

Pricing Third-Party Logistics Services

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Contents

Contents	II
List of Figures.....	V
List of Tables	VI
List of Abbreviations	VII
1 Introduction.....	9
1.1 Research Motivation.....	9
1.2 Research Goals	10
1.3 Structure.....	11
2 Literature Review	12
2.1 Characterizing 3PL.....	12
2.1.1 Characteristics of Industrial Services.....	12
2.1.2 Definition and Particularities of 3PL	13
2.2 Content Analysis of Reviewed Literature	16
2.2.1 Sampling	16
2.2.2 Literature Classification	23
2.2.3 Categorization	27
2.2.3.1 Composition	30
2.2.3.2 Governance.....	32
2.2.3.3 Context	33
2.2.3.4 Structure	35
2.2.3.5 Outcome	37
2.3 Implications and Future Research Directions.....	38

3	Conceptual Framework	40
3.1	Theoretical Background	40
3.1.1	TCE-based Logistics Services Classification.....	40
3.1.2	Relationship-specific Sources of Transaction Costs	43
3.2	Price Dimensions	44
3.3	Price Model Design Hypotheses.....	46
3.3.1	Asset Specificity.....	47
3.3.1.1	Specific Investments by the LSP.....	47
3.3.1.2	Specific Investments by the Customer	49
3.3.2	Behavioral Uncertainty in Terms of Bounded Rationality	50
3.3.2.1	Bounded Rationality of the LSP.....	51
3.3.2.2	Bounded Rationality of the Customer	52
3.3.3	Environmental Uncertainty	53
3.3.3.1	Volume Uncertainty	54
3.3.3.2	Technological Uncertainty	54
3.3.4	Remuneration-induced Opportunism.....	55
3.3.5	Summary of Price Model Design Hypotheses	56
3.4	Conclusions on the Conceptual Framework.....	57
4	Empirical Analysis.....	60
4.1	Research Methodology	60
4.1.1	Sample Design	60
4.1.2	Respondent Characteristics	62
4.1.3	Measurement Scales.....	64
4.2	Empirical Analysis	66
4.2.1	Measurement Items	66
4.2.2	Measurement Models	69
4.2.2.1	Confirmatory Factor Analysis	69
4.2.2.2	Direct Influence Model	70
4.2.2.3	Indirect Influence Models	72
4.2.2.4	Moderation Analysis	78
4.3	Implications	81
4.3.1	Discussion of Results	81

4.3.2 Managerial Implications.....	83
4.3.3 Limitations and Future Research	84
5 Conclusion	86
Appendix	88
A.1 Advance Notice Email	88
A.2 Invitation Email	90
A.3 Questionnaire	92
A.4 First Reminder	108
A.5 Second Reminder	110
Bibliography	112

List of Figures

Figure 2.1: Classification of Reviewed Literature	24
Figure 2.2: Dates of Publication of Reviewed Articles.....	25
Figure 2.3: Content Analysis Framework	28
Figure 3.1: TCE-based Logistics Classification.....	42
Figure 3.2: Transaction-cost-driven Problem Classification.....	44
Figure 3.3: Price Model Matrix.....	45
Figure 3.4: High Asset Specificity of the LSP	49
Figure 3.5: Overview of Price Model Design Hypotheses.....	57
Figure 4.1: Direct Influence Model.....	71
Figure 4.2: Basic Moderation Model	74
Figure 4.3: Mediation Model	78

List of Tables

Table 2.1: Common 3PL Definitions	14
Table 2.2: Logistics Articles Reviewed	17
Table 2.3: Reviewed Marketing Articles	20
Table 2.4: Methodological Assessment of Theory-driven Articles Reviewed	26
Table 2.5: Categorization of Reviewed Articles	29
Table 4.1: Sample Description	62
Table 4.2: Measurement Items	67
Table 4.3: Application of the Fornell-Larcker Criterion.....	69
Table 4.4: Moderation Results	79

