavior will occur" as a stable cooperative outcome in a repeated games context. Blancero and Ellram (1997) add that futuristic orientation is a necessity for a "strategic supplier partnership to grow and evolve." Paulraj and Chen (2005) and Griffith et al. (2006) ascertain that "long-term orientation" (similar to futuristic orientation) is an antecedent of the dyadic relationship.

*Communication* is widely recognized as an antecedent of high-quality BSRs (Dwyer et al. (1987), Heide and Miner (1992), Morgan and Hunt (1994), Blancero and Ellram (1997), Smith (1998), Vickery et al. (2004), Prahinski and Benton (2004), Knemeyer and Murphy (2004), Paulraj and Chen (2005), Fynes et al. (2005b), Hsu et al. (2008)). Communication's effect on cooperation has been researched extensively (Heide and Miner (1992), Morgan and Hunt (1994), Vickery et al. (2004), Prahinski and Benton (2004), Fynes et al. (2005b)). In addition, frequent communication allows trust to emerge from

the interactions (Anderson and Weitz (1989), Smith (1998), Knemeyer and Murphy (2004), Fynes et al. (2005b)).

The interrelations of the two BSR aspects follow the assessment of Morgan and Hunt (1994) and Fynes et al. (2005b). Both ascertain a positive effect of trust on cooperation, stating that cooperation can thrive on a foundation of trust. This is, in fact, an extremely interesting starting point for the Transaction Cost and Game Theory considerations: Game Theory does not model trust in its considerations; trust is, in fact, at odds with the fully rational actors of Game Theory.

The effects of BSR aspects on the BSR outcome are also part of various research efforts. Depending on the research, either financial or non-financial outcomes are considered. Carr and Pearson (1999) address the effect of the BSR on the "Buying Firm's Financial Performance." Skjoett-Larsen (2000) confirms that the goals of contract logistic BSRs are not only reduced costs but also service improvements and efficient operations as well. Ellram et al. (2004) state that the BSR can help the buying company to deal with "hidden cost adders." Knemeyer and Murphy (2004) use a structure of BSR "antecedents-aspects-outcome," similar to this thesis, with "3PL performance" as the outcome. Fynes et al. (2005a) affirm a positive effect of "supply chain relationship quality" on "supply chain performance." All these articles share the opinion of Huntley (2006), whose research "establishes a link between the qualitative, 'soft' relational elements of a relationship to quantifiable, profitable, 'hard' outcomes." Hsu et al. (2008) confirm the effect of "relationship quality" on "firm performance." To link these relational aspects with performance, this review covers the effects of cooperation first and then turns to the effect of trust.

*Cooperation* and its effect on the financial and non-financial outcomes (i.e., performance) of the BSR have been covered extensively, receiving increasing attention in more recent research. Ellram and Krause (1994) demonstrate that "partnering" (similar to cooperation) enables buying companies to reduce price and improve reliability. Prahinski and Benton (2004) verify that cooperation can increase "supplier performance" in a manufacturing context. Fynes et al. (2005a) attest a positive effect of "supply chain relationship quality" (consisting of trust, cooperation, etc.) on "supply chain performance."

Huntley (2006) also addresses the effect of cooperation on the “quantifiable” and “profitable” outcomes of the BSR. The construct, "relational behaviour," (similar to cooperation) used by Griffith et al. (2006) also has an effect on manufacturing "performance." Gulati and Sytch (2007) treat "joint action" (similar to cooperation) only as a mediator of the effect of dependence on performance, but they confirm a positive effect.

The effect of trust on BSR outcomes has also been addressed by a wide range of studies. Anderson and Weitz (1989) confirm that relationship aspects, especially trust, can be seen as a supplement to, or even a substitute for, formal legal contracts and can subsequently improve the BSR outcomes. This conclusion is in line with Morgan and Hunt (1994), who claim that “trust” has a negative effect on “uncertainty,” which can have a positive effect on the performance of the transaction. Knemeyer and Murphy (2004) affirm an effect of “shared trust” on perceived 3PL performance. Fynes et al. verify a positive effect of "supply chain relationship quality" (consisting of trust, etc.) on "supply chain performance" (2005a) and an indirect effect (via cooperation) of trust on performance (2005b). Huntley (2006) also addresses the effect of trust on the “quantifiable” and “profitable” BSR outcomes. Gulati and Sytch (2007) treat trust (in addition to the above-mentioned "joint action" (similar to cooperation) construct) as a positive mediator of the effect of dependence on performance.

Table 3: Relevant Studies on Buyer-Supplier Relationships (1/4)

Author's (Year) Journal	Primary Theoretical Focus	Unit of Analysis	BSR Focus	Antecedents, Aspects, or Outcomes of the BSR	Service Performance Focus	Perspective of the Focal Company	B2B or B2C Focus	Product or Service Focus	Type of Analysis	Key Findings
Anderson and Weitz (1989) Marketing Science	Social Exchange, Bargaining and Negotiation Theory	BSR	Yes.	BSR Antecedents and Aspects	No.	Dyadic	B2B	Products	Survey (N = 690 Dyads)	<ul style="list-style-type: none"> <li>Relationship aspects, especially trust (with communication as an antecedent), can be seen as a supplement to, or even a substitute for, formal legal contracts.</li> </ul>
Heide and Miner (1992) Academy of Management Journal	Game Theory	BSR	Yes.	BSR Antecedents	No.	Dyadic	B2B	Products	Survey (N = 155, thereof 60 Dyads)	<ul style="list-style-type: none"> <li>Cooperation in a BSR is modeled as an iterated games framework</li> <li>"Anticipated open-ended future interaction, or extendedness (similar to futuristic orientation) and frequency of contact (similar to communication) will increase the chances that a pattern of cooperative behaviour will occur."</li> <li>In addition, "months to replace buyer/seller" (similar to BATNA) is used as control variables</li> </ul>
Elram and Krause (1994) The International Journal of Logistics Management	Supply Chain Management and Transaction Cost Theory	BSR	Yes.	BSR Antecedents, Aspects, and Outcomes	No.	Procurement	B2B	Products and Services	Survey (N = 98 Dyads)	<ul style="list-style-type: none"> <li>BSRs (partnering/cooperation) allow the buying companies to reduce price and improve reliability.</li> </ul>
Morgan and Hunt (1994) Journal of Marketing	Relationship Marketing	BSR	Yes.	BSR Antecedents and Aspects	No.	Marketing	B2B	Products	Survey (N = 204)	<ul style="list-style-type: none"> <li>Positive effect of both "trust" and "communication" on "cooperation."</li> <li>Additionally, "trust" has a negative effect on "uncertainty," which might allow the conclusion that "trust" could have a positive effect on the performance of the transaction.</li> </ul>
Elram and Hendrick (1995) Journal of Business Logistics	Supply Chain Management	BSR	Yes.	BSR Antecedents and Aspects	No.	Dyadic	B2B	Products and Services	Survey (N = 186 + 98 Dyads)	<ul style="list-style-type: none"> <li>"Futuristic orientation," "win-win/risk-sharing" (similar to cooperation), and "communication issues" are measured in a dyadic context. Buyers' and suppliers' perceptions of each parameter are matched with each other and the "desire" parameter value.</li> </ul>

## Relevant Studies on Buyer-Supplier Relationships (2/4)

Authors (Year) Journal	Primary Theoretical Focus	Unit of Analysis	BSR Focus	Antecedents, Aspects, or Outcomes of the BSR	Service Performance Focus	Perspective of the Focal Company	B2B or B2C Focus	Product or Service Focus	Type of Analysis	Key Findings
Blancero and Ellram (1997) International Journal of Physical Distribution & Logistics Management	Psychological Contract Theory and Organizational Justice Theory	BSR	Yes.	BSR Antecedents	No.	Dyadic	B2B	Products and Services	Survey (N = 98 Dyads)	<ul style="list-style-type: none"> <li>Psychological contract perspective (perceived fairness, etc.) is used on strategic supplier partnering to complement the transaction-based view.</li> <li>Communication and futuristic orientation aspects are antecedents for a "strategic supplier partnership to grow and evolve."</li> </ul>
Smith (1998) Psychology & Marketing	Relationship Marketing	BSR	Yes.	BSR Antecedents and Aspects	No.	Marketing	B2B	Products	Survey (N = 366)	<ul style="list-style-type: none"> <li>Effects of personal similarity (age, sex, race, work attitude, personality) on the BSR and its antecedents.</li> <li>"Communication" is one of the BSR antecedents, and "trust" is one of the BSR aspects.</li> </ul>
Carr and Pearson (1999) Journal of Operations Management	Transaction Cost Theory	BSR	Yes.	BSR Antecedents, Aspects, and Outcomes	No.	Procurement	B2B	Products	Survey (N = 739)	<ul style="list-style-type: none"> <li>"Strategic purchasing and supplier evaluation systems" are introduced as BSR antecedents.</li> <li>BSR has an effect on the "buying firm's financial performance."</li> </ul>
Sjøpøtt-Larsen (2000) International Journal of Physical Distribution & Logistics Management	Transaction Cost Theory and Network Theory	BSR	Yes.	BSR Aspects	No.	Procurement	B2B	Services	Case studies (N = 3)	<ul style="list-style-type: none"> <li>The goals of contract logistic BSRs are not only reduced costs but also service improvements and efficient operations.</li> </ul>
Vickery et al. (2004) Management Science	Customer Relationship Management	BSR	Yes.	BSR Antecedents and Aspects	No.	Marketing	B2B	Services	Survey (N = 113)	<ul style="list-style-type: none"> <li>Media richness (similar to communication) has an effect on relational performance (similar to cooperation), which in turn influences satisfaction and loyalty.</li> <li>Additional research is needed to generalize the results from contract logistics to other B2B services.</li> </ul>



## Relevant Studies on Buyer-Supplier Relationships (3/4)

Author's (Year) Journal	Primary Theoretical Focus	Unit of Analysis	BSR Focus	Antecedents, Aspects, or Outcomes of the BSR	Service Performance Focus	Perspective of the Focal Company	B2B or B2C Focus	Product or Service Focus	Type of Analysis	Key Findings
Kraemer and Murphy (2004) The Journal of Supply Chain Management	Supply Chain Management	BSR	Yes.	BSR Antecedents, Aspects and Outcome	Yes.	Procurement	B2B	Services	Survey (N = 388)	<ul style="list-style-type: none"> <li>"Empirical support for the linkage between various relationship dimensions [Antecedents (good communications, limited instances of opportunistic behaviour, solid reputation for fairness, satisfactory prior interactions, and relationship-specific investments), Aspects (shared trust)] and perceived 3PL performance."</li> <li>Only 6 of the 11 linkages are empirically supported. Four of these six contain communication or trust.</li> <li>Supplier development programs for automotive first-tier suppliers and their communication have an effect on supplier performance. Communication increases commitment and cooperation, which in turn increase supplier commitment and performance.</li> <li>B2B services are a largely underresearched aspect of supply chain management.</li> <li>Concepts from product procurement cannot be readily transferred.</li> <li>ESR can help to cope with "hidden cost adders."</li> <li>"Communication" and "long-term orientation" (similar to futuristic orientation) are antecedents of the dyadic relationship.</li> </ul>
Prahinski and Benton (2004) Journal of Operations Management	Supply Chain Management	Supplier Development Programs	Yes.	BSR Antecedents, Aspects, and Outcomes	No.	Procurement	B2B	Products	Survey (N = 139)	<ul style="list-style-type: none"> <li>Supplier development programs for automotive first-tier suppliers and their communication have an effect on supplier performance. Communication increases commitment and cooperation, which in turn increase supplier commitment and performance.</li> </ul>
Elram et al. (2004) Journal of Supply Chain Management	Supply Chain Management	Service Supply Chain	Yes.	BSR Outcomes	Yes.	Dyadic / Network	B2B	Services	Literature Review	<ul style="list-style-type: none"> <li>B2B services are a largely underresearched aspect of supply chain management.</li> <li>Concepts from product procurement cannot be readily transferred.</li> <li>ESR can help to cope with "hidden cost adders."</li> </ul>
Patraj and Chen (2005) Journal of Supply Chain Management	Supply Chain Management	BSR	Yes.	BSR Antecedents	No.	Procurement	B2B	Products	Survey (N = 232)	<ul style="list-style-type: none"> <li>"Communication" and "long-term orientation" (similar to futuristic orientation) are antecedents of the dyadic relationship.</li> </ul>

## Relevant Studies on Buyer-Supplier Relationships (4/4)

Author's (Year) Journal	Primary Theoretical Focus	Unit of Analysis	BSR Focus	Antecedents, Aspects or Outcomes of the BSR	Service Performance Focus	Perspective of the Focal Company	B2B or B2C Focus	Product or Service Focus	Type of Analysis	Key Findings
Burca et al. (2005) Irish Journal of Management	Relationship Marketing	BSR	Yes.	BSR Aspects	No.	Marketing	B2B	Products	Case study	<ul style="list-style-type: none"> <li>BSR assessment from a marketing point of view "Relationship quality captures the essence of relationship marketing."</li> <li>Definition of BSR quality as a higher order construct consisting of "communication," "trust," "cooperation," etc.</li> <li>"Long-term commitment" (similar to futuristic orientation) added after case interviews.</li> <li>Need for additional empirical investigation across industry borders is stated to make the research more generally applicable.</li> </ul>
Fynes et al. (2005b) International Journal of Operations & Production Management	Supply Chain Management	BSR	Yes.	BSR Antecedents, Aspects, and Outcomes	No.	Procurement	B2B	Products	Survey (N = 200)	<ul style="list-style-type: none"> <li>Positive effects of BSR's antecedents and aspects on manufacturing performance.</li> <li>Communication is an antecedent of trust and (indirectly) of cooperation.</li> <li>Trust has an effect on cooperation and an (indirect) effect on performance.</li> <li>Cooperation has an (indirect) effect on performance.</li> </ul>
Huntley (2006) Industrial Marketing Management	Relationship Marketing and Commitment Trust Theory	BSR	Yes.	BSR Aspects and Outcomes	No.	Marketing	B2B	Products	Executive Interviews (N = 13)	<ul style="list-style-type: none"> <li>Evaluation of relationship quality in B2B BSRs: Trust and cooperation (as well as "goal congruity" and "commitment") are key aspects of relationship quality in B2B BSRs.</li> <li>Interviewee response "establishes a link between the qualitative, 'soft' relational elements of a relationship to quantifiable, profitable, 'hard' outcomes" (Performance).</li> </ul>
Griffith et al. (2006) Journal of Operations Management	Social Ex- change Theory	BSR	Yes.	BSR Antecedents, Aspects, and Outcomes	No.	Dyadic	B2B	Products	Survey (N = 200)	<ul style="list-style-type: none"> <li>"Long-term orientation" (similar to futuristic orientation) is considered as an antecedent of "relational behaviour" (similar to cooperation), which in turn has an effect on manufacturing "performance."</li> </ul>
Hsu et al. (2003) International Journal of Physical Distribution & Logistics Management	Supply Chain Management	BSR	Yes.	BSR Antecedents, Aspects, and Outcomes	No.	Procurement	B2B	Products	Survey (N = 625)	<ul style="list-style-type: none"> <li>"Information sharing" (similar to communication) as an antecedent of "relationship quality," and effect of "relationship quality" on "firm performance."</li> </ul>

### 3.2.3 Studies on Moderation: Complexity, Dynamics and BATNA

Most research concerning the moderation of the relationship between the BSR and the object of transaction (i.e., the service performance) covers the moderating factors only as control variables. The actual calculation of the moderation itself is rarely included (Fynes et al. (2005a)).

Concerning the theoretical focus, there is a prevalence of studies using Supply Chain Management (Dahlstrom et al. (1996), Fynes et al. (2005a), Kaufmann and Carter (2006), Gulati and Sytch (2007)) and Transaction Cost Theory (Dahlstrom et al. (1996), Dowlatshahi (1999), Fynes et al. (2005a), Kaufmann and Carter (2006)). Interestingly, half of the articles considering moderating effects employ more than one theoretical lens (Heide (1994), Dahlstrom et al. (1996), Dowlatshahi (1999), Fynes et al. (2005a), Kaufmann and Carter (2006)), allowing the conclusion that dual or eclectic research approaches are successful in capturing the multifaceted aspects of the BSR which they frequently view as the unit of analysis. Similar to the research on BSR antecedents, aspects, and outcomes, the older studies stem from marketing or network backgrounds, and the more recent ones assume a procurement perspective. In contrast to the BSR discussion, empirical tests of moderating factors are rarely to be found.

The first moderator, complexity, is addressed by Dahlstrom et al. (1996), who discuss the issues of "complex [and] volatile environments" in a transaction cost setting. Lamming et al. (2000) measure the direct influence of the complexity of the object of transaction on the BSR attributes. Kaufmann and Carter (2006) find that complexity is positively related to the "Extendedness of the Relationship" and to "Behavioural Transparency." This allows the conclusion that "transaction costs are lower when complex purchase items are dealt with in long-term relationships" (Kaufmann and Carter (2006, p657)). Gulati and Sytch (2007) use the "complexity" of the product as a control variable.

The second moderator, dynamics, is often discussed as part of transaction cost considerations when the "volatility" of the transaction environment (e.g., Dahlstrom et al. (1996)) or object of transaction is assessed. Cravens and Nigel (1994) and Harland et al. (2001) argue that, depend-

ing on the volatility of the environment, different forms of networks/relationships emerge. Lamming et al. (2000) draw a similar conclusion but attest that the “degree of innovation” (similar to dynamics) of the object of transaction influences the BSR attributes. Fynes et al. (2005a) includes the moderating effects of "technological turbulence" (similar to dynamics) in his SEM.

The BATNA of buyer and supplier constitute the third and fourth moderating factors. While the first two moderators usually go by the same names in most articles (i.e., complexity and dynamics/volatility), the notion of BATNA goes by many names in extant research. For this reason, this literature review presents a selection of articles that most closely address the notion of BATNA as defined by this thesis, independent of the respective terminology.

The BATNA is termed “power” by Dwyer et al. (1987) and considered important in the creation of a BSR. The (unjust) use of power is a factor in the dissolution of relationships. Heide and Miner (1992) use a one-item construct, "months to replace buyer/seller," as a control variable, which is close to the essence of this thesis’s BATNA definition. Heide (1994) uses the expression, “buyer and supplier dependence,” which also is measured in the sense of the BATNA definition: the ease with which a buyer/supplier can be replaced. Dowlatshahi (1999) uses the term “bargaining power” (similar to BATNA) and addresses its influences on the BSR: If a buyer has high “bargaining power,” he can act offensively to his advantage; if the supplier has high BATNA, he might do the same. In both cases cooperative BSRs lose some of their attractiveness. Harland et al. (2001) distinguish four different types of supply networks that emerge, depending on, among other things, the “influence of the focal firm” (similar to BATNA). Fynes et al. (2005a) model the "competitive environment" (similar to BATNA) as a moderating factor on the BSR.

Table 4: Relevant Studies on Moderation: Complexity, Dynamics and BATNA (1/3)

Authors (Year) Journal	Primary Theoretical Focus	Unit of Analysis	BSR Focus	Antecedents, Aspects, or Outcomes of the BSR	Service Performance Focus	Perspective of the Focal Company	B2B or B2C Focus	Product or Service Focus	Type of Analysis	Key Findings
Dwyer et al. (1987) Journal of Marketing	Relationship Marketing	BSR	Yes.	BSR Antecedents and Aspects	No.	Marketing	B2C	Products and Services	Literature Review	<ul style="list-style-type: none"> <li>Communication and power (similar to BATNA) are important in the creation of BSR.</li> <li>Communication is necessary for bargaining and thus is an antecedent to the relationship.</li> <li>The (just or unjust) use of power is a factor in the dissolution of relationships.</li> </ul>
Cravens and Nigel (1994) International Journal of Service Industry Man- agement	Network Theory	Supply Network	Yes.	BSR Aspects	No.	Marketing	B2B	Services	Literature Review	<ul style="list-style-type: none"> <li>Depending on the volatility of the environment, different forms of networks/relationships emerge.</li> <li>Trust and cooperation are considered important for the relationship.</li> </ul>
Heide (1994) Journal of Marketing	Eclectic	BSR	Yes.	BSR Antecedents and Aspects	No.	Marketing	B2B	Products	Survey and Literature Review	<ul style="list-style-type: none"> <li>Transaction Cost Theory, Resource Dependence Theory, Relational Contracting Theory, and Marketing Channels Literature are used to assess BSR. BSRs are a governance mechanism replacing the "invisible hand"</li> <li>"Buyer and supplier dependence" is included in the model. This dependence is measured in the sense of the BATNA definition: the ease with which a buyer/supplier can be replaced.</li> </ul>
Dahlstrom et al. (1996) Journal of the Acad- emy of Marketing Science	Supply Chain Management and Transac- tion Cost Theory	BSR	Yes.	BSR Antecedents and Aspects	No.	Procurement	B2B	Services	Survey (N = 189)	<ul style="list-style-type: none"> <li>BSR with logistics providers are costly to build and to maintain.</li> <li>"Complex environments" and "volatile environments" are directly addressed as part of the transaction cost discussion.</li> </ul>

## Relevant Studies on Moderation: Complexity, Dynamics and BATNA (2/3)

Author's (Year) Journal	Primary Theoretical Focus	Unit of Analysis	BSR Focus	Antecedents, Aspects, or Outcomes of the BSR	Service Performance Focus	Perspective of the Focal Company	B2B or B2C Focus	Product or Service Focus	Type of Analysis	Key Findings
Dowla Shahi (1999) Production and Inventory Management Journal	Transaction Cost Theory and General Management Theory	BSR	Yes	BSR Aspects	No.	Procurement	B2B	Products	Literature Review	<ul style="list-style-type: none"> <li>There are two approaches to BSRs: the traditional adversarial BSRs and cooperative relationships.</li> <li>There is a "strong economic and competitive rationale for cooperative BSRs" because they "allow the participants to enjoy many of the benefits of vertical integration without the commensurate risks of ownership."</li> <li>"Bargaining power" (similar to BATNA) and its influences on the BSR are addressed. If a buyer has high BATNA, he can choose the adversarial approach to his advantage. If the supplier has high BATNA, he might choose the adversarial approach as well. In both cases the cooperative approach loses attractiveness.</li> </ul>
Larunning et al. (2000) International Journal of Operations & Production Management	Network Theory	Physical flow of a product within the supply network	Yes	BSR Aspects	No.	Dyadic / Network	B2B	Products and Services	Survey (N = 16 supply networks)	<ul style="list-style-type: none"> <li>Complexity and "degree of innovation" (similar to dynamics) of the object of transaction influence the BSR attributes.</li> </ul>
Harland et al. (2001) The Journal of Supply Chain Management	Network Theory	Product Supply Network	Yes	BSR Aspects	No.	Dyadic / Network	B2B	Products	Survey (N = 16+50); Case studies (N = 8)	<ul style="list-style-type: none"> <li>Four different types of supply networks emerge, depending on the supply dynamics and the influence of the focal firm (similar to BATNA).</li> </ul>

Relevant Studies on Moderation: Complexity, Dynamics and BATNA (3/3)

Author's (Year) Journal	Primary Theoretical Focus	Unit of Analysis	BSR Focus	Antecedents, Aspects, or Outcomes of the BSR	Service Performance Focus	Perspective of the Focal Company	B2B or B2C Focus	Product or Service Focus	Type of Analysis	Key Findings
Fynes et al. (2005a) International Journal of Production Research	Eclectic	BSR	Yes.	BSR Aspects and Outcomes	No.	Procurement	B2B	Products	Survey (N = 200)	<ul style="list-style-type: none"> <li>Supply chain management article on the foundation of Transaction Cost Theory, Social Exchange Theory, Resource Dependence Theory.</li> <li>Positive effect of "Supply Chain Relationship Quality" (consisting of Trust, Communication, Cooperation, and Adaption) on "Supply Chain Performance."</li> <li>Moderation effects of the "competitive environment" (similar to BATNA) and "technological turbulence" (similar to dynamics) are tested.</li> </ul>
Kaufmann and Carter (2006) Journal of Operations Management	Transaction Cost Theory and Supply Chain Management	BSR	Yes.	BSR Antecedents, Aspects, and Outcomes	No.	Procurement	B2B	Products	Survey (N = 200)	<ul style="list-style-type: none"> <li>Complexity is positively related to the "extendedness of the relationship" and to "behavioural transparency." This allows the conclusion that "transaction costs are lower when complex purchase items are dealt with in long-term relationships."</li> <li>In addition, the direct effect of the "extendedness of the relationship" (similar to futuristic orientation) on the "non-financial performance" of the BSR is disconfirmed.</li> </ul>
Gulati and Sych (2007) Administrative Science Quarterly	Supply Chain Management	BSR	Yes.	BSR Antecedents and Aspects	No.	Procurement	B2B	Products	Executive Interviews (N = 37) and Survey (N = 151)	<ul style="list-style-type: none"> <li>"Joint dependence" within BSRs has a positive effect on supplier performance.</li> <li>Interdependence between buyer and supplier can be considered a "non-zero-sum game" with "trust," "joint action" (similar to cooperation), and "communication" mediating the effect of dependence on performance.</li> <li>"Complexity" of the product is used as a control variable.</li> </ul>

## 3.3 Research Gaps

On the foundation of the preceding literature review, several largely unexplored areas of BSRs and their performance outcomes can be identified. The assessment of the research gap once again follows the three research questions. Each assessment is grouped into issues relating to the *theory* (theoretical foundation of the research), the *content* (conclusions drawn by the research), the *context* (background and focus of the research), and the *methodology* (way the research was conducted).

### 3.3.1 Research Gaps: Service Quality/Performance

Identifying unexplored areas of research on Service Quality/Performance is easily accomplished because of the limited amount of extant research.

*Theory:* Almost all of the relevant articles address the topic only as a measurement issue without any further theoretical foundation. Allen and Chandrashekar (2000) are the only ones that try to address the issue from a Transaction Cost Theory point of view. This is surprising, as Williamson (1991) considers the “ease of performance measurement” of the object of transaction very important. In addition, most studies chose the service quality as their unit of analysis, which neglects the perspective of, for example, Allen and Chandrashekar (2000), who view the service transaction as the unit of analysis and thus focus on the service properties that are relevant for the transaction.

*Content:* Almost all extant research defines service quality/performance as a higher order dimensional construct. Yet (due to the marketing perspective of most articles) price or costs are rarely part of these dimensions. In addition, most articles use the unwieldy “expectations-perception gap,” despite the possibility of using a more efficient and often superior-performing “perceptions-only” approach (Brown et al. (1993)). A reason for this might be the B2C focus of the studies: The B2C service encounters described in the studies (e.g., banking, retail) are simi-



lar to a spot market (i.e., no longer a service relationship). Perhaps in this context measuring the subconscious service expectations might make more sense than in the case of B2B services, where the service has been explicitly specified in contracts and SLAs.

*Context:* Most studies stem from a marketing and B2C context. B2B services from a procurement point of view are largely unexplored. A comprehensive measure like SERVQUAL (which covers a B2C marketing perspective) does not exist for a B2B procurement perspective yet.

*Methodology:* Several studies don't back up their results with large-scale surveys, and to date no study has analyzed service quality/performance in a B2B context and from a procurement perspective empirically.

### 3.3.2 Research Gaps: Buyer-Supplier Relationships: Antecedents, Aspects, and Outcomes

To date numerous researchers have identified the BSR in a service procurement context as a relevant direction of research (e.g., Nordin et al. (2006)). Nevertheless, little research exists on the BSR's antecedents, aspects, and outcomes from a B2B service procurement perspective (cf. Ellram et al. (2004)).

*Theory:* Most extant studies rely on one theoretical foundation for their research (generally either Supply Chain Management Theory or Transaction Cost Theory). Dual or eclectic research approaches are rarely followed, in spite of Dowlatshahi's (1999) recommendation to supplement Transaction Cost Theory approaches with a second theory suited to assess the emergence of cooperation. In addition, the BSR tends to be the unit of analysis. But unless all three "antecedents, aspects, and outcomes" of the BSR are considered, this unit of analysis fails to capture the full extent of the BSR and its implications on the transactions conducted within it.

*Content:* Only the more recent studies use the expedient distinction of antecedents, aspects, and outcomes. Although this structure is widely accepted, we have not yet seen "any real consensus

regarding the conceptualization of relationship quality” (Burca et al. (2005, p62)); “the marketing discipline still struggles with an incomplete, operational definition of quality in buyer-seller relationships” (Huntley (2006, p713)). The BSR’s effect on the outcomes/transaction is also rarely considered.

*Context:* Older articles address the BSR primarily from a marketing or network point of view and as a marketing tool. This notion is picked up by Blancero and Ellram (1997,p 618), who state, “Literature on strategic supplier partnerships focuses primarily on [...] the perspective of the selling firm.” More recent studies show a growing interest in the procurement perspective. This trend is without doubt laudable, but the potential benefits of relational supply chain governance for the buying company are still largely untapped. Most studies focus on BSRs in B2B and product procurement contexts. The role of BSRs in a B2B service procurement context is largely unexplored. This lack of research is surprising, as nearly 70% of companies that decided to outsource services are unhappy with the resulting relationship (Kakabadse and Kakabadse (2002)). The few articles that cover service procurement without exception struggle with the huge diversity of service categories, either limiting their scope to a few choice categories (e.g., contract logistics) or introducing new concepts like KIBS (Pardos et al. (2007), Bagdoniene and Jakstaite (2008)). As yet, none have used moderation effects to model different service categories.

*Methodology:* Most BSR articles use large-scale surveys, and the newer studies frequently employ SEMs. Thus, in this area there is no research gap to speak of.

### 3.3.3 Research Gaps: Moderation: Complexity, Dynamics and BATNA

The moderating factors of this thesis are included in quite a few studies, but they are rarely used as moderators within a model. The majority of studies either use them as control variables or as latent variables in their models.

*Theory:* Many of the studies use dual or eclectic theory lenses, which apparently help them to address the complex interrelations within BSRs. Yet few studies assess complexity and dynamics as uncertainty issues from a transaction cost perspective (e.g., Dahlstrom et al. (1996)). And while BATNA would be very relevant from a Game Theory point of view (high BATNAs express the ability of one player to abort a multi-round game prematurely), none of the studies used this theoretical lens. Concerning the unit of analysis, most studies are only concerned with the antecedents and aspects of the BSR being moderated. Only Fynes et al. (2005a) include the moderation of performance outcomes in their publications.

*Content:* Most studies address the effects of complexity, dynamics, and BATNA within the BSR (as control variables or latent constructs but not as moderators). Some articles conclude that complexity and dynamics influence the BSR's attributes (e.g., Harland et al. (2001), Lamming et al. (2000)), or they conclude that a high BATNA could decrease the positive effects of the BSR (e.g. Dwyer et al. (1987)). All of these studies neglect to recognize and quantify the moderating effect.

*Context:* Similar to the other research gaps, employing a procurement perspective is only a recent trend in this area. In addition, almost all moderated BSRs are assessed for product rather than service transactions; meanwhile, extant research for service transactions either groups similar clusters of services, focuses only on one service category (e.g., contract logistics), or introduces definitions like KIBS for complex and dynamic services.

*Methodology:* Although many studies use complexity, dynamics, or BATNA in their large-scale surveys, only very few actually treat them as moderating factors.



## 4 Development of Research Questions and Hypotheses

The development of this thesis's research questions directly builds upon the foundations of the literature review and the identified research gaps.

*Theory:* This thesis aims to achieve a real-world application of Transaction Cost Theory and Game Theory. This dual theory approach is applied to the B2B service transaction as the unit of analysis, following the recommendation of Williamson (2008). On this foundation the measurement of service performance as the object of transaction becomes possible, especially focusing on the service properties relevant for the transaction (i.e., both price and quality aspects). Concerning the BSR this thesis follows Dowlatshahi (1999) and supplements the Transaction Cost Theory approach with a second theory, Game Theory, to better capture the BSR's antecedents, aspects, and outcomes. This dual theory lens is also expedient when it comes to the moderation of the interrelations of BSR and service performance: Transaction Cost Theory is very suited to address the issues of complexity and dynamics, and the moderating influence of BATNA can be interpreted relying on Game Theory.

*Content:* This research assesses whether the BSR can constitute a safeguarded hybrid form of governance between hierarchy and market and whether the "Shadow of the Future" is sufficiently present within a BSR for cooperation to emerge. The BSR is modeled consisting of antecedents (futuristic orientation and communication), aspects (cooperation and trust), and outcome (service performance as a higher-order dimensional construct). This thesis then tests whether these interrelations are moderated by additional factors (complexity, dynamics, and BATNA of the buyer and BATNA of the supplier). Service performance is modeled with "perceptions-only" scores (Brown et al. (1993)) and both financial (price) and non-financial (quality) dimensions. The BSR follows the more recent "antecedents-aspects-outcomes" approach, thus attempting an often-demanded operational definition (Burca et al. (2005), Huntley (2006)).

The moderation is addressed using latent moderating factors within the model (Little et al. (2006)), not just control variables or a multi-group analysis.

*Context:* This thesis follows the trend present in most recent research to move from a B2C marketing perspective to a B2B procurement perspective. In addition, this research investigates a general B2B service context (i.e., no B2B services are excluded). In this context Transaction Cost and Game Theory implications within the BSR can be observed, especially those resulting from service peculiarities, such as incomplete contracts or difficulties specifying performance (Maltz and Ellram (1997), Allen and Chandrashekar (2000)). By doing so, this thesis can help to create a comprehensive performance measurement framework for B2B services, which to date does not exist. Concerning the BSR, this focus enables this dissertation project to identify possible sources of and solutions to dissatisfaction frequently present in service BSRs (Kakabadse and Kakabadse (2002)). Additionally, the employed modeling techniques of this thesis allow for the assessment of a multitude of service categories within one joint model without any need to focus on singular categories or concepts, such as KIBS (Pardos et al. (2007), Bagdoniene and Jakstaite (2008)).

*Methodology:* A large-scale empirical study is selected to remain competitive with state-of-the-art research in the field of BSRs. Thus, this thesis follows the recommendation of Fynes et al. (2005a, p3303) that “the discipline is now at the stage where more rigorous empirical investigation is required.” A confirmatory factor analysis (CFA) allows a comprehensive second-order measurement framework for Service Performance to be developed. In addition, using an AMOS-based SEM to evaluate the data allows for the effective modeling of antecedents, aspects, and outcomes of the BSR. Also, the use of an AMOS SEM puts this dissertation project in the position to model the moderation using latent variables and interaction terms directly in the SEM (Little et al. (2006)) without the need to rely on multi-group analysis or the requisite sample size for each group. This way, differently complex and dynamic service categories can be investigated in the same model. Finally, the discussion of the BATNA of both buyer and supplier as moderating factors allows this thesis to ensure that the assumed relationship between

the BSR and the performance of the object of transaction is not spurious, with BATNA being the constitutive factor.

Based on theory, content, context, and methodology, this thesis can formulate its unique research proposition and the resulting research criteria, analogous to the literature review:

Table 5: Research Criteria for This Thesis's Research

Primary Theoretical Focus	Unit of Analysis	BSR Focus	Antecedents, Aspects, or Outcomes of the BSR	Service Performance Focus	Perspective of the Focal Company	B2B or B2C Focus	Product or Service Focus	Type of Analysis
Transaction Cost Theory and Game Theory	Service Transaction	Yes.	BSR Antecedents, Aspects, and Outcomes	Yes.	Procurement	B2B	Services	Survey (N = 245)

On this foundation of theory, content, context, and methodology, this thesis can develop its three research questions.

## 4.1 Research Question 1

The first research question covers the measurement of the object of transaction. As service transactions are significantly different from product transactions (Maltz and Ellram (1997), Allen and Chandrashekar (2000)), all attempts to measure service performance have to deal with the “case of a missing product” (Grönroos (1998)). The extant approaches investigating service quality of performance aren't fully applicable in a B2B service transaction context: Either they are created with a marketing perspective in mind or they have a B2C focus. Yet the extant approaches provide sufficient material to follow the example of Parasuraman et al. (1988). In this publication Parasuraman and his research team take the original SERVQUAL measure and perform scale and item purification based on a large-scale survey, resulting in the RATER scale (B2C services from a marketing perspective).

Following more recent approaches (Westbrook and Peterson (1998), Vandaele (2004)), both financial and non-financial dimensions of B2B service performance will be addressed. In addition, the unwieldy difference scores are dropped in favor of the perception scores recommended by, for example, Brown et al. (1993). Thus, following the terminology of the extant research, this thesis develops the first “B2B-SERVPERF” measure aiming to answer the first research question:

**How can “Service Performance” in a B2B service context be measured?**

## 4.2 Research Question 2

The second research question investigates the antecedents, aspects, and performance outcomes (i.e., B2B-SERVPERF) of the BSR on the foundation of Transaction Cost Theory and Game Theory (for a more detailed discussion see Chapter 5).