List of Abbreviations

3PL	Third-Party Logistics
AGFI	Adjusted Goodness of Fit Index
BC	Bounded Rationality of the Customer
BL	Bounded Rationality of the LSP
CFI	Comparative Fit Index
CI	Proactive Cost Improvement
CO	Cost Orientation
CS	Customer-Related Specificity
df	Degrees of Freedom
GDP	Gross Domestic Product
GFI	Goodness of Fit Index
H	Hypothesis
IMP	Industrial Marketing and Purchasing group
LS	LSP-Related Specificity
LSP	Logistics Service Provider
M	Moderated Path
OL	Opportunistic Inclination of the LSP
OO	Outcome Orientation
OS	Outsourcing Success
PI	Proactive Performance Improvement
RMSEA	Root Mean Square Error of Approximation
RP	Rationality Principle
SA	Situational Analysis

SBU	Strategic Business Unit
SEM	Structural Equation Modeling
SRMR	Standardized Root Mean Square Residual
TCE	Transaction Cost Economics
TLI	Tucker Lewis Index
TU	Technological Uncertainty
VU	Volume Uncertainty

1 Introduction

1.1 Research Motivation

Logistics expenditures amount to about 14 percent of global GDP (Rodrigues, Bowersox and Calantone 2005). In this market, the logistics services industry has exhibited tremendous growth for more than two decades (Maloni and Carter 2006). Especially since the 1990s, this development was paralleled by an increasing academic interest in third-party logistics (3PL), since half of industrial logistics activities are provided by third parties (Langley et al. 2007). However, with the majority of academic articles on 3PL following a descriptive approach (Selviaridis and Spring 2007), this field is still in its early stages of development (Marasco 2008). While the increase in theory-testing articles (Sachan and Datta 2005) indicates a beginning maturation (Colquitt and Zapata-Phelan 2007; Boyd, Finkelstein and Gove 2005), there are still gaps in the theoretical foundation of 3PL research (Marasco 2008; Selviaridis and Spring 2007; Mentzer, Min and Bobbitt 2004).

Recently, three extensive reviews of logistics literature related to 3PL were published: Maloni and Carter (2006), Selviardis and Spring (2007), and Marasco (2008). All three stressed the importance of contractual arrangements and incentives for logistics outsourcing and the need for further research in this area. Maloni and Carter (2006) emphasized that studies on logistics contracts were underrepresented, while Selviardis and Spring (2007) called for more work on the question of whether contracts are an important element of relationship management or just a necessary formality, and Marasco (2008) found a need for closer examination of the bonding elements necessary for the preservation and development of sustainable logistics relationships.

The need for further research on 3PL contracts is substantiated by the empirical observation that users and providers of logistics services lack the know-how to design purposeful agreements since their agreed upon contracts often fail to govern the relationship and set wrong or misleading incentives (Halldorsson and Skjoett-Larsen 2006).

Contracts are an important institution of relational governance (Williamson 1979; Williamson 1991). One of the central elements of contracts is the price model. In long-term arrangements, such as those in 3PL relationships (Lieb and Bentz 2005a), a well fitted price model sets the tone for further development of the relationship and success. On the other hand, an inappropriate price model may impede the growth and success of the relationship because the logistics service provider (LSP) may undertake only the most necessary changes and improvements to its services without considering specific investments that would be beneficial to its customer. Therefore, knowledge about 3PL pricing is not relevant only to LSPs, but also to the customers, especially since they heavily influence the structure of price models through the tendering process and by issuing detailed and specific service requests.

1.2 Research Goals

Logistics pricing is an important but only partially investigated topic. The aim of this study is to narrow this gap by pursuing the question of how the price model should be designed in 3PL relationships for the mutual benefit of both parties: the logistics customer, further on called customer, as well as the LSP. To answer this question, three successively built research questions will be analyzed.

Research Question 1: What implications referring to 3PL price model design can be drawn from existing studies?

Research Question 2: Theoretically, how should price models be designed to foster mutually successful 3PL relationships?

Research Question 3: Does business practice support the theoretical model and what are the implications for 3PL pricing practice and research?

1.3 Structure

To answer research question 1, it is necessary to consolidate previous studies on logistics service pricing, especially from the fields of logistics and marketing. A comprehensive literature review on logistics pricing is presented in chapter 2, organized as follows: In section 2.1, the nature of 3PL services is discussed, followed by the content analysis of identified articles on (logistics) service pricing in section 2.2. Section 2.3 closes the review with implications and further research directions.