Transaction Cost Theory acknowledges that ongoing exchange (in the form of a BSR) can be more beneficial than a spot exchange if contracts are incomplete and if the object of transaction is complex. This way, the BSR can constitute a hybrid form between spot market and hierarchy that offers efficiency similar to the spot market and safeguards similar to hierarchical governance (Williamson (2008)). To reach this beneficial outcome Williamson recognizes three approaches: the “muscular,” the “benign,” and the “credible contracting” approach. The first approach is deemed “myopic and inefficient” when facing incomplete contracts, asset specificity, and complexity. The second approach relies on trust and repetition to foster cooperation. The third approach builds on credible commitments in order to achieve cooperation.

Game Theory recognizes long-term relationships as an effective mean to foster cooperation and to prevent inefficient equilibria within repeated games (Norman and Trachtmann (2008)) but puts additional emphasis on the cooperation of the individuals involved in the relationship. Repeated games are viewed as a necessary but not sufficient condition for cooperation to emerge. The individuals involved in the transaction—the procurement officer and the key ac-



count manager of the provider—must also display certain characteristics to allow for improved equilibria to develop. Players must be “patient” (Norman and Trachtmann (2008)) and act in a “nice, provokable, and forgiving” fashion (Jarillo and Ricart (1987)) to receive improved outcomes. This effect of the procurement officer’s individual actions is also recognized by Ellram et al. (2004), who state that “buyers of services must be aware of the impact of their activities on the supply chain and their service providers.” Each of their activities in the relationship, “if performed properly, reduces the inherent uncertainty in the supply chain, leading to improved outcomes.”

On the foundation of these two theories the BSR can be further specified and its effect on performance can be assumed. The extant research presented in the literature review offers many insights about which factors are relevant and which interrelations exist between the antecedents, aspects, and performance outcomes of the BSR.<sup>10</sup>

Futuristic orientation and communication are picked as the BSR antecedents of this thesis on the foundation of Transaction Cost Theory considerations (Williamson (2008)) and Game Theory considerations (e.g., strategies like “Tit-for-Tat” and “Penance” have to be communicated; absence of communication in the prisoner’s dilemma; futuristic orientation corresponds to the “shadow of the future”). These two antecedents of the BSR are also supported by the literature review (e.g., by Paulraj and Chen (2005)) and allow a “strategic supplier partnership to grow and evolve” (Blancero and Ellram (1997)).

Cooperation and trust are the aspects of BSR quality examined by this thesis. Cooperation is part of Williamson’s (2008) “benign” and “credible contracting” approaches. The benign approach also relies on trust to assist in the emergence of cooperation. Game Theory sees cooperation between players as a possibility to avoid inefficient equilibria. Choosing these two aspects is in accordance with the extant research presented in the literature review: Cravens and Nigel

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<sup>10</sup> The discussion of the different approaches to measure and model relationship quality can be found in Chapter 3.2.2. The discussion which additional constructs were not taken into consideration is located in Chapter 7.2.2.

(1994) consider trust and cooperation very important for the relationship, and Huntley (2006) acknowledges trust and cooperation as key aspects of relationship quality in B2B BSRs.

Before presenting the individual hypotheses, this dissertation will address the issue of directionality in the relationship between relationship quality and service performance. As mentioned above, the majority of publications and all articles from a procurement perspective (e.g., Carr and Pearson (1999)) acknowledge that a high-quality exchange relationship precedes the service performance derived from the relationship. Nonetheless several publications with a marketing background postulate an inversed relationship: Providing high-quality service (price elements are not part of the marketing perceptions of service performance) as a tool to improve BSRs which in turn positively affect customer retention, repurchase intention and recommendation intention. Crosby et al. (1990) considers service quality as a necessary but not sufficient marketing tool for achieving high-quality relationships<sup>11</sup> which in turn influence “sales effectiveness” and the “anticipation of future interaction.” Taylor and Baker (1994) draw similar conclusions but they see service quality as requirement for customer satisfaction.<sup>12</sup> Storbacka et al. (1994) come from a marketing background as well and postulate that service quality increases customer satisfaction which improves relationship quality which makes the overall relationship to the customer more profitable. Woo and Ennew (2004) represent a more recent trend in marketing research. They discuss the earlier approaches of viewing service quality as a marketing tool. On this foundation, they come to the conclusion that multi-faceted service quality models (of e.g. Parasuraman et al. (1985)) should not be seen as a mere marketing tool but as the result of cooperative BSRs. This dissertation will follow the procurement perspective and the more recent marketing approaches and assume the directionality expressed in the following hypotheses.

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<sup>11</sup> High relationship quality in the model of Crosby et al. (1990) is a single first-order construct primarily focused on trust within the relationship.

<sup>12</sup> Taylor and Baker (1994) define customer satisfaction as having trusting and satisfied customers.

On the foundation of literature review and Transaction Cost and Game Theory, the following hypotheses about the BSR antecedents, aspects, and performance outcome have been developed.

**Futuristic orientation and its effects are the subject-matter of the first two hypotheses.**

Extant empirical studies and literature illustrate a substantial rationale that futuristic orientation is an antecedent of the aspects of BSR quality in the sense that "anticipated, open-ended future interaction, or extendedness will increase the chances that a pattern of cooperative behaviour will occur" (Heide and Miner (1992)). Blanco and Ellram (1997) see futuristic orientation as a requirement for the "strategic supplier partnership to grow and evolve." The mutual growth and evolution within the partnership represents both cooperation and trust. A similar notion of futuristic orientation as an antecedent of BSR quality is conveyed by Paulraj and Chen (2005) as well as Griffith et al. (2006). The latter establish that "long-term orientation" (similar to futuristic orientation) is an antecedent of the dyadic relationship" positively influencing the emergence of both cooperation and trust.

From a theoretical point of view, futuristic orientation has been chosen based on Transaction Cost and Game Theory considerations. In Transaction Cost Theory, it is represented by both the continuity and the long-term reputation effects in the benign approach and the foresight of the credible contracting approach (Williamson (2008)). Futuristic orientation in Transaction Cost Theory can thus have a positive effect both on cooperation and on trust. In Game Theory futuristic orientation corresponds to the "shadow of the future" (Axelrod (1984)) and repeated games (Norman and Trachtman (2008)) which allow cooperation to emerge.

Summarizing the empirical and theoretical considerations, we can conclude that a positive relationship exists between futuristic orientation and cooperation as well as trust, leading to this thesis's first and second hypotheses.

H1: The level of the futuristic orientation of a relationship is positively related to the intensity of cooperation within the relationship.

H2: The level of the futuristic orientation of a relationship is positively related to the level of trust within the relationship.

### **Communication and its effects are the subject-matter of hypotheses three and four.**

Extant empirical studies and literature depict communication as a widely accepted antecedent of the aspects of BSR quality (e.g., Hsu et al. (2008)). Dwyer et al. (1987) view communication as an "enabling subprocess" for relational exchange. The relationship between communication and cooperation has been addressed and demonstrated in several studies (Heide and Miner (1992), Morgan and Hunt (1994), Vickery et al. (2004), Prahinski and Benton (2004), Fynes et al. (2005b)). Similarly, communication has been widely recognized as an antecedent of trust within the extant research (Anderson and Weitz (1989), Morgan and Hunt (1994), Smith (1998), Coote et al. (2003), Knemeyer and Murphy (2004), Fynes et al. (2005b)).

From a theoretical point of view, communication was chosen based on Transaction Cost and Game Theory considerations. In Transaction Cost Theory, for example, it is assumed by Williamson (2008) in his description of different approaches to cooperation. In the benign approach, trust and cooperation emerge based on continuity and reputation effects. The benign approach assumes regular interaction of the two involved parties, which cannot take place in absence of the ability to communicate. Furthermore, reputation effects spread because of the effective exchange of information. In the credible contracting approach, even the most credible commitment (or the most credible threat from a Game Theory perspective) cannot develop its effect if it has not been communicated or the other party is uninformed. In addition the need to

communicate credible threats, Game Theory recognizes the importance of communication by specifying the (in)ability to communicate as part of many Game Theory setups.

Summarizing the empirical and theoretical considerations, we can conclude that a positive relationship exists between communication and cooperation as well as trust, leading to this thesis's third and fourth hypotheses.

H3: The intensity of communication within a relationship is positively related to the intensity of cooperation within the relationship.

H4: The intensity of communication within a relationship is positively related to the level of trust within the relationship.

### **Trust and its effects are the subject-matter of hypotheses five and seven.**

Extant empirical studies and literature emphasize the notion that trust fosters cooperation in several articles concerning BSRs (Morgan and Hunt (1994), Fynes et al. (2005b)). Jarillo (1990, p498) describes the importance of trust as follows: "The essential 'glue' that holds the network together (that organizes the economic activities going on inside) is neither the pure price signal, nor command from above: it is trust. This [trust] is not a 'soft' issue, it goes to the heart of the question of what are the real causes of transaction costs." Jarillo (1990, p101) continues to state that "firms are more inclined to engage in co-operation with partners who have demonstrated their trustworthiness." The effect of trust on the performance outcomes of the BSR is also discussed in a number of studies. Trust's role as a supplement to or even a substitute for formal legal contracts is addressed (Anderson and Weitz (1989)), as is the negative effect of trust on the "uncertainty" of the transaction (Morgan and Hunt (1994)). In addition, several articles directly address the effect of trust on performance (e.g., Knemeyer and Murphy (2004), Fynes et al. (2005a) and (2005b), Huntley (2006), Gulati and Sytch (2007)).

From a theoretical point of view, trust was chosen based on Transaction Cost Theory considerations only. In Transaction Cost Theory trust is a key concept in the benign approach described

by Williamson (2008), with trust and repetition leading to cooperation. Especially when having to select potentially opportunistic exchange partners, trust is invaluable for boundedly rational individuals hinting at a positive effect on both cooperation and performance. From a Game Theory point of view, trust is at odds with the assumption of perfect rationality and is thus not acknowledged as a relevant factor (cf. Chapter 5.1). Because of this difference between the two main theories employed by this thesis, the relevance of trust in the model can help to determine which rationality assumption is more suited to the real world context of B2B service transactions. The higher the effect of trust in the model, the better bounded (i.e., intended but limited) rationality fits the real-world scenario.

Summarizing the empirical and theoretical considerations, we can conclude that a positive relationship exists between trust and cooperation as well as performance, leading to this thesis's fifth and seventh hypotheses.

H5: The level of trust within a relationship is positively related to the intensity of cooperation within the relationship.

H7: The level of trust within a relationship is positively related to the level of service performance delivered by the relationship.

### **Cooperation and its effects on performance are the subject-matter of the sixth hypothesis.**

Extant empirical studies and literature have covered the effect of cooperation on the performance outcomes of the BSR extensively: Cooperation, depending on the sources, goes by many names: "partnering" (Ellram and Krause (1994)), "relational behaviour" (Griffith et al. (2006)), or "joint action" (Gulati and Sytch (2007)) – but all articles confirm the positive interrelation between cooperation and performance. Additionally, Prahinski and Benton (2004) demonstrate that cooperation can increase "supplier performance" and Fynes et al. (2005a) verify a positive relationship between "supply chain relationship quality" (consisting of trust, cooperation, etc.) on "supply chain performance."

From a theoretical point of view, cooperation was chosen based on Transaction Cost and Game Theory considerations. In Transaction Cost Theory, cooperation is the expected result of Williamson's (2008) benign and credible contracting approach. In Game Theory the cooperation of two players allows them to leave inefficient equilibria and to establish new ones with superior outcomes.

Summarizing the empirical and theoretical consideration, we can conclude that a positive relationship exists between cooperation and performance, leading to this thesis's sixth hypothesis.

H6: The intensity of cooperation within a relationship is positively related to the level of service performance delivered by the relationship.

Testing these seven hypotheses provides an answer to this thesis's second research question:

**Does "Relationship Quality" have an impact on Service Performance?**

### 4.3 Research Question 3

The third research question explores whether the interrelations proposed in the second research question are moderated by external factors. As shown in the literature review, only few studies directly address the moderation within their models. In this dissertation project, the moderation is considered highly relevant for three reasons.

The first reason is that the four moderators – complexity and dynamics, as well as the BATNA of both buyer and supplier – are supported by Transaction Cost and Game Theory. Several studies address the issue that both complexity and dynamics express uncertainty in a transaction cost context. This is why complexity and dynamics might reinforce the effect of the BSR on the performance outcomes (Dahlstrom et al. (1996), Kaufmann and Carter (2006)). In a Game Theory assessment, complexity and dynamics are originally assumed to be irrelevant for perfectly rational actors. But if the rationality assumption is relaxed dynamics could discount the "shadow of the future" and have a negative effect on the effects of the BSR's antecedents and

aspects (especially on “futuristic orientation”). The BATNAs of buyer and supplier are similar to the issues of power discussed in Transaction Cost Theory (Williamson (1985)) and represent the ability of one player to abort a multi-round game prematurely in a Game Theory context. Concerning the interpretation of high BATNAs, these could weaken the effect of BSRs as they are seen as a factor in the dissolution of relationships (Dwyer et al. (1987)) and might entice the partner with the higher BATNA to forego cooperation for short-term personal gain (Dowlatshahi (1999)).

The second reason for using Complexity and Dynamics as moderators is the resulting possibility to analyze very different services through the research lens of this thesis without losing the flexibility to differentiate service categories. This way, this thesis’ model can assess the general BSR effects for all B2B BSRs in a service context in a single model and still be able to distinguish complex (e.g. engineering) and simple (e.g. cleaning) services as well as dynamic (e.g. travel) and unvarying (e.g. cleaning) service categories<sup>13</sup>.

The third reason is (partially) protecting this thesis’s model from being spurious, with one of the moderators being the actual factor. To avoid this possibility, both the moderating effects and the possible direct effects of the moderators will be tested.

As the above-mentioned effects of the moderating factors are not extensively covered in extant research and can only be vaguely assumed, the third research question remains exploratory in nature. Both the moderating and the direct effects of the four moderators are tested on all model interrelations between the BSR’s antecedents, aspects, and performance outcomes to answer the third research question of this thesis.

### **Do Moderating Factors exist that influence the impact of Relationship Quality on Service Performance?**

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<sup>13</sup> The mentioned service categories were identified based on their factor scores of the moderator constructs.



## 5 Theoretical Foundation

While both Transaction Cost Theory and Game Theory have been mentioned as theories adequate for assessing the service transaction within a B2B BSR, this assertion does not alleviate the need for a thorough theoretical foundation. Both theories can be applied to the B2B service transaction to compare theoretical assumptions and to further their applicability in a real world context.

In the first part of this chapter, the selection of theories is explained, and the compatibility of the theories' assumptions is discussed. In the second part, Transaction Cost Theory is presented with a special focus on its relevant aspects in the context of a B2B service transaction. In the third part, the same is done for Game Theory.

### 5.1 Selection and Compatibility of Theories

This subchapter discusses the reasons for choosing Transaction Cost Theory and Game Theory, how they complement each other, and how their assumptions differ. Although this discussion would typically be part of the subsequent subchapters, in which each theory is examined individually, it is provided here to ascertain their compatibility before going further into theoretical details.

For the choice of theories Williamson (1985, pp18-19) advances the view that Transaction Cost Theory should be used as part of a dual or an eclectic approach: "Given the complexity of phenomena under review, transaction cost economics should often be used in addition to, rather than to the exclusion of, alternative approaches. Not every approach is equally instructive, however, and they are sometimes rivals rather than complementary." This notion is picked up by Dowlatshahi (1999), who also proposes that traditional Transaction Cost Theory is to be supplemented by a second theory.

Dowlatshahi (1999, p28), similar to Williamson (2008), provides a first summary of the advantages of applying the transaction cost perspective to the B2B service transaction and the underlying BSR: The BSR can provide a safeguarded, hybrid form of governance between hierarchy and market, that allows "the participants to enjoy many of the benefits of vertical integration without the commensurate risks of ownership."

But the BSR as a mode of governance and cooperation between companies is not without flaw. Williamson (1985, p204) states, "The achievement of cooperation is widely thought to be frustrated by the relentless logic of the prisoners' dilemma." This is why Game Theory is the secondary theoretic lens applied to the service transaction. Game Theory provides insights into the interactions of the individuals involved in the BSR and helps develop a framework for cooperative behavior.

Transaction Cost Theory and Game Theory stem from two different areas of economic research with different but compatible assumptions: Transaction Cost Theory stems from the "New Institutional Economics" research, and Game Theory is a field of "Neoclassical Economics." To discuss the distinct assumptions of both theories, this subchapter identifies the assumptions from the two theories concerning "rationality" and "self interest" and discusses which assumptions are best suited for the theories' application to the B2B service transaction.

Concerning the assumption of "rationality," Williamson (1985, p44) elaborates: "Three levels of rationality are usefully distinguished. The strong form contemplates maximizing. Bounded rationality is the semi-strong form. The weak form is organic rationality." In addition to these three forms of rationality, Williamson acknowledges other possibilities that are not included in the assessment: "That does not exhaust the rationality categories. Non-rationality and irrationality might also be included."

*Maximizing* is the strongest form of rationality. Williamson (1985, p45) describes maximizing as follows while criticizing the lack of governance implications: "Neoclassical economics [e.g., Game Theory] maintains a maximizing orientation. That is unobjectionable, if all of the relevant costs are recognized. The maximizing tradition does not, however, encourage such recognitions. Instead, the role of institutions is suppressed in

favor of the view that firms are production functions, consumers are utility functions, the allocation of activity between alternative modes of organization is taken as given, and optimizing is ubiquitous.”

*Bounded rationality* is seen as an inherent limitation of all “human agents” (Williamson (1981)). In his subsequent work, Williamson (1985, p45) continues to elaborate:

“Bounded rationality is the cognitive assumption on which transaction cost economics relies. This is the semi-strong form of rationality in which economic actors are assumed to be ‘*intendedly* rational, but only *limitedly* so.’” This conjunction combines the “economizing orientation” of intended rationality with the emergence of institutions based on rationality’s limitations. Williamson (1985, p46) identifies an additional implication of bounded rationality: “Comprehensive contracting is not a realistic organizational alternative when provision for bounded rationality is made.”

*Organic rationality* (or process rationality) is the weak form of rationality (Williamson (1985, p46)). It stems from evolutionary approaches and assumes that the actors behave reasonably but not intendedly.

Concerning the assumption of “self-interest orientation,” Williamson (1985, p47) elaborates: “Three levels of self-interest seeking can also be distinguished. The strongest form, the one to which transaction cost economics appeals, is opportunism. The semi-strong form is simple self-interest seeking. Obedience is the weak (really null) form.”

*Opportunism* is defined as “self-interest seeking with guile. This includes but is scarcely limited to more blatant forms, such as lying, stealing, and cheating. Opportunism more often involves subtle forms of deceit” (Williamson (1985, p47)). Williamson continues to differentiate between “ex ante and ex post opportunism” in Transaction Cost Theory, the former describing “adverse selection” and the latter “moral hazard.” Game Theory also assumes opportunism as an attribute of its actors.

*Simple self-interest seeking* “presumes that bargains are struck on terms that reflect original positions. But initial positions will be fully and candidly disclosed upon inquiry, state-of-the-world declarations will be accurate, and execution is oath- or rule-bound”

(Williamson (1985, p49)). Put differently, economic models that assume simple self-interest seeking treat “individuals as playing a game with fixed rules which they obey. They do not buy more than they can pay for, they do not embezzle funds, they do not rob banks” (Williamson (1985, p31)).

*Obedience* is defined by Williamson (1985, p49) as “stewardship of an extreme kind in which self-interestedness vanishes.” Notions of obedience in this sense are mostly prevalent in utopian and related literatures.

On the foundation of the different types of rationality and self-interest orientation, this thesis can classify its two key theories as shown in Table 6.

Table 6: Types of Rationality and Self-Interest Orientation

		Self-Interest Orientation		
		Opportunism	Simple Self-Interest Seeking	Obedience
Rationality	Maximizing	<b>Game Theory</b>		
	Bounded Rationality	<b>Transaction Cost Theory</b>		
	Organic			

Both Transaction Cost Theory and Game Theory share the assumption of the strongest type of self-interest orientation: opportunism. Applying this assumption to the real world context of a B2B service transaction, this assumption appears justified. Ellram et al. (2004) enumerate eight “hidden cost adders” in a B2B service procurement context that all relate to different forms of ex ante or ex post opportunism. This match of the assumptions of both theories with the real world context to which they are applied suggests that the choice of theories is appropriate.

While both theories assume opportunism, their ways of dealing with said opportunism are different.

Transaction Cost Theory relies more on “credible commitments” (Williamson (2008)) while Game Theory puts more emphasis on threats and deterrence (Schelling (1981, p35f). Williamson (1985, p167) describes this distinction of “commitments versus threats” as follows: “The former involve reciprocal acts designed to safeguard a relationship, while the latter are unilateral efforts to pre-empt an advantage.”

On this foundation, if a commitment in Transaction Cost Theory is in fact credible and believed by the other party, reciprocal trust may emerge and can foster cooperation and performance. Game Theory, on the other hand, focuses solely on the “outcomes” to deal with opportunism: If a threat is believed by the other party, the other party’s outcome matrix changes. Thus, the decision maker is completely indifferent toward his counterpart: “he is not concerned with *why* his partner may choose a particular strategy, but what strategy his partner will choose. Nothing but the *outcomes* enter his value system. If a man has good will or malice toward his partner, a conscience or a bent for mischief, it is all assumed to be reflected in his valuation of the final outcomes” (Schelling (1984, p240)).

Concerning the assumed rationality, Transaction Cost Theory and Game Theory differ in their assumptions. Game Theory assumes the strongest form of rationality, maximizing or perfect rationality, while Transaction Cost Theory relies on bounded (intended but limited) rationality to describe their actors.

To reconcile these two distinct assumptions this dissertation project first compares decision-making under perfect and bounded rationality, then puts forward contracting implications of the two rationality assumptions, and finally compares the discussion of the rationality assumptions by two of the most prominent researchers concerning the respective theory: Nobel prize laureates Oliver E. Williamson and Thomas C. Schelling.

First, we discuss the decision-making process under perfect and bounded rationality. Kaufmann (1993, p95) provides a comprehensive line-up of different decision-making activities, assuming “Maximizing/Perfect Rationality” and “Bounded Rationality” (Table 7). In these activities, Kaufmann uses the eight-step “decision-making process” of Robbins and Coulter (2009, pp136f).

Table 7: Comparison of Decision Making under Perfect and Bounded Rationality

<b>Decision-Making Step</b>	<b>Perfect Rationality</b>	<b>Bounded Rationality</b>
1. Problem formulation	An important and relevant organizational problem is identified.	A visible problem that reflects the manager’s interests and background is identified.
2. Identification of decision criteria	All criteria are identified.	A limited set of criteria is identified.
3. Allocation of weights of criteria	All criteria are evaluated and rated in terms of their importance to the organization’s goal.	A simple model is constructed to evaluate and rate the criteria; the decision maker’s self-interest strongly influences the ratings.
4. Development of alternatives	A comprehensive list of all alternatives is developed creatively.	A limited set of similar alternatives is identified.
5. Analysis of alternatives	All alternatives are assessed against the decision criteria and weights; the consequences for each alternative are known.	Beginning with a favored solution, alternatives are assessed, one at a time, against the decision criteria.

6. Selection of an alternative	Maximizing decision: the one with the highest economic outcome (in terms of the organization's goal) is chosen.	Satisficing decision: the search continues until a solution is found that is satisfactory and sufficient, at which time the search stops.
7. Implementation of alternative	Since the decision maximizes the single, well defined goal, all organizational members will embrace the solution.	Politics and power considerations will influence the acceptance of, and commitment to, the decision.
8. Evaluation	The decision's outcome is objectively evaluated against the original problem.	Measurement of the decision's results are rarely so objective as to eliminate self-interests of the evaluator; possible escalation of resources to prior commitments in spite of both previous failures and strong evidence that allocation of additional resources is not warranted.

Trying to relate these decision-making activities under differing rationality to the B2B service transaction, a differentiated picture emerges: The perfect rationality assumptions would never hold up in reality. "All" criteria and alternatives are concepts too absolute to hold true in a real-world context. The assumptions of bounded rationality, on the other hand, might give too little credit to the professionalism of a full-time procurement officer. Especially when it comes to the analysis and selection of the alternatives, more rationality might be expected from the actors. In

the end, the truth might lie in between the two rationality assumptions, although presumably it is closer to the bounded rationality.

Second, we discuss the contracting implications of the two rationality assumptions. Williamson (1985, p67) presents the contracting implications depending on the presence or absence of “bounded rationality” and “opportunism”:

Table 8: Contracting Implications of Perfect and Bounded Rationality

		Condition of Bounded Rationality	
		Absent	Admitted
Condition of Opportunism	Absent	Bliss	“General clause” contracting
	Admitted	<b>Comprehensive contracting</b>	<b>Serious contractual difficulties</b>

When “bounded rationality” and “opportunism” are both absent, fair and fully rational actors blissfully interact with each other. In the case of perfect rationality (absence of bounded rationality) and present opportunism—the setup of Game Theory—comprehensive contracts can fully describe and thus govern the exchange. If the actors are boundedly rational but not opportunistic, general contracts can govern the exchange, leaving sufficient flexibility to accommodate changes that have to be made due to incomplete planning and unforeseen contingencies. When both bounded rationality and opportunism are present, serious difficulties arise in specifying the exchange in a contract.

Through this lens, the context of the B2B service transaction favors the Transaction Cost Theory assumption of “bounded rationality.” Incomplete contracts are widely recognized as an



inherent issue of B2B service exchanges (e.g., Allen and Chandrashekar (2000), Vandaele et al. (2007)). The discussion of incomplete contractual relations and the subsequent governance issues will be continued in the Transaction Cost Theory subchapter.

Third, this dissertation project illustrates the discussion of the rationality assumptions of Oliver E. Williamson and Thomas C. Schelling.

Williamson (1981, p553) sums up the transaction cost perspective on rationality: “Although boundedly rational agents experience limits in formulating and solving complex problems and in processing (receiving, storing, retrieving, transmitting) information [...], they otherwise remain intendedly rational.” These rationality deficits combined with potential opportunism are among the factors that justify the emergence of hierarchical institutions as a form of governance superior to the market. But Williamson (2008) acknowledges that there are hybrid forms in between market and hierarchical governance that allow both players to achieve an even more beneficial, cooperative outcome. These can be reached in a benign fashion, allowing trust to evolve after repeated interactions or by means of credible contracting that relies on credible commitments (trusted commitments). Trust is, in fact, a concept that emerges when individuals acknowledge the bounds of their rationality: They trust their counterparts to act cooperatively, and they trust that if new information emerges the parties involved in the exchange will find a solution together.

Yet, Williamson (1985, p204) acknowledges that the theoretical achievement of cooperation is threatened by the logic of Game Theory generally and the prisoners’ dilemma particularly. In the same work, Williamson (1985, p45) criticizes that the assumption of perfect rationality “is unobjectionable, if all of the relevant costs are recognized.” But as this is not the case, Williamson deems the bounded rationality perspective superior which accounts for the transactional outcome as well as transaction costs.

Schelling (1984, p238) is aware of the critique of Game Theory’s rationality assumptions: “The question is often raised whether game theory restricts its empirical applicability by postulating

mental giants with nerves of steel – perfectly rational amoral<sup>14</sup> deciders who have access ex officio to the theoretical results of game theory.” Schelling continues to elaborate that in real world contexts, naturally, there are bound to be imperfections. “But to handle these departures from perfection one has to specify them explicitly. And it greatly complicates the problem to depart from perfection, whether it be perfect memory or perfect absence of memory, perfect knowledge or perfect absence of knowledge, perfect calculation or perfect random choice. The man with the perfect memory and the man with without memory are the easiest to handle in abstract analysis.”

Schelling (1984, p221) considers Game Theory “more than a ‘theory,’ more than a set of theorems and solutions; it is a framework for analysis.” Thus, his decision for perfect rationality is put into context: The assumption is suited optimally to provide a “framework for analysis” and to allow for precise modeling. Schelling does not consider this “a limitation of game theory; it is a limitation of any theory that tries to deal with the full multidimensional complexity of imperfect decision makers.” Thus, with the assumption of perfect rationality, “Game theory helps to discover [...] ‘inefficient’ situations; it can also try to discover some rules or procedures, legal arrangements, or enlargement of the range of strategies available, to achieve better outcomes for both participants.”

In summary, both theories’ assumptions hold up reasonably well in a decision-making context. In a contracting context, the incomplete contracts of Transaction Cost Theory capture reality better than the comprehensive contracts of Game Theory. The literature review of rationality assumptions demonstrates that, to achieve the two theories’ goals (explaining governance and institutions compared to providing a modeling framework for interactions, respectively), both

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<sup>14</sup> The assumption of perfect rationality and opportunism in fact negates the concept of trust: A perfectly rational and opportunistic actor will without doubt maximize his outcome no matter what this means for the other party, and he knows perfectly well that his counterpart will do the same. Thus, without a change of the outcome matrix, Game Theory actors are unable to trust beyond the numerically superior alternatives.

theories' assumptions are appropriate. In this dissertation project, the role of trust in the BSR might allow interesting insights into which rationality assumption is more suited to the real-world context of B2B service transactions: that trust is largely irrelevant, supporting Game Theory's assumptions, or that trust in fact enables cooperation and enhances the BSR's performance, suggesting that Transaction Cost Theory better captures this specific context.

## 5.2 Transaction Cost Theory

Transaction Cost Theory is based on the works of Commons (1931), Coase (1937), and Williamson (e.g., 1975, 1979, 1981, 1985, 1991, 2008). As early as 1937 Coase noted that, given a perfect market and a functioning price function, (1) cooperation resulting in the formation of firms seems unnecessary, and (2) all economic activity could be "co-ordinated through a series of exchange transactions on the market."

Based on this conclusion, Coase raised the question of why a firm emerges at all in a specialised exchange economy: "It is clear that these [firm and market] are alternative models of coordinating production. Yet having regard to the fact that if production is regulated by price movements, production could be carried out without any organization at all, well might we ask, why is there any organization?" Coase answers his own question in that organizations as alternative governance structures seem to have an advantage over the market. As Rindfleisch and Heide (1997, p31) put it: "Specifically, Coase proposes that under certain conditions, the costs of conducting an exchange in a market may exceed the costs of organizing the exchange within a firm." Coase refers to the cost of conducting an exchange in the market as the "cost of using the price mechanism," and it is part of the transaction costs, which are then referred to as the "costs of running the system." These costs include ex ante search and contracting costs and ex post costs for control and enforcement of the contract. According to Coase, the amount of these costs determines whether an exchange is carried out externally or internally. The transaction costs thus determine the "boundaries of the firm."

Over the past four decades, Williamson has added significant depth and precision to Coase's general argument and also has introduced the concept of hybrid forms between market and hierarchy. Williamson (1985, pp52f) identifies transactional dimensions that determine whether exchanges are carried out more efficiently in the market or within the hierarchy: "Transaction cost economics maintains that there are rational economic reasons for organizing some transactions one way and other transactions another. [...] The principal dimensions with respect to which transactions differ are asset specificity, uncertainty, and frequency." The need to cope with asset specificity, uncertainty, and frequency increases the transaction costs of an exchange (Heide (1994)). In addition Williamson addresses the major behavioral assumptions about the actors in Transaction Cost Theory. The first two assumptions, bounded rationality and opportunism, have already been presented in the previous subchapter. The third behavioral assumption is risk neutrality.

This dissertation presents these transactional dimensions and behavioral assumptions briefly before discussing the applications of Transaction Cost Theory within the context of a B2B service exchange.

*Asset specificity* is described by Heide (1994, p73) as "physical or human assets that are dedicated to a particular relationship and cannot be redeployed easily." In this context the size of the investment is less important than the specific dedication: "The issue is less whether there are large fixed investments, though this is important, than whether such investments are specialized to a particular transaction. Items that are unspecialised among users pose few hazards, since buyers in these circumstances can easily turn to alternative sources and suppliers can sell output intended for one buyer to other buyers without difficulty" (Williamson (1981)). In the case of high asset specificity, "safeguards" (Williamson (2008)) are especially useful to secure said assets against opportunism.

In the case of the B2B service transaction, especially human asset specificity is important. Although these assets are not an intuitive "specific asset," like a specialized production line in a product procurement context, they can be highly specific. First, the person-

nel providing the service might face “site specificity” (Williamson (1981)). Second, the training and experience (concerning the service itself but also concerning the service customer, his requirements, corporate culture, etc.) that the personnel of the service provider receive constitute a relationship-specific asset. And third, because “capacity” is a relevant factor for the provision of a service (comparable to safety stocks in a production context), the service provider likely has to employ additional personnel to provide the service reliably (Allen and Chandrashekar (2000)). In countries with high employees’s protection against dismissal, this additional capacity can constitute a specific asset.

*Uncertainty*, according to Williamson (1985, pp56f), refers to transactional “disturbances.” Different “governance structures differ in their capacities to respond effectively to” these disturbances. Williamson (1985, p57) notes that uncertainty is directly related to bounded rationality and opportunism (cf. chapter 5.1). Without bounded rationality, all disturbances could be foreseen in comprehensive contracts. Without opportunism, flexible and cooperative “general rule” contracts could handle all unexpected disturbances. Heide (1994, p73) distinguishes two kinds of uncertainty: External uncertainty refers to the fact that “contingencies are too numerous or too unpredictable to be specified *ex ante* in a contract” while internal uncertainty (also referred to as “performance ambiguity”) describes the fact that during and after a transaction, evaluation issues of the performance of the object of transaction might arise.

In the case of the B2B service transaction, the BSR is an important part of the governance structure. The notion of this thesis is that the BSR constitutes a governance structure that can effectively deal with the inherent uncertainty of the service transaction, thus making it a viable, if not superior, alternative to market and hierarchical exchange. External uncertainty in this context relates to the notion of incomplete contracts (Williamson (2008)), which fits the service definition of this dissertation project very well. Internal uncertainty expresses the difficulties of service performance measurement, which this research addresses in its first research question.

*Frequency* is the third and least covered of the transaction dimensions. Williamson (1985, p60) states that more frequent transactions might provide an incentive to be governed within the hierarchy because “the cost of specialized governance structures will be easier to recover for large transactions of a recurring kind.” But as Rindfleisch and Heide (1997, p31) state, “TCA researchers have been largely unsuccessful in confirming the hypothesized effects of frequency, in that several studies have failed to find any positive association between transaction frequency and hierarchical governance.”

In the case of the B2B service transaction, frequency is considered only partially relevant in a B2B service context. For example: A service like “maintenance, repair, and overhaul” or “contract logistics” can be negotiated and “bought” only every two years, but the negotiated service contract will span a duration of two years as well. Thus, although many B2B services are negotiated in regular but longer intervals, they are provided more or less continuously. Also, a service that is provided very frequently (e.g., on a daily basis, such as cleaning) can profit a lot from market competition.

The three transaction dimensions are represented in this thesis’s research model primarily by the moderation effect:

*Asset specificity* is approximated by the BATNA of buyer and supplier. If a party involved in the transaction has a high BATNA (i.e., a good alternative to the negotiated agreement), the asset specificity can be assumed to be lower. This would mean that the transaction in question is situated more to the left on the X-axis of Figure 2 and that the BSR’s role as a performance-enhancing safeguard is less important.

*Uncertainty* is represented by complexity and dynamics, following the model of, for example, Kaufmann and Carter (2006). Complexity and dynamics are similar to both external and internal uncertainty because they complicate ex ante specifications and planning and dilute ex post performance measurement. The efforts of this dissertation project to develop a measurement framework for the performance of B2B services might decrease internal uncertainty for the companies who adapt it.

*Frequency*, because of its limited applicability to and unclear definition in the B2B service context, is not directly part of this thesis model.

The discussion of the behavioural assumptions of Transaction Cost Theory is already largely covered in the previous subchapter. Thus, this subchapter only sums up the key aspects.

“*Bounded rationality*” is the semi-strong rationality assumption that enables the actors to intend to act rational but limits their capabilities to do so. Under bounded rationality comprehensive contracting ceases to be a realistic option.

“*Opportunism*” is the strongest form of self-interest orientation defined as “self-interest seeking with guile” (Williamson (1985, p47)). “Ex ante opportunism” describes “adverse selection” before the transaction and “ex post opportunism” the “moral hazard” within the exchange relationship. Williamson (2008) proposes that installing “safeguards” can prevent and limit opportunistic behavior.

“*Risk neutrality*” is, in contrast to the other two behavioural assumptions, “patently counterfactual” (Williamson (1985, p388)) if applied to real-world actors. But because Transaction Cost Theory considers firms, rather than individuals, risk neutrality could be an attribute of a diversified institution (Williamson (1985, p389)). Also, if risk aversion is costly, “parties have strong incentives to craft structures with superior risk-bearing properties.” Finally, an assumption of risk neutrality “helps to disclose core efficiency features that go unnoticed or are misconstrued when risk aversion assumptions are employed.”