In response to research question 2, a conceptual framework is deduced in chapter 3 that builds on transaction cost economics (TCE). Section 3.1 discusses the theoretical background of TCE, while section 3.2 identifies the underlying price model design dimensions. Section 3.3 applies the derived TCE framework to the problem of logistics price model design, presenting seven design hypotheses. Section 3.4 concludes the chapter with implications for further theoretical development.

As for research question 3, the hypotheses are empirically tested in chapter 4. Section 4.1 discusses the empirical methodology, and the empirical analysis is performed in section 4.2. In doing so, a two-step approach is applied: first, direct effects of the relationship context on price model design are analyzed and second, an interaction fit approach is followed using moderation analysis to test the proposed design hypotheses. Section 4.3 presents major research results, implications for business practice as well as limitations and further research opportunities.

The study closes with chapter 5. The chapter presents essential findings of the study. It provides a concluding evaluation and outlook on the topic of logistics service pricing.

2 Literature Review

This chapter is based on the article “Pricing Third-Party Logistics Services: Integrating Insights from the Logistics and Industrial Service Literature” by Lukassen and Wallenburg (2009b), currently under review with the *Transportation Journal*. Presenting a detailed review of price/pricing oriented logistics and service marketing literature an overview of the current status of research on logistics pricing is given.

2.1 Characterizing 3PL

2.1.1 Characteristics of Industrial Services

3PL services are a subset of services in general and industrial services in particular. Zeithaml, Parasuraman and Berry (1985) described services in general as:

- (i) intangible,
- (ii) inseparable,
- (iii) heterogeneous, and
- (iv) perishable.

Compared to those, industrial services have several additional characteristics that distinguish them from other services, especially consumer services. According to Morris and Fuller (1989), industrial services are non-convenience products, customized to the specific needs of the customer, so they require a formal and extensive provider selection process in order to ensure the LSP's capability to perform accordingly.

Moreover, industrial services are often provided at the customer's location but target objects rather than people. In addition, the service is often based heavily on human resources and their specific knowledge and involves costly service-specific equipment. Finally, industrial service relationships tend to be long-term and continuous, showing a more predictable demand pattern than that of consumer services.

Revisiting the four characteristics of services in general, industrial services have additional specifications:

- (i') intangibility not only complicates service comparison but also requires an intense ex-ante supplier selection process,
- (ii') inseparability not only implies that the customer is an integral part of the service, but also the customer's assets,
- (iii') heterogeneity causes service performance to vary not only because of differing customer attributes but also because of the requirement of service-specific equipment and know-how,
- (iv') perishability refers not only to a discrete capacity allocation problem but also, because of the long-term nature of the relationship, to a continuous capacity dedication and planning problem that complicates the analysis on the one hand yet makes demand more predictable on the other hand.

2.1.2 Definition and Particularities of 3PL

Common definitions of 3PL, which help to identify the specificities of 3PL (table 2.1), range from broad to narrow (Deepen et al. 2008; Marasco, 2008). The first group of definitions have a broad view of 3PL that encompasses simple, "traditional" transportation, warehousing services and more complex multi-service bundles (Lieb 1992) and contract durations ranging from short-term agreements to long-term relationships (Bask 2001). The second group of definitions take a more narrow view that associates 3PL with providing comprehensive logistics services (Sink, Langley and Gibson 1996)

on the basis of a longer-term relationship (e.g., Berglund et al. 1999; Murphy and Poist 1998; Skjoett-Larsen 2000; Knemeyer and Murphy 2005).

Table 2.1: Common 3PL Definitions

Author(s)	Definition
Bagchi and Virum (1996)	3PL is “[a] long-term formal or informal relationship between a shipper and a logistics service provider [LSP] to render all or a considerable number of logistics activities of the shipper. The shipper and the logistics service provider [LSP] see themselves as long-term partners in these arrangements.” (p. 93)
Bask (2001)	3PL represent “relationships between interfaces in the supply chains and third-party logistics [3PL] providers, where logistics services are offered, from basic to customized ones, in a shorter or longer-term relationship, with the aim of effectiveness and efficiency.” (p. 474)
Berglund et al. (1999)	3PL is “activities carried out by a logistics service provider [LSP] on behalf of a shipper and consisting of at least management and execution of transportation and warehousing (if warehousing is part of the process). In addition, other activities can be included. ... Also, we require the contract to contain some management, analytical or design activities, and the length of the cooperation between shipper and provider to be at least one year, to distinguish third-party logistics [3PL] from traditional ‘arm’s length’ sourcing of transportation and/or warehousing.” (p. 59)
Lieb (1992)	“Third-party logistics [3PL] involves the use of external companies to perform logistics functions that have traditionally been performed within an organization. The functions performed by the third party can encompass the entire logistics process or selected activities within that process.” (p. 29)
Murphy and Poist (1998)	3PL is “a relationship between a shipper and 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, more mutually beneficial relationship.” (p. 26, derived from Africk and Calkins 1994)
Sink, Langley and Gibson (1996)	“Third-party logistics [3PL] services are multiple distribution activities provided by an external party, assuming no ownership of inventory, to accomplish related functions that are not desired to be rendered and/or managed by the purchasing organization.” (p. 40)

Observing the market for logistics services, the first, broader perception of 3PL includes service offerings ranging from basic logistics like freight forwarding and courier, express and postal (CEP) services, to complex service bundles and comprehensive logistics solutions. In the more narrow view, only the more complex service bundles and logistics solutions belong to 3PL. This notion of 3PL, specifically the one by Berglund et al. (1999), is applied in this study, as otherwise 3PL would include all out-

sourced logistics and would not differ from the more general area of “logistics services”.

Based on this definition, a further refinement of the services characteristics is proposed for 3PL, especially regarding the third element of heterogeneity. In contrast to other industrial services, like auditing or operations and maintenance services, 3PL includes the management and execution of multiple services, suggesting higher complexity and customer-specificity of the service bundle. While this kind of service requires a larger part of the associated investments to be specific to the service and to the individual customer, it also allows for greater price differentiation. Thus, 3PL services are especially heterogeneous industrial services, where both the service and price components can be customized.

Summarizing, 3PL services are:

- (i') intangible, such that the 3PL service itself is immaterial requiring considerate supplier selection,
- (ii') inseparable, such that 3PL services are produced and consumed simultaneously and involve goods of the customer,
- (iii'') heterogeneous, such that 3PL service performance depends on service- and customer-specific characteristics and calls for relationship-specific equipment and knowledge,
- (iv') perishable, such that 3PL service capacity cannot be stored, necessitating relationship-dependant capacity allocation and planning.

This refined definition serves as a guideline when evaluating whether certain service pricing articles may be relevant to 3PL services and should be included in the literature review.

2.2 Content Analysis of Reviewed Literature

Consistent with, for example, Marasco (2008), Spens and Kovács (2006), Li and Cavusgil (1995), and Krippendorff (1980), content analysis is applied to consolidate the existing knowledge regarding pricing of 3PL. Content analysis aims for an reliable, objective, systematic, quantitative study of existing publications (Ellinger et al. 2003; Krippendorff 1980) and allows for the investigation of both implicit assumptions and explicit statements (Krippendorff 1980). Thus it represents a promising method for reviewing literature (Cullinane and Toy 2000). In order to conduct a content analysis, sampling and categorization (Li and Cavusgil 1995) are required.

2.2.1 Sampling

In an initial step, articles that contribute to the domain of logistics service pricing are identified. Given the diversity of available publications, this search has to be directed by setting appropriate limits. First, to ensure quality and traceability, only literature published in English in, or frequently referenced in, academic journals was considered to account for quality and traceability. Next, key-word definition limited the literature to two areas: 1) logistics articles dealing with pricing and contracting issues and 2) due to the proximity of 3PL services and other industrial services, articles that address industrial service pricing. All available literature published before the end of 2007 was included. Keeping in mind that pricing research is still comparatively weak (Hinterhuber 2004; Malhotra 1996), especially with respect to services (Bolton and Myers 2003) and industrial goods (Noble and Gruca 1999), no starting date was specified and no journal preselection applied.

For the first area, logistics articles dealing with pricing and contracting issues, the keywords “third-party logistics” [or] “logistics outsourcing” and “contract” [or] “price” [or] “pricing” were applied to titles, abstracts and author-supplied keywords using the EBSCO database. The resulting 31 academic publications were scrutinized for whether they contribute to the analysis of logistics pricing, which scrutiny resulted in omitting 13 articles. In the next step, reference lists of the remaining 18 articles, as

well as the most recent literature reviews on logistics from Maloni and Carter (2006), Selviaridis and Spring (2007), and Marasco (2008), were searched for further articles that address logistics pricing, leading to nine other academic articles and five studies to be included in the present literature review. Thus, in total, 32 publications from the logistics pricing domain were included (table 2.2).