On the foundation of these transactional dimensions and behavioral assumptions, this dissertation project can address the question of “which governance structures are more efficacious for which types of transactions” (Williamson (1985, p46)).

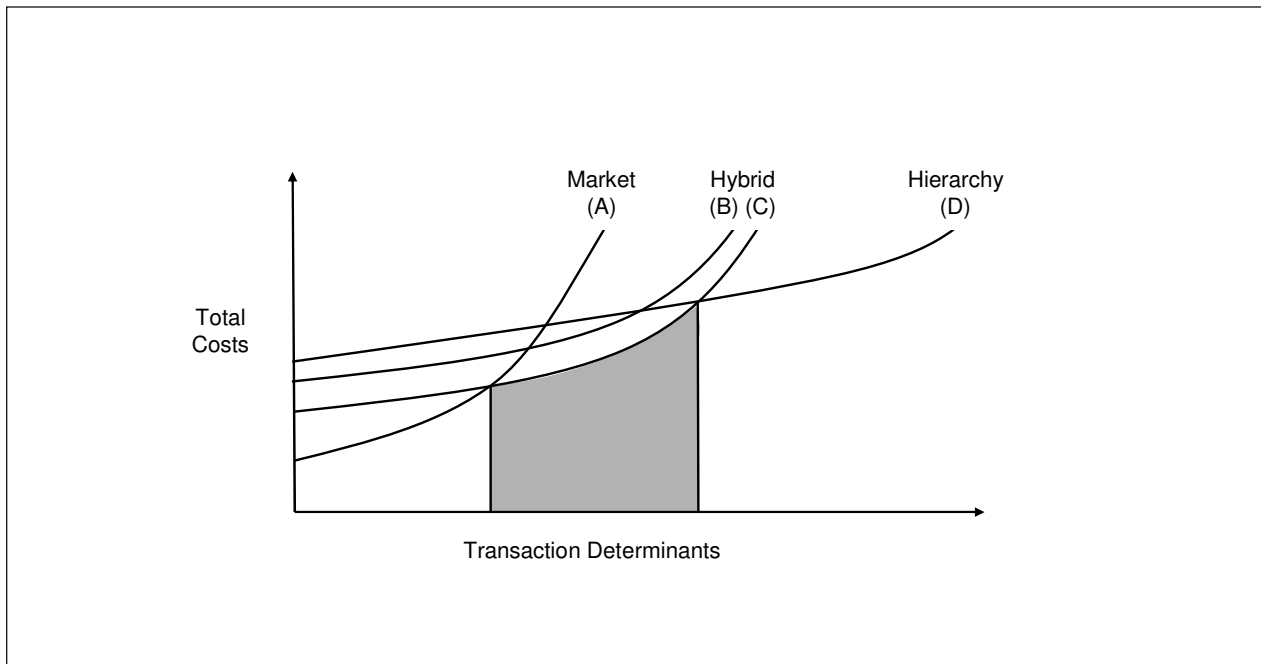


Figure 2: Relationship between Transaction Determinants and Total Costs

Figure 2 displays the total costs (transaction costs plus cost of service provision) for different transactions similar to the “total cost” perspective of Ellram and her fellow researchers (Ellram and Siferd (1993), Ellram (1994), Ellram (1995), Ellram and Maltz (1995), Ellram and Siferd (1998), Ellram (2002)). This is of importance because the original service outsourcing decision is based on a total cost perspective (Ngwenyama and Bryson (1999)). This is why the total cost perspective is an adequate foundation for the discussion of different modes of governance for the resulting service exchange.

Figure 2 follows the conclusion of Rindfleisch and Heide (1997, p32) that “the basic premise of TCA is that if adaption, performance, evaluation, and safeguarding costs are absent or low, economic actors will favor market governance [curve A in Figure 2]. If these costs are high enough to exceed the production cost advantages of the market, firms will favor internal organization [curve D in Figure 2].” In addition to this conclusion, Williamson (2008) makes a distinction between hybrid forms between market and hierarchy with unrelieved (curve B in Figure 2) and relieved hazards in a “hybrid contracting” setting (curve C in Figure 2). The shaded area



in Figure 2 area signifies the transactions for which a safeguarded hybrid governance form can bring about an improvement over market or hierarchical governance.

Heide (1994, 73) reinforces the notion that the BSR can act as such a governance mechanism. He begins with the statement that “Transaction Cost Theory views governance in terms of designing particular mechanisms for supporting economic transactions.” The BSR can, in Heide’s opinion, act as a governance mechanism, replacing the “invisible hand.” This approach supports this thesis’s conclusion that the BSR provides effective, hazard-relieving safeguards as a hybrid governance form between market and hierarchy. Heide’s statement that “different relationship management strategies are appropriate under different conditions” supports the use of moderation effects to model different service categories.

Based on Heide’s conclusion that the BSR can be used to govern the B2B service transaction, we can address the other governance mechanism relevant for a B2B service transaction: According to Vandaele et al. (2007), “contractual and relational” governance of business service exchanges exist. This leaves the contract as a means of governance for further discussion.

The contract, as Williamson (1981, p554) observes, can contain neither promises nor other forms of warrants that deal with the problem of opportunism in its entirety: “Such devices will not work, however, if some actors (either principals or agents) are dishonest (or more gradually, disguise attributes or preferences, distort data, obfuscate issues, and otherwise confuse transactions), and it is very costly to distinguish opportunistic from non-opportunistic types ex ante.” Thus, when facing opportunism (e.g., in the form of hidden additional costs described by Ellram et al. (2004)), contracts will invariably be complete.

The different types of governance and contractual distinctions can be used to address the problem of contractual incompleteness. Williamson (1985, p72f) proposes a framework of governance structures that are best suited for different values of the transaction determinants:

*Market governance* is “the main governance structure for nonspecific transactions of both occasional and recurrent contracting” and relies on legal contracts in the classical contracting sense.

*Trilateral governance* emerges when there is a need to extend the exchange relationship beyond market transactions because the objects of transaction have medium to high specificity. The expression, “trilateral,” stems from the neoclassical contracts used for this type of governance, which include a third party. The often substantial setup costs for this arbitration system make this governance less appealing for occasional transactions.

*Bilateral governance* signifies a relational exchange of two autonomous parties and relies on relational contracting. The object of transaction possesses medium to high specificity, and the nature of the transaction is difficult to standardize. These attributes allow the parties to recoup the cost of establishing relational governance structures, which is especially the case for a recurring (or continuous) exchange.

*Unified governance* is the result of vertical integration and leads to the transaction’s taking place within the hierarchy by means of “relational contract”. This type of governance is very well suited for highly specific transactions.

These governance structures correspond to different types of contracting, which Williamson (1979, pp235f) defines based on the work of Macneil (1978, pp862f):

*Classical contracting* is defined by comprehensive contracts [assuming perfect information], which also specify future contingencies and problems and their precise remedies. The transaction is fully described and to be provided within a finite time horizon. “The emphasis, thus, is on legal rules, formal documents, and self-liquidating transactions.”

*Neoclassical contracting* is a further development of classical contracting. Many transactions—especially long-term contracts executed under conditions of uncertainty—cannot be represented in a classical contracting scenario: Future contingencies are almost impossible to foresee comprehensively, precise remedies are difficult to define *ex ante*, and opportunism of at least some parties presents grave difficulties for classical contracting. Facing these planning gaps and the resulting contractual incompleteness, neoclassical contracting proposes to involve a third party, an arbitrator, in the transaction. The arbitrator then resolves issues while trying to invoke the spirit of the original contract. In com-

parison with litigation (in the case of classical contracting failure), this arbitration increases the chances of continuity or at least contract completion.

*Relational contracting* is a further development and accommodates increasing “duration and complexity.” The exchange relationship is seen as (potentially) continuous, and the contractual understanding is moving away from isolated transactions. The BSR in this case is compared to “a minisociety with a vast array of norms beyond those centered on the exchange,” which allows for iterative adaptations of the exchange relationship. An external source of arbitration is not part of the relational contracting setup.

On the foundation of the different governance structures and contractual setups, we can position this thesis’s unit of analysis—the B2B service transaction—within the resulting matrix:

Table 9: Governance and Contracting: Classification of the B2B Service Transaction

	Classical Contracting	Neoclassical Contracting	Relational Contracting
Market Governance			
Trilateral Governance			
Bilateral Governance			<b>B2B Service Transaction</b>
Unified Governance			

The match of bilateral governance and relational contracting represents the optimal form of organizing the exchange of a B2B service: In addition to the contractual governance of the exchange, the relational governance of the BSR is a valuable tool to deal with the threat of opportunism. Trust, as an aspect of BSR quality, is of special importance in this context because “[it] can be seen as the opposing force of opportunism” (Kaufmann (1993, p97)). And as entre-

preneur Jean Paul Getty put it, trust enables successful contracting: “If you can trust a person, a contract is superfluous. If you can’t trust him, a contract is useless”

Thus, applying Transaction Cost Theory to the B2B service transaction and the BSR’s antecedents and aspects appears to be a scientifically worthwhile endeavor. The issue of the effect of the BSR on its performance outcomes is addressed by Rindfleisch and Heide (1997, pp32f), who provide an overview of research applications of Transaction Cost Theory. They identify the main contexts in which Transaction Cost Theory has been applied: “vertical integration”, “vertical interorganizational relationships” and “horizontal interorganizational relationships” as well as general “tests of transaction cost analysis’s assumptions.” Of these context, this dissertation project falls into the group of “vertical interorganizational relationships.” These relationships allow for governance without common ownership within a BSR (here referred to as “close and enduring interorganizational ties” in which “buyers and suppliers use close relationships as a means of safeguarding specific investments and adapting to uncertainty”). Concerning research gaps in the applications of TCA, Rindfleisch and Heide conclude that “the limited research on TCA’s performance implications makes it difficult to assess fully its theoretical value and empirical validity.” Thus, measuring the effect of the BSR on service performance constitutes an additional application of Transaction Cost Theory.

In summary, the transactional dimensions (asset specificity, uncertainty, and frequency) and behavioral assumptions (bounded rationality, opportunism, and risk neutrality) of Transaction Cost Theory can be applied adequately to the context of B2B service transactions. The BSR can provide a safeguard in a hybrid contracting setting, in between market and hierarchy. In the hybrid contracting setting, all contracts are incomplete because of asset specificity and uncertainty, as well as bounded rationality and opportunism. Thus, the BSR can add relational governance to the incomplete contractual governance, resulting in a combination of bilateral governance and relational contracting. This thesis’s research concerning the performance implications of bilateral governance and relational contracting (in the form of the BSR) addresses an identified research gap in Transaction Cost Theory.

## 5.3 Game Theory

The interdisciplinary field of Game Theory was introduced by von Neumann and Morgenstern (1944), using the term “game” as a metaphor for interactions. Von Neumann’s and Morgenstern’s considerations, as well as the subsequent research in the field, are rooted in Neoclassical Theory (with the above-mentioned assumptions of perfect rationality and opportunism). In more recent research, Schelling (1984, p214) provides the following definition:

“*Game Theory* is the formal study of rational decision in situations [...]. Two or more individuals have choices to make, preferences regarding the outcomes, and some knowledge of the choices available to each other and of each other’s preferences. The outcomes depend on the choices that both of them make [...]. There is no independently ‘best’ choice that one can make; it depends on what others do.”

Schelling continues:

“Any ‘solution’ of a problem [...] is necessarily a solution for *both* participants. [...] What game theory did was to identify this class of situations as one of practical importance and intellectual challenge, and to propose that any satisfactory solution for rational participants ought to be a solution for them jointly.”

These premises of Game Theory can be demonstrated using an example provided by Schelling (1984, p221):

Schelling describes a situation of two men riding on a train on which every single seat is taken and quite a few people are left without seats. One man is lucky enough to sit, but he is hungry and has no food with him. He could go to the buffet car and get some food, but in the process he would lose his seat, and this hungry man values his seat higher than he does getting food. A second man who is not hungry but tired didn’t manage to secure a seat.

In this scenario the interests of the two men “are neither strictly opposed nor wholly coincident.” Both would be better off if the hungry man could eat and reclaim his seat afterward and if

the standing man could at least sit down for a while until the other returned (as opposed to not at all). But as the first man sits rather than eats (if both are mutually exclusive), the “solution” will be an “inefficient” one: The hungry man remains hungry, and the second man stands all the way.

Schelling (1984, p221) uses this example to describe the merits of a game theoretical approach: “Game theory helps to discover some of these ‘inefficient’ situations; it can also try to discover some rules or procedures, legal arrangements, or enlargement of the range of strategies available, to achieve better outcomes for both participants.” Thus, Game Theory can provide a framework to model interactions, and it can help to determine if and when cooperation between the two interacting individuals or “players” can emerge.

Cooperation in Game Theory emerges solely based on the outcomes of the game (Schelling (1984, p240)). Because both players are perfectly rational and opportunistic (as Schelling put it, “mental giants with nerves of steel—perfectly rational amoral deciders”), there are no “soft” factors, like trust, which might aid cooperation; there are only “hard” changes of the payoff matrix that motivate the players.

In the train example, the hungry man’s “trust” of the tired man to surrender the seat upon his return from the buffet car would not be a viable solution. As both players are perfectly rational and opportunistic, the hungry man knows full well that the tired man acts opportunistically and would continue to occupy “his” seat upon his return from the buffet car. Cooperation would occur only if the two players could rely on a “one-way promise that the man who sits down will get up, or an enforceable contract, or a scheme to rearrange the incentives of the man who takes the seat” that would change the payoffs in a way that it would be more costly for the tired man to keep the seat than to surrender it.

Without these changes to the outcome matrix, cooperation is difficult in a Game Theory context. Williamson (1985, p204) acknowledges, “The achievement of cooperation is widely thought to be frustrated by the relentless logic of the prisoners’ dilemma.” The prisoners’ dilemma was invented in 1950 by Albert W. Tucker to demonstrate Game Theory’s implications:

The prisoners' dilemma setup consists of two felons who have been caught by the police and are now incarcerated and questioned separately without any means of communication. The questioning is important as the police have only limited evidence of the committed crimes. The felons choose their actions independently and can either confess or remain silent.

If both felons remain silent, both will receive only a minor sentence (corresponds to a payoff of 1 (Schelling (1978, p216f))) for the crimes that the police can prove without any testimony. If both confess, both will face a moderately high sentence for their crimes (payoff of 0). If one confesses and the other does not, the whistle-blower will receive witness protection and go free (payoff of 2) while the other that remained silent will face a substantial sentence (payoff of -1).

Based on this setup and payoff matrix, Game Theory concludes that both players will always choose "confess," receiving the joint outcome of high sentences for both. At first thought this outcome seems to fall far short. But both players only act rationally and thus choose the strictly dominant strategy of confessing, as the following scenario illustrates:

If player R assumes that his opponent C will remain silent, he can either confess (payoff of 2 for him as he receives witness protection) or remain silent as well (payoff of 1 for him as some crimes remain undiscovered). Because our player is perfectly rational and opportunistic, naturally, he will confess.

If player R assumes that his opponent C will confess, he can either choose to confess as well and receive a moderately high sentence (payoff of 0), or he can remain silent, consciously accepting a substantial jail term (payoff of -1). Faced with these options, naturally, he will confess.

Player C, being also fully rational and opportunistic, is well aware of R's decision process and decision. Presented with the choice of either the moderately high sentence (payoff of 0) or an even longer jail term (payoff of -1), he will maximize his utility and confess as well.

Thus, according to Game Theory logic, the two players will always achieve an “inefficient equilibrium” (Norman and Trachtman (2008)) in a zero-sum and one-round game and fail to cooperate. This leads to the question: What factors can promote cooperation between two players?

On the one hand, a potential change in the payoff matrix could lead to cooperation, as proposed by Schelling and as already discussed at the beginning of this subchapter. Because this is not a reliable option, other possibilities have to be considered.

On the other hand, repetition of the game could allow the players to perceive the “Shadow of the Future” (e.g., Axelrod (1984), Heide and Miner (1992), Kaufmann and Carter (2006)). In a context of repeated games, the shadow of the future relates to the discounted expectation of future interaction, which might have an influence on the current round of play. The logic behind the “shadow of the future” considerations assumes that present defection will make future cooperation less likely and that present cooperation will increase the chance of continuing cooperation.

To discuss repeated games, we must leave behind the example of the prisoners being interrogated.<sup>15</sup> An example of two men who go hunting together on a regular basis can help us to assess cooperation in a multi-round game.

Two hunters go into the forest together regularly, planning to hunt a stag. Apprehending the stag requires both hunters to surround the stag because it is sufficiently fast to elude a single hunter. While trying to apprehend the stag, the hunters come across hares regularly. If at least one hunter defects from the stag hunt and hunts a hare, two things happen: Said hunter will catch a hare (which he values less than his share in a caught stag), and the stag will get away as the defecting hunter creates an opening for it to escape.

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<sup>15</sup> The notion of the same two individuals going on crime sprees on a regular basis and being always apprehended by the police and interrogated separately is not sufficiently realistic to make a good example, although numerically the result would be the same.



The hunters' payoffs can be described as follows: "Defection" yields a certain payoff of 7 in any case. "Cooperation" yields either a payoff of 0 or 10 depending on whether one or two hunters hunt the stag. Once again, "defection" would be the numerically superior outcome and thus is to be expected from a utility point of view. This numerical superiority can be demonstrated with the following example: If hunter C cooperates, hunter R's cooperation would bring him an increase in utility of +3 over defection. If hunter C defects, hunter R's defection would bring him an increase in utility of +7 over cooperation.

But if the game is repeated, the (discounted) value of a sufficient amount of cooperatively apprehended stags in the future (i.e., the shadow of the future) can outweigh the numerical temptation of the hare today. Nevertheless, repetition by itself does not lead to cooperation (Norman and Trachtmann (2008)): Repetition is only necessary but not sufficient for cooperation within multi-round games.

Norman and Trachtmann (2008, pp7f) identify the condition needed, in addition to repetition, for cooperation to emerge: patience. Patience in this context means that the players are patient enough to sacrifice current payoffs in favour of superior future payoffs. Thus, patient players are able to discover and develop new equilibria in repeated games. This way patient players can reap superior payoffs in comparison to their impatient counterparts. These improved payoffs can be reached by means of several strategies in repeated games, presented by Norman and Trachtmann:

*"Tit-for-Tat"* originally was the entry of Anatol Rapoport in Axelrod's tournament (Axelrod (1984)). Axelrod's tournament was a computer simulation in which Game Theory researchers could enter into the tournament a program specifying the strategy they deem most successful over multiple rounds of a game very similar to the prisoners' dilemma. Rapoport's Tit-for-Tat was the winner of the tournament, the single strategy that performed well against a multitude of other strategy entries. Tit-for-Tat's strength and strategic dominance in this context was not that it consistently outperformed its direct opponents but that it was "doing well against any opponent. Thus, taking a long-term approach seems to bring an effective improvement to the problems of cooperation"

(Jarillo and Ricart (1987)). Axelrod (1984) describes the traits of the successful Tit-for-Tat strategy: 1) It is “nice” and never starts non-cooperatively; 2) it is “retaliative” in that it retaliates against defection in the subsequent period; and 3) it is “forgiving” and allows for a return to cooperation.

“*Grim Trigger*,” another entry, is less of a strategy and more of a single decision rule: Grim trigger responds to the first defection of the opponent with a perfect streak of defection continued indefinitely (until the end of the multi-round game). This Dr.-Strangelove-scenario<sup>16</sup> is considered “collectively irrational” in a real world context because rational negotiators would have an incentive to end the grim trigger phase by renegotiating.

“*Penance*” (known as Tit-for-2-Tat in other publications) means that one starts out nicely and acts exactly like Tit-for-Tat but retaliates for exactly one period longer than in Tit-for-Tat. This means that the opponent has to accept one punitive period (in which the wronged player reaps superior profits) to return to the friendly state, forfeiting his gains from the defection. Penance is sometimes deemed superior to Tit-for-Tat (Norman and Trachtmann (2008)) but is recognized as the most communication- and coordination-intensive alternative.

After this initial assessment of Game Theory strategies that lead to cooperation in repeated games played by patient players, we can exclude Grim Trigger from consideration because of its theoretical critique and poor performance in Axelrod’s tournament (seventh of the 15 participants).

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<sup>16</sup> Stanley Kubrick’s (1964) movie, “Dr. Strangelove,” applies the Grim Trigger scenario to the context of the cold war: The Soviets consider the arms race too costly in the long run and decide to reduce their whole arsenal to a single, gigantic nuclear weapon (big enough to irradiate the atmosphere), set to detonate automatically and without any human element in case of an attack.

It has to be noted, that a Tit-for-Tat strategy never actually outperforms the other player: The optimum outcome is equal. Both players receive an equal number of periods in which both cooperate and an equal number in which both defect. Also, both players receive the same number of periods in which they cooperate and face defection and the same number in which they defect from a cooperating opponent.<sup>17</sup>

Penance, on the other hand, does punish defection. The additional punitive period in fact grants the player that did not defect originally a superior outcome over the defecting player: Both players receive an equal number of periods in which both cooperate and an equal number in which both defect. But the player that does not defect in the first place always receives one more period of defecting a cooperative opponent (and thus a superior payoff) than he receives periods of cooperating but being defected from. This potential payoff for punishing a defecting player adds credibility to the Penance strategy.

Independent from whether Tit-for-Tat or Penance is the superior strategy, both share the same assumptions of being “nice, retaliative, and forgiving.” These assumptions are very similar to those of Jarillo and Ricart (1987), who postulate that “nice, provokable, and forgiving” are important personality traits for an entrepreneur creating and sustaining a network. These three traits are assessed separately to deduce their meaning for the B2B BSR and the service transaction.

The quality of being *nice* is described by Schelling (1966, pp7f) in a military context. Being nice (i.e., refraining from the use of force in this context) is of special importance in two situations. The first is when cooperation is necessary: “Brute force can only accomplish what requires no collaboration” (Schelling (1966, p8)). The second is where a non-zero-sum game setup is present: “Destroying property only reduces the value of the things that were being fought over, to the disadvantage of both sides” (Schelling (1966, p28)). But Schelling recognizes also that the “use of force” is unnecessary if the threat of

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<sup>17</sup> This is the case unless the opponent defects in every single round. In this case Tit-for-Tat “loses” the first cooperative period and performs worse than the opponent (Penance as well).

force is sufficiently credible. Based on these insights, we can deduce that a cooperative procurement relationship can thrive without exercising any power or coercion but only on the grounds of the credible threat to do so.

The quality of being *retaliative* is described as retaliating against defections. However, in a real world context, defection is significantly more difficult to distinguish. A solution from Game Theory is a “decision threshold” (Schelling (1966, pp66f). These thresholds are seen as a countermeasure to “Salami Tactics”— the infringement of an explicit or implicit agreement by gradually hollowing out the interpretation of the agreement (very similar to the hidden cost adders of Ellram et al. (2004)). This move can be effectively countered by implementing and communicating clearly specified “decision thresholds.” Once those thresholds are crossed, an appropriate and limited retaliation is inevitable.

The quality of being *forgiving* consists of containing and ending a crisis in a relationship and returning to cooperation (Schelling (1966, p57, p204)). The chance to do so depends to a large degree on the perception of the other party that the retaliation has been “just” and “appropriate” (Schelling (1966, p141f). In these cases a return to cooperation is significantly easier to achieve.

Thus, using Game Theory as a second theory to apply to the B2B service transaction and the BSR’s antecedents and aspects appears scientifically reasonable. Game Theory provides an excellent framework for modeling interactions and cooperation. The ability of Game Theory to deal with neither “strictly opposed nor wholly coincident” interests (Schelling (1984, p221)) perfectly describes procurement BSRs that are not completely adversarial but still display differing goals of buyer and supplier.

Game Theory also raises an issue about whether threats that are fully viable can replace the use of force if they are communicated and credible. On the one hand, this shows that open conflict is not necessary to achieve cooperation, and on the other hand, it relates to communication as an antecedent of cooperation in this thesis’s model. Further, Game Theory assessments also rebut Williamson’s argument that the relentless logic of the prisoners’ dilemma negates cooperation. Cooperation can be (forcibly) achieved if one party has the power to change the outcome ma-

trix, although this might weaken the BSR. This relates to the interpretation of the BATNAs of the buyer and supplier in this dissertation's model. Cooperation can also be achieved by means of repetition if the shadow of the future is visible enough to make future payoffs for cooperation compete with current payoffs for defection. This relates to the effect of a futuristic orientation in this thesis's model. For cooperative behaviour to emerge, the repetition of the game is necessary but not sufficient: The players must be patient enough to perceive the shadow of the future. Only then can successful players achieve cooperation similar to successful strategies like Tit-for-Tat or Penance. These strategic interactions in multi-round games also provide insights that nice, retaliative, and forgiving players should be most successful at achieving cooperation. All of these discussions, by which means cooperation can be achieved, give excellent insights into the antecedents of cooperation as an aspect of BSR quality. And as Game Theory primarily focuses on cooperating to achieve superior outcomes, the performance implication of cooperation is also addressed. The model variables of trust, complexity, and dynamics are irrelevant from a Game Theory point of view: A perfectly rational and opportunistic actor has no capacity to act based on a concept like trust. This "mental giant" is able to fully grasp every aspect of complexity and foresee every single contingency that dynamics may bring about.

In summary, Game Theory can help to identify inefficient equilibria within an exchange relationship. It can also provide a modeling framework to assess these inefficiencies, as well as strategies to bring about cooperation in a repeated games context. Cooperation of patient players can emerge based on changed payoffs and on the shadow of the future, allowing the players to find additional, more efficient equilibria and thus to reap superior payoffs. In these capacities Game Theory can be suitably applied to cooperation within the B2B BSR and to the resulting performance outcomes.



## 6 Methodology

In the previous chapters the research questions of this dissertation project were developed based on the review of relevant literature and in accordance with the main theories. To answer the three research question, this thesis employs an empirical test based on a large-scale survey. This chapter presents the methodology (i.e., an overview of the techniques used for data collection and analysis) of the survey and the empirical testing, as well as providing first insights into the relevant characteristics of the data sample.

### 6.1 Large-Scale Empirical Research

This dissertation project employs an empirical large-scale research approach (cf. Riesenhuber (2006)). “Empirical” in this context means that “data gathered from naturally occurring situations or experiments” (Flynn et al. (1990), p251) is collected and analyzed. Empirical research can be classified on the basis of the methods used:

*Qualitative approaches* rely on logic and theory-driven analysis to build and develop new theory in research fields where the theoretical foundation is not yet sufficiently developed to deduct hypotheses on cause-effect relationships (Eisenhardt (1998), Yin (1991), Yin (2003), Flick et al. (2005)). The most prominent research instrument of qualitative analysis is the case study analysis. Case studies rely on a relatively small number of cases, which are examined to explain observed phenomena (Flick et al. (2005)).

*Quantitative approaches* build on existing theory or use conclusions by analogy to derive hypotheses concerning cause-effect relationships. These hypotheses are put to the test by statistically evaluating a larger number of cases to generate significant and generalizable results (Polonsky and Waller (2005), Hair et al. (2006)).

In the case of this thesis, research concerning the BSR and its performance implications in a B2B service procurement context is still relatively rare. But extant marketing research combined with findings from Transaction Cost Theory and Game Theory provides sufficient material for conclusions by analogy to formulate research questions and hypotheses for quantitative tests. In addition, this research project meets the concerns of extant research and develops measurement models to enable further development of this field of research in the future.

Quantitative approaches require a significantly larger number of cases than qualitative ones (Polonsky and Waller (2005)). If latent variables are part of the quantitative effort (which is the case for this thesis's CFA and SEM), Hair et al. (2006) recommend either using a sample size of 15 cases per latent variable<sup>18</sup> or applying the rule of thumb of "200, which provides a sound basis for estimation." They conclude that "sample sizes in the range of 150 to 400 are suggested" because significantly larger samples make the model overly sensitive (Hair et al. (2006), p741). To obtain these numbers, two types of data collection are possible: secondary data from databases and primary data gathered by means of a survey. For an assessment of the BSR in a B2B service procurement context, no secondary data (particularly including BSR attributes, service performance, and moderating effects) exist, to the knowledge of the author. Two reasons offered for this absence of data are that this field of research is particularly new and that procurement officers are particularly hesitant to participate in surveys (Bode (2008)).

Thus, this dissertation project builds on primary data obtained through a large-scale survey. The survey was developed and conducted based on the recommendations of Nieschlag et al. (2002), beginning with questionnaire design, pre-test, data collection, and data analysis.

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<sup>18</sup> Two BSR antecedents, two BSR aspects and one second-order BSR outcome, measured by five first-order dimensions plus four moderating factors: 14 latent variables. This leads to a recommended sample size of 210.



## 6.2 Data Collection and Data Sample

This subchapter is structured according to the above-mentioned recommendations of Nieschlag et al. (2002). Based on the “definition of the research object,” the design and pretest of the questionnaire are presented. After a description of the data collection, the properties of the resulting data sample are discussed.

### 6.2.1 Definition of Research Object

To define the research object, this subchapter provides a short recapitulation of the unit of analysis and identifies the relevant countries, service categories, industries, and respondents.

*Selecting the unit of analysis* is a key issue for any research project. In contrast to the analyzed latent variables and their interrelations, the unit of analysis is “one issue not visible in a model” (Hair et al. (2006, p848)). This fact emphasizes the issue Swink and Way (1995, p5) raise: “units of analysis in existing research have not always been consistent with the objectives of the research.” For a B2B service exchange, two self-evident options come to mind: choosing the BSR as the unit of analysis, including antecedents, aspects, and outcomes, or selecting the service transaction, including the underlying BSR. On the basis of the literature review and the theoretical foundation, the decision was made to focus on the transaction as the unit of analysis, following the recommendation of Williamson (2008), and to address it from a procurement perspective. This decision has implications for all research questions:

Concerning the first research question, this decision allows a precise focus on the performance of the object of transaction: the B2B service. Westbrook and Peterson (1998) state that the attributes of the object of transaction are rarely measured in a B2B service context, which is seen as a limitation.

Concerning the second research question, the BSR can be seen as a safeguard, reducing transactional hazards in a hybrid governance setting between market and hierarchy,

which is supported by Transaction Cost Theory. Furthermore, focusing on the transaction as unit of analysis allows a better assessment of the performance outcomes from a Game Theory perspective.

Concerning the third research question, the moderating influence of the different service characteristics (complexity and dynamics) is better addressed with the service transaction as the unit of analysis. The BATNAs of the two parties involved in the transaction could be assessed using either of the competing units of analysis (i.e., the BSR or the transaction). In addition, the initial interviews with service procurement officers showed that B2B service issues span both the BSR and the service performance outcomes, reinforcing the service transaction as the unit of analysis.

For the *selection of countries* included in the survey, the OECD study of Leshner and Nordas (2006) provides insights into which countries could provide a current snapshot of B2B service transactions. Germany, with a GDP share of 11.9 percent, is among the countries where B2B service transactions are most prevalent and thus well observable. The United States would be of interest as well, with a GDP share of 11.8 percent, as is France, with 12.7 percent. While this dissertation project acknowledges that a multi-national survey encompassing all OECD economies with developed B2B services sectors would have added scientific value, the focus on Germany—one of the largest OECD economies with a well-developed B2B service sector—provides sufficient insights into the researched phenomena and allows for adequate generalizability.

Concerning the *selection of service categories* analyzed, no service categories are excluded. Although services differ significantly in their nature and their attributes, relationships between service buyers and providers exist beyond service category borders. As this thesis's modeling of moderators makes it possible to differentiate between services of different complexity and dynamics, no *ex ante* limitations are necessary.

Regarding the *selection of industries*, again, no specific restrictions were imposed. Because the unit of analysis is the service transaction from a procurement perspective, all companies buying B2B services were considered relevant. The differences between service transactions stem from

the service categories and not from the industries for which they are provided. This decision is backed extensively by the initial interviews: Companies from all types of industries faced very similar challenges when procuring services of a certain category. For example, corporate fleet management, a consulting project, or an advertising campaign are very similar transactions across all industries.

Finally, the *selection of respondents* within the companies must be considered. From a theoretical point of view it would be preferable to include all personnel who can assess the relationship to the specific service provider and who can evaluate the performance of the service provided. In a real-world setting, however, this would lead to critical complications concerning the required effort and the subsequent data aggregation. Thus, a single person from the buying company was chosen as the key informant (Kumar et al. (1993)).

Two possible key informants are considered: The first is the service consumer in the company, the one buying the B2B service (e.g., the marketing project manager for whom a booklet is designed by a marketing agency).

The direct service consumer should have in-depth insight into the specific project and can evaluate his or her interactions and relationship with the service provider's personnel. The service consumer would be the relevant key respondent if, for example, critical incidents on the project level (Edvardsson (1988)) were researched.

The second possible key informant is the procurement officer responsible for the procurement of a specific B2B service category. While a procurement officer does not have the in-depth knowledge of specific projects, he or she has superior perception of the service performance a specific service provider delivers across different projects. In addition, initial interviews showed that the performance assessment of the different projects is often gathered by the procurement department as a foundation of "preferred supplier" decisions and for renegotiating contracts. The procurement officer is the counterpart of the key account manager of the service provider and can thus assess the BSR directly. The key issue of the development of trust is also most relevant between the key account manager and the procurement officer.

Thus, service procurement officers were chosen as the key informants. This approach is in line with extant research. Procurement officers are used as key informants to evaluate the service performance (Maltz (1994), Westbrook and Peterson (1998), Vandaele and Gemmel (2004)), to assess the quality of the BSR (e.g., Paulraj and Chen (2005), Fynes et al. (2005b), Griffith et al. (2006), Hsu et al. (2008)), and to comment on the attributes of the object of transaction and the bargaining power in the BSR (Fynes et al. (2005a), Kaufmann and Carter (2006), Gulati and Sytch (2007)).

In order to address key informant bias, this dissertation project had to ensure that the key informants have adequate knowledge concerning all issues covered by this thesis' model (Campbell (1955)). The procurement officers who completed the survey also have sufficient experience and insight into the issues covered. This insight was ensured by means of contact selection and the specific membership profile of the BME e.V., which provided the contacts to procurement officers. The contact list was a list of the corporate members of the association. All corporate members are companies who pay annual membership fees. Each company is allowed to nominate one procurement officer as key contact. (Depending on company size/membership fee, a maximum of four is possible.) This key contact for the association is almost exclusively the most senior procurement officer, usually the head of procurement. As a result, in most cases either the head of procurement or a designated service procurement officer completed the survey, both of whom can be considered exceedingly knowledgeable.

## 6.2.2 Questionnaire Design and Pretest

This dissertation's questionnaire was developed following the process of Hair et al. (2006, p780).

The first step is the theoretical definition of the constructs, which is similar to the recommendation of Flynn et al. (1990, p260) that "the foundation for questionnaire construction is the theory which underlies it. A questionnaire should not merely consist of a series of 'interesting questions' but should be designed to develop or test a theory." Thus,

the questionnaire is based on the conceptualization and operationalization of the constructs presented in Chapter 7.1.2, Chapter 7.2.2 and Chapter 7.3.2.

The second step is to “develop a list of potential scale items that correspond to the definition in step 1.” This process is also addressed in Chapter 7.1.2, Chapter 7.2.2 and Chapter 7.3.2. Hair et al. also raise the point of the scales to measure the items. This dissertation uses a seven-point Likert scale, based on DeVellis (2003), for most questions. This use of closed questions with the option to agree or disagree simplifies the statistical evaluation of the survey’s results (Schnell et al. (1999), DeVellis (2003)). Concerning the items, we decided against a mix of positive and negative wordings for this thesis. Although doing so might lower the risk of agreement bias (DeVellis (2003)), it can be confusing and increase the stress of the participants, which is a particular risk in the case of longer questionnaires. In addition, a mixed wording was widely rejected in the initial interviews. A few additional items (e.g., company revenue and service volume) were queried in absolute values.

The third step is to judge the items for content. Hair et al. recommend expert interviews, which were conducted with procurement officers (each supervising usually one (or rarely two) service categories, with the sum of interviews covering a wide variety of categories from cleaning to consulting) both as one-on-one interviews and as part of focus groups in 2007 and 2008. Especially for the creation of the B2B ServPerf scale, their input was invaluable. Redundant items were eliminated; the wording and translation were

checked.<sup>19</sup> This assured that the criteria proposed by Kaya (2006) were met: clear, unambiguous, and understandable wording; no suggestiveness; and a direct relation to the investigated subject.

The fourth step is the pretest of the questionnaire to identify logical errors in the questionnaire design and to ensure consistent interpretation (Churchill (1991)). Hair et al. (2006, p735) recommend the following: “Generally, when measures are either developed for a study, or they are taken from various sources, some type of pretest should be performed. The pretest should use respondents similar to those from the population to be studied so as to screen items for appropriateness. Pretesting is especially important when scales are applied in specific contexts (e.g., purchase situations [...]).” The pretest took place in February and March 2009 and was administered to five service procurement officers to follow Hair et al.’s recommendation.

The fifth step includes scale modifications, which in the case of this thesis were only minor changes to the wording of a few items and the elimination of a few redundant ones.

The final questionnaire was six pages long.<sup>20</sup> The first page contains the cover letter, information about the research project, a claim guaranteeing confidentiality, and an extensive descrip-

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<sup>19</sup> The questionnaire was provided in German because the full sample consisted of native German speakers and an English questionnaire would have reduced the response rate (confirmed by initial interviews). The German translation was checked by means of back-translation (cf. Aaker et al. (2004)), as described by Geisinger (1994, p306): “an original translation would render items from the original version of the instrument to a second language, and a second translator—one not familiar with the instrument—would translate the instrument back into the original language.”

<sup>20</sup> The print questionnaire is largely irrelevant because only two questionnaires were received on paper. The online version is structured in exactly the same way, the only difference being that it had more than six pages because it was optimized for laptop resolutions.

tion of the reward package available to every participant.<sup>21</sup> This information was included in the invitational e-mail for the online version. The second page contains instructions about how to handle the questions, contact information of the authors of the study (in the online version, provided in the page footer of every page), and the questions about the company background, as well as the service category and the annual service volume. Pages three to six hold the actual questions, grouped according to the constructs. All questions were worded so as to be unsuggestive of cause and effect relationships (Podsakoff and Organ (1986)).

### 6.2.3 Procedure for Data Collection

The data collection for this thesis was conducted in April and May 2009. A standardized e-mail with individual form of address was sent to 1,650 companies, addressed to the nominated key contact of the BME e.V. (i.e., head of procurement or senior procurement officer). The e-mail was carefully designed to ensure a high response rate:

The Data provided by the BME e.V., combined with the serial mail function of the Microsoft Office suite, put this dissertation project in the position to address the recipients personally (i.e., “Dear Mr. Mueller” instead of “Dear senior procurement officer”) and to add text elements in a flexible way (e.g., “You have recognized the importance of service procurement by participating in a BME e.V. service procurement workshop”).

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<sup>21</sup> Participants received an individualized 63-page report of the study’s findings, including recommendations for the participant’s specific service category, as well as a comparison of the participant’s particular BSR attributes, service performance dimensions, and moderating factors (based on factor scores) with the category averages. On the foundation of the factor score comparison, the participants received a full-text evaluation of their service procurement relationship, including recommendations and the identification of areas of improvement.

The e-mail also featured a significant endorsement of the study by both the BME e.V. and the WHU, as well as a detailed description of the reward package.<sup>21</sup>

Recipients of the e-mail were given the option of completing the questionnaire online, receiving it as a Word-file (to be returned digitally, by FAX or by mail), or receiving a hard copy by mail (and to return it by FAX or by mail).

The online questionnaire featured state-of-the-art design elements (e.g., a short web address ([www.bme.de/b2b](http://www.bme.de/b2b)), a color-coded progress bar, and corporate design elements of both BME e.V. and WHU), as recommended by Christian et al. (2007).

No selection was made concerning the company sizes. Other researchers often use the values of 50 employees and 10 million Euro annual sales defined by the European Commission (2003) as cutoff values because this threshold marks the borders between very small and small/medium enterprises. Because the unit of analysis of this thesis is the service transaction and not the company, a restriction based on company size was considered inappropriate. A cutoff based on annual service volume would have been a possibility, but no relevant data were available. Thus, no restrictions were imposed concerning company size.

Concerning reminders for those of the 1,650 recipients who did not respond, this dissertation project was only authorized to use the high-quality contact information provided by the BME e.V. for a single reminder to avoid disrupting the key contacts. Although this single reminder is less than the four contacts proposed by Dillman ((1978), (1991), (2000)), the survey nevertheless yielded a sufficient response rate.

#### 6.2.4 Data Sample

Of the 1,650 e-mails, 550 were undeliverable. In most of these cases, the contact information was out of date. Based on the remaining 1,100 mails that did reach their targets, 245 questionnaires were completed (243 online, 2 as hard copies), yielding an effective response rate of 22.3 percent. Considering that procurement response rates above 10 percent are considered satisfac-



tory (Knemeyer and Murphy (2004), Bode (2008)), the number of responses received appears more than adequate.

#### 6.2.4.1 Missing Values

This subchapter is to a certain degree unique: The 245 completed surveys do not contain missing values. The 2 paper-based responses had no missing values, and the web tool that was used for the remaining 243 online surveys encouraged complete questionnaires: If a participant did not answer a question and clicked on the “Next” button, leading to the subsequent page, a popup message would note the missing question, which then was highlighted. This message was only displayed once, and afterward it was possible to leave the question unanswered. It should be noted that the evaluation of usage statistics revealed that no questionnaires were aborted while the popup was open, so we can conclude that this tool reduced missing values without any additional effects on the responses.

Both the response rate and the lack of missing values can be linked with superior respondent motivation. To a certain degree the respondents were familiar with the author from different service procurement events, which—combined with the credible promise of a superior reward package—might have had a positive influence.

#### 6.2.4.2 Distribution of Variables

In order to assess the multivariate normality of the collected sample, the Kolmogorov-Smirnov test is employed. This test assumes the null hypothesis that the sample is multivariate normally distributed. In the case of this thesis’ data sample this hypothesis is not met by any of the measured variables at a significance level of  $p < 0.05$ . This is not surprising as previous research by Lei and Lomax (2005) noted that the assumption of multivariate normal distribution is unlikely to hold up in a real-world context. Additionally, the seven-point Likert scales employed by this dissertation project are at odds with the prerequisite for multivariate normal distribution that the

scales be continuous. Yet it is accepted practice to treat Likert scales with four or more answer choices as continuous (Bagozzi (1981), Bentler and Chou (1987), Byrne (2001)).

These findings suggest that further data analysis can be performed using either a non-parametric method (not assuming normal distribution) or a parametric method which is robust against violations of the distribution assumption (assuming normal distribution). In the case of this thesis's method, the latter approach is chosen.

#### 6.2.4.3 Potential Biases and Representativeness

In this subchapter, issues of non-response bias, common method bias and sample representativeness concerning company size and service categories are addressed.

To consider non-response bias, this thesis follows the approach of Armstrong and Overton (1977) and compares early and late respondents. To examine the representativeness, this thesis discusses the respondents' revenues, as well as the represented service categories and volumes. The comparison of early and late respondents suggested by Armstrong and Overton (1977) builds on the assumption that late respondents are more similar to non-respondents. Because of the non-normally distributed data sample for this thesis, the non-parametric Kruskal-Wallis is used. This test assumes the null hypothesis that several independent samples come from the same population. To perform this test, we group our data sample into three parts, based on the response dates. The test results show that only 7 of the 77 model variables (9%) had a significance level of less than 10 percent. Thus, these could come from different populations. In extant research there is no commonly accepted decision threshold for the Kruskal-Wallis test; However, 9 percent is lower than the 10 percent significance level of the Kruskal-Wallis test, so we can assume that the sample is free from non-response bias.

This dissertation's data for the measures of the predictor and criterion variables was obtained from the same source (i.e. the questionnaire completed by a senior procurement officer). Thus, measures had to be taken to reduce and to assess common method bias (Podsakoff and Organ

(1986), Podsakoff et al. (2003)). In the design of the questionnaire and in all communication with the respondents, “protecting respondent anonymity” (Podsakoff et al. (2003, p888)) was directly addressed: The respondents were assured that their inputs would be treated with utmost confidentiality. In accordance with Podsakoff et al. (2003) the “single common method factor approach” was employed to test the obtained data for common method bias: An additional “common method factor” was included in the structural model as a latent variable. All items in the model were connected to the common method factor as indicators. This test-model yielded an inadmissible solution with negative variances which made it impossible to measure the common method bias. After setting the negative variance in question to 0, the model produced an admissible solution. In the admissible solution, none of the model’s items displayed a significant factor loading on the common method factor which itself did not have a significant variance. These results signify that there is not enough common variance captured by a common method factor. While this dissertation acknowledges that the measurement of common method bias via the common method factor is limited, this is not considered to be a crucial limitation: More recent publications like Richardson et al. (2009) argue that the single common method factor approach is not a suitable key criterion to assess overall model fit.

Concerning the representativeness, this thesis makes three distinctions: respondents’ revenues, service volumes, and service categories. Sadly, no distinct statistical profile of “companies buying B2B services” exists, to the knowledge of the author. Thus, the assessment of the representativeness is only possible to a very limited degree and relies on pointing out peculiarities of the sample. Concerning the company sizes of the respondents (cf. Table 10) there is a notable predominance of larger enterprises. A possible explanation for this prevalence is that, to date, only larger enterprises have outsourced a significant amount of services and discovered their interest in service procurement. Concerning the annual service volume procured by this survey’s respondents, service categories range from smaller service categories with an annual volume of less than €1 million (22% of respondents) to categories between €1 million and €10 million (38% of respondents) to categories with annual volumes exceeding €10 million (40% of respondents). Only 8 percent of respondents are procurement officers for categories with an annual volume of more than €100 million. As this thesis is one of the very first research projects

in the field of B2B service transactions, the result that the responding procurement officers are in charge of an accumulated annual service volume in the two-digit billion euro range is a very positive finding.

Table 10: Sample Characteristics: Annual Revenue and Service Volume

	Share of Company Revenue (in %)	Share of Service Volume (in %)
Less than €1 million	2%	22%
€1-10 million	5%	38%
€10-25 million	3%	16%
€25-50 million	5%	10%
€50-100 million	8%	6%
€100-250 million	17%	4%
€250-500 million	11%	2%
€500-1,000 million	12%	0%
€1,000-2,500 million	16%	1%
€2,500-5,000 million	9%	1%
More than €5,000 million	12%	0%

The service categories mirror the key categories identified by the BME e.V. and thus indicate an adequate fit between the respondents and the real-world B2B service context: 16 percent of respondents are in charge of “business travel” and another 16 percent of “consulting.” “Fleet management” and “maintenance” are each the service categories of 12 percent of respondents. 10 percent of respondents are procuring services related to “IT services” and 9 percent buy “cleaning” services. “Engineering” and “marketing” are both the responsibility of 5 percent of respondents. “Full-service facility management” is bought by 4 percent of respondents. The remaining 12 percent are services that do not fall into any of these nine categories. These nine categories are only distantly related to SIC or WZ classifications. Service categories from a real world context are often comprised of different service aspects which span several SIC or WZ

classifications. “Appendix 1: SIC and WZ Codes of Service Categories” provides insight to which SIC and WZ classifications this thesis’ service categories correspond.

These results concerning the lack of biases and the service focus and volumes allow the conclusion that this thesis’s sample is well suited to explore the phenomena surrounding the B2B service transaction.

## 6.3 Data Analysis

This subchapter provides insight into the choice of statistical methods, first looking at the statistical method best suited to the research goals and data sample and then considering the fundamentals of model assessment. We also present here the different fit criteria, as well as the target values for the relevant criteria. After describing the procedure for the operationalization and development of the model, we delineate our approach to modeling the moderation effects within the model.

### 6.3.1 Statistical Method Suited for Data Analysis

For this dissertation project, a variety of different statistical methods was available. Hair et al. (2006) and Backhaus et al. (2006) provide a comprehensive discussion of possible statistical approaches. On the foundation of their work, the structural equation model (SEM) was chosen as the favored approach for several reasons:

First, the “estimation of multiple interrelated dependence relationships” described by Hair et al. (2006, p711), a central quality of SEMs, sets them apart from other multivariate techniques and allows the researcher to estimate “a series of separate, but independent, multiple regression equations simultaneously by specifying the structural model.” This positions the SEM as one of most powerful approaches to multivariate data analysis.

Second, SEMs are able to deal with latent constructs (also termed latent variables). Latent variables are hypothesized, unobserved concepts that can be represented by observable or measurable indicators (i.e., items collected by means of a survey). All indicators are associated with individual measurement errors, depending on how well they reflect their construct. This allows representing abstract or theoretical concepts, like trust within a relationship, which is very important for this dissertation project as all its constructs are latent.

Third, SEMs offer the possibility of specifying a larger number of latent variables, both exogenous and endogenous, and of modeling the interrelations between these variables. This capability fits the needs of this thesis very well, as the BSR's antecedents, aspects, and outcomes are extensively interrelated. Furthermore, SEMs are able to reflect interrelations between exogenous variables (Homburg and Dobratz (1991)).

Fourth, SEMs offer the possibility of representing second-order constructs (e.g., service performance), as well as the moderating factors (cf. Little et al. (2006)), directly within the model. Thus, this dissertation project can include the relevant elements in one comprehensive model, and there will be no partial models with different goodness of fit indices that distort the overall model assessment and sometimes allude to a better fit than the actual one. Also, the use of moderators within the model helps to vaccinate the results of this dissertation project against the threat of their being spurious. As Hair et al. (2006, p722) describe, modeling moderators as latent variables within the model allows the researcher to ensure that they are not "alternate causes" of interrelations within the model.

An important basis for all SEMs is the nature of the latent variables. Each latent variable can be measured employing either a reflective or a formative measurement model. Reflective measurement implies that the construct causes its indicators (Fornell (1982), Brown (2006)) and represents an abstract notion that the indicators measure imperfectly. Formative measurement assumes that the construct is caused by its indicators, of which it is the sum (Bagozzi (1994), Brown (2006)). We can thus draw up a list of criteria for reflective constructs based on Jarvis et al. (2003) and Hair et al. (2006):

A reflective construct has an abstract meaning beyond the sum of its indicators and causes several highly correlated and thus interchangeable (and to a certain degree expendable) indicators.

On the foundation of this definition, all constructs of this dissertation project can be defined as reflective.

The fact that all constructs are reflective opens up several new options for the choice of the SEM approach (and SEM software package subsequently). The two relevant SEM approaches in this context are variance-based modeling and covariance-based modeling, which are often closely related to the major software packages.

*Variance-based approaches* are often linked to the PLS software. PLS can deal with formative constructs, tends to require smaller samples, and has no identification problems with one- and two-item constructs (Hair et al. (2006)).

*Covariance-based approaches* are linked with the LISREL and AMOS software packages, which produce identical results (Arbuckle and Wothke (1999)), meaning that “ultimately, the selection of an SEM program is based on researcher preference” (Hair et al. (2006, p743)). LISREL and AMOS both provide a wide range of model fit criteria, which PLS does not (Hair et al. (2006)). Also, covariance-based approaches are more suited to the empirical testing of hypotheses (Scholderer and Balderjahn (2005)). However, these approaches also require larger samples (cf. discussion in Chapter 6.1) and exclusively reflective items, and they build on the assumption of the multivariate normal distribution of the data.

On the foundation of this short comparison (for a more detailed discussion see Hair et al. (2006)), a covariance-based approach was chosen for this dissertation project. Because the data sample for this thesis features only reflective constructs and has a sufficient sample of 245, it meets the requirements for a covariance-based model. Although the data for this thesis are not normally distributed, Lei and Lomax (2005), for example, demonstrate that the method is robust against this violation of the requirements. Both covariance-based techniques identified produce

similar results; AMOS was chosen, however, because of its graphical user interface. The graphic interface was a very valuable tool for the exploratory assessment of the moderation, which would have posed a significant coding effort. In addition, AMOS made possible the extraction of the “factors score weights” and, using these, the calculation of the factor scores, which were important in creating the individualized reward packages.

### 6.3.2 Fundamentals of Model Assessment

The ability of a statistical model like an SEM to describe real-world phenomena is, to a large degree, determined by the quality of the underlying data and their measurement (Backhaus et al. (2006)). Berekoven et al. (2001) state that three main issues have to be investigated in this context: objectivity, reliability, and validity.

Objectivity addresses the influence of the personal interaction between researcher and respondent. High objectivity in this context implies that different researchers would have reached the same results if they had performed the study (Nieschlag et al. (2002)). This dissertation project used a web-based survey with no personal interaction between researcher and respondent, thus ensuring objectivity.

#### 6.3.2.1 Reliability

Hair et al. (2006, p137) define reliability as an “assessment of the degree of consistency between multiple measurements of a variable.” One possible approach to assess the reliability is the “test-retest, by which consistency is measured between the responses for an individual at two points in time,” proposed by Hair et al. (2006, p137). Because this approach is very time-consuming, the second and more commonly used approach is followed: assessing the internal consistency by measuring “the degree to which a set of indicators of a latent construct is internally consistent.” The internal consistency is addressed through the testing if the indicators are highly intercorrelated (Hair et al. (2006, p137)). Nevertheless, reliability does not guarantee that



the latent variables represent what they are intended to; instead, reliability addresses the absence of random error in the measurement and is a necessary but not sufficient condition for validity. In this thesis, Cronbach's alpha and average variance extracted (AVE) are used to assess reliability.

### 6.3.2.2 Validity

Hair et al. (2006, p137) define validity as the "extent to which a scale or set of measures accurately represents the concept of interest" and distinguish four forms of validity:

*Content or face validity* "subjectively assesses the correspondence between the individual items and the concept through ratings by expert judges, pretests with multiple sub-populations, or other means" (Hair et al. (2006, p136)). This definition implies that the assessment of content validity is qualitative in nature. To achieve content validity, two main precautions were taken: First, the scale development of this thesis relied on extant approaches as much as possible to ensure a selection of tried and proven items. Second, the items were tested extensively both by experts and as part of a pretest. In doing so, a wide selection of suitable items was drawn from extant literature but only the ones rated best by expert and pretest respondents were retained in order to assure content validity.

*Convergent validity* measures "the degree to which two measures of the same concept are correlated" (Hair et al. (2006, p137)). In order to ensure high correlations among the items of a construct a confirmatory factor analysis was employed (Brown (2006)) in AMOS.

*Discriminant validity* refers to "the degree to which two conceptually similar concepts [i.e. the individual constructs] are distinct" (Hair et al. (2006, p137f)). Mathematically, this is the case when the items of one construct are not highly correlated with the items of other constructs. This absence of correlation is determined by using the Fornell/Larcker Criterion (Fornell and Larcker (1981)), which proves discriminant validity

if a construct's AVE is greater than any squared correlation with the other factors. In addition, item purification based on "modification indices" in AMOS will be used to this end.

*Nomological validity* describes the "degree that the summated scale makes accurate predictions of other concepts in a theoretically based model" (Hair et al. (2006, p138)). This is why the interrelations within the SEM must be thoroughly based on "theoretically supported relationships from prior research." This dissertation project has developed its research questions and hypotheses based on a solid foundation of previous research and extant literature (cf. Chapter 4). The research questions and hypotheses are then put to the test statistically (cf. Chapter 7).

Thus dissertation project will employ all possible tools to ensure reliability and validity of the measurement and structural model. In addition to the fit indices mentioned above, a variety of goodness of fit measures is measured as well.

### 6.3.3 Fit Criteria for the Assessment of Measurement Models and SEM

On the foundation of the decision to use an SEM and of the discussion of reliability and validity, this dissertation project puts forward its selection of goodness-of-fit indices. Fornell (1982) and many researchers after him make a distinction between fit criteria of the first generation and fit criteria of the second generation. The first generation is dominated by criteria adapted from psychological and sociological research (e.g., Peter (1979)); the second-generation criteria use complementary tools developed for confirmatory factor analysis.

### 6.3.3.1 Fit Criteria of the First Generation

Two first-generation fit criteria are considered useful for the assessment of the measurement model of this thesis: Cronbach's alpha and the item-to-total correlation.

*Cronbach's alpha* was introduced by Cronbach (1951) and is one of the most accepted tools to measure internal consistency reliability (Peter (1979)). Cronbach's alpha results range from 0 to 1, with values close to 1 signifying high covariances (or correlations) of the individual items. There is no scientific consensus concerning the minimum values: Peter (1997) suggests that, for constructs with only two or three items, values over .40 are already acceptable. DeVellis (2003) proposes that values between .60 and .70 are sufficient for newly developed scales. For already established scales, Hair et al. (2006, p 137) propose that "the generally agreed upon lower limit for Cronbach's alpha is .70," which is in line with, for example, Nunnally (1978). Although most scales of this thesis are either newly developed or extensively adapted to the specific field of research, only Cronbach alphas over .70 are considered adequate.

The *item-to-total correlation* measures the correlation of an item with the construct to which it is attributed (Homburg and Giering (1996)). The item-to-total correlation can be used to eliminate items with low item-to-total correlations in case of unsatisfactory Cronbach's alphas (Churchill (1979)). This approach is acceptable because items are seen as interchangeable outcomes caused by the (reflective) latent variables (Bollen and Lennox (1991)). Based on Bearden et al. (1989), this dissertation project considers items with item-to-total correlations over .50 satisfactory.

Cronbach's alphas and item-to-total correlations are used for a first purification of the scales. In the case of this dissertation project, sufficient theoretical proof of a factor structure is present which is why no EFA will be performed. Because first-generation fit criteria provide only first insights into factor and model reliability and validity (DeVellis (2003)), second-generation fit criteria are used as well.

### 6.3.3.2 Fit Criteria of the Second Generation

In contrast to the fit criteria of the first generation, the second-generation fit criteria stem from CFA considerations. In this field a wide variety of fit criteria exists, both for the local fit of the individual items and for the global fit of the model as a whole.

For the selection of local fit criteria, this thesis follows the recommendations of Hu and Bentler (1998) and employs factor loadings, composite reliability (CR), and average variance extracted (AVE).

For the selection of appropriate global fit criteria, this thesis follows the recommendations of Hair et al. (2006), as well as Jahn (2007), and employs the absolute global fit indices  $\chi^2$  (or rather  $\chi^2/df$ ), SRMR, and RMSEA, as well as the incremental global fit indices CFI and TLI. Other fit criteria that do not consider the degrees of freedom (e.g., the GFI) were considered inadequate in accordance with Homburg and Baumgartner (1995, p166), who state that these criteria have “very limited explanatory power”<sup>22</sup> and, with Hu and Bentler (1998), advise against using GFI or its adjusted forms.

#### Local Fit Indices

Local fit indices evaluate the quality of the measurement models. The measurement models of this thesis are reflective in nature, and adequate local fit indices are selected.

The size of the *factor loading* is the first local fit criterion. If convergent validity is established, “high loadings on a factor would indicate that they converge on some common point” (Hair et al. (2006, p777). Concerning target values, standardized loading estimates should be .50 or higher. However, as Johnson et al. (2006) elaborate, the ideal target value for factor loadings is .707. Then, more than half the variance of the indicator is linked with the construct.

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<sup>22</sup> “sehr begrenzte Aussagekraft“

The *composite reliability* (CR, which is sometimes synonymous for “construct reliability” as well (Hair et al. (2006, p777))) is an indicator of convergent validity. In this function CR is more accurate than Cronbach’s alpha because it is not sensitive to the number of indicators. Acceptable CR values are above .70 (Chin (1998)).

The *average variance extracted* (AVE) is a summary indicator of convergence for the sum of items of a construct. Sufficient AVE values are above .50 (Fornell and Larcker (1981)). The AVEs for all constructs within the model can be used to assess the discriminant validity by calculating the Fornell/Larcker Criterion. This criterion is met if the AVE of a construct is greater than the squared variance shared by the construct and any other construct in the model.

### **Absolute Global Fit Indices**

In the following section this thesis provides a brief overview of the absolute global fit indices, which provide insight into how well the specified model fits the data.

The  $\chi^2$  fit index is one of the most frequently used global fit indices. It compares the covariance matrix estimated by the model with the observed covariance matrix (Hair et al. (2006)). The null hypothesis is that the model’s matrix matches the observed covariance matrix perfectly, which is rarely the case (Browne and Cudeck (1993)) and which becomes even less likely with increasing sample size (Bagozzi and Baumgartner (1994)), as well as with increasing degrees of freedom (df). This is why Hair et al. (2006) recommend using the  $\chi^2/df$  statistic. The smaller the value of  $\chi^2/df$ , the better the model’s covariance matrix matches the observed covariance matrix. This thesis follows the recommendation of Homburg and Baumgartner (1998), so that values below 3 signify adequate model fit.

The *standardized root mean residual* (SRMR) corresponds to the standard error in a regression analysis. It represents the standardized value of the square root of the mean of the squared residuals of the covariance terms. Higher SRMR values express the badness-

of-fit of the model; thus, a lower value is desirable. This thesis follows Hair et al. in their assessment that an SRMR below .08 expresses adequate model fit.

The *root mean square error of approximation* (RMSEA) is an absolute global fit index that, as Hair et al. (2006, p748) put it, “attempts to correct for the tendency of the  $\chi^2$  [goodness of fit] test statistic to reject models with large samples or a large number of observed variables.” The RMSEA is similar to the SRMR in that it also addresses the discrepancy of the model and the sample’s covariance matrix (but assumes a known distribution). In the case of the RMSEA, lower values signify a better model fit as well. Hair et al. (2006) indicate that values under .08 indicate good model fit. Because this thesis uses an AMOS SEM, it can also determine the upper and lower RMSEA boundaries for a 95 percent confidence interval, which ideally should both be under .08.

### **Incremental Global Fit Indices**

The incremental global fit indices “differ from the absolute fit indices in that they assess how well a specified model fits relative to some alternative baseline model” (Hair et al. (2006, p749)). This alternative baseline model is usually a null model in which all observed variables are assumed to be uncorrelated. This assumption has the effect that, in the null model, no data reduction could improve model quality. Of the multitude of different incremental global fit indices, CFI and TLI were chosen on the foundation of Hair et al. (2006) and based on the recommendation of Marsh et al. (1996).

The *comparative fit index* (CFI) is an improved version of the normed fit index (which is a ratio of the difference in the  $\chi^2$  value for the fitted model and a null model divided by the  $\chi^2$  value for the null model), but the CFI takes the degrees of freedom into account and thus rewards parsimonious models. CFI values range from 0 to 1, with 1 indicating a perfect fit (i.e., all latent variables in the specified model are perfectly uncorrelated). Generally, a CFI of more than .90 is considered acceptable (Homburg and Baumgartner (1998)), but Hu and Bentler (1999) argue that CFIs as high as .95 are advisable.

The Tucker Lewis index (TLI) is often used in addition to the CFI because it is highly independent from sample size. The TLI values range from 0 to 1, similar to the CFI, with higher values indicating better fit. Hair et al. (2006) recommend values of more than .90 but acknowledge other research (e.g., Hu and Bentler (1999)) who demand .95.

In the cases of both CFI and TLI this thesis follows the considerations of Hair et al. (2006, p751), who state that with an increasing number of latent variables in the model and an increasing sample size, the target values for CFI and TLI can be partially relaxed and assumes “the magic .90” for both.

### 6.3.3.3 Summary of Fit Criteria

On the foundation of this extensive discussion of relevant fit criteria and the relevant cut-off values, this dissertation can present an overview of selected values and recommended cut-off values.

Table 11: Fit Criteria of This Thesis

	Cut-Off Value	
<b>First Generation</b>		
	Cronbach's alpha	> .70
	Item-to-Total Correlation	> .50
<b>Second Generation</b>		
Local Fit Indices	Factor Loading	> .50 ideally > .707
	Composite Reliability	> .70
	AVE	> .50
	Fornell/Larcker Criterion	Must be met
Absolute Global Fit Indices	$\chi^2/df$	< 3
	SRMR	< .08
	RMSEA	< .08 (with 95% confidence)
Incremental Global Fit Indices	CFI	> .90
	TLI	> .90

### 6.3.4 Procedure for Operationalization and Structural Model Assessment

Based on the development of the fit criteria and on the recommendations of Homburg and Giering (1996), this dissertation project can outline the next steps, of which there are five:

The first step is an assessment of reliability and validity in SPSS 15.0. Using Cronbach's alphas and item-to-total correlations a second item purification is performed, eliminating items with



low item-to-total correlations from constructs with insufficient Cronbach's alpha. Furthermore, the remaining items are verified by means of the AVE.

The second step is the CFA, relying on second-generation fit indices and performed in AMOS 5.0. If the fit indices are not met, a further item purification takes place.

The third step is the assessment of discriminant validity using the Fornell/Larcker Criterion. If the criterion is not met, the factors responsible for the violation are deleted in order to prevent multicollinearity. Furthermore, modification indices will be used for further item purification.

The fourth step builds on the measurement models created by the first four steps and includes the assessment of the proposed structural model in AMOS 5.0. At this point, if the structural model does not meet the proposed global fit criteria, this dissertation retains the option of eliminating further items based on the modification indices provided in the AMOS output. If the model meets the necessary fit criteria, the p-levels of the different path coefficients are determined.

The fifth step is the assessment of the moderating effects and is covered in more detail in the next subchapter.

### 6.3.5 Investigation of Moderating Effects: Latent Moderation

After both the measurement and structural models of sufficient fit are established, this thesis turns to the moderation effects. As mentioned, these effects are important in differentiating between different service categories and ensuring that the model relationships are not spurious, with the moderators being the actual factors. In contrast to the other statistical procedures and fit indices, the technique used to assess the moderation is relatively new and unique, and thus is explained in more detail.

Until recently, moderation in SEMs was normally addressed by means of multi-group analysis (Byrne (2001)). Compared to modeling moderation using latent variables, the multi-group ap-

proach has significant downsides: It fails to precisely measure the moderation effect; it does not separate the direct and the moderating effect of the moderator; and it has difficulties assessing the fit criteria for the moderated model. Also, splitting the sample poses problems for larger models, where high sample size requirements apply.

The approach of modeling moderation as latent variables within the model is a relatively new one (Little et al. (2006)). Little and his team of researchers propose to model each moderator as two latent variables: one latent “direct effect” variable measured by the items of the moderator and one latent “interaction term” variable. The interaction term consists of the orthogonalized indicators and has to be calculated for each moderator.

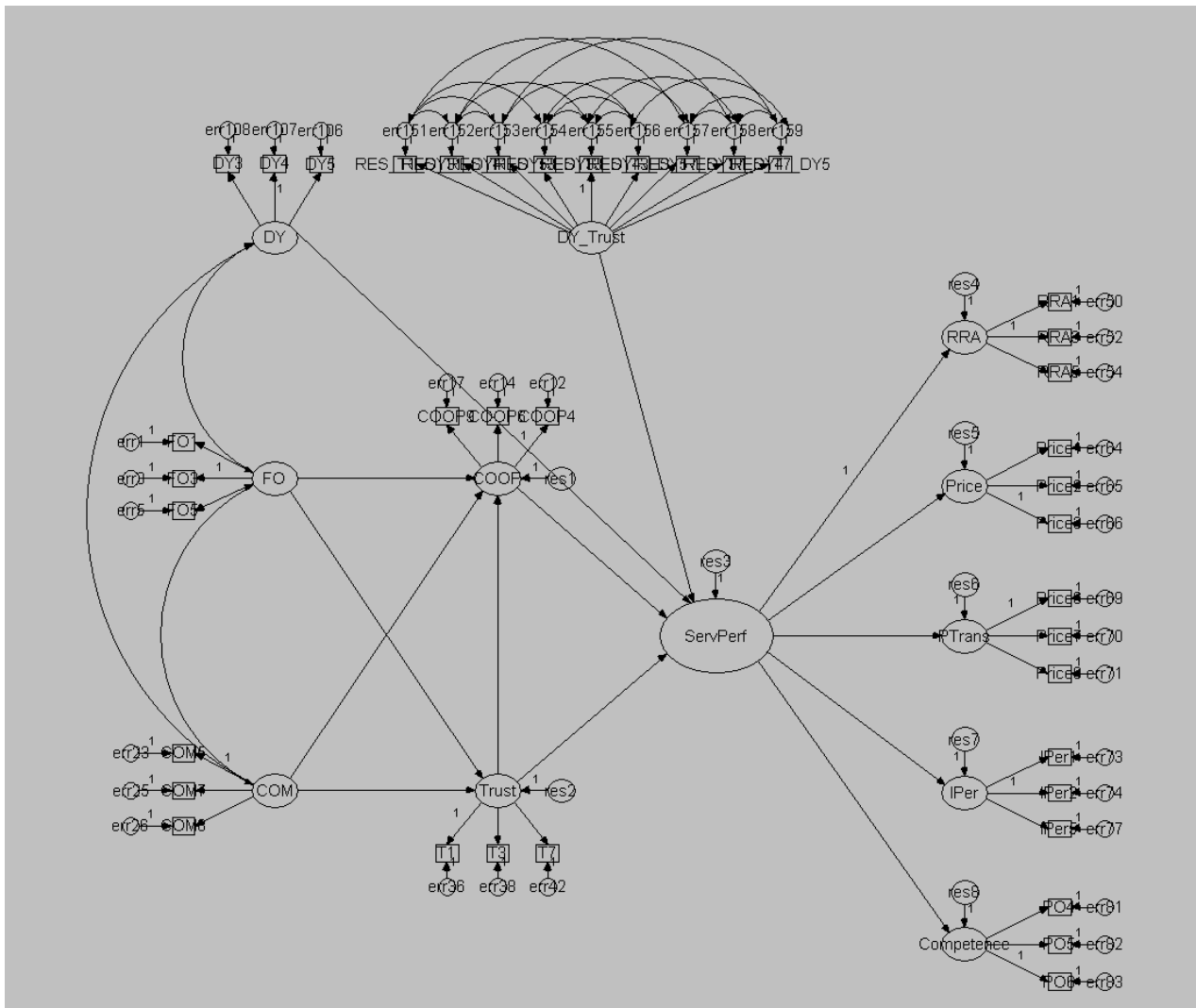


Figure 3: Latent Interaction Terms

To further clarify the approach of Little et al. (2006) an example is provided in Figure 3 which shows an analysis of whether the effect of trust on service performance is moderated by dynamics: To conduct this analysis, a latent variable for the direct effect of dynamics “DY” is created (with the three indicators measuring dynamics).

The direct effect variable “DY” is treated as an exogenous variable within the model. Then the interaction term, “DY\_Trust,” is created. It consists of the residuals of the regressions of the

sum of all indicators from the moderated variable (trust) and the moderator (dynamics), regressed on every possible product of all the indicators from trust and dynamics. Because both trust and dynamics have three indicators each, nine regressions ( $3*3=9$ ) are performed in SPSS, and the interaction term thus has nine indicators. By measuring the path coefficients from “DY” and “DY\_Trust” to the second-order construct of service performance (“ServPerf”), we can determine whether the relationship between trust and service performance is moderated by complexity.

Because residual centering yields superior results compared to mean centering (Little et al. (2006)), and because it has the above-mentioned advantages over multi-group analysis, this procedure is used in this thesis to explore the moderation effects within the model.

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## 7 Model Development and Results

Following the discussion of the methodology employed for this thesis, Chapter 7 presents the empirical results and the implications for the research questions. This chapter consists of three main subchapters that each deal with one research question. Each subchapter starts with a short review of the research question. A detailed depiction of the measurement model's development follows, and then the structural model results are presented. On this foundation we discuss the results extensively and deduce the primary research and management implications. In these three subchapters, this thesis's model is developed incrementally.

As the model develops, the fit criteria and cut-off values identified in Chapter 6 are used to ensure reliability and validity. Reliability is assured by calculating the Cronbach's alpha, the item-to-total correlation, and the average variance extracted (AVE). Content or face validity is established by expert interviews and a pre-test and it is confirmed by discussing the items of the final versions of the latent variables. The convergent validity is ensured by performing a CFA, as well as by calculating the factor loadings, the composite reliability (CR), and the AVE. Discriminant validity is verified by calculating the Fornell/Larcker Criterion, as well as by using modification indices in AMOS. Finally, the nomological validity is scrutinized by translating and, thus, testing the literature-based research questions and hypotheses in an AMOS SEM, as well as by measuring the SEM's fit with second-generation indices ( $\chi^2/df$ , TLI, CFI, SRMR and RMSEA).

### 7.1 Measurement Model for Service Performance

This subchapter deals with the scientific measurement of B2B Service Performance in a procurement context. Because to date no such measurement exists, with all extant approaches featuring either a strong marketing bias, a B2C focus, or both, this thesis must develop a measurement model to assess the performance of the object of transaction (i.e., the B2B service).

### 7.1.1 Research Question 1

Because services are distinct from products (Maltz and Ellram (1997), Allen and Chancrashekar (2000)) and because B2B services are distinct from B2C services (Parasuraman (1998)), this dissertation project follows the recommendations of Parasuraman and develops and empirically verifies a comprehensive measurement approach for B2B service performance. The B2B Service Performance model is built using perception-only scores (Brown et al. (1993)). Doing so does not provide insight as to whether perception-only scores are superior to difference scores (expectations minus perceptions) however, it does provide an answer as to whether perception-only scores are sufficient to measure B2B service performance. Furthermore, this thesis addresses which service performance dimensions are important in a B2B service context and from a procurement perspective. Important aspects in this context are the role of financial aspects (Westbrook and Peterson (1998), Vandaele and Gemmel (2004)) and the applicability of B2C service quality dimensions.