Table 2.2: Logistics Articles Reviewed

Author(s)	Classification				Categorization					Key points regarding pricing
	descriptive	prescriptive	empirical	conceptual	composition	governance	context	structure	outcome	
Andersson and Norrman (2002)	x			x		x		x	x	Outcome-based bonuses and penalties effect contractual governance.
Bhatnagar, Sohal and Millen (1999)	x		x		x					50 % of contracts are signed, thereof, 70 % include bonuses or penalties.
Bowersox (1990)		x		x	x		x	x		Risk transfer calls for the inclusion of bonuses as well as penalties.
Boyson et al. (1999)	x		x				x	x		Customers are risk-averse and try to explicitly outline service charges.
Crum and Allen (1997)	x		x		x					82 % of contracts include performance standards, and 12 % include penalties.
Dapiran et al. (1996)	x		x		x					60 % of contracts are signed, thereof, 54 % include bonuses, and 52 % include penalties.
Fernie (1999)	x		x		x			x		Simpler services are compensated based on outcome, more complex ones based on cost.
Halldorsson and Skjoett-Larsen (2006)	x		x			x	x		x	Price models may sketch possible win-win arrangements, yet, if misaligned, will cause constant quarrel.
Jaafar and Rafiq (2005)	x		x		x					62 % of contracts are signed, thereof, 43 % use open-book cost-plus compensation, and 26 % closed-book fixed rates.
Lambert, Emmelhainz and Gardner (1999)	x		x		x	x			x	Risk- and reward-sharing is important in building strong relationships.
Langley, Allen and Colombo (2003)	x		x		x					47 % of contracts include cost-sharing, 38 % risk- and reward-sharing, and 10 % revenue-sharing.

Table 2.2: Reviewed Logistics Articles (continued)

Author(s)	Classification				Categorization					Key points regarding pricing
	descriptive	prescriptive	empirical	conceptual	composition	governance	context	structure	outcome	
Langley, Allen and Dale (2004)	x		x		x					46 % of contracts include cost-sharing, 33 % risk- and reward-sharing, and 18 % cost-plus agreements.
Langley et al. (2005)	x		x		x					32 % of contracts include cost-sharing, 19 % risk- and reward-sharing, and 28 % cost-plus agreements.
Langley et al. (2007)	x		x		x					65 % of contracts include transaction-based fees, 44 % fixed prices, 27 % cost-plus agreements and 19 % gain-sharing.
Lieb (1992)	x		x		x					One-third of signed contracts include bonuses, and half envision penalties.
Lieb, Millen and van Wassenhove (1993)	x		x		x					European contracts include bonuses more often (43 %) than in the US (25 %), yet the usage of penalties is similar (51 % Europe vs. 44 % US).
Lieb and Randall (1996)	x		x		x					60 % of contracts include bonuses or penalties.
Lieb and Randall (1999a)	x		x		x					Outcome-oriented remuneration is most common, followed by cost-plus and gain-sharing agreements.
Lieb and Randall (1999b)	x		x		x					91 % of contracts are signed, thereof, 52 % include bonuses, and 49 % include penalties.
Lieb and Bentz (2004)	x		x		x		x	x		LSP compensation should be outcome-based, rather than cost-based.
Lim (2000)		x		x	x				x	Combining low-base compensation and high outcome-based bonuses, as well as penalties, induces LSPs to reveal their true capabilities.
Logan (2000)		x		x	x	x	x	x		LSPs should call for long-term outcome-based contracts, while customers should demand open-book cost-plus agreements.
Maltz and Ellram (1997)		x		x	x		x	x		3PL services are often hardly quantifiable; thus, remuneration should be more often based on delivered value to the customer (outcome).