An additional point of interest is whether a measurement tool for service performance can be developed that measures a wide variety of B2B service categories without relying on restrictions like KIBS (Pardos et al. (2007), Bagdoniene and Jakstaite (2008)). All of these aspects are addressed to answer the first research question:

**How can “Service Performance” in a B2B service context be measured?**

### 7.1.2 Conceptualization and Operationalization of Measurement Model

The conceptualization and operationalization of the measurement model required three steps: Selecting and defining the relevant performance dimensions (the first-order latent variables), based on existing measurement approaches; creating a suitable item list to include in the questionnaire; and purifying these items to finalize the scales to measure the constructs.

Based on this dissertation's definition of service performance as a higher-order construct, a set of relevant non-financial and financial service performance dimensions was developed. Based on the most successful extant approaches (Parasuraman et al. (1985), Parasuraman et al. (1988), Westbrook and Peterson (1998), Vandaele and Gemmel (2004)), this dissertation project selected the five dimensions, both financial and non-financial: reliability, geographical presence, price, interpersonal skills, and service competence.

In defining the indicators of the five latent first-order variables (i.e., the five dimensions), this dissertation follows the approach of newer composite models (Vandaele and Gemmel (2004)) by proposing a larger number of items and identifying the most relevant ones by means of a CFA, as well as by allowing latent variables to disaggregate if justified by the empirical analysis. This process is briefly presented in the following overview of the five (initial) dimensions of service performance.

#### 7.1.2.1 Reliability

The latent variable, reliability, in this thesis corresponds to the reliability dimensions of most extant B2C service performance approaches (Parasuraman et al. (1985), Parasuraman et al. (1988), Westbrook and Peterson (1998)), and to a limited degree to the responsiveness and the access/accessibility dimensions. These early approaches defined responsiveness as or similar to "provider reliably reacts to the buyer's wishes" and accessibility as similar to "provider can be reliably contacted." As these performance dimensions can be easily applied to a B2B service performance context, this thesis includes them in its considerations. More recent research (Vandaele and Gemmel (2004)) considers these performance dimensions to constitute a single latent variable. This dissertation project follows this approach and includes in the questionnaire the items shown in Table 12 (based on Westbrook and Peterson (1998), Prahinski and Benton (2003), Vandaele and Gemmel (2004), Burca et al. (2006), Carter and Kaufmann (2007)).

Table 12: Initial Items to Measure Reliability

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Reliability	8	.88	.90	.53
Item	Item Text		Item-to-Total Correlation	Factor Loading
Rel_1	The service provider can be contacted easily.		.65	.70
Rel_2	The service provider is available at all times to assist the client.		.69	.74
Rel_3	When the service provider promises to do something by a certain time, he does so.		.78	.86
Rel_4	The service provider meets deadlines for projects and assignments.		.71	.79
Rel_5	Projects and assignments are properly followed-through by the service provider.		.78	.86
Rel_6	The service provider documents his work accurately.		.63	.63
Rel_7	The service provider is responsive to requests for changes.		.70	.75
Rel_8	The service provider has technical resources that ease access and information spreading.		.35	.35

Of these initial items, Rel\_8 displayed insufficient item-to-total correlation and factor loading, indicating that “reliable technical access” is not among the indicators of the latent variable “reliability”; and it was thus eliminated. The remaining seven items were then put to the test of a CFA in AMOS and a further item purification was performed based on modification indices, which led to the selection of the three final items for the reliability construct.



Table 13: Final Items to Measure Reliability

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Reliability</b>	3	.85	.85	.66
Item	Item Text		Item-to-Total Correlation	Factor Loading
Rel_1	The service provider can be contacted easily.		.64	.69
Rel_3	When the service provider promises to do something by a certain time, he does so.		.79	.89
Rel_5	Projects and assignments are properly followed-through by the service provider.		.72	.84

While Cronbach's alpha, CR, and AVE all are within an acceptable range for the initial items, the final item selection exhibits a significantly better AVE (and thus better performance concerning the Fornell/Larcker Criterion) with only minor reductions of Cronbach's alpha and CR.

The final version of the latent variable, reliability, encompasses the general notion of reliability (Rel\_3, Rel\_5) and reliable access (Rel\_1) and, as proposed by Vandaele and Gemmel (2004), all load onto one construct with adequate fit criteria.

### 7.1.2.2 Geographical Presence

The notion of “geographical presence” measuring service performance is innate to the newer composite models (Westbrook and Peterson (1998), Vandaele and Gemmel (2004)) and is only employed by some researchers. The construct consists of elements that cover the geographical locations of the service provider and the resulting ability to provide the service in national and international markets, as well as the market presence aspects that relate to the provider's posi-

tion within its industry. While Vandaele and Gemmel (2004) combine these two aspects in one latent variable, Westbrook and Peterson (1998) consider them to be distinct. Based on both articles, the items shown in Table 14 were included in the questionnaire.

Table 14: Initial Items to Measure Geographical Presence

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Geographical Presence</b>	6	.88	.87	.55
Item	Item Text		Item-to-Total Correlation	Factor Loading
GP_1	The service provider has a large presence (market share) in the market.		.75	.82
GP_2	The service provider acts as a leader to other companies in the market.		.76	.92
GP_3	The service provider has leverage (power and influence) in the market.		.78	.94
GP_4	The service provider is able to offer his services in other cities nationally.		.65	.54
GP_5	The service provider is able to offer his services in other countries.		.68	.56
GP_6	The service provider has the ability to coordinate and consolidate resources with other companies.		.56	.53

Even the initial version of the latent variable “geographical presence” displays acceptable values of the fit criteria. However, similar to the findings of Westbrook and Peterson (1998), the items corresponding to market presence (GP\_1, GP\_2, GP\_3) exhibit very suitable fit values while the items relating to geographical presence (GP\_4, GP\_5, GP\_6) display significantly lower ones. Combined with the analysis of the modification indices, this outcome constitutes a

hint toward the existence of two distinct constructs: geographical presence (Table 15) and market presence (Table 16). These two constructs are tested in the next step.

Table 15: Final Items to Measure Geographical Presence

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Geographical Presence</b>	3	.80	.83	.64
<b>Item Details</b>				
Item	Item Text		Item-to-Total Correlation	Factor Loading
GP_4	The service provider is able to offer his services in other cities nationally.		.71	.81
GP_5	The service provider is able to offer his services in other countries.		.78	.98
GP_6	The service provider has the ability to coordinate and consolidate resources with other companies.		.50	.54

The final version of the latent variable geographical presence is measured by the degree to which the service provider can offer its services nationally and internationally, as well as the provider's ability to employ resources from other companies (i.e., subcontractors) to increase its reach and offering.

Table 16: Final Items to Measure Market Presence

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Market Presence	3	.93	.93	.81
Item	Item Text		Item-to-Total Correlation	Factor Loading
GP_1	The service provider has a large presence (market share) in the market.		.75	.82
GP_2	The service provider acts as a leader to other companies in the market.		.76	.92
GP_3	The service provider has leverage (power and influence) in the market.		.78	.95

The final version of the latent variable market presence encompasses the influence of the service provider in its market—specifically its market share and its leadership position, as well its general influence.

The final latent variables for geographical presence and market presence allow for a significant increase in AVE values. While the initial item structure yielded an AVE barely over the threshold (.55), the separation of the two variables yields more satisfactory AVEs, of .64 and .81 respectively. This strongly supports the notion of Westbrook and Peterson (1998) that these two constructs are distinct. This thesis follows this example and tests in Chapter 7.1.3 whether geographical presence and market presence measure the second-order construct of service performance.

### 7.1.2.3 Price

Including financial aspects of service performance is characteristic of more recent measurement approaches (Westbrook and Peterson (1998), Vandaele and Gemmel (2004)). The older approaches (e.g., those of Parasuraman et al.) had a very clear marketing focus and thus were not concerned with the financial or price-performance ratio aspects of service performance. For the development of the latent variable price, this thesis takes a two-step approach:

In the first step items from Westbrook and Peterson (1998), Maltz and Ellram (1999), Vandaele and Gemmel (2004), and Fynes et al. (2005a, 2005b) were included in the questionnaire. These items primarily measure the competitiveness of the absolute price (i.e., the amount).

In the second step this thesis drew on the insight provided by the initial expert interviews and focus groups: that the absolute price is a valid aspect of financial service performance, but that the transparency of the price is at least equally important. Because items did not yet exist for the transparency of prices, these were developed based on Eriksson et al. (1996) and on the absence of the “hidden cost adders” put forward by Ellram et al. (2004).

Once again, an empirical analysis is used to determine whether these two notions of financial performance both load onto a common latent variable or if they are better treated separately.

Table 17: Initial Items to Measure Price

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Price</b>	9	.84	.85	<b>.40</b>
Item	Item Text	Item-to-Total Correlation	Factor Loading	
Price_1	The price of the service provided relates to the quality delivered.	.66	.79	
Price_2	The price of the service provided meets the client's budget objectives.	.58	.69	
Price_3	The price is competitive compared to other offers for similar services.	.68	.81	
Price_4	The service provider's price increases over time are lower than those of competitors.	<b>.49</b>	.50	
Price_5	Considering all costs and revenues associated with this relationship, please rate the following statement: The procurement relationship is profitable above average.	.70	.74	
Price_6	The service provider does NOT use confusing service bundles or intransparent packages.	.59	.62	
Price_7	The service provider does NOT charge for every single task that is not explicitly specified in the service level agreements.	.52	<b>.49</b>	
Price_8	The service provider's invoices are separate and detailed – there is NO summary invoicing.	<b>.47</b>	.50	
Price_9	When dealing with subcontractors, the service provider does NOT use his procurement leverage to receive additional rebates for himself.	<b>.42</b>	<b>.44</b>	

The initial performance of the latent variable price is far from adequate. While Cronbach's Alpha and CR are well above the threshold values, the AVE is not adequate, and several items display low item-to-total correlations and factor loadings. As the modification indices hint at the existence of two separate latent variables, this structure was put to the test next. Price\_1 to

Price\_5 were subsumed under price amount and Price\_6 to Price\_9 under price transparency. These two latent variables with five and four items already performed significantly better than the combined solution (Table 17) but still had a few items with unsatisfactory item-to-total correlations and factor loadings (Price\_4 and Price\_9), and Price\_5 displayed significant multicollinearity. These items were then eliminated. The results are the two latent variables price amount (Table 18) and price transparency (Table 19).

Table 18: Final Items to Measure Price Amount

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Price Amount</b>	3	.85	.85	.66
Item	Item Text	Item-to-Total Correlation	Factor Loading	
Price_1	The price of the service provided relates to the quality delivered.	.71	.82	
Price_2	The price of the service provided meets the client's budget objectives.	.67	.73	
Price_3	The price is competitive compared to other offers for similar services.	.78	.88	

The final version of the latent variable for price amount is in line with extant approaches (Westbrook and Peterson (1998), Vandaele and Gemmel (2004)) and performs reasonably well concerning all fit indices. The final items measure the price of the service against the quality received, against the service consumer's budget goals, and against the competitiveness with comparable service offerings.

Table 19: Final Items to Measure Price Transparency

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Price Transparency	3	.71	.71	.46
Item	Item Text		Item-to-Total Correlation	Factor Loading
Price_6	The service provider does NOT use confusing service bundles or intransparent packages.		.57	.79
Price_7	The service provider does NOT charge for every single task that is not explicitly specified in the service level agreements.		.51	.57
Price_8	The service provider's invoices are separate and detailed – there is NO summary invoicing.		.52	.65

The final version of the latent variable price transparency displays at best tolerable values for the fit criteria. Cronbach's Alpha and CR are just above the threshold, but AVE is slightly below. Because this latent variable is being newly developed, this dissertation project retains it nonetheless and uses the Fornell/Larcker Criterion to determine whether to drop it. The final items measure the clarity of service packages, the comprehensiveness of service level agreements, and the level of detail in invoicing.

#### 7.1.2.4 Interpersonal Skills

The interpersonal skills of the service provider and its personnel are integral to all extant approaches in measuring service performance. While the meaning and the items are often similar, the latent variables tend to go by different names. Parasuraman et al. (1985) include the dimension of courtesy in the original SERVQUAL. Parasuraman et al. (1988) include the dimensions



of assurance and empathy in their RATER scale. Both Westbrook and Peterson (1998) and Vandaele and Gemmel (2004) measure a latent variable interpersonal skills. Based on items from these articles and adding one item based on the initial expert interviews (IPer\_5: consistency of contact persons), the items shown in Table 20 were included in the questionnaire.

Table 20: Initial Items to Measure Interpersonal Skills

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Interpersonal Skills</b>	5	.86	.87	.57
Item	Item Text		Item-to-Total Correlation	Factor Loading
IPer_1	The service provider's personnel are polite and respect the privacy of others.		.80	.87
IPer_2	The personnel of the service provider are sociable and friendly.		.74	.86
IPer_3	The service provider's personnel can be trusted.		.68	.79
IPer_4	We have one or more direct contact persons at the service provider who are dedicated to our account.		.56	.57
IPer_5	Our contact persons at the service provider remain constant over time.		.61	.63

The performance of the initial version of the latent variable interpersonal skills is already quite satisfactory. Not a single fit criterion is near the threshold, and most are significantly higher than required. Nonetheless, two adjustments allowed for further improvements. Based on the modification indices in AMOS, IPer\_3 was eliminated because of significant multicollinearity. Also, IPer\_4 as the worst performing single indicator was purified from the list. The resulting final version of the latent variable "interpersonal skills" is presented in Table 21.

Table 21: Final Items to Measure Interpersonal Skills

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Interpersonal Skills</b>	3	.83	.85	.66
Item	Item Text		Item-to-Total Correlation	Factor Loading
IPer_1	The service provider's personnel are polite and respect the privacy of others.		.80	.92
IPer_2	The personnel of the service provider are sociable and friendly.		.71	.86
IPer_5	Our contact persons at the service provider remain constant over time.		.56	.62

The final version of the interpersonal skills latent variable performs nicely across all fit indices and consists of politeness, friendliness, and the consistency of contact persons. Interestingly, the item recommended by the expert interviews actually performed well within the measurement model, allowing a positive judgment of the experts's competence and adding a new aspect to the extant approaches.

#### 7.1.2.5 Service Competence

The assessment of the service provider's competence to provide the service is only part of few extant measurement approaches. Parasuraman et al. (1985) include a competence dimension in SERVQUAL but drop it from the subsequent RATER scale, apparently aiming to cover the competence aspects by means of the reliability dimension. This neglects the importance of knowledge and skill in the more complex B2B service categories, which is why this dissertation project follows the examples of Westbrook and Peterson (1998) and Vandaele and Gemmel

(2004) and includes a latent variable for service competence. The different indicators cover the knowledge, skill, and innovation of the service provider, as well as the provider's capability to provide an extended scope of services with a large enough capacity to act as a sole supplier.

Table 22: Initial Items to Measure Service Competence

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Service Competence	6	.78	.79	.39
Item	Item Text		Item-to-Total Correlation	Factor Loading
Comp_1	The service provider offers an extended scope of services in the area of the provided service.		.54	.55
Comp_2	If desired, we could use this service provider as a one stop vendor.		.48	.49
Comp_3	The customer has multiple options and programs to choose from and compose the service.		.65	.65
Comp_4	The service provider has extensive expertise in the area of the provided service.		.54	.65
Comp_5	The service provider possesses good problem-solving skills.		.48	.69
Comp_6	The service provider develops innovative service solutions and includes them in his service offering.		.54	.69

The initial version of the service competence latent variable leaves room for improvement. The AVE is well below the desired threshold, and several items display only subpar item-to-total correlations and factor loadings. The possibility for single sourcing (Comp\_2) apparently does not measure service competence well and was therefore eliminated. The problem solution capabilities of the service provider (Comp\_5) displayed weak item-to-total correlations, but the item was not immediately eliminated because of decent factor loadings. After the elimination of

another two items (Comp\_1 and Comp\_3) based on modification indices, Comp\_5 performed significantly better in the final version of the service competence latent variable, displayed in Table 23.

Table 23: Final Items to Measure Service Competence

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Service Competence	3	.76	.77	.52
Item	Item Text		Item-to-Total Correlation	Factor Loading
Comp_4	The service provider has extensive expertise in the area of the provided service.		.55	.63
Comp_5	The service provider possesses good problem-solving skills.		.62	.81
Comp_6	The service provider develops innovative service solutions and includes them in his service offering.		.64	.72

The final version of the service competence latent variable displays sufficient but not extraordinary performance concerning the fit indices, which is considered acceptable for a newly developed construct. The final version of service competence encompasses the service provider's knowledge and skill, problem solving capabilities, and innovation.

### 7.1.3 Statistical Analysis and Results

Before assessing the second-order measurement model for service performance, this dissertation project discusses the discriminant validity of the proposed seven final first-order constructs. We use the Fornell/Larcker Criterion to do so.

Table 24: Fornell/Larcker Criterion for Service Performance

		Reliability	Geographical Presence	Market Presence	Price Amount	Price Transparency	Interpersonal Skills	Service Competence
	<b>AVE</b>	<b>.66</b>	<b>.64</b>	<b>.81</b>	<b>.66</b>	<b>.46</b>	<b>.66</b>	<b>.52</b>
Reliability	<b>.66</b>	1						
Geographical Presence	<b>.64</b>	.01	1					
Market Presence	<b>.81</b>	.16	.35	1				
Price Amount	<b>.66</b>	.18	.00	.04	1			
Price Transparency	<b>.46</b>	.36	.00	.01	.42	1		
Interpersonal Skills	<b>.66</b>	.35	.01	.04	.11	.20	1	
Service Competence	<b>.52</b>	.34	.06	.14	.21	.25	.36	1
Squared Correlations								

As presented in Before assessing the second-order measurement model for service performance, this dissertation project discusses the discriminant validity of the proposed seven final first-order constructs. We use the Fornell/Larcker Criterion to do so.

Table 24, the Fornell/Larcker Criterion is fulfilled for each of the final latent variables. Even the subpar AVE of price transparency did not pose any problems. On this foundation, this dissertation project can continue with the evaluation of the second-order structure of service performance. To this end, a CFA was performed in AMOS testing the second-order structure of service performance. The results are displayed in Table 25.

Table 25: Initial Second-Order Structure of Service Performance

Second-Order Construct		N of Dimensions	Composite Reliability (CR)	Average Variance Extracted (AVE)
Service Performance		7	.79	.38
$\chi^2/df$	TLI	CFI	RMSEA	SRMR
2.5	.886	.901	.079	.118
Dimension				Factor Loading
Reliability				.77
Geographical Presence				.28
Market Presence				.16
Price Amount				.60
Price Transparency				.73
Interpersonal Skills				.70
Service Competence				.79

The results of the initial second-order structure are presented in Table 25. The fit criteria developed before either are not or are just barely met. The AVE is far below the desired .50, and the SRMR is significantly higher than the threshold of .08. TLI and RMSEA fail to meet the thresholds. In the case of the RMSEA, the absolute value is below the cut-off of .08, but the 95% confidence interval ranges from .070 to .088.

Concerning the significance levels, the relationships of all of the first-order dimensions with the second-order construct service performance are all significant at  $p < .001$ , except for market presence, which is significant at  $p < .05$ .

A glance at the factor loadings and the outputs of the significance levels identifies the sources of these problems. Two latent variables, geographical presence and market presence, display negligible factor loadings. On this foundation we eliminate these two latent variables from the second-order measurement model and draw the conclusion that neither geographical presence nor market presence measure service performance to a significant degree. After this adjustment, the final second-order measurement model of service performance is as displayed in Table 26.

Table 26: Final Second-Order Structure of Service Performance

Second-Order Construct		N of Dimensions	Composite Reliability (CR)	Average Variance Extracted (AVE)
Service Performance		5	.85	.53
$\chi^2/df$	TLI	CFI	RMSEA	SRMR
2.1	93.3	94.6	.067	.063
Dimension				Factor Loading
Reliability				.79
Price Amount				.61
Price Transparency				.75
Interpersonal Skills				.70
Service Competence				.76

The final second-order measurement model of “Service Performance” performs significantly better than the initial one. Even the 95% confidence interval of the RMSEA ranges from .053 to .081, which is only .001 over the threshold and thus considered acceptable. In addition, all fit

indices meet or surpass their thresholds, and all model relationships are significant at  $p < .001$ , as displayed in Figure 4.

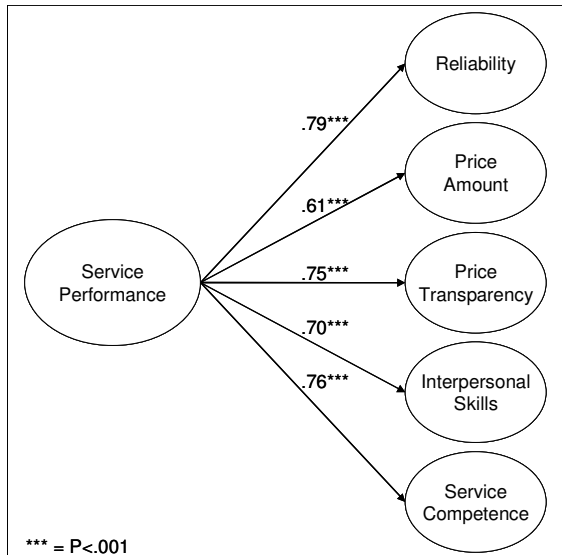


Figure 4: Final Second-Order Structure of Service Performance

### 7.1.4 Discussion

On the foundation of the preceding statistical considerations, this dissertation project presents its own reliable and valid B2B-SERVPERF scale, effectively answering the first research question:

#### **How can “Service Performance” in a B2B service context be measured?**

Based on the results, we can re-evaluate the initial assumptions from the beginning of the subchapter.

The first assumption proposed that a B2B service performance scale in a procurement context would be significantly different from the extant B2C scales from marketing contexts. This assumption can be confirmed as a new set of service performance dimensions emerges (reliability,



price amount, price transparency, interpersonal skills, service competence) and as other dimensions from extant research (geographical and market presence) offer little explanatory value.

The second assumption, that a perception-only measurement approach is sufficient to develop a reliable and valid scale for B2B Service Performance can also be confirmed. While a measurement approach based on difference scores (expectations minus perceptions) could conceivably perform better, this thesis approach was definitely more efficient and resulted in a functional measurement model.

The third assumption, that financial aspects would be important for B2B service performance perceptions, can definitely be confirmed as the initially proposed price dimension disaggregated into two relevant subcategories, the amount and the transparency of the price.

The fourth assumption, that one B2B SERVPERF scale could realistically measure the performance of a wide variety of service categories, can also be confirmed in that the developed scale performed adequately across a wide range of categories, from cleaning to consulting services.

In the next step this thesis presents the discussion of the empirical results of the first-order latent variables.

*Reliability* emerged as the service performance dimension with the highest factor loading. This finding is very much in line with the context of service procurement because the reliable provision of the service is a central issue of most research in the field. The empirical evaluation of this dissertation project proves that reliability as a single construct performs better than separate latent variables for reliability, responsiveness, and access. The final reliability latent variable describes the general notion of reliability and reliable access. Reliable technical resources and access apparently are not part of the reliability latent variable. Whether technical aspects have any relevance as part of service performance remains to be determined by future research.

*Geographical Presence* and *Market Presence* emerged as distinct latent variables after the initial geographical presence latent variable disaggregated into two separate variables. Although the two final latent variables display very suitable fit indices for their

first-order measurement models, they do not measure the second-order construct service performance. A possible explanation is that the geographical presence is considered a hygiene factor in a service procurement context: Only service providers who are able to provide the service geographically are considered in the tender. Thus, all possible providers are present at the relevant locations, and geographical presence provides no grounds for differentiation. Concerning market presence a similar argument can be made: As soon as a service provider can guarantee the required service capacity, market presence becomes irrelevant. Furthermore, the service provider's claim to be the market leader appears to have little effect on service perceptions.

*Price Amount* and *Price Transparency* are of particular interest. First, both display significant factor loadings on the service performance second-order construct. Interestingly, price transparency possesses a higher factor loading on service performance than price amount. This insight is incredibly interesting, as procurement's perception apparently is able to differentiate between high but justified prices and deceptively low prices. Considering the significant relevance of price aspects, especially older research has displayed cases of marketing myopia neglecting relevant financial aspects of service performance. Second, the price transparency construct is until now an almost unexplored aspect of service performance. This dissertation project recognizes and quantifies this relevant construct and provides a first approach to the measurement of price transparency, which should be further developed by future research. An interesting finding is that the items defined as "absence of hidden cost adders" performed adequately, possibly indicating a direction for the further development of this performance aspect.

*Interpersonal Skills* is an additional dimension of service performance with a sufficient factor loading. An interesting finding in this regard is that all aspects concerning courtesy, assurance, and empathy can be subsumed under one common latent variable that measures politeness, friendliness, and the consistency of contact persons. The successful introduction of the "consistency of contact persons" item based on practitioner inter-

views marks another adaptation of existing scales to the B2B service procurement context.

*Service Competence* is the service performance dimension with the second highest factor loading. This newly developed latent variable can be combined with the reliability latent variable (the dimension with the highest factor loading) to address the service provider's capability (service competence) and history (reliability) of successfully providing a specific service.

In the end we can conclude not only that this thesis second-order measurement model performs well statistically, but that it also addresses essential performance aspects of B2B services: The service provider must possess and display the capability, the skill, and the knowledge to provide a specific service (service competence). The provider must also exhibit a history of successful and satisfactory service provision (reliability) as precedent and proof of service competence. For the service provided, the price charged must be reasonable (price amount), but more importantly the price must be perceived as just, fair, and transparent ("price transparency). Furthermore, as a foundation of the exchange relationship, a possibly consistent contact person must act as a polite and friendly counterpart and partner of service procurement (interpersonal skills).

### 7.1.5 Research and Managerial Implications

The research implications of the developed "B2B SERVPERF" measurement scale are various.

First, this thesis is one of the few publications that theoretically grounds its development of a service performance measurement scale. The "ease of performance measurement" of the object of transaction described by Williamson (1991) is a key aspect of understanding exchange relationships and also relates to the performance outcomes of Game Theory considerations.

Second, this thesis research puts forward a specifically developed measurement framework that measures B2B service performance effectively across service categories. The

dimensions of the final second-order construct directly relate to the unique challenges of a B2B service transaction.

Third, this thesis abandons the extant marketing-centric approaches and develops a service performance construct that capture the price-performance implications of the object of transaction significantly better by including financial aspects.

Fourth, this thesis empirically confirms the assumption that service performance is a second-order construct and can effectively be modeled as such in state-of-the-art SEM software packages.

On the foundation of these findings, the developed “B2B SERVPERF” framework can provide a starting point for additional research, surpassing some of the limitations of the research at hand.

First, the B2B SERVPERF scale can be further adapted and developed (e.g., whether difference scores are an improvement). While the dimensions of this thesis already allow for an effective measurement, every scale can be subject of further optimization. The new insights provided by the addition of financial aspects in this thesis should encourage future researchers to test their own modifications to existing scales based on theory and practitioner interviews.

Second, the B2B SERVPERF scale can be applied to an international context of B2B service transactions. This dissertation project only addressed German speaking countries, which limits its international applicability to a certain degree. Thus, analogous to Barry et al. (2008), a cross-cultural examination of service performance measurement could be of scientific interest.

Third, while this dissertation project relied on procurement officers to develop its service performance scale, the B2B SERVPERF scale can and should be applied and tested with different respondents. In this context, the assessment of the exchange dyads between service procurement and the service provider suggests itself. Adding the service consumer in the enterprise to these considerations could promise even greater merit: The service per-

formance perceptions in the resulting service procurement triad could be assessed and compared (similar to Choi and Wu (2009)).

Fourth, this thesis assumption that performance dimensions and relationship aspects should be similar across service categories could be confirmed. On this foundation future research should not rely on limitations of service categories (e.g., KIBS) but should employ modeling techniques to manage category diversity.

Concerning the managerial implications, this dissertation project has created a first measurement framework that is also practitioner-friendly. Using only 15 easily answered questions, the performance of a B2B service can be measured effectively. This measurement framework is relevant from both procurement and marketing perspectives.

From the (to date, partially neglected) procurement perspective, this thesis's measurement framework provides an alternative to the extant marketing-centric "service quality" approaches. The possibility of measuring the object of transaction allows procurement officers to keep track of service performance over time. Procurement officers are able to poll the service consumers' service performance perceptions using a questionnaire developed on the foundation of the B2B SERVPERF scale. The results can be used to evaluate suppliers (Prahinski and Benton (2004), Carr and Pearson (1999)) and to effectively renegotiate contracts, focusing on areas where the service currently underperforms or where service levels have deteriorated over time. This way, declining service levels can even be addressed proactively.

From a marketing point of view, the B2B SERVPERF scale provides a customer's perspective. Understanding and embracing the proposed service dimensions can help service providers to develop a multi-faceted view of their service offering. The implications of price transparency are especially interesting: Apparently service procurement officers and service customers are able to detect deceptive pricing policies, which in turn significantly reduces their perception of service performance. Thus, service providers have a lot to gain by providing fair and transparent pricing. Furthermore, the "price amount" was not as significant an indicator of service performance as service providers might

have imagined, proving that procurement officers and customers apparently care more for a balanced mix of reliability, competence, and politeness provided for an adequate and transparent price than just for rock-bottom prices.

Considering that B2B services are one of the Top10 GDP contributors in the developed OECD economies (Leshner and Nordas (2006)), the practical implications of B2B SERVPERF have the potential to make B2B service transactions more measurable and transparent.

## 7.2 Relationship between Relationship Quality and Service Performance

This second subchapter deals with the antecedents, aspects, and outcomes of the buyer-supplier relationship (BSR). This section is key for the empirical analysis of the application of Transaction Cost Theory and Game Theory to the real-world context of the B2B service transaction and the BSR. To conduct the analysis this dissertation project first develops measurement models for the antecedents and aspects of the BSR and then tests the interrelations between the antecedents, aspects, and outcomes (B2B SERVPERF) in an AMOS SEM.

### 7.2.1 Research Question 2 and Hypotheses

Based on Transaction Cost Theory (Chapter 5), this dissertation has presented how the ongoing exchange in a BSR can constitute a safeguarded, hybrid form that falls between spot market and hierarchy forms. On the basis of Game Theory, we discussed the emergence of cooperation in a repeated games setting, contracting issues, and necessary player attributes. This dual theory approach enables this dissertation project to better assess relationship antecedents and aspects and their performance outcomes. On this theoretical foundation the second research question was formulated:

### **Does “Relationship Quality” have an impact on Service Performance?**

Based on the review of extant literature and on the implications of the two main theories, futuristic orientation and communication were identified as antecedents, and cooperation and trust as the aspects of relationship quality. The seven hypotheses put forward about the interrelations of these antecedents and aspects, as well as about the effect of the aspects on performance are tested in this subchapter. Trust as an aspect of BSR quality is of special interest in this context, in that it should either have a key function in an exchange relationship with boundedly rational actors or be negligible for interactions of perfectly rational actors.

## **7.2.2 Conceptualization and Operationalization of Measurement Model**

In the literature review (Chapter 3.2.2) the lack of a comprehensive operational definition (Huntley (2006)) and of a consensus regarding the operationalization of BSR quality (Burca et al. (2005)) are attested. Thus, this thesis develops comprehensive measurement models for the BSR's antecedents and aspects.

Concerning the BSR's elements, three different approaches to modeling BSR quality have been discussed. The first approach does not differentiate between antecedents and aspects: It models all BSR elements as first-order variables that are treated equally by the model. The second approach defines BSR quality as a second-order construct measured by the BSR elements as the dimensions. The third and most recent approach differentiates between antecedents, aspects, and outcomes. This approach is the foundation of the conceptualization and operationalization of the BSR quality in this thesis.

The conceptualization and operationalization again took place in three steps: (1) Identify antecedents and aspects of BSR quality, (2) create the item list for the questionnaire, and (3) optimize the measurement models by means of item purification.

The identification of antecedents and aspects of BSR quality was a difficult task because of the plethora of different constructs (Athanasopoulou (2006)) proposed in extant research. To focus on the most relevant BSR constructs, the following restrictions were imposed:

First, there are BSR antecedents and aspects not suited to the theoretical context of this thesis or the context of the B2B BSR.<sup>23</sup> These were omitted from further considerations.

Second, there are constructs that are not mutually exclusive from the final BSR antecedents and aspects of this thesis.<sup>24</sup> These constructs were often used to generate additional items.

Third, marketing-centric approaches in many cases contained constructs that reflected the notion of the BSR as a marketing tool.<sup>25</sup> These constructs were excluded, and al-

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<sup>23</sup> : For example: “Bonds” (Storbacka et al. (1994)) or “personal similarity of buyer and supplier (age, family situation, attractiveness, sex)” (Smith (1998)) from a psychological perspective are at odds with the company-level perspective of Transaction Cost Theory and with the perfectly rational actors from Game Theory. “Commitment” from a commitment-trust perspective (Coote et al. (2003)) would have required the addition of Commitment-Trust Theory diluting the clear theoretical focus of this dissertation. “Incentive structures” from a motivational perspective (Wathne and Heide (2004)) were omitted as they are at odds with the perfectly rational actors from Game Theory.

<sup>24</sup> For example: “Joint-action” (similar to cooperation) of Heide and John (1990), “adaptation” (similar to cooperation) of Hallen et al. (1991), and “information sharing” (similar to communication) of Maltz and Ellram (2000) or Hsu et al. (2008) were helpful in generating additional items.

<sup>25</sup> For example: “customer profitability,” “satisfaction” (Storbacka et al. (1994)), “repurchase intention,” and “recommendation intention” (Taylor and Baker (1994), Huntley (2006)) were excluded as they treat “service quality” as mere marketing tool not as the multi-faceted outcome of an exchange relationship.



though certain items from these constructs were considered, they were only usable to a very limited degree.

In the end, two antecedents (futuristic orientation and communication) and two aspects (cooperation and trust) were selected based on the theoretical foundations and the literature review of this thesis.

Concerning the measurement of BSR antecedents and aspects, there is a limited number of studies that employ difference scores: Harland (1996) measures the gap between expectations of BSR quality and perceptions of BSR quality and Gardner et al. (1994) compare the current relationship to an ideal relationship. Nonetheless, the majority of extant research employs perception scores, which is the direction this dissertation project takes as well. Additionally, a version of this dissertation's questionnaire using difference scores was described as unwieldy and widely rejected in the pre-test.

The creation of the item list for the questionnaire and the optimization of the measurement models are presented in the subsequent overview of the antecedents and aspects of BSR quality.

### 7.2.2.1 Futuristic Orientation

Futuristic orientation as an antecedent of the BSR is widely recognized by extant research on relationship quality, although this latent variable often goes by different names. Heide and Miner (1992) speak of "extendedness." Paulraj and Chen (2005), as well as Griffith et al. (2006), use "long-term orientation."

The effect of futuristic orientation on cooperation and on trust has been researched extensively (Heide and Miner (1992), Blancero and Ellram (1997), Paulraj and Chen (2005), Griffith et al. (2006)), leading to the first hypothesis of this thesis:

H1: The level of the futuristic orientation of a relationship is positively related to the intensity of cooperation within the relationship.

In addition to this, a futuristic orientation can allow trust to grow and evolve over time (Blancero and Ellram (1997)), leading to the second hypothesis of this thesis:

H2: The level of the futuristic orientation of a relationship is positively related to the level of trust within the relationship.

The items used for the measurement model of futuristic orientation were based on the work of Ellram and Hendrick (1995) and supplemented with items from Coote et al. (2003), Paulraj and Chen (2005), and Griffith et al. (2006). These items were in line with other research in this field (Heide and Miner (1992), Blancero and Ellram (1997)). On this foundation, the items shown in Table 27 were included in the questionnaire.

Table 27: Initial Items to Measure Futuristic Orientation

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Futuristic Orientation</b>	8	.83	.86	<b>.46</b>
Item	Item Text	Item-to-Total Correlation	Factor Loading	
FO_1	Our procurement relationship with this service provider is oriented towards future transactions.	.73	.80	
FO_2	The relationship with this service provider deserves our maximum effort to maintain.	.60	.71	
FO_3	We expect our relationship with this service provider to continue a long time.	.70	.78	
FO_4	We have high expectations of the long-term relationship.	.71	.79	
FO_5	We expect that the relationship with this service provider will be profitable over the long run.	.62	.74	
FO_6	Our written agreements with the service provider are ever-green/ongoing.	<b>.39</b>	<b>.41</b>	
FO_7	We work with this service provider to improve quality in the long run.	.65	.65	
FO_8	We view our service provider as an extension of our company.	<b>.35</b>	<b>.38</b>	

The initial version of the futuristic orientation latent variable displays few unsatisfactory values. The AVE is slightly below the threshold of .5, and two indicators display both unsatisfactory item-to-total correlations and factor loadings. These two indicators measured whether the agreements with the provider are evergreen (FO\_6) and whether the provider is perceived as an external extension of the buying company (FO\_8). These items apparently do not measure the futuristic orientation and were thus deleted. In the next step, three additional items (FO\_2,

FO\_4, FO\_7) were eliminated because of multicollinearity (based on modification indices), resulting in the final version of the latent variable, futuristic orientation.

Table 28: Final Items to Measure Futuristic Orientation

<b>Name of Latent Variable</b>	<b>N of Items</b>	<b>Cronbach's Alpha</b>	<b>Composite Reliability (CR)</b>	<b>Average Variance Extracted (AVE)</b>
<b>Futuristic Orientation</b>	3	.81	.82	.60
<b>Item</b>	<b>Item Text</b>		<b>Item-to-Total Correlation</b>	<b>Factor Loading</b>
FO_1	Our procurement relationship with this service provider is oriented towards future transactions.		.75	.80
FO_3	We expect our relationship with this service provider to continue a long time.		.70	.78
FO_5	We expect that the relationship with this service provider will be profitable over the long run.		.79	.74

The final version of the futuristic orientation latent variable displays very favorable values for all fit indices. The final items measure the long-term orientation and the expected long-term profitability (which is, in essence, very similar to the Game Theory notion of the “shadow of the future”).

#### 7.2.2.2 Communication

Communication is widely accepted as an antecedent of high-quality BSRs, and its role is the subject of a significant number of research publications (Dwyer et al. (1987), Heide and Miner (1992), Morgan and Hunt (1994), Blancero and Ellram (1997), Smith (1998), Vickery et al.

(2004), Prahinski and Benton (2004), Knemeyer and Murphy (2004), Paulraj and Chen (2005), Fynes et al. (2005b), Hsu et al. (2008)).

The effect of communication on cooperation (Heide and Miner (1992), Morgan and Hunt (1994), Vickery et al. (2004), Prahinski and Benton (2004), Fynes et al. (2005b)) and on trust (Anderson and Weitz (1989), Smith (1998), Knemeyer and Murphy (2004), Fynes et al. (2005b)) has been researched extensively, leading to the following hypotheses:

H3: The intensity of communication within a relationship is positively related to the intensity of cooperation within the relationship.

H4: The intensity of communication within a relationship is positively related to the level of trust within the relationship.

Items to measure communication were widely available because it is a prevalent concept in a large number of publications. Communication in a B2B service context encompasses a large number of facets, so a significant number of items was included in the questionnaire. The communication subtopics addressed range from personal communication, communication across hierarchy levels, and communication beyond the level contractually specified to communication concerning quality, results, demand predictions, and technical aspects. These items were adapted from the publications of Heide and Miner (1992), Ellram and Hendrick (1995), Blancero and Ellram (1997), and Stuart (1997). Although these publications might appear dated, a large number of other and more recent articles<sup>26</sup> uses these items successfully.

In addition there were three items addressing communication about the subcontractors used by the service provider (COM\_13, COM\_14, COM\_15). These items were added after the initial practitioner interviews, as were two items about software compatibility and data exchange

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<sup>26</sup> For example, Mohr and Spekman (1994), Krause and Ellram (1997), Carr and Pearson (1999), Coote et al. (2003), Paulraj and Chen (2005), Fynes et al. (2005a, 2005b), Griffith et al. (2006), Fynes et al. (2008), and Hsu et al. (2008) use very similar items.

(COM\_16, COM\_17). The latter stem from Ellram and Hendrick (1995) and Carr and Pearson (1999), where they displayed subpar factor loadings on the communication construct. The software items were included, nonetheless, to test them in a B2B service context. On this foundation, the items shown in Table 29 were included in the questionnaire.

Table 29: Initial Items to Measure Communication

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Communication</b>	17	.85	.86	<b>.28</b>
Item	Item Text	Item-to-Total Correlation	Factor Loading	
COM_1	Face-to-face planning and communication with the service provider are frequent.	.55	.68	
COM_2	Communication on important issues takes place on a high corporate level.	<b>.45</b>	.51	
COM_3	Communication on important issues takes place on many corporate levels.	<b>.39</b>	<b>.41</b>	
COM_4	We have joint planning committees / task forces on key issues together with the service provider.	.59	.60	
COM_5	We regularly provide this service provider with all relevant information required for capacity planning and service provision.	.62	.72	
COM_6	We share proprietary information with this service provider if it is relevant for the cooperation.	<b>.44</b>	.51	
COM_7	We constantly keep our service provider informed about changes that might affect him.	.50	.59	
COM_8	Exchange of information in this relationship takes place frequently and informally – not only according to pre-specified agreements.	.54	.64	
COM_9	We monitor only end results of the service provider's work.	<b>.10</b>	<b>.11</b>	

COM_10	We routinely advise the service provider of his service performance.	.50	.60
COM_11	We share demand forecasts with the service provider.	<b>.48</b>	.53
COM_12	We exchange technical information extensively with the service provider.	.54	.59
COM_13	The service provider discloses the extent and names of employed subcontractors.	<b>.49</b>	<b>.49</b>
COM_14	We understand the added value of the service provider and his subcontractors within the service value chain.	.53	.51
COM_15	We monitor the impact of commissioning former subcontractors as direct service providers and act accordingly.	<b>.46</b>	<b>.45</b>
COM_16	Our and the service provider's IT systems have computer-to-computer links.	<b>.41</b>	<b>.37</b>
COM_17	Our software is compatible with the service provider's systems.	<b>.39</b>	<b>.34</b>

As expected, this initial long list of indicators displayed unacceptable fit indices. However, it provides excellent material to develop a fitting communication construct for a B2B service context. The software exchange items (COM\_16, COM\_17) underperform, hinting at the fact that electronic data exchange is not a key aspect of communication in a B2B service BSR. The items concerning the communication about subcontractors (COM\_13, COM\_14, COM\_15) performed unsatisfactorily as items of the communication latent variable.<sup>27</sup> Both the software and the subcontractor items thus have been eliminated from the list. Of the remaining 12 indicators, 5 exhibit item-to-total correlations below the cut-off value and thus are also eliminated. The remaining seven items possess adequate fit values, but some show multicollinearity with other constructs and thus are eliminated based on modification indices. The final indicators for the communication latent variable are displayed in Table 30.

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<sup>27</sup> Nonetheless, treated as a separate construct, COM\_13, COM\_14, and COM\_15 do measure "subcontractor transparency," with decent values for the fit criteria (CR of .84 and AVE of .64).

Table 30: Final Items to Measure Communication

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Communication</b>	3	.76	.77	.53
Item	Item Text		Item-to-Total Correlation	Factor Loading
COM_5	We regularly provide this service provider with all relevant information required for capacity planning and service provision.		.62	.74
COM_7	We constantly keep our service provider informed about changes that might affect them.		.63	.77
COM_8	Exchange of information in this relationship takes place frequently and informally – not only according to prespecified agreements.		.56	.68

The final version of the latent variable communication has adequate values for all considered fit criteria, although a few values are not far above the desired thresholds. The final latent variable encompasses the provision of all relevant information for the service provider, the notification if changes occur, and the level of communication above and beyond the level agreed on in the contract.



### 7.2.2.3 Trust

Trust as an aspect of BSR quality is employed by a large number of studies consistently using the term trust for this latent variable, conveniently reducing all naming difficulties.

The model considers two main effects of trust. The first effect is that trust can enable and facilitate cooperation in an exchange relationship (Morgan and Hunt (1994) and Fynes et al. (2005b)), which is expressed by the following hypothesis:

H5: The level of trust within a relationship is positively related to the intensity of cooperation within the relationship.

The second effect is the direct performance effect of trust, which has been addressed by various studies (Knemeyer and Murphy (2004), Fynes et al. (2005a, 2005b)). Trust is researched as an effective supplement to incomplete contracts (Anderson and Weitz (1989)) or as a safeguard against uncertainty (Morgan and Hunt (1994)). These notions are captured in the last hypothesis:

H7: The level of trust within a relationship is positively related to the level of service performance delivered by the relationship.

The items used for the measurement model of trust were derived from the publications of Morgan and Hunt (1994), Roberts et al. (2003), Kaufmann and Carter (2006), Huntley (2006), and Gulati and Sytch (2007), as well as Barry et al. (2008). On this foundation, the items shown in Table 31 were included in the questionnaire.

Table 31: Initial Items to Measure Trust

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Trust</b>	8	.86	.88	<b>.48</b>
Item	Item Text	Item-to-Total Correlation	Factor Loading	
Trust_1	We trust the service provider at all times.	.69	.78	
Trust_2	The service provider is fair and honest in his actions towards us.	.75	.84	
Trust_3	We believe that the service provider always acts with our best interest in mind.	.73	.79	
Trust_4	We can count on this supplier to consider how their decisions and actions affect us in the future.	.67	.69	
Trust_5	We trust that confidential/proprietary information shared with this service provider will be kept strictly confidential.	.56	.60	
Trust_6	The service provider is genuinely concerned about our business success.	<b>.38</b>	<b>.39</b>	
Trust_7	We trust the information this supplier provides us.	.68	.73	
Trust_8	The service provider is honest about problems.	.52	.61	

While the fit criteria for the initial version of trust have a few flaws (AVE slightly below threshold and one underperforming indicator), overall they display an adequate performance. After eliminating the underperforming indicator and a further purification of the scale based on modification indices, the final version of the latent variable trust displays none of these shortcomings (see Table 32).

Table 32: Final Items to Measure Trust

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Trust</b>	3	.78	.79	.56
Item	Item Text		Item-to-Total Correlation	Factor Loading
Trust_1	We trust the service provider at all times.		.67	.80
Trust_3	We believe that the service provider always acts with our best interest in mind.		.64	.71
Trust_7	We trust the information this supplier provides us.		.59	.73

The final trust latent variable exhibits favorable values for all fit indices and encompasses overall trust: trust that the supplier acts in the best interest of the customer and trust in the data and information provided within the exchange relationship.

#### 7.2.2.4 Cooperation

Cooperation is recognized as a pivotal aspect of high-quality BSRs (Anderson (1994)). The Cooperation constructs are sometimes named differently, although they all express the same notion: Ellram and Krause (1994) name their cooperation construct “Partnering,” Griffith et al. (2006) use the term “Relational Behaviour,” and Gulati and Sytch (2007) speak of “Joint Action.” This dissertation follows Fynes et al. (2005a) and Huntley (2006) and uses the term “cooperation.”

Superior BSR outcomes achieved by means of cooperation are the subject of considerable extant research (e.g., Ellram and Krause (1994), Prahinski and Benton (2004), Fynes et al.

(2005a), Huntley (2006), Griffith et al. (2006), and Gulati and Sytch (2007)), on which the sixth hypothesis of this thesis is based:

H6: The intensity of cooperation within a relationship is positively related to the level of service performance delivered by the relationship.

The items used for the measurement model of communication were chosen based on the publications by Ellram and Hendrick (1995), Prahinski and Benton (2004), and Huntley (2006), as well as Gulati and Sytch (2007). Apart from these sources the selected items have been employed in a considerable number of other articles (Heide and Miner (1992), Stuart (1997), Griffith et al. (2006)). Again, the existing items express two slightly different notions of cooperation: “joint action” (general cooperation issues) and “joint problem solving” (ability to cooperatively deal with problems). The first five items (Coop\_1 to Coop\_5) correspond to the former, the last five items (Coop\_6 to Coop\_10) to the latter. Based on the fit indices we determine whether both notions load onto one common latent variable or two variables are more appropriate. On this foundation, the items shown in Table 33 were included in the questionnaire.

Table 33: Initial Items to Measure Cooperation

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Cooperation</b>	10	.83	.85	<b>.36</b>
Item	Item Text	Item-to-Total Correlation	Factor Loading	
Coop_1	We work together with the service provider to achieve our mutual goals.	.55	.58	
Coop_2	We are very loyal to this supplier/buyer.	.51	.56	
Coop_3	In this procurement relationship we strive for continuous improvement.	<b>.42</b>	<b>.47</b>	
Coop_4	Our relationship with the service provider is of value for both parties: it's a win/win partnership.	.67	.73	
Coop_5	The service provider does not take advantage of a strong bargaining position.	<b>.44</b>	.51	
Coop_6	In the relationship with the service provider there is a high willingness to handle exceptions by negotiation.	.57	.65	
Coop_7	The service provider displays high willingness to help us in difficult situations.	.60	.68	
Coop_8	Our willingness to help the service provider in difficult situations is high.	.56	.60	
Coop_9	Problems that arise in the course of the relationship are solved by both parties in a joint effort.	.68	.75	
Coop_10	Before switching to another provider, we give the current service provider the opportunity to make a counter offer.	<b>.32</b>	<b>.37</b>	

The initial version of cooperation meets only some of the fit criteria. To determine the source of the unsatisfactory fit, this dissertation first assesses whether a disaggregation into two latent variables would bring an improvement and then continues with the item purification. For the first step, the joint action and joint problem solving indicators are organized under two distinct

latent variables. Even the optimized (three indicators each) versions of the joint action and joint problem solving variables exhibit insufficient AVEs, of .44 and .47 respectively. They also display a squared correlation of .85, which would violate the Fornell/Larcker Criterion by a wide margin. Thus, we can conclude that a single latent variable for cooperation is the better solution. After eliminating items based on item-to-total correlations, factor loadings, and modification indices, three items remain, as shown in Table 34.

Table 34: Final Items to Measure Cooperation

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Cooperation</b>	3	.73	.74	.50
Item	Item Text		Item-to-Total Correlation	Factor Loading
Coop_4	Our relationship with the service provider is of value for both parties: it's a win/win partnership.		.57	.71
Coop_6	In the relationship with the service provider there is a high willingness to handle exceptions by negotiation.		.52	.65
Coop_9	Problems that arise in the course of the relationship are solved by both parties in a joint effort.		.60	.75

Although the final measurement model displays sufficient values for all fit criteria, the achieved values are universally just slightly above the thresholds. The final latent variable for cooperation consists of the notions of a mutually beneficial cooperation, of mutual willingness to handle exceptions by means of negotiations, and of joint problem solving.

### 7.2.3 Statistical Analysis and Results

Before discussing the interrelations of the BSR’s antecedents, aspects, and outcomes in the structural model, the discriminant validity of the proposed two antecedents and two aspects is discussed. To this end, the Fornell/Larcker Criterion is employed.

Table 35: Fornell/Larcker Criterion for BSR Quality

		Futuristic Orientation	Communication	Cooperation	Trust
	<b>AVE</b>	<b>.60</b>	<b>.53</b>	<b>.50</b>	<b>.56</b>
Futuristic Orientation	<b>.60</b>	1			
Communication	<b>.53</b>	.08	1		
Cooperation	<b>.50</b>	.32	.30	1	
Trust	<b>.56</b>	.13	.13	<b>.58</b>	1
Squared Correlations					

As presented in Table 35, the Fornell/Larcker Criterion is fulfilled for each of the final latent variables except trust and cooperation: The squared correlation of the two latent variables is greater than the AVEs of both variables. Thus, the Fornell/Larcker Criterion indicates that the two constructs, trust and cooperation, might not be distinct but are one construct. When looking at the items of both constructs, this warning can be dispelled: Trust addresses the belief in the actions and data of the provider, and to a certain degree the absence of opportunism. Cooperation addresses mutually beneficial interactions, as well as the joint problem solving abilities. Concerning the content, the two latent variables are distinct. In order to determine statistically whether the two constructs are distinct, an alternative model in which all six items of trust and cooperation loaded onto one single construct was tested. This alternative model displayed over-

all worse fit than the model with trust and cooperation.<sup>28</sup> Thus, based both on content discussion and model results, we can conclude that the solution with two distinct constructs for trust and cooperation is superior to a one construct solution in accordance with accepted modeling practice (Unterreitmeier and Schwinghammer (2004)). On this foundation, this dissertation project can continue with the development of the structural model and the test of the hypotheses, both of which are presented in the next subchapter.

#### 7.2.4 Structural Model Estimation and Hypotheses Testing

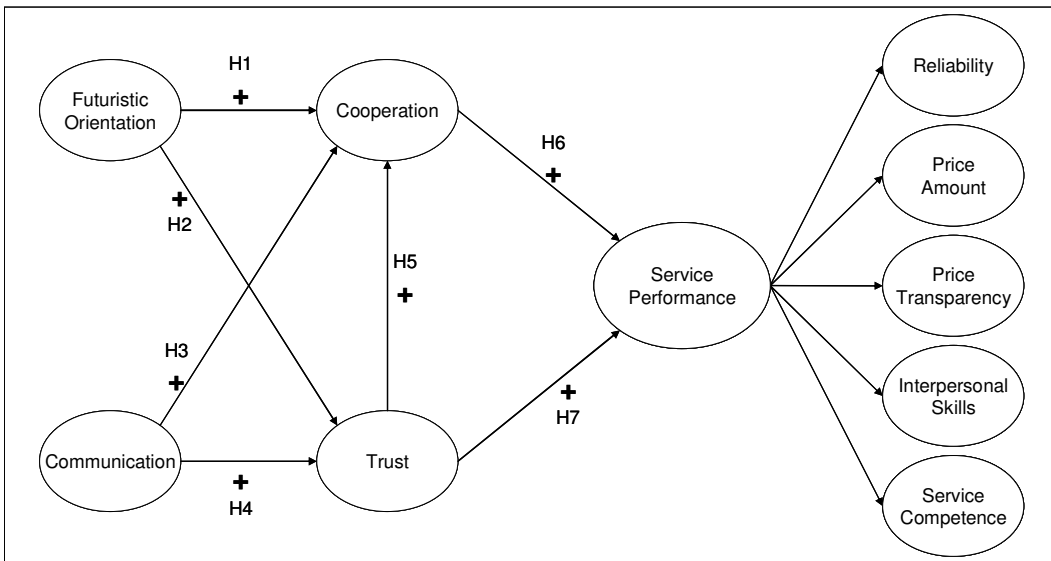
Based on the developed hypotheses, a visualization of the proposed interrelations between the constructs measuring the BSR's antecedents, aspects, and outcomes of this thesis is possible. The proposed interrelations are displayed in Figure 5. Simply put, the antecedents each have a positive effect on both aspects. Both aspects have a positive effect on the performance, and trust has a positive effect on cooperation.

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<sup>28</sup> In comparison with the final model results with trust and cooperation (Table 36), the single construct model displayed worse  $\chi^2/df$  (1.8), worse TLI (.907), worse CFI (.917), worse RMSEA (.057), and worse SRMR (.066)



Figure 5: Proposed Hypotheses



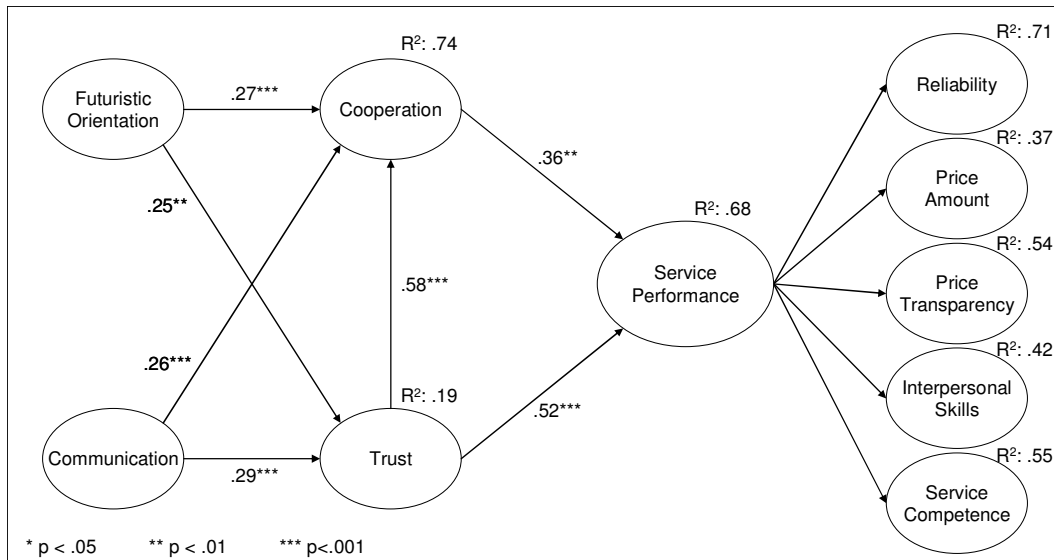
Using the latent variables developed in the previous subchapter and the second-order measurement model developed for service performance, these interrelations were modeled as a structural model using the AMOS software package. The resulting overall model (consisting of all constructs displayed in Figure 5) possesses an excellent fit for a model with nine constructs and a sample size of 245 (cf. Hair et al. (2006)).

Table 36: Antecedents, Aspects, and Outcomes of the BSR: Fit Criteria

$\chi^2/df$	TLI	CFI	RMSEA	SRMR
1.6	.926	.934	.051	.063

All relevant fit indices (displayed in Table 36) are significantly above the thresholds, and even the 95% confidence interval for the RMSEA ranges from .043 to .059; thus, even the upper boundary remains well below the target of .08. All relationships in the model except two are significant at  $p < .001$ , as shown in Figure 6. The two path coefficients with a lower significance level are still significant at .002 (Futuristic Orientation → Trust) and .003 (Cooperation → Service Performance).

Figure 6: Antecedents, Aspects, and Outcomes of the BSR: Path Coefficients and Significance Levels



On the foundation of these results all seven hypotheses can be confirmed (Table 37) and the total performance effects of the antecedents and aspects of the BSSR can be calculated (Table 38).

Table 37: Antecedents, Aspects, and Outcomes of the BSR: Hypotheses

Label	Exogenous Variable	Endogenous Variable	Expected Relationship	Empirical Result	
H1	Futuristic Orientation	Cooperation	+	.27***	✓
H2	Futuristic Orientation	Trust	+	.25**	✓
H3	Communication	Cooperation	+	.26***	✓
H4	Communication	Trust	+	.29***	✓
H5	Trust	Cooperation	+	.58***	✓
H6	Cooperation	Service Performance	+	.36**	✓
H7	Trust	Service Performance	+	.52***	✓
* p < .05		** p < .01		*** p < .001	

Table 38: Antecedents, Aspects, and Outcomes of the BSR: Total Effects

Exogenous Variable	Endogenous Variable	Empirical Result
Futuristic Orientation	Service Performance	.28
Communication	Service Performance	.30
Cooperation	Service Performance	.36
Trust	Service Performance	.73

The assessment of the total effects (cf. Table 38) shows that while all relationship antecedents and aspects have significant and positive performance effect, the effect of trust stands out among the antecedents and aspects. The role of trust within the structural model indicates that Transaction Cost Theory's rationality assumption describes the real world context of the B2B service procurement relationship better than the rationality assumption of Game Theory.

### 7.2.5 Discussion

On the foundation of a set of reliable and valid latent variables and a well-fitting SEM, this dissertation project can effectively answer its second research question:

#### **Does “Relationship Quality” have an impact on Service Performance?**

Based on the results, we can re-evaluate the initial assumptions from the beginning of the subchapter.

The first assumption refers to the structure of the latent variables defining the BSR, assuming a structure of antecedents (futuristic orientation and communication) and aspects (trust and cooperation), with the antecedents having an effect on the aspects, which then influence the performance outcomes. This assumption is confirmed, as the antecedents-aspects-outcomes structure performed more than sufficiently in the structural model: The antecedents each have a significant and positive effect on both aspects of BSR quality (H1-H4). Although additional antecedents and aspects certainly do exist, this thesis can—based on its theoretical foundation and context—confirm that futuristic orientation and communication are among the antecedents and that trust and cooperation are among the aspects.

In the second assumption, a BSR can act as a safeguarded, hybrid form between spot market and hierarchy forms and in which cooperation can emerge due to repeated interaction and the “shadow of the future.” It is also assumed that this effectively increases transactional performance. This can be confirmed in that both aspects of BSR quality have a significant and positive

effect on service performance (H5 and H7), effectively answering the second research question with “Yes.”

The third assumption is that among the BSR aspects, trust fosters the emergence of cooperation. Based on the SEM this assumption can be confirmed because trust has a significant and positive effect on cooperation (H6).

Also confirmed is the fourth assumption: that a perception-only measurement approach is adequate to reliably and validly measure the BSR’s antecedents and aspects. Note again that this confirmation only proves that perception-only measurement works adequately well, not that it outperforms difference scores.

The fifth assumption, that the structural model describing the interrelations between the antecedents, aspects, and outcomes of the BSR could work equally well for a wide variety of service categories, is confirmed; the developed model performs well across a wide range of categories. The third research question further explores whether significant differences between categories exist.

As a next step this thesis presents the discussion of the empirical results of the first-order latent variables.

*Futuristic Orientation* is confirmed as an antecedent of BSR quality. The final indicators of futuristic orientation convey the notions of long-term orientation and expected long-term profitability of the exchange relationship. The latter is of particular interest because this indicator relates very directly to the notion of the “shadow of the future.” Thus, the implications of Transaction Cost Theory and Game Theory concerning futuristic orientation can be applied to a real world context.

*Communication* is also confirmed as one of the BSR’s antecedents. Its final indicators convey the exchange of relevant information beyond the contractually agreed upon level and especially if changes occur. The indications of Transaction Cost Theory and Game Theory can thus be applied to the real world context of BSRs.

*Cooperation* is confirmed as one of the aspects of BSR quality. The level of cooperation in a BSR is enhanced by the futuristic orientation, the communication, and the Trust present in the relationship, and it has a direct effect on the performance outcomes of the relationship. The final cooperation indicators encompass elements expressing both joint action and joint problem solving, which do not disaggregate into separate constructs. The items describe a mutually beneficial cooperation in which problems are solved jointly and in which exceptions do not end the cooperation but are handled by means of negotiation. The assumptions of Transaction Cost Theory and Game Theory thus hold true in a real world context: Cooperation can help the partners involved in a BSR to avoid inefficient equilibria and to achieve superior outcomes.

*Trust* can be distinctly confirmed as an aspect of BSR quality that not only has a direct positive effect on the performance outcomes of the relationship but also facilitates cooperation and thus further positively affects performance. The final indicators for trust describe a BSR in which partners act in each other's interest and believe in the data and information exchanged. Trust is only based on Transaction Cost Theory and allows insights into the real-world applicability of the two employed theories' rationality assumptions. In a Game Theory scenario, with perfectly rational actors, trust would be meaningless for the BSR. In this thesis' structural model the opposite is the case. In line with Schelling (1984) we can thus conclude that the assumption of perfect rationality is not perfectly suited to describe and capture real-world phenomena. But perfect rationality remains a very suitable assumption to model interactions and decision situations.

In the end we can conclude that the structural model capturing the interrelations of the BSR's antecedents, aspects, and outcomes not only performs well statistically, but also provides key insights into the nature of BSRs in general and into a B2B service context specifically. A BSR can only grow and evolve if the parties involved expect the relationship to continue and if they expect a long-term beneficial outcome very much in line with Game Theory's "shadow of the future" (futuristic orientation). In addition, because the BSR needs to grow and develop, the exchange of information is a necessity—especially a casual exchange of knowledge beyond the

negotiated levels, as well as immediate alerts to the other party if changes occur (communication). On the bases of a long-term orientation and the exchange of information in the relationship, high-quality BSRs can develop. The actual quality of the BSR is determined by two aspects: the level of trust between the involved parties and the actual cooperation achieved by the exchange partners. In this context, it has to be noted that the presence of trust greatly facilitates the emergence of cooperative behavior. Finally, in line with the two main theories applied to this context, a high-quality relationship does allow the parties involved to jointly reap superior benefits.

### 7.2.6 Research and Managerial Implications

The research implications of the assessment of the BSR's Antecedents, Aspects, and Outcomes and their interrelations are numerous.

First, this dissertation is in line with the more recent but rare approaches that employ more than one theory lens to assess the phenomena of the BSR. An application of both Transaction Cost Theory and Game Theory to the context of the BSR for B2B services allows an exhaustive assessment of the antecedents, aspects, and outcomes of the BSR and even enables this thesis to further the understanding of the theories' basic assumptions (i.e., rationality).

Second, selecting the service transaction as the unit of analysis (the BSR is the unit of analysis in most extant research) enables this dissertation to look beyond the BSR's antecedents and aspects themselves and to consider the performance outcomes of the BSR.

Third, this dissertation provides one of the first empirically based frameworks for the BSR's antecedents, aspects, and outcomes. The selected antecedents and aspects are all measured with reliable and valid latent variables. Their interrelations and their effect on the performance outcomes are presented in a well-fitting SEM. On this foundation this thesis can prove a significant and positive effect of the BSR on service performance.

Fourth, this dissertation is, to the knowledge of the author, the first large-scale empirical assessment of BSRs in a B2B service procurement context. To date, most extant approaches neglect this perspective in favor of a marketing centric view. By doing so, this thesis can move away from treating the BSR as a marketing tool. Thus, the BSR can be addressed as a safeguarded hybrid form between market and hierarchy and as an efficient governance mechanism for service transactions.

Fifth, the structural model of this thesis captures the phenomena of the BSR across different service categories. The selected antecedents and aspects of the BSR capture common elements of all B2B service transactions. Differences are addressed in answering the third research question of this thesis.

On the foundation of these findings this dissertation project can identify suitable areas for additional research, surpassing some of the limitations of the research at hand.

First, this thesis can encourage the use of dual theory lenses and the transaction as the unit of analysis for future BSR research. Dual or eclectic theory lenses can provide new perspectives and enable the researcher to complement one theory with another. Transactions as the unit of analysis broaden the scope of BSR research by including governance considerations or performance outcomes.

Second, the framework of the antecedents and aspects of BSR quality should be further tested and developed by future research. Although the selected antecedents and aspects provide numerous insights into BSR phenomena, there is a wide range of additional parameters (e.g. commitment) yet unexplored in this context (cf. Chapter 4).

Third, an international and cross-cultural application of this dissertation's findings would be of scientific merit. While one can assume that BSRs have a positive effect on performance in almost all contexts, there are bound to be differences which this dissertation could not address.

Fourth, a dyadic empirical assessment of the BSR and its performance effects does not exist to date. And although researchers like Kalwani and Narayandas (1995) imply that



the development of BSRs has positive effects for both parties involved, to date this apparent fact has not been proven by means of a large-scale survey.

Fifth, this thesis's assumption that the BSR's antecedents, aspects, and outcomes are similar across service categories could be confirmed. Similar to the insight from the first research question, this finding should encourage future researchers to avoid limiting their research focus to a narrow selection of service categories.

Concerning the managerial implications, this dissertation project proves the importance of professional service procurement and the possibility of achieving superior financial and non-financial performance by developing high-quality BSRs. A long-term orientation of the relationship and frequent, relevant communication with the service provider are important to increase relationship quality. Cooperation within the BSR is the first step toward superior performance outcomes. However, the strongest and yet most elusive factor for increased performance is trust.

This insight helps understand that basing procurement decisions on "price only" has to be weighed against the established cooperation and trust with the current provider. Game Theory offers a hint as to how this area of conflict can be avoided: A credible threat is equally potent as the use of force. Applied to a service sourcing context, the threat of "bringing in and developing a second provider" could credibly convince an incumbent provider to deliver optimal service performance without having to sever the relationship.

These results reinforce the growing strategic importance of service procurement in companies: In the aftermath of an outsourcing decision, procurement's relationship to the service provider is a key factor for the continued economic success of the outsourcing decision. Without the safeguards provided by service procurement and its supplier relationships, the loss of internal competence, avoidable dependency on the supplier, and sliding performance are inevitable. Thus, service procurement is a guarantor of continued outsourcing success.

## 7.3 Investigation of Moderating Effects

The investigation of moderating effects is of great importance for this thesis for several reasons. First, the moderators of complexity, dynamics, and the BATNA of buyer and supplier stem from the dual theory perspective of this thesis. Second, moderation offers the possibility of answering the first and second research questions for all service categories and deriving category-specific insights and recommendations based on the moderation. Third, covering the moderating effects of especially the BATNA ensures that the model interrelations of the second research question are not spurious, with the BATNA being the actual factor.

### 7.3.1 Research Question 3

To explore these possible moderating effects, we formulated the third research question of this thesis:

**Do Moderating Factors exist that influence the impact of Relationship Quality on Service Performance?**

Because little research exists on these issues and the possible moderating effects can only be broadly assumed based on the theoretical foundation, this research question is exploratory in nature. Both the moderating and the direct effects of the four moderators are tested for all seven model relationships proposed in the hypotheses.

### 7.3.2 Conceptualization and Operationalization of Measurement Model

Moderation effects are generally rarely found in extant research and in publications concerned with the BSR. The studies that do consider moderation effects tend to consider complexity and

dynamics (e.g., Dahlstrom et al. (1996)) but, to the knowledge of the author, never the BATNA. In addition, BATNAs are rarely ever part of the model and tend to be addressed via multi-group effects. We do not repeat these shortcomings in this thesis, instead addressing moderation of complexity, dynamics, and BATNAs within the structural model.

The conceptualization and operationalization again took place in three steps: identifying the relevant moderating factors, creating item lists for the questionnaire, and optimizing the measurement models.

Because of the scarcity of moderation in extant research, this thesis chose its moderators based on the two main theories and on the real-world context. The creation of the item list for the questionnaire and the optimization of the measurement models are presented in the subsequent overview of the moderating factors.

### 7.3.2.1 Complexity

Complexity is employed by most studies using the term, “complexity” (Kaufmann (1993), Lamming et al. (2000), Kaufmann and Carter (2006), Gulati and Sytch (2007)), although a few speak of “complex environments” (Dahlstrom et al. (1996)). This dissertation follows the more numerous and more recent publications and uses the term “complexity.”

In this dissertation project, complexity is part of the Transaction Cost Theory considerations. In combination with “dynamics” it represents “uncertainty.” In uncertain environments, the safeguards provided by the BSR could become even more valuable, increasing the performance effect of BSR quality. From a Game Theory perspective complexity is irrelevant because perfectly rational actors can deal with any presenting level of complexity.

Based on items from Kaufmann (1993), Kaufmann and Carter (2006), and Gulati and Sytch (2007), as well as on the initial interviews, the items shown in Table 39 were included in the questionnaire.

Table 39: Initial Items to Measure Complexity

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Complexity</b>	10	.86	.86	<b>.39</b>
Item	Item Text	Item-to-Total Correlation	Factor Loading	
CX_1	Regarding the purchased service: The service is complex. Its processes are not easily describable.	.57	.65	
CX_2	The service category faces significant price reductions each year.	.51	.54	
CX_3	The service category faces significant increases in quality each year.	.58	.59	
CX_4	The service category faces significant technological or procedural progress each year.	.63	.65	
CX_5	The service category faces significant decreases to lead and development times each year.	.59	.61	
CX_6	The service category faces an increasing pressure for even more precise on time delivery each year.	.55	.57	
CX_7	The service provided is very complex in relation to other services that we buy.	.60	.69	
CX_8	The service provided consists of a large number of service components.	.64	.71	
CX_9	The service provided consists of very diverse service components.	.53	.61	
CX_10	The service provided consists of very interdependent service components.	.50	.57	

While the initial indicators for the complexity latent variable display item-to-total correlations and factor loadings slightly above the thresholds, the AVE is still below the cut-off value. To remedy this, both underperforming items and others with high modification indices were deleted, resulting in the final version of the latent variable, complexity.

Table 40: Final Items to Measure Complexity

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Complexity</b>	3	.78	.80	.59
Item	Item Text		Item-to-Total Correlation	Factor Loading
CX_7	The service provided is very complex in relation to other services that we buy.		.53	.60
CX_8	The service provided consists of a large number of service components.		.76	.93
CX_9	The service provided consists of very diverse service components.		.61	.73

The final version of the complexity latent variable exhibits satisfactory values for all fit criteria. The three remaining indicators measure the comparative complexity of the service and the number and diversity of service components.

### 7.3.2.2 Dynamics

The notion of “dynamics” goes by many names in extant research. Terms used include “volatile environments” (Dahlstrom et al. (1996)), a high “degree of innovation” (Lamming et al. (2000)), and “technological turbulence” (Fynes et al. (2005a)). This dissertation uses the term “dynamics” because its meaning is less related to a production context.

In this dissertation project, dynamics are part of the Transaction Cost Theory considerations. Again, in combination with complexity, it represents “uncertainty.” In uncertain environments, the safeguards provided by the BSR could become even more valuable, increasing the performance effect of BSR quality. From a Game Theory perspective dynamics is irrelevant because

perfectly rational actors can deal with any presenting level of dynamism. If actors are boundedly rational (as is suggested by the role of trust), dynamics could discount the “shadow of the future” and reduce the positive effect of the related antecedent (futuristic orientation).

Based on items from Kaufmann (1993), Kaufmann and Carter (2006), and Fynes et al. (2005a), the items shown in Table 41 were included in the questionnaire.

Table 41: Initial Items to Measure Dynamics

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>Dynamics</b>	5	.80	.80	<b>.46</b>
Item	Item Text		Item-to-Total Correlation	Factor Loading
DY_1	The service's characteristics change frequently.		.53	.50
DY_2	If the service requirements change, they change substantially.		.53	<b>.49</b>
DY_3	Service demand fluctuations are frequent.		.63	.71
DY_4	The required service capacity is difficult to predict.		.65	.84
DY_5	It is very difficult to forecast how the provided service will change in 3 to 5 years.		.60	.76

The initial measurement model for dynamics displays acceptable fit, although the AVE and one factor loading are below the cut-off values. With the elimination of two underperforming indicators, the final version (cf. Table 42) displays significantly more favorable values for all fit criteria.

Table 42: Final Items to Measure Dynamics

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Dynamics	3	.82	.83	.62
Item	Item Text		Item-to-Total Correlation	Factor Loading
DY_3	Service demand fluctuations are frequent.		.62	.68
DY_4	The required service capacity is difficult to predict.		.75	.88
DY_5	It is very difficult to forecast how the provided service will change in 3 to 5 years.		.67	.78

The final indicators for the dynamics latent variable perform more than adequately across all fit indices and measure the frequency of changes to the service, the difficulty to predict the required service capacity, and the problems of predicting service developments on a three- to five-year time horizon.

### 7.3.2.3 BATNA of the Buyer

The BATNAs of the buyer and supplier alike are an expression of the ease with which one party can find a replacement for the other. Similar constructs are termed “power” (Dwyer et al. (1987)), “buyer / supplier dependence” (Heide (1994)), “bargaining power” (Dowlatshahi (1999)), “influence of the focal firm” (Harland et al. (2001)), and “competitive environment” (Fynes et al. (2005a)).

In this thesis, the BATNAs are based on Transaction Cost Theory and Game Theory. In Transaction Cost Theory “asset specificity” relates to the notion of BATNA. A high BATNA for one

party involved in the transaction means that this party experiences low asset specificity and can switch to a new partner with ease. As the asset specificity of a transaction sinks lower, the alternative of a spot market transaction becomes more attractive than a transaction safeguarded by the BSR. In Game Theory the high BATNA of a party signifies that this party is able to abandon a multi-round game prematurely. In any case, high BATNAs could reduce the effects of the BSR.

Based on items from Heide and Miner (1992), Kaufmann (2002), and Gulati and Sytch (2007), the initial selection of indicators measuring the BATNA of the buyer (cf. Table 43) was composed. Similar items were employed by Heide (1994) and Stuart (1997). On this foundation, the items shown in Table 43 were included in the questionnaire.



Table 43: Initial Items to Measure the BATNA of the Buyer

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>BATNA of the Buyer</b>	6	.84	.84	<b>.48</b>
Item	Item Text		Item-to-Total Correlation	Factor Loading
BBuy_1	The service is easily substitutable.		.60	.61
BBuy_2	Other service providers can provide the full required capacity.		.50	<b>.44</b>
BBuy_3	Multiple competing providers exist for this service category.		<b>.49</b>	<b>.43</b>
BBuy_4	Our internal processes would only be minimally affected by a provider change.		.71	.83
BBuy_5	After changing service providers we require only minimal time until satisfactory performance could be expected from a new supplier.		.73	.88
BBuy_6	We are able to switch to an alternative supplier on short notice without problems.		.72	.83

The initial version of the latent variable, BATNA of the buyer, still possesses a few underperforming indicators and an AVE below the threshold. In a first step we eliminated the two underperforming indicators, and in a second step eliminated another indicator based on factor loadings, thus leading to the final version of the latent variable (see Table 44).

Table 44: Final Items to Measure the BATNA of the Buyer

<b>Name of Latent Variable</b>	<b>N of Items</b>	<b>Cronbach's Alpha</b>	<b>Composite Reliability (CR)</b>	<b>Average Variance Extracted (AVE)</b>
<b>BATNA of the Buyer</b>	6	.89	.89	.73
<b>Item</b>	<b>Item Text</b>		<b>Item-to-Total Correlation</b>	<b>Factor Loading</b>
BBuy_4	Our internal processes would only be minimally affected by a provider change.		.77	.83
BBuy_5	After changing service providers we require only minimal time until satisfactory performance could be expected from a new supplier.		.82	.91
BBuy_6	We are able to switch to an alternative supplier on short notice without problems.		.77	.82

The final version of the BATNA of the buyer latent variable displays excellent fit criteria. The final items capture the essence of the BATNA definition of this thesis: the ease of substituting the current exchange partner. The three items address the disruption of business processes and the time to achieve sufficient service quality after changing the supplier, as well as the possibility of changing suppliers on short notice.

#### 7.3.2.4 BATNA of the Supplier

As the BATNA of the supplier shares the naming issues and theoretical background with the BATNA of the buyer, we do not repeat them in detail here. For the discussion see Chapter 7.3.2.3.

Based on items from Heide and Miner (1992), Kaufmann (2002), Krause and Scannell (2002), and Wathne and Heide (2004), the initial selection of indicators measuring the BATNA of the

supplier (cf. Table 45) was composed. Similar items were used by Heide (1994) and Stuart (1997). On this foundation, the items shown in Table 45 were included in the questionnaire.

Table 45: Initial Items to Measure the BATNA of the Supplier

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>BATNA of the Supplier</b>	6	.73	.81	<b>.45</b>
Item	Item Text	Item-to-Total Correlation	Factor Loading	
BSup_1	If the service provider lost our business, he could compensate the lost volume with other buyers.	.58	.75	
BSup_2	If the service provider lost our business, he would need little time to establish a satisfactory relationship with other buyers.	.62	.79	
BSup_3	If the service provider lost our business, the loss of volume would be without negative consequences for his processes.	.65	.73	
BSup_4	If the service provider lost our business, the loss of volume would be without negative consequences for his financial situation.	.70	.80	
BSup_5	If the service provider lost our business, he would not be required to write off substantial investments.	<b>.48</b>	.58	
BSup_6	The service provider is aware that he is the only suitable provider for our company.	<b>.06</b>	<b>.06</b>	

The initial version of the latent variable, BATNA of the supplier, exhibits two underperforming indicators and an AVE below the threshold. After eliminating the two underperforming indicators and an additional indicator based on factor loadings, the final version of the latent variable emerges (see Table 46).

Table 46: Final Items to Measure the BATNA of the Supplier

Name of Latent Variable	N of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
<b>BATNA of the Supplier</b>	3	.83	.83	.62
Item	Item Text		Item-to-Total Correlation	Factor Loading
BSup_1	If the service provider lost our business, he could compensate the lost volume with other buyers.		.69	.79
BSup_2	If the service provider lost our business, he would need little time to establish a satisfactory relationship with other buyers.		.73	.86
BSup_4	If the service provider lost our business, the loss of volume would be without negative consequences for his financial situation.		.64	.71

The final version of the latent variable, BATNA of the supplier, possesses adequate fit of the measurement model. The final items measure the lack of financial consequences for the supplier in losing the buying company as a customer, as well as the time the supplier would need to build an exchange relationship with a new service consumer.

### 7.3.3 Statistical Analysis and Results

Before beginning with the assessment of the moderation effects, the Fornell/Larcker Criterion is used to assess the discriminant validity of the four moderators.

Table 47: Fornell/Larcker Criterion for Moderators

		Complexity	Dynamics	BATNA Buyer	BATNA Supplier
	<b>AVE</b>	<b>.59</b>	<b>.62</b>	<b>.73</b>	<b>.62</b>
<b>Complexity</b>	<b>.59</b>	1			
<b>Dynamics</b>	<b>.62</b>	.08	1		
<b>BATNA Buyer</b>	<b>.73</b>	.01	.01	1	
<b>BATNA Supplier</b>	<b>.62</b>	.01	.00	.10	1
Squared Correlations					

The AVEs and squared correlations in Table 47 demonstrate that the Fornell/Larcker Criterion is fulfilled for each of the final latent variables by a wide margin. Thus, the assessment of moderating effects in the model can proceed.

### 7.3.4 Structural Model Estimation of Moderation

Based on the approach of Little et al. (2006) described in Chapter 6.3.5, one moderation assessment for each hypothesized model relationship with each of the four moderators was calculated in AMOS. Thus, 28 moderation assessments were calculated, and of these 28, a significant moderation effect emerged in 8 cases. For reasons of clarity, only these significant moderating effects are displayed in Table 48.

The first moderator considered is complexity.

Complexity has a positive moderating effect of .10 on the relationship between trust and service performance (i.e., the interaction variable based on trust and complexity has an effect on service performance). Although this effect can only be confirmed at a significance level of  $p=.06$ , the result means that the performance effect of trust is increased in highly complex environments.

From a Transaction Cost Theory perspective, greater complexity means greater uncertainty, which in turn increases the value (and thus the performance effect) of transactional safeguards like trust. However, by this logic a similar moderation effect of complexity on the relationship between cooperation and service performance would have been expected as well.

The second moderator considered is dynamics.

Dynamics has a negative moderating effect of  $-.19$  on the relationship between futuristic orientation and trust, at a significance level of  $p < .01$ . Game Theory provides a possible explanation for this moderation: Highly dynamic environments decrease the effect of the “shadow of the future,” which reduces the positive effect of a futuristic orientation on the aspects of BSR quality. However, by this logic a similar moderation effect of dynamics on the relationship between futuristic orientation and cooperation would have been expected as well.

Dynamics also has a positive moderating effect of  $.12$  on the relationship between cooperation and service performance at a significance level of  $p < .05$ . Furthermore, dynamics has a positive moderating effect of  $.25$  on the relationship between trust and service performance at a significance level of  $p < .001$ . These two effects can be explained based on Transaction Cost Theory. In this context a high dynamics measure is a sign of uncertainty, which in turn increases the value (and thus the performance effect) of transactional safeguards like trust and cooperation.

Concerning complexity and dynamics another point has to be added: Their positive moderation effect on the relationship between the BSR aspects and service performance exists because increasing uncertainty makes the BSR more attractive as a safeguarded hybrid form of transactional governance in comparison with market governance. In this context it has to be noted that there is a hypothetical level of complexity and dynamics at which the safeguarded hybrid governance is outperformed by hierarchical governance. If enterprises make rational insourcing and outsourcing decisions, the internalized service categories are not captured by this thesis because they would be internalized and there would be no service procurement officer to answer the questionnaire. Still, the comparison of the factor scores (cf. Chapter 8.3) of the different service categories addressed in this thesis hints at the possibility that some service categories (e.g. full service facility management) might be governed more effectively by the hierarchy governance

form than by a hybrid form. Because this possibility is not part of the scientific model, we address this issue in Chapter 8.3.

Table 48: Assessment of Moderating Effects

Exogenous Variable	Endogenous Variable	Direct Effect	Significance Direct Effect	Moderating Effect	Significance Moderating Effect	$\chi^2/df$	TLI	CFI	RMSEA	SRMR
<b>Moderator: Complexity</b>										
Trust	Service Performance	-05	.331	.10	.060	1.5	.932	.939	.044	.060
<b>Moderator: Dynamics</b>										
Futuristic Orientation	Trust	.07	.312	-.19	.008	1.6	.921	.929	.048	.063
Cooperation	Service Performance	-.04	.503	.12	.048	1.5	.928	.935	.044	.064
Trust	Service Performance	-.04	.494	.25	<.001	1.5	.927	.934	.047	.062
<b>Moderator: BATNA of the Buyer</b>										
Cooperation	Service Performance	.13	.024	-.21	<.001	1.3	.952	.957	.037	.057
Trust	Service Performance	.13	.025	-.22	<.001	1.4	.947	.952	.041	.057
<b>Moderator: BATNA of the Supplier</b>										
Cooperation	Service Performance	.07	.024	-.32	<.001	1,3	.952	.957	.037	.058
Trust	Service Performance	.07	.025	-.24	<.001	1,4	.947	.952	.041	.056
<b>Structural Model without Moderation</b>										
						1,6	.926	.934	.051	.063



The third and fourth moderators are the BATNA of the buyer and supplier.

The BATNA of the buyer has a positive direct effect of .13 ( $p < .05$ ) on service performance, a negative moderating effect of  $-.21$  ( $p < .001$ ) on the relationship between cooperation and service performance, and a negative moderating effect of  $-.22$  ( $p < .001$ ) on the relationship between trust and service performance. The positive direct effect can be explained as follows: Very high BATNAs allow the buying company to use the “muscular” approach (Williamson (2008)) and just force superior supplier performance. The negative moderating effect can be explained by the fleeting attractiveness of the costly development of BSRs if changing suppliers is very easy.

The BATNA of the supplier has a positive direct effect of .07 ( $p < .05$ ) on service performance, a negative moderating effect of  $-.32$  ( $p < .001$ ) on the relationship between cooperation and service performance, and a negative moderating effect of  $-.24$  ( $p < .001$ ) on the relationship between trust and service performance. The (small) positive direct effect is surprising. Having a very powerful service provider should not increase service performance by itself. The negative moderating effect does not come as a surprise. Developing a BSR with a service provider that can easily switch customers should reduce the effect that the aspects of BSR quality has on service performance.

In conclusion it has to be noted that the full models containing the second-order measurement model from the first research question, the structural model from the second research question, and the moderation from the third research question have very good model fit. In fact, the fit of the moderated models outperforms the structural model from the second research question in some cases. This result allows the conclusions that, on the one hand, latent moderation is a statistically potent research tool and that, on the other hand, adequate moderators were chosen.

### 7.3.5 Discussion

On the foundation of the statistical assessment of the measurement models and the 28 calculated structural models, this dissertation project can answer its third research question:

**Do Moderating Factors exist that influence the impact of Relationship Quality on Service Performance?**

Based on the results, we can re-evaluate the initial assumptions from the beginning of the sub-chapter.

The first assumption, that the moderation effects are similar to the ones proposed on the foundation of Transaction Cost Theory and Game Theory, can be confirmed: Uncertainty (high complexity and high dynamics) reduces the performance effects of the aspects of BSR. High dynamics discount the “shadow of the future” and reduce the trust-building effect of a futuristic orientation. High BATNAs reduce the performance effect of the aspects of BSR quality.

The second assumption, that by employing moderating effects a wide variety of service categories could be assessed with the developed structural model, can be confirmed as well. A category-specific summary of management recommendations is provided in Chapter 8.3.

The third assumption implied that modeling the moderation effects as latent variables could ensure that the model interrelations of the second research question are not spurious, with the BATNA's being the actual factor. This can be confirmed in that the only moderators with a significant, direct effect are the BATNAs, which in the end only have minor path coefficients and do not change the proposed model interrelations.

The empirical results for the first-order latent variables were as expected: This dissertation project generated four reliable and valid latent variables to measure the four moderators, and the final items capture the latent variables' essences as defined at the beginning of the thesis (cf. Chapter 2).

In the end we can conclude that the moderated versions of this thesis's structural model display very favorable values for all fit criteria. In fact, adding the moderation in the majority of cases even improves the fit of the model compared to the version without moderation. This result hints at a suitable selection of moderating effects. Apart from that, the moderating effects are in line with the theoretical background of this thesis: Uncertainty (complexity and dynamics) does indeed enhance the performance effects of the BSR; dynamics discounts the "shadow of the future" to some extent; and high BATNAs shift the optimal governance form of the transaction from safeguarded hybrid slightly toward market governance, thus reducing the effects of the BSR on performance.

### 7.3.6 Research and Managerial Implications

The research implications of this assessment of the moderation effects include the following:

First, the methodology of latent modeling of moderation effects in the structural model performs exceedingly well and constitutes a significant step forward from multi-group analysis. It provides path coefficients, significance levels, and the complete set of fit indices for the moderated models.

Second, the dual theory selection of Transaction Cost Theory and Game Theory was very suitable for explaining the moderating effects. Thus, the use of dual or eclectic theory lenses can be recommended in this context as well.

Third, applying the moderation to the B2B service transactions in a procurement context provides new insights concerning the effects of these moderators. Using the moderation allowed the use of one model for all service categories, which were then differentiated by means of moderation, thus effectively reducing the need for ex ante service clustering like KIBS (Pardos et al. (2007), Bagdoniene and Jakstaite (2008)).

On the foundation of these findings, this dissertation project can identify suitable areas for additional research, surpassing some of the limitations of the research at hand:

First, testing whether the BSR's antecedents, aspects, and outcomes are moderated by other effects than the ones addressed in this thesis would be scientifically interesting.

Second, developing a taxonomy of service supply networks (similar to Lamming et al. (2000), Harland et al. (2001)) based on clusters derived from the four moderators of this thesis would be an interesting scientific endeavor as well. For example, the cluster analysis could show that there is one cluster of BSRs that deal with highly complex and dynamic services and another cluster of BSRs that deal with simple and unchanging services. These BSRs could be analyzed by means of e.g. case study research to determine whether the exchange relationships are fundamentally different in their nature.

Third, maybe the most interesting area of future research in this field would be the inclusion of internalized services in the overall considerations. The results of the moderation effects allow the conclusion that in conditions of increasing complexity and dynamics a safeguarded hybrid form of transactional governance would outperform market governance. Following this logic, adding internalized services to the focus of future research would add hierarchical governance to the addressed organizational forms. If the moderating effects of complexity and dynamics are fully captured by Transaction Cost Theory, there should be a certain level of complexity and dynamics at which hierarchical governance starts to outperform hybrid governance. Future research that succeeds in capturing the "total cost of outsourcing" (Ngwenyama and Bryson (1999)) and the total cost of internal service provision, could directly verify Transaction Cost Theory finding in a "do versus buy" context (Pardos et al. (2007)).

For practitioners both from marketing and procurement backgrounds, the implications of the moderation are simple. If a service transaction is particularly complex or dynamic, developing a high-quality BSR can provide effective safeguards to achieve high service performance despite the complex and dynamic environment. In contrast to this, the positive effects of a high-quality BSR falter if one or both partners involved in the transaction have a high BATNA (i.e., can easily change partners). In these situations the costly development of BSRs might not constitute an improvement over market governance.

## 8 Summary of Theoretical Contributions and Implications

In this final chapter, we offer an overview of this dissertation project, first presenting the key findings and the central academic contributions and then drawing up an agenda for future research. Finally, we sum up the managerial implications and provide results for the different service categories.

### 8.1 Key Findings and Academic Contributions

The primary motivation for this dissertation project was the application of Transaction Cost Theory and Game Theory on the real-world context of the buyer-supplier relationship (BSR) for B2B services. The B2B service transaction was selected as the unit of analysis to develop insights that further the scientific understanding of the two theories and providing much needed scientific attention for the procurement function. While the procurement perspective is constantly gaining both scientific and practical importance, most extant research adopts a marketing perspective and neglects the potential of BSRs other than as a marketing tool. Although some scientific advances have been made for general purchasing topics, the highly relevant aspect of B2B service procurement (B2B services make up 11.9 percent of the German GDP) is still almost unexplored.

Nonetheless, the BSR's potential to govern transactions starts to be recognized in more recent research. Even Nobel laureate Williamson (2008) recognizes the potential of high-quality BSRs to create a safeguarded, hybrid form of governance between market and hierarchy forms. Still, this field of research is in dire need of theoretically founded and empirically based investigation, which is why this dissertation project has assessed the BSR's antecedents, aspects, and outcomes. Transaction Cost Theory and Game Theory provided the foundation for the selection

of the antecedents, aspects, and outcomes of BSR quality: Futuristic orientation and communication were chosen as the antecedents; cooperation and trust were proposed as aspects of BSR quality; the performance of the object of transaction (i.e., B2B service performance) was the obvious outcome.

In this context, Transaction Cost Theory addresses the organizational and governance issues of economic exchange: The antecedents allow the relationship to grow, which then provides an effective governance mechanism for the transaction, increasing the performance of the object of transaction. Game Theory is perfectly suited to model the cooperation and interaction issues: Repeated interactions of two parties can foster cooperation, which enables both parties to avoid inefficient equilibria and to reap superior payoffs.

To address the phenomena of the BSR's antecedents, aspects, and outcomes, we have followed a three-step-approach. First, we developed a comprehensive measurement model to assess the performance of the object of transaction—the B2B service—because no adequate approach existed. Second, we addressed using a structural model the interrelations of the BSR's antecedents and aspects, as well as their impact on the B2B service performance. Third, we used moderating effects to differentiate between different service attributes and categories with the goals of providing more detailed results and ensuring the insights derived from the model.

Insights provided by a comprehensive literature review were limited by the surprisingly small amount of extant research in this field. None of the extant measurement approaches captures the performance of B2B service on a financial and non-financial level. Few studies address the BSR's antecedents, aspects, and outcomes on a thorough theoretical foundation, and none employ the dual theory lens of this thesis, complementing Transaction Cost Theory with insights from Game Theory. Furthermore, no studies use moderation effects as latent variables to effectively address a wide range of service categories in the same model. This last is not surprising, given that latent moderation is a rather state-of-the-art method. In addition, most extant research is marketing centric and treats the BSR not as a form of governance but merely as a marketing tool. A significant number of studies also employs a B2C focus, neglecting many peculiarities inherent in B2B transactions.

The research questions were developed on the basis of the literature review. The first research question formulates the need for a comprehensive and empirically verified second-order measurement model for the performance of B2B services. The second research question proposes a positive effect of the BSR's antecedents on the aspects, a cooperation-enhancing effect of trust, and an effect of the aspects on service performance, and it calls for empirical verification. The third research question demands the investigation of moderating effects in the model.

To answer the research questions, we conducted a large-scale, inter-sectoral survey in one of the world's leading markets for B2B services: Germany (Leshar and Nordas (2006)). Because of the extensive support of BME e.V. and WHU, as well as the high practitioner interest in the topic, 245 questionnaires—a very solid response rate of 22.3 percent—were completed by senior procurement officers or heads of procurement. The respondents in this thesis are responsible for an overall annual service volume in the two-digit billion Euro range. Note that no service categories were excluded from the analysis. The specific research design of this dissertation project (e.g., specifically developed service performance scale and latent moderation effects) made it possible to effectively analyze a wide variety of services with the same model. The following sections summarize the empirical findings and the scientific contributions and are structured according to the three research questions.

### **Research Question 1: How can “Service Performance” in a B2B service context be measured?**

The first research question addressed the lack of a suitable performance measurement framework for B2B services. Most extant approaches measure notions of “service quality” from a marketing and/or B2C perspective and without theoretical foundation. Although these approaches are reliable and valid in measuring the service quality perceived by a bank customer and its marketing implications, they completely fail to capture the relevant dimensions of a service exchange between two companies. Financial aspects (e.g., price of the service provided) are of little to no importance in all extant approaches.

The only thing the extant approaches agree on is that service performance is a second-order construct measured by several dimensions (first-order latent variables). Concerning the actual dimensions or the items, no such consensus exists. This dissertation selected dimensions based on extant approaches (Parasuraman et al. (1985), Parasuraman et al. (1988), Westbrook and Peterson (1998), Vandaele and Gemmel (2004)) and added numerous additional items from other sources. In the end, 34 items for 5 dimensions (reliability, geographical presence, price, interpersonal skills, and service competence) were included in the questionnaire. The larger number of items allowed for the possibility that dimensions could disaggregate if justified by fit criteria and content.

Based on the first CFA assessment, the initial five dimensions were optimized, resulting in a very favorable fit of the measurement models. Two dimensions did disaggregate: Price amount and price transparency emerged from the original latent variable, price. In addition, geographical presence and market presence arose from the original latent variable, geographical presence. The resulting seven dimensions were then included in a second-order measurement model. Of the seven variables, only geographical presence and market presence do not measure the second-order construct, service performance.

Thus, this dissertation can propose the first reliable and valid measurement model for B2B service performance, increasing the “ease of performance measurement” of the object of transaction (Williamson (1991)) and providing insight into the performance outcomes of the transaction. Although the measurement model satisfies all scientific requirements, it also provides practitioners with a concise list of 15 questions that effectively allow them to measure the performance of a service provider, independent of the service category. In the end, five dimensions of service performance can be confirmed: reliability, price amount, price transparency, interpersonal skills, and service competence. The introduction and development of the two price constructs constitutes a move away from the extant marketing-centric approaches. These results provide an accurate measure for this dissertation’s object of transaction. The final second-order measurement model is applicable to both a procurement and a marketing perspective.



Moving beyond statistical fit, the developed measurement model captures essential aspects of the B2B service transaction: Service providers must exhibit the skill and knowledge to provide a specific service (service competence). They must also possess a history of successful service provision (reliability) as a reference. The price charged for the service must be reasonable (price amount), but more importantly it must be perceived as fair and transparent (price transparency). Furthermore, a preferably consistent contact person must be a polite and friendly partner of service procurement (interpersonal skills).

### **Research Question 2: Does “Relationship Quality” have an impact on Service Performance?**

Using the dual theory lens of Transaction Cost Theory and Game Theory, the second research question has addressed the interrelations of the antecedents, aspects, and outcomes of a high-quality BSR. Transaction Cost Theory considers the ongoing exchange in a BSR as a safeguarded, hybrid governance form between spot market and hierarchy forms. Game Theory addresses the BSR as a repeated games setting in which two players interact to maximize their outcomes.

Extant research in this area is in many cases more concerned with the structure of the BSR (first-order, second-order, or antecedents-and-aspects) than with the outcomes. Furthermore, a large amount of relevant studies originates from marketing backgrounds and/or addresses the BSRs only in a product procurement context. To the knowledge of the author, no assessment of the BSR’s antecedents, aspects, and outcomes exists for a B2B service procurement context.

Based on a thorough discussion of the basic assumptions and implications of the two theories, this dissertation has identified the relevant antecedents and aspects of BSR quality: A futuristic orientation and communication were selected as antecedents, cooperation and trust as aspects of relationship quality. Reliable and valid measurement models were developed for these four latent variables, and their interrelations were modeled in a well-fitting AMOS SEM.

*Futuristic Orientation* corresponds to the notion of continuity and the long-term reputation effects from Transaction Cost Theory, as well as to the “shadow of the future” and repeated games from Game Theory. It is hypothesized that futuristic orientation as an antecedent of the BSR has a positive effect on both cooperation and trust.

*Communication* is either implicitly assumed or explicitly considered in most Transaction Cost Theory and Game Theory assessments. It is hypothesized that communication as an antecedent of the BSR has a positive effect on both cooperation and trust.

*Cooperation* was introduced as a single latent variable, with the possibility of disaggregating into joint action and joint problem solving. (In the end the disaggregation was not empirically justified). In Transaction Cost Theory, cooperation enables the parties involved in the transaction to achieve beneficial transactional outcomes (i.e., improved performance). In Game Theory, cooperation allows the players to leave inefficient equilibria behind and to achieve improved outcomes. It is hypothesized that cooperation as an aspect of BSR quality has a positive effect on service performance.

*Trust* is based only on Transaction Cost Theory considerations, representing an opposing force of opportunism that is inherent in both theories. In Game Theory, players are assumed to be perfectly rational and are thus above “irrational” notions like trust. It is assumed to foster cooperation and to have a positive effect on service performance.

*Service Performance* constitutes the outcome of the BSR. It encompasses financial and non-financial aspects relevant for the performance of the transaction.

Based on the statistical analyses performed, the measurement models for the antecedents and aspects could be optimized and confirmed. The well-fitting structural model revealed that the “antecedents, aspects, and outcomes” structure effectively captures the phenomena of the BSR: Both antecedents have a positive effect on the two aspects, and trust indeed does foster cooperation. Furthermore, the theory-based hypothesis that the BSR aspects have a positive effect on the outcome of the BSR (service performance) could be confirmed as well. As expected, these insights could be generalized over a wide variety of different service categories.

The total performance effects of the two antecedents and two aspects allow an additional interesting conclusion: Trust has the most prominent performance effect by a wide margin. This reinforces the notion of Transaction Cost Theory that bounded rationality better describes real-world transactions than Game Theory's modeling assumption of perfect rationality. On this foundation, a speculative but interesting proposition can be made: It appears that actors with intended but limited (i.e., bounded) rationality have the ability to develop trust and to cooperate on its basis and that, possibly, perfectly rational actors are *more* bounded by their inability to trust than boundedly rational actors are by their lack of mental greatness and nerves of steel.

Moving beyond statistical fit, the developed structural model captures essential aspects of the BSRs for B2B services in particular and for all BSRs in general: A BSR can only grow and evolve if the parties involved expect the continuity of the relationship and its long-term beneficial outcome (futuristic orientation). In addition, the casual exchange of information beyond the negotiated levels—especially if changes occur—is a necessity for the development of BSRs (communication). Under these conditions, the quality of the BSR, represented by cooperation and trust, can increase and positively influence the performance outcomes of the relationship. In this context, it has to be noted that the presence of trust greatly facilitates the emergence of cooperative behavior.

### **Research Question 3: Do Moderating Factors exist that influence the impact of Relationship Quality on Service Performance?**

The third research question investigates possible moderating effects in this thesis's model. The four potential moderators (complexity, dynamics, and the BATNA<sup>29</sup> of both buyer and supplier) were selected based on the dual theory perspective of this dissertation. The assessment of their

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<sup>29</sup> "Best alternative to a negotiated agreement": A high BATNA for one party signifies that that party can easily change suppliers or buyers respectively.

direct and indirect effects provides insight into the differences between service categories and ensures that the proposed interrelations from the second research question are not spurious.

In Transaction Cost Theory complexity and dynamics are expressions of “uncertainty.” Under increased uncertainty the value of the safeguards provided by the BSR, and thus the performance effect of a high-quality BSR, should increase. The BATNAs refer to the “asset specificity” of a transaction. If the BATNAs are high, asset specificity can be assumed to be low. In case of low asset specificity, the safeguards provided by the BSR should decrease in value.

In Game Theory complexity and dynamics are irrelevant. Perfectly rational actors can deal with any level of complexity or dynamics, although, in the case of bounded rationality, dynamics might make it more difficult for players to perceive the shadow of the future. The BATNAs refer to the parties’ ability to abandon a multi-round game prematurely. Based on both theories, high BATNAs could reduce the positive performance effects of the aspects of BSR quality.

Extant research on the moderation of the BSR’s antecedents, aspects, and outcomes is virtually nonexistent. At best, complexity and dynamics are considered as control variables within a multi-group analysis.

The innovative methodology of this thesis has modeled the moderating effects as latent variables directly in the SEM (cf. Little et al. (2006)), providing precise path coefficients, significance levels, and the complete set of fit indices for the moderated models. Moderated structural models were calculated in an exploratory way for all model relationships of the second research question and for each moderator (i.e., 28 moderated models). The level of detail of the results and conclusions constitutes a significant improvement over multi-group analysis.

The empirical results of the moderation confirm the assumptions developed based on Transaction Cost Theory and Game Theory: Uncertainty (complexity and dynamics) reduces the performance effects of the aspects of BSR quality. Dynamics discount the “shadow of the future” and reduce the trust-building effect of a futuristic orientation. High BATNAs make market governance of the transaction more attractive and reduce the performance effect of the BSR aspects.

Furthermore, employing moderating effects allowed for the assessment of a wide variety of service categories using the developed structural model. This assessment, in turn, allowed for the category-specific summary of management recommendations provided in Chapter 8.3. In addition, this dissertation could ensure that none of the interrelations in the SEM were spurious because the moderators had none or only small direct effects.

In summary, the moderation effects round out an already well-performing structural model. They allow for extensive applications of the two main theories and for exceedingly detailed practical interpretation of the results.

## 8.2 Implications for Further Research Agenda

On the foundation of the key finding of the three research questions this thesis can draw up an agenda for future research.

Employing a dual theory lens served this dissertation project very well, allowing it to use complementary theories and to draw insights from both. On the basis of these positive experiences, dual and eclectic approaches can be recommended for future research.

The developed measurement scale for B2B service performance is, on the one hand, performing sufficiently well to be used in future research. On the other hand, additional development of the scale would be of scientific merit. Although the existing five dimensions already capture the aspects of B2B services very well, further testing of these dimensions and/or the addition of others can be considered interesting as well.

Similarly, the framework of the antecedents, aspects, and outcomes of BSR is performing well enough to be used for future research. Nevertheless, further testing and expansions would definitely provide additional scientific insights. The selected antecedents, aspects, and outcomes provide numerous insights into BSR phenomena, but a wide range of additional parameters and interrelations has yet to be explored.

An international application and adaptation of both the service performance and the BSR research of this thesis is another area of scientific interest. Although one can assume similar results in almost all contexts, there are bound to be cross-cultural differences.

This dissertation project has relied on procurement officers as key informants in the development of its measurement and structural models—with satisfactory results. Selecting different respondents or adapting a dyadic (or triadic) perspective would generate additional insights. The dyadic perspective would include the procurement officer and the key account manager of the service provider. The triadic perspective would include the procurement officer and the key account manager, plus the internal service consumer of the buying company. This inclusion would allow for the comparison of the service performance perceptions of the different respondents, as well as the recognition of different roles and their influence in the BSR.

The use of latent moderation effects has enabled this thesis to address a wide variety of service categories all within a single model and to determine differences between categories at the same time. The quality of the results makes a strong point against *ex ante* limitations of categories and for the latent modeling of moderation effects. Concerning the use of complexity, dynamics, and BATNAs as moderators, this thesis provides reliable and valid measurement models and a successful methodology for latent moderation for future research.

The four moderation effects were selected based on Transaction Cost Theory and Game Theory, and their analysis has contributed greatly to the application of the theories and to the model results.

Furthermore, the results of this thesis, especially in conjunction with the moderating effects, allow for a clustering of different service BSRs. On this foundation, future research could develop a taxonomy of service supply networks, similar to the research of Harland et al. (2001).

A final but definitely very rewarding area for future research would be the inclusion of internalized services in the considerations of this thesis. The results of the moderation effects lead to the conclusion that with increasing uncertainty (complexity and dynamics), a safeguarded hybrid form of transactional governance outperforms market governance. Following this logic, adding

internalized services would add hierarchical governance to the addressed organizational forms. And if the moderating effects of complexity and dynamics are fully captured by Transaction Cost Theory, there should be a certain level of complexity and dynamics at which hierarchical governance starts to outperform hybrid governance. Examples for which this might be the case include legal services, inhouse consulting, and full service facility management (cf. Chapter 8.3).

### 8.3 Recommendations for Managers

Because B2B services are one of the top10 GDP contributors in developed OECD economies (Leshner and Nordas (2006)), the practical implications of the measurement of “B2B service performance” and the assessment of the BSR as a governance form for service exchanges are numerous.

The first feedback from the practitioners who completed the questionnaire and received the summary packages already has allowed a few insights into the practical implications. The 15 questions of the performance measurement scale have already made their way into the everyday work life of service procurement professionals. The measurement framework, developed with the help of practitioner focus groups, was pretested and finally empirically tested with the help of 245 senior service procurement officers. The resulting “B2B service performance” scale is thoroughly unique in its movement away from the extant marketing-centric approach and in its inclusion of financial and non-financial dimensions, and it constitutes a significant improvement for both service procurement and marketing functions alike.

Service procurement can use the scale to evaluate suppliers and to effectively renegotiate contracts, focusing on areas where the service currently underperforms. If procurement decides to track the performance of the providers over time, it can even address declining service levels proactively. Specifically, service procurement gains the option of reacting to declining but not yet critical service levels. In the end, the service performance

perceptions of procurement officers prove that they fulfill procurement's task to balance quality and price adeptly.

Service marketing can use the scale to better understand the customer's perspective and to develop a multi-faceted view of the service offering. On the one hand, the implications of price transparency are particularly interesting: Service providers must understand that their customers are able to detect deceptive pricing policies. If detected, these lower the perceptions of the service performance received. On the other hand, price amount was a less significant indicator of service performance than service providers might have imagined. Thus, service providers have a lot to gain by providing transparent and "fair" pricing.

The assessment of the BSR's aspects, antecedents, and outcomes reinforces the growing importance of service procurement in companies. Service procurement does more than simply buy services: It ensures and maintains the continued economic success of outsourcing decisions. Without the safeguards provided by service procurement and its supplier relationships, the loss of internal competence, overdependence on the supplier, and sliding performance are inevitable.

Professional service procurement enables companies to achieve superior financial and non-financial performance by developing high-quality BSRs. A long-term orientation toward the BSR and frequent, relevant communication with the service provider are important to increase relationship quality, but they do not have a direct performance effect. Cooperation among those in the BSR is the first step toward superior performance outcomes. The strongest, yet most elusive, factor for increased performance is trust.

This insight makes a strong point against basing procurement decisions on "price only." Switching to a new, lower-cost provider has to be weighed against the established cooperation and trust achieved with the current provider. Nonetheless, regular tenders and the regular replacement of service providers are important procurement tools, and it is not the goal in this dissertation to discount their importance on grounds of BSR considerations. Game Theory offers a



possible solution: A credible threat is equally potent as the use of force. Applied to a service sourcing context, “bringing in and developing a second provider” could be a credible threat to convince an incumbent provider to deliver optimal service performance without having to sever the relationship. Another interesting recommendation is to maintain BSRs with key service providers beyond the duration of contracts. Even if one key supplier does not win a tender, maintaining contact could help to minimize the loss of “BSR capital” until the next tender process.

In addition, the findings of this thesis make a strong argument for employee retention of procurement officers and key accountant managers of the service providers. High employee fluctuation is a serious impediment for high-quality BSRs and thus superior transactional performance.

The direct implications of the calculated moderation effects of complexity, dynamics, and the BATNA of both buyer and supplier are simple:

If a service transaction is particularly complex and/or dynamic, developing a high-quality BSR can provide effective safeguards to achieve high service performance. Note, however, that there is a hypothetical level of complexity and dynamics of a service for which internalization might be an improvement compared to the BSR.

If one or both partners involved in the transaction have a high BATNA (i.e., can easily change partners), the costly development of BSRs might not constitute an improvement over market governance from a total cost perspective.

In addition to the direct implications, including the moderating factors in this study offers additional, at least equally important, insights. By drawing the factor score weights from the AMOS outputs, this dissertation project could calculate the factor scores for all latent variables. Based on these factor scores and on additional telephone interviews with the participants, this dissertation could derive specific insights for the nine most prominent service categories procured by the respondents.

*Business travel* is an above-average dynamic service category, in which service procurement officers perceive a particularly low BATNA for both parties (i.e., changing partners is deemed more difficult). The service procurement BSRs for business travel display antecedents slightly above average and aspects of BSR quality considerably above average with, as expected, superior service performance. Practitioners revealed that business travel is a service category with a rather long service procurement history. It was one of the first categories for which service procurement was introduced. When facing high dynamics caused by changing travel policies, a cooperative supplier relationship was a key to success. Travel is also one of the categories where subcontractor management is of particular importance.

*Consulting* is a highly dynamic and project-based service category. Because of the nature of consulting projects, service procurement has a relatively high BATNA (i.e., partners can easily switch consultancies after project completion), and a futuristic orientation is of lesser importance. Otherwise, the consulting procurement relationships are generally positive: The consultancies are trusted and perceived as having above-average reliability and competence (although their price performance is only average). The major challenge for service procurement in this category is dealing with the project nature of consulting (i.e., ensuring early involvement by the service consumer) and coping with the hugely differing job titles and qualification levels of the different consultancies.

*Fleet management* is slightly less dynamic than other service categories, and the relationship to the providers exhibits a below-average level of trust but above-average levels of the price amount and price transparency. All of these aspects can be explained with the highly quantitative nature of fleet management. The possibilities for fleet management are largely determined by the companies' car policies, explaining the low dynamics. Otherwise, fleet tenders are highly quantitative: Car types, annual mileage, and servicing can be specified at a very highly detailed level. The highly detailed tenders could explain the transparent and adequate prices. The issue of trust is an effect of the highly quantitative nature. Because providers of fleet services specify all tasks and costs to a

very high degree, few black sheep are tempted to improve their profits with, for example, unreasonably high service fees upon the return of fleet vehicles.

*Maintenance services* are considered rather complex. Factor scores for this category are generally at average levels, except for increased futuristic orientation and below average price performance. The practitioner interviews revealed that price performance and futuristic orientation go hand in hand: A new provider of maintenance has a significant learning curve to provide the service properly. Also, the primary target variable for maintenance services is quality rather than cost (thus explaining the price performance): If a maintenance provider damages expensive machinery or if insufficient lubrication halts an assembly line, the original costs of the service quickly become negligible. Procurement officers identify maintenance as a service category in which BSR governance competes more with internalization than with market governance.

*IT services* are an interesting category. Procurement considers the BATNA for IT services to be below average, but the providers' BATNA to be above average, denoting very powerful suppliers. This imbalance seems natural and quite obvious when considering service providers like SAP or Microsoft. The communication is seen as below average, which is often linked to the cultural gap between procurement officers and IT technicians. In line with the assessment of BATNA, price performance is perceived to be below average. Very low comparability of tender offers and an endless stream of new features and releases were identified as additional reasons for the low price performance.

*Cleaning* is one of the simplest service categories addressed by this study: Complexity and dynamics are both very low. In addition, procurement sets the BATNA significantly above average, and those of the providers are significantly below average, making this category a natural outsourcing candidate. From this position of power, procurement maintains high-quality relationships with its providers and reaps superior service performance. Note that cleaning services in this dissertation project are distinct from the following services:

*Full-service facility management* is the outsourcing of the total building and plant management to one or more service providers. While this category might appear similar to cleaning at first, the two categories are actually thoroughly different. Full-service facility management is the single most complex category in this study (significantly more complex than engineering or IT). In addition, while communication in the relationship is described as intensive, all other relationship and performance aspects are, without exception, below or far below the averages of the study. The telephone interviews helped identify reasons for this situation: In many cases the outsourcing decision was made on the basis that “these services could be outsourced well” without considering whether there were adequate regional providers for these services. Also, a highly complex service category was outsourced to one or a few service providers without recognition that most service providers have only one or a few specializations and would invariably fall short for other aspects of the service. In a few cases, the service procurement officers giving the telephone interviews stated that full-service facility management is currently being divided into smaller service packages and partially internalized again.

*Engineering* offers an example of a service procurement success. The category is highly complex and above average in terms of dynamics, and both buyer and supplier have difficulties finding replacements (i.e., have low BATNAs). Nonetheless, the partners in the service exchange maintain high-quality relationships and achieve decent service performance. The procurement officers identify close cooperation with both the service provider and the internal service consumer as a success factor. In addition, this category provides an excellent example of how service procurement can deal with necessary expert knowledge. To negotiate a contract for engineering services, the procurement officer needs in-depth insight into the engineering issues. The interviewees either described themselves as engineers or emphasized the importance of close cooperation with the engineers managing the project. Interestingly, both the engineers and those closely cooperating with engineers achieved similar performance. Furthermore, the early involvement of procurement was identified as a key success factor as well.

*Marketing* is a highly complex, dynamic, and political service category with overall average relationships and performance results. Two points of interest are the politics of marketing and the budget-driven nature of marketing services. The internal service consumers are marketing project managers, with the head of marketing as the authorized representative. Both the marketing department and the heads of marketing tend to have considerable political power in companies. Thus, marketing procurement has to gain acceptance carefully, be involved early, and be perceived as support and consultant of the service consumer. Compliance issues (e.g., the four-eyes principle of the Sarbanes-Oxley Act) can sometimes help procurement to be included in the internal processes of the marketing (or any other particularly powerful) department. The budget-driven nature is a second issue of marketing procurement: Marketing budgets have to be spent, and this spending requirement sometimes leads to strange perceptions of austerity (e.g., the “December spending frenzy”). Convincing marketing that procurement can help to receive more marketing services for a given budget can effectively aid procurement’s involvement.

In conclusion, the results of this dissertation project make a strong argument for multi-faceted views of service performance. They also make a strong argument for cooperation and for developing personal relationships. The procurement relationship in general, and trust in particular, can provide safeguards in an uncertain business world full of opportunism. In the end, one must never underestimate the imperfectly rational force of trust in all exchange relationships, or, as Jean Paul Getty put it:

*“If you can trust a person, a contract is superfluous. If you can’t trust him, a contract is useless”*



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# Appendix

## Appendix 1: SIC and WZ Codes of Service Categories

Service category	SIC	WZ 2003 English	WZ 2003 German
Business travel	7011: Hotels & motels	55.1: Hotels 62: Air transport 62.1: Scheduled air transport 63.3: Activities of travel agencies and tour operators; tourist assistance activities	55.1: Hotellerie 62: Luftfahrt 62.1: Linienflugverkehr 63.3: Reisebüros und Reiseveranstalter
Consulting	8742: Management consulting services	74.14.1: Business and management consultancy activities	74.14.1: Unternehmensberatung
Fleet management	7500: Auto rental & leasing (no drivers) 7600: Miscellaneous repair services	50.2: Maintenance and repair of motor vehicles 65.21: Financial Leasing 71.10.0: Renting of automobiles	50.2: Instandhaltung und Reparatur von Kraftwagen 65.21: Institutionen für Finanzierungsleasing 71.10.0: Vermietung von Kraftwagen bis 3,5 t Gesamtgewicht Diese Unterklasse umfasst: – Vermietung und Operate-Leasing von Kraftwagen bis 3,5 t Gesamtgewicht ohne Fahrer

Maintenance	7600: Misc repair services	All maintenance services are included in the categories for the production of the maintained items.	Einheiten, die Waren reparieren, instand halten oder überholen, werden derselben Unterklasse zugeordnet wie die Einheiten, die diese Güter herstellen, mit Ausnahme der Fälle, in denen die WZ 2003 eigene Unterklassen für die Reparatur und Instandhaltung von Gütern enthält <sup>18</sup> bzw. in denen die Reparatur und Instandhaltung von anderen Unterklassen als denen, denen die Herstellung zugeordnet wird, erfasst werden.
IT services	7370: Computer programming, data processing, etc.	72: Computer and related activities	72: Datenverarbeitung und Datenbanken
Cleaning	7340: Services -To Dwellings & Other Buildings	74.7: Industrial cleaning 74.70.1: Cleaning of buildings, rooms and equipment 93.01: Washing and dry cleaning of textile and fur products	74.7: Reinigung von Gebäuden, Inventar und Verkehrsmitteln 74.70.1: Reinigung von Gebäuden, Räumen und Inventar 93.01: Wäscherei und chemische Reinigung

Engineering	8700: Services - Engineering, accounting, research, management	73.10.2: Research and experimental development on engineering 74.20.4: Engineering activities for projects involving civil, hydraulic and traffic engineering 74.20.5: Engineering activities for projects in specific technical fields	73.10.2: Forschung und Entwicklung im Bereich Ingenieurwissenschaften 74.20.4: Ingenieurbüros für bautechnische Gesamtplanung 74.20.5: Ingenieurbüros für technische Fachplanung
Marketing	7310: Services - Advertising	22.2: Printing and service activities related to printing 74.13: Market research and public opinion polling 74.4: Advertising 74.81: Activities of the photographic industry 74.86: Call centre activities 74.87.1: Activities of fair, exhibition and commodity market organizers 92.11.3: Production of films for industry, business and advertising	22.2: Druckgewerbe 74.13: Markt- und Meinungsforschung 74.4: Werbung 74.81: Fotografisches Gewerbe und fotografische Laboratorien 74.86: Call Centers 74.87.1: Ausstellungs-, Messe- und Warenmarkteinrichtungen 92.11.3: Herstellung von Industrie-, Wirtschafts- und Werbefilmen

Full-service facility management	7340: Services - to dwellings & other buildings	70.32: Management of real estate on a fee or contract basis  Plus all categories related to cleaning services	70.32: Verwaltung von fremden Grundstücken, Gebäuden und Wohnungen  Zusätzlich alle "Cleaning" Dienstleistungen
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Source: Statistisches Bundesamt, WZ 2003; U.S. Securities and Exchange Commission, Standard Industrial Classification Codes

## Appendix 2: Questionnaire Items

### Service Performance: Reliability

Name	Item Text English	Item Text German	Source(s)
Rel_1	The service provider can be contacted easily.	Der Dienstleister ist stets gut erreichbar.	Vandaele and Gemmel (2004)
Rel_2	The service provider is available at all times to assist the client.	Der Dienstleister ist bereit, uns jederzeit zu assistieren.	Vandaele and Gemmel (2004)
Rel_3	When the service provider promises to do something by a certain time, he does so.	Der Dienstleister hält Zusagen und Absprachen ein.	Vandaele and Gemmel (2004)
Rel_4	The service provider meets deadlines for projects and assignments.	Der Dienstleister hält sich an Deadlines und Abgabetermine für Projekte und Aufgaben.	Vandaele and Gemmel (2004)
Rel_5	Projects and assignments are properly followed-through by the service provider.	Projekte und Aufgaben führt der Dienstleister stets ordnungsgemäß durch.	Westbrook and Peterson (1998) Vandaele and Gemmel (2004)
Rel_6	The service provider documents his work accurately.	Der Dienstleister dokumentiert seine Tätigkeit detailliert.	Vandaele and Gemmel (2004)
Rel_7	The service provider is responsive to requests for changes.	Dieser Dienstleister reagiert schnell und umfassend auf unsere Änderungswünsche.	Prahinski and Benton (2003) Vandaele and Gemmel (2004) Burca et al. (2006)
Rel_8	The service provider has technical resources that ease access and information spreading.	Der Dienstleister verfügt über die nötigen technischen Ressourcen, um seinen Kunden digital Informationen und Zugang zu relevanten Daten zu bieten.	Vandaele and Gemmel (2004)

## Service Performance: Geographical Presence

Name	Item Text English	Item Text German	Source(s)
GP_1	The service provider has a large presence (market share) in the market.	Der Dienstleister hat eine starke Marktposition (Marktanteil).	Westbrook and Peterson (1998) Vandaele and Gemmel (2004)
GP_2	The service provider acts as a leader to other companies in the market.	Der Dienstleister nimmt eine Marktführer-Rolle ein und beeinflusst dadurch andere Marktteilnehmer.	Westbrook and Peterson (1998) Vandaele and Gemmel (2004)
GP_3	The service provider has leverage (power and influence) in the market.	Der Dienstleister verfügt über hohen Einfluss und Macht in seinem Markt.	Westbrook and Peterson (1998) Vandaele and Gemmel (2004)
GP_4	The service provider is able to offer his services in other cities nationally.	Der Dienstleister ist in der Lage, seine Leistungen landesweit anzubieten.	Westbrook and Peterson (1998) Vandaele and Gemmel (2004)
GP_5	The service provider is able to offer his services in other countries.	Der Dienstleister ist in der Lage, seine Leistungen in anderen Ländern anzubieten.	Westbrook and Peterson (1998) Vandaele and Gemmel (2004)
GP_6	The service provider has the ability to coordinate and consolidate resources with other companies.	Der Dienstleister verfügt über die Fähigkeit, Ressourcen anderer Firmen zu koordinieren und zu konsolidieren.	Westbrook and Peterson (1998) Vandaele and Gemmel (2004)



## Service Performance: Price

Name	Item Text English	Item Text German	Source(s)
Price_1	The price of the service provided relates to the quality delivered.	Der Preis der Dienstleistung entspricht der erhaltenen Qualität.	Vandaele and Gemmel (2004)
Price_2	The price of the service provided meets the client's budget objectives.	Der Preis der Dienstleistung liegt innerhalb der Budgetvorgaben des Bedarfsträgers.	Westbrook and Peterson (1998) Vandaele and Gemmel (2004)
Price_3	The price is competitive compared to other offers for similar services.	Der Preis der Dienstleistung ist wettbewerbsfähig zu dem Preis vergleichbarer Dienstleistungen.	Vandaele and Gemmel (2004) Fynes et al. (2005b)
Price_4	The service provider's price increases over time are lower than those of competitors.	Die Preise des Dienstleisters steigen im Zeitverlauf weniger an als die der Konkurrenz.	Vandaele and Gemmel (2004) Fynes et al. (2005a and 2005b)
Price_5	Considering all costs and revenues associated with this relationship, please rate the following statement: The procurement relationship is profitable above average.	Bitte stellen Sie alle Kosten und Leistungen der letzten Jahre aus dieser Dienstleistungsbeziehung gegenüber und beurteilen folgende Aussage: Diese Dienstleistungsbeziehung ist überdurchschnittlich profitabel.	Eriksson et al. (1996)
Price_6	The service provider does NOT use confusing service bundles or intransparent packages.	Der Dienstleister verwendet KEINE verwirrenden Dienstleistungs-“Pakete” oder intransparenten Komplettangebote.	Ellram et al. (2004)
Price_7	The service provider does NOT charge for every single task that is not explicitly specified in the service level agreements.	Der Dienstleister berechnet NICHT jede einzelne Leistung, die nicht explizit in den Service Level Agreements definiert ist.	Ellram et al. (2004)

Price_8	The service provider's invoices are separate and detailed – there is NO summary invoicing.	Die Abrechnungen des Dienstleisters sind einzeln und detailliert – es sind KEINE ungenauen Sammelrechnungen.	Ellram et al. (2004)
Price_9	When dealing with sub-contractors, the service provider does NOT use his procurement leverage to receive additional rebates for himself.	Der Dienstleister erhält von Subkontraktoren KEINE Rabatte, die er nicht an ihr Unternehmen weitergibt.	Ellram et al. (2004)

## Service Performance: Interpersonal Skills

Name	Item Text English	Item Text German	Source(s)
IPer_1	The service provider's personnel are polite and respect the privacy of others.	Die Mitarbeiter des Dienstleisters sind höflich und zuvorkommend.	Vandaele and Gemmel (2004)
IPer_2	The personnel of the service provider are sociable and friendly.	Die Mitarbeiter des Dienstleisters sind freundlich und sympathisch.	Vandaele and Gemmel (2004)
IPer_3	The service provider's personnel can be trusted.	Die Mitarbeiter des Dienstleisters sind vertrauenswürdig.	Vandaele and Gemmel (2004)
IPer_4	We have one or more direct contact persons at the service provider who are dedicated to our account.	Wir haben einen oder mehrere direkte Ansprechpartner beim Dienstleister, die unser Unternehmen betreuen.	Westbrook and Peterson (1998)
IPer_5	Our contact persons at the service provider remain constant over time.	Unsere Ansprechpartner beim Dienstleister bleiben über längere Zeit dieselben.	Practitioner interviews

## Service Performance: Service Competence

Name	Item Text English	Item Text German	Source(s)
Comp_1	The service provider offers an extended scope of services in the area of the provided service.	Der Dienstleister bietet in seinem Dienstleistungsfeld eine breite Palette an verschiedenen Leistungen an.	Vandaele and Gemmel (2004)
Comp_2	If desired, we could use this service provider as a one stop vendor.	Wenn wir wollen, können wir unseren kompletten Bedarf für diese Dienstleistung von diesem Anbieter decken.	Westbrook and Peterson (1998)
Comp_3	The customer has multiple options and programs to choose from and compose the service.	Der Dienstleister bietet verschiedene Optionen und Programme an, durch die man die Dienstleistung anpassen kann.	Westbrook and Peterson (1998) Vandaele and Gemmel (2004)
Comp_4	The service provider has extensive expertise in the area of the provided service.	Der Dienstleister hat umfangreiche Expertise in seiner Dienstleistungskategorie.	Westbrook and Peterson (1998)
Comp_5	The service provider possesses good problem-solving skills.	Der Dienstleister verfügt über gute Problemlösungsfähigkeiten.	Westbrook and Peterson (1998)
Comp_6	The service provider develops innovative service solutions and includes them in his service offering.	Innovationen in seinem Dienstleistungsbereich entwickelt der Dienstleister selbst oder integriert sie umgehend in sein Angebot.	Burca et al. (2006)

## Relationship Quality: Futuristic Orientation

Name	Item Text English	Item Text German	Source(s)
FO_1	Our procurement relationship with this service provider is oriented towards future transactions.	Unsere Einkaufsbeziehung zu diesem Dienstleister ist auf langfristige Zusammenarbeit ausgerichtet.	Ellram and Hendrick (1995) Coote et al. (2003) Griffith et al. (2006)
FO_2	The relationship with this service provider deserves our maximum effort to maintain.	Es ist uns sehr wichtig, die Beziehung zu diesem Dienstleister aufrecht zu erhalten.	Coote et al. (2003) Fynes et al. (2005c)
FO_3	We expect our relationship with this service provider to continue a long time.	Wir erwarten, dass die Beziehung zu diesem Dienstleister noch lange Zeit andauert.	Heide and Miner (1992) Blancero and Ellram (1997) Paulraj and Chen (2005) Griffith et al. (2006)
FO_4	We have high expectations of the long-term relationship.	Wir erwarten einen hohen Nutzen von einer langfristigen Beziehung.	Ellram and Hendrick (1995) Coote et al. (2003)
FO_5	We expect that the relationship with this service provider will be profitable over the long run.	Wir erwarten, dass die Beziehung zu diesem Dienstleister langfristig profitabel sein wird.	Coote et al. (2003)
FO_6	Our written agreements with the service provider are evergreen/ongoing.	Unsere schriftlichen Vereinbarungen mit dem Dienstleister sind unbefristet/langfristig.	Heide and Miner (1992) Ellram and Hendrick (1995)
FO_7	We work with this service provider to improve quality in the long run.	Wir arbeiten mit diesem Dienstleister eng zusammen, um auf lange Sicht die erhaltene Qualität zu steigern.	Paulraj and Chen (2005)
FO_8	We view our service provider as an extension of our company.	Wir sehen diesen Dienstleister als eine externe Ergänzung unseres Unternehmens.	Paulraj and Chen (2005)

## Relationship Quality: Communication

Name	Item Text English	Item Text German	Source(s)
COM_1	Face-to-face planning and communication with the service provider are frequent.	Persönliche Planung und Kommunikation mit dem Dienstleister finden regelmäßig statt.	Ellram and Hendrick (1995) Carr and Pearson (1999) Paulraj and Chen (2005)
COM_2	Communication on important issues takes place on a high corporate level.	Wichtige Themen werden in beiden Unternehmen auch auf hoher Organisationsebene diskutiert.	Ellram and Hendrick (1995) Blancero and Ellram (1997) Carr and Pearson (1999)
COM_3	Communication on important issues takes place on many corporate levels.	Kommunikation findet auf mehreren Organisationsebenen statt.	Ellram and Hendrick (1995) Krause and Ellram (1997)
COM_4	We have joint planning committees / task forces on key issues together with the service provider.	Gemeinsame Planungsgremien und Task Forces werden für Kernthemen genutzt.	Ellram and Hendrick (1995)

COM_5	We regularly provide the service provider with all relevant information required for capacity planning and service provision.	Wir versorgen den Dienstleister regelmäßig mit allen relevanten Informationen, damit er Kapazität und Bereitstellung seiner Dienstleistung planen kann.	<p>Item is a reworded combination of several „production information and capacity planning“ items that had to be adapted from a product procurement context.</p> <p>Heide and Miner (1992)</p> <p>Mohr and Spekman (1994)</p> <p>Krause and Ellram (1997)</p> <p>Blancero and Ellram (1997)</p> <p>Coote et al. (2003)</p> <p>Paulraj and Chen (2005)</p> <p>Fynes et al. (2005a und 2005b)</p> <p>Griffith et al. (2006)</p> <p>Fynes et al. (2008)</p>
COM_6	We share proprietary information with the service provider if it is relevant for the cooperation.	Wir teilen auch vertrauliche Informationen mit dem Dienstleister, wenn sie für die Zusammenarbeit relevant sind.	<p>Mohr and Spekman (1994)</p> <p>Blancero and Ellram (1997)</p> <p>Fynes et al. (2005a und 2005b)</p> <p>Griffith et al. (2006)</p> <p>Fynes et al. (2008)</p> <p>Hsu et al. (2008)</p>

COM_7	We constantly keep our service provider informed about changes that might affect him.	Wir informieren den Dienstleister stets, wenn Veränderungen auftreten, die ihn betreffen können.	Heide and Miner (1992) Morgen and Hunt (1994) Mohr and Spekman (1994) Stuart (1997) Krause and Ellram (1997) Coote et al. (2003) Paulraj and Chen (2005) Fynes et al. (2005a und 2005b) Griffith et al. (2006) Fynes et al. (2008)
COM_8	Exchange of information in this relationship takes place frequently and informally – not only according to prespecified agreements.	Wir kommunizieren regelmäßig informell und über das im Vertrag vereinbarte Maß hinaus mit diesem Dienstleister.	Heide and Miner (1992) Mohr and Spekman (1994) Krause and Ellram (1997) Paulraj and Chen (2005) Fynes et al. (2005a und 2005b) Griffith et al. (2006) Fynes et al. (2008)
COM_9	We monitor only end results of the service provider's work.	Unser Unternehmen kontrolliert nur die Ergebnisse der Arbeit des Dienstleisters.	Ellram and Hendrick (1995)



COM_10	We routinely advise the service provider of his service performance.	Wir informieren den Dienstleister regelmäßig über die Qualität seiner Dienstleistung.	Morgan and Hunt (1994) Blancero and Ellram (1997) Stuart (1997) Paulraj and Chen (2005)
COM_11	We share demand forecasts with the service provider.	Unser Unternehmen teilt dem Dienstleister Nachfrageprognosen für die Dienstleistung mit.	Ellram and Hendrick (1995)
COM_12	We exchange technical information extensively with the service provider.	Technische Informationen werden umfassend ausgetauscht.	Ellram and Hendrick (1995)
COM_13	The service provider discloses the extent and names of employed subcontractors.	Der Dienstleister informiert uns darüber, wann und welche Subkontraktoren eingesetzt werden.	Practitioner interviews
COM_14	We understand the added value of the service provider and his subcontractors within the service value chain.	Wir verstehen, wie sich die eingekauften Leistungen auf den Dienstleistungsanbieter und seine Subkontraktoren aufteilen.	Practitioner interviews
COM_15	We monitor the impact of commissioning former subcontractors as direct service providers and act accordingly.	Wir überprüfen regelmäßig, ob es sinnvoll ist, Subkontraktoren direkt zu beauftragen.	Practitioner interviews
COM_16	Our and the service provider's IT systems have computer-to-computer links.	Die IT-Systeme der beiden Firmen sind direkt verbunden.	Ellram and Hendrick (1995) Carr and Pearson (1999)
COM_17	Our software is compatible with the service provider's systems.	Unsere Software ist kompatibel mit der des Dienstleisters.	Ellram and Hendrick (1995)

## Relationship Quality: Cooperation

Name	Item Text English	Item Text German	Source(s)
Coop_1	We work together with the service provider to achieve our mutual goals.	Der Dienstleister und unser Unternehmen arbeiten zusammen, um unsere gemeinsamen Ziele zu erreichen.	Heide and Miner (1992) Prahinski and Benton (2004)
Coop_2	We are very loyal to this service provider.	Wir sind sehr loyal gegenüber diesem Dienstleister.	Ellram and Hendrick (1995)
Coop_3	In this procurement relationship we strive for continuous improvement.	In der Einkaufsbeziehung streben wir nach kontinuierlichen Verbesserungen.	Ellram and Hendrick (1995) Gulati and Sytch (2007)
Coop_4	Our relationship with the service provider is of value for both parties: it's a win/win partnership.	Unsere Beziehung zu diesem Dienstleister ist für beide Seiten gewinnbringend: Es ist eine Win/Win-Partnerschaft.	Huntley (2006)
Coop_5	The service provider does not take advantage of a strong bargaining position.	Wenn der Dienstleister sich in einer starken Verhandlungsposition befindet, nutzt er das nicht aus.	Prahinski and Benton (2004)
Coop_6	In the relationship with the service provider there is a high willingness to handle exceptions by negotiation.	In der Beziehung mit dem Dienstleister besteht eine hohe Bereitschaft, Ausnahmen oder Veränderungen durch Verhandlungen zu regeln.	Ellram and Hendrick (1995) Griffith et al. (2006)
Coop_7	The service provider displays high willingness to help us in difficult situations.	Der Dienstleister zeigt eine hohe Bereitschaft, uns in schwierigen Situationen zu unterstützen.	Ellram and Hendrick (1995) Stuart (1997) Prahinski and Benton (2004) Griffith et al. (2006)

Coop_8	Our willingness to help the service provider in difficult situations is high.	Unsere Bereitschaft ist hoch, den Dienstleister in schwierigen Situationen zu unterstützen.	Ellram and Hendrick (1995) Stuart (1997) Prahinski and Benton (2004) Griffith et al. (2006)
Coop_9	Problems that arise in the course of the relationship are solved by both parties in a joint effort.	Probleme, die im Laufe der Dienstleistungsbeziehung auftreten, lösen wir gemeinsam mit dem Dienstleister.	Heide and Miner (1992) Stuart (1997) Gulati and Sytch (2007)
Coop_10	Before switching to another provider, we give the current service provider the opportunity to make a counter offer.	Bevor wir den Anbieter wechseln, geben wir dem aktuellen Dienstleister eine Gelegenheit, ein Gegenangebot zu machen.	Huntley (2006)

## Relationship Quality: Trust

Name	Item Text English	Item Text German	Source(s)
Trust_1	We trust the service provider at all times.	Wir vertrauen diesem Dienstleister.	Crosby et al. (1990) Morgan and Hunt (1994) Smith (1998) Roberts et al. (2003) Coote et al. (2003) Hsieh and Hiang (2004) Fynes et al. (2005a und 2005b)
Trust_2	The service provider is fair and honest in his actions towards us.	Wir vertrauen darauf, dass sich dieser Dienstleister uns gegenüber fair und ehrlich verhält.	Kaufmann and Carter (2006) Gulati and Sytch (2007)
Trust_3	We believe that the service provider always acts with our best interest in mind.	Wir vertrauen darauf, dass dieser Dienstleister stets in unserem Interesse handelt.	Huntley (2006) Barry et al. (2008)
Trust_4	We can count on this service provider to consider how their decisions and actions affect us in the future.	Wir vertrauen darauf, dass dieser Dienstleister bei seinen Entscheidungen und Handlungen bedenkt, wie sie unser Unternehmen jetzt und in Zukunft betreffen werden.	Mohr and Spekman (1994) Roberts et al. (2003) Barry et al. (2008)
Trust_5	We trust that confidential/proprietary information shared with this service provider will be kept strictly confidential.	Wir vertrauen darauf, dass der Dienstleister geheime und vertrauliche Informationen auch streng vertraulich behandelt.	Gulati and Sytch (2007)
Trust_6	The service provider is genuinely concerned about our business success.	Unser Geschäftserfolg ist diesem Dienstleister wichtig.	Roberts et al. (2003) Barry et al. (2008)

Trust_7	We trust the information this service provider gives us.	Wir halten die Informationen und Daten dieses Dienstleisters für glaubwürdig.	Crosby et al. (1990) Huntley (2006) Barry et al. (2008)
Trust_8	The service provider is honest about problems.	Der Dienstleister geht offen und ehrlich mit Problemen um.	Roberts et al. (2003)

Moderator: Complexity

Name	Item Text English	Item Text German	Source(s)
CX_1	Regarding the purchased service: The service is complex. Its processes are not easily describable.	Die eingekaufte Dienstleistung ist komplex, sie ist von Prozessen und Beschreibbarkeit keinesfalls einfach.	Reworded to fit services. Kaufmann and Carter (2006)
CX_2	The service category faces significant price reductions each year.	In der Dienstleistungskategorie werden jedes Jahr signifikante Kostensenkungen gefordert.	Reworded to fit services. Kaufmann (1993)
CX_3	The service category faces significant increases in quality each year.	In der Dienstleistungskategorie werden jedes Jahr signifikante Qualitätsverbesserungen gefordert.	Reworded to fit services. Kaufmann (1993)
CX_4	The service category faces significant technological or procedural progress each year.	In der Dienstleistungskategorie werden jedes Jahr signifikante Technologiesprünge oder Prozessverbesserungen gefordert.	Reworded to fit services. Kaufmann (1993)
CX_5	The service category faces significant decreases to lead and development times each year.	In der Dienstleistungskategorie werden jedes Jahr signifikante Verkürzungen des Time-to-Market gefordert.	Reworded to fit services. Kaufmann (1993)
CX_6	The service category faces an increasing pressure for even more precise on time delivery each year.	In der Dienstleistungskategorie werden jedes Jahr signifikante Verbesserungen der Pünktlichkeit der Leistungserbringung gefordert.	Reworded to fit services. Kaufmann (1993)
CX_7	The service provided is very complex in relation to other services that we buy.	Von allen Dienstleistungen, die unser Unternehmen einkauft, ist diese Dienstleistung eine der komplexeren.	Reworded to fit services.
CX_8	The service provided consists of a large number of service components.	Die Dienstleistung besteht aus einer Vielzahl einzelner Teilleistungen.	Practitioner interviews

CX_9	The service provided consists of very diverse service components.	Die Teilleistungen der Dienstleistung sind sehr unterschiedlich.	Practitioner interviews
CX_10	The service provided consists of very interdependent service components.	Die Teilleistungen der Dienstleistung sind stark miteinander verknüpft / von einander abhängig.	Practitioner interviews

Moderator: Dynamics

Name	Item Text English	Item Text German	Source(s)
DY_1	The service's characteristics change frequently.	Die Charakteristika der Dienstleistung verändern sich häufig.	Kaufmann (1993) Kaufmann and Carter (2006)
DY_2	If the service requirements change, they change substantially.	Wenn sich die Charakteristika der Dienstleistung verändern, verändern sie sich stark.	Kaufmann and Carter (2006)
DY_3	Service demand fluctuations are frequent.	Das nachgefragte Dienstleistungsvolumen ändert sich häufig.	Kaufmann (1993)
DY_4	The required service capacity is difficult to predict.	Das benötigte Dienstleistungsvolumen lässt sich schwierig im Vorfeld prognostizieren.	Kaufmann (1993)
DY_5	It is very difficult to forecast how the provided service will change in 3 to 5 years.	Es ist sehr schwierig vorherzusagen, wie sich die nachgefragte Dienstleistung in den nächsten 3 bis 5 Jahren verändern wird.	Fynes et al. (2005a)



## Moderator: BATNA of the Buyer

<b>Name</b>	<b>Item Text English</b>	<b>Item Text German</b>	<b>Source(s)</b>
BBuy_1	The service is easily substitutable.	Die Dienstleistung ist leicht ersetzbar.	Heide (1994) Stuart (1997) Kaufmann (2002)
BBuy_2	Other service providers can provide the full required capacity.	Andere Dienstleistungsanbieter können die komplette benötigte Kapazität liefern.	Stuart (1997) Kaufmann (2002)
BBuy_3	Multiple competing providers exist for this service category.	Es existieren mehrere vergleichbare Anbieter, die miteinander im Wettbewerb stehen.	Heide (1994) Kaufmann (2002)
BBuy_4	Our internal processes would only be minimally affected by a provider change.	Ein Anbieterwechsel wirkt sich nur minimal auf den eigenen Geschäftsablauf und die eigenen Prozesse aus.	Stuart (1997) Kaufmann (2002)
BBuy_5	After changing service providers we require only minimal time until satisfactory performance could be expected from a new service provider.	Nach einem Anbieterwechsel benötigen wir nur kurze Zeit, bis der neue Dienstleister zufriedenstellende Qualität liefert.	Heide and Miner (1992)
BBuy_6	We are able to switch to an alternative service provider on short notice without problems.	Wir könnten auch kurzfristig problemlos den Dienstleister wechseln.	Gulati and Sytch (2007)

Moderator: BATNA of the Supplier

Name	Item Text English	Item Text German	Source(s)
BSup_1	If the service provider lost our business, he could compensate the lost volume with other buyers.	Wenn der Dienstleistungsanbieter Ihr Unternehmen als Kunden verliert kann das verlorene Volumen leicht mit anderen Kunden kompensiert werden.	Heide (1994) Stuart (1997) Kaufmann (2002)
BSup_2	If the service provider lost our business, he would need little time to establish a satisfactory relationship with other buyers.	Wenn der Dienstleistungsanbieter Ihr Unternehmen als Kunden verliert benötigt der Dienstleister nur kurze Zeit, um mit einem neuen Abnehmer eine zufrieden stellende Beziehung aufzubauen.	Heide and Miner (1992)
BSup_3	If the service provider lost our business, the loss of volume would be without negative consequences for his processes.	Wenn der Dienstleistungsanbieter Ihr Unternehmen als Kunden verliert entstehen keine Nachteile für die Prozesse des Dienstleisters.	Kaufmann (2002)
BSup_4	If the service provider lost our business, the loss of volume would be without negative consequences for his financial situation.	Wenn der Dienstleistungsanbieter Ihr Unternehmen als Kunden verliert hat dies keine negativen Auswirkungen auf die finanzielle Lage des Anbieters.	Kaufmann (2002)
BSup_5	If the service provider lost our business, he would not be required to write off substantial investments.	Wenn der Dienstleistungsanbieter Ihr Unternehmen als Kunden verliert muss der Anbieter keine Investitionen abschreiben.	Wathne and Heide (2004)
BSup_6	The service provider is aware that he is the only suitable provider for our company.	Der Dienstleister weiß, dass er als einziger Anbieter diese Dienstleistung für unser Unternehmen bereitstellt.	Krause and Scannell (2002)

## Appendix 3: Correlation Table

N=245

	FO	COM	Trust	COOP	RRA	Price	PTrans	Comp	IPer
Antecedents of Relationship Quality									
FO	1								
COM	,353*	1							
Aspects of Relationship Quality									
Trust	,425*	,439*	1						
COOP	,630*	,633*	,851*	1					
Dimensions of Service Performance									
RRA	,222*	,325*	,828*	,739*	1				
Price	,335*	,411*	,555*	,580*	,491*	1			
PTrans	,176*	,388*	,632*	,673*	,692*	,745*	1		
Comp	,241*	,387*	,644*	,691*	,675*	,526*	,602*	1	
IPer	,097	,213*	,471*	,546*	,649*	,369*	,522*	,685*	1

\* Correlation is significant at the 0.01 level (2-tailed).