Table 2.2: Reviewed Logistics Articles (continued)

Author(s)	Classification				Categorization					Key points regarding pricing
	descriptive	prescriptive	empirical	conceptual	composition	governance	context	structure	outcome	
Millen et al. (1997)	x		x		x					Compared to the US and Europe, Australian 3PL relationships less often include signed contracts, yet, of these, more envision explicit bonuses and penalties.
Peters, Lieb and Randall (1998)	x		x		x					85 % of contracts are signed, thereof, 47 %include bonuses, and 65 % include penalties.
Richardson (1993)		x		x	x			x		Cost-plus contracts are favorable if technical uncertainty is high.
Sohail and Sohal (2003)	x		x		x					40 % of contracts are signed, thereof, 73 %include bonuses or penalties.
Sohail, Austin and Rushdi (2004)	x		x		x					70 % of contracts are signed, thereof, 60 %include bonuses or penalties
Sohail and Al-Abdali (2005)	x		x		x					60 % of contracts are signed, thereof, 31 %include bonuses, and 38 % include penalties.
Sohail, Millen and Moss (2002)	x		x		x					75 % of contracts are signed, thereof, 40 % include bonuses, and 63 % include penalties.
van Hoek (2000)		x	x		x			x		More complex services call for detailed contracts containing fixed prices.
van Laarhoven, Berglund and Peters (2000)	x		x		x			x		75 % of contracts are signed, thereof, half specify logistics services in detail, and 40 % envision penalties.

For the second area, articles that address industrial service pricing, a keyword search conducted in the titles, abstracts and author-supplied keywords of articles in the EBSCO database using “service(s) price” [or] “service(s) pricing” revealed 170 academic articles. In order to identify those articles relevant for the question of 3PL pricing, the characteristics of 3PL services were applied to each, and articles focusing solely on spot transactions (e.g., Chao and Wilson 1987; Crew, Kleindorfer and Smith 1990; Yano and Newman 2007), on retail services (e.g., Hoffman, Turley and Kelley

2002; Rabinovich and Bailey 2004) or on services non-specific to an individual relationship (e.g., Morris and Fuller 1989; Essegaier, Gupta and Zhang 2002) were excluded. A search for relevant cross-references resulted in a total of 29 articles, which were included in the present literature analysis (table 2.3).

Table 2.3: Reviewed Marketing Articles

Author(s)	Classification				Categorization					Key points regarding pricing
	descriptive	prescriptive	empirical	conceptual	composition	governance	context	structure	outcome	
Arnold, Hoffman and McCormick (1989)		x		x			x	x		Service pricing decisions should be based on testability and availability of the service.
Avlonitis and Indounas (2005a)	x		x		x		x	x		When pricing services, most companies use cost-plus (58 %) and pricing based on the market's average price (55 %).
Avlonitis and Indounas (2005b)	x		x				x	x		Being important for logistics services, quality, competition and customer-related objectives are associated with relationship pricing.
Avlonitis, Indounas and Gounaris (2005)	x		x				x	x		Transportation companies emphasize capacity and asset utilization in their pricing decisions; in the initial stage, they are concerned with service quality.
Avlonitis and Indounas (2006)	x		x		x		x	x		Cost-based pricing is positively associated with the uniqueness of services (cost-plus) and the high importance of service costs (target return pricing); contrary intensity of competition has a negative effect.
Avlonitis and Indounas (2007a)	x		x				x	x		Service, organizational and environmental characteristics influence pricing strategy, so the strategy has to be formulated based on the relational situation.
Avlonitis and Indounas (2007b)	x		x				x			Pricing their services, transportation companies focus on customer retention, considering competitors' prices and neglecting profit maximization.
Beard and Hoyle (1976)		x		x	x					Services should be priced based on accruing costs, allowing for better-founded decisions on whether to accept a job or not.

Table 2.3: Reviewed Marketing Articles (continued)

Author(s)	Classification				Categorization					Key points regarding pricing
	descriptive	prescriptive	empirical	conceptual	composition	governance	context	structure	outcome	
Berman (2005)		x		x			x	x		Given limited capacity, high fixed costs, and separable and fluctuating demand, capacity-dependent pricing is favorable.
Bolton and Lemon (1999)		x	x			x			x	Payment equity, i.e., customer perception of compensation fairness, influences service satisfaction, as well as further service usage.
Cannon and Morgan (1990)		x		x				x		Large projects should be priced either based on sealed bids or on explicit price negotiations.
Cram (1996)		x		x		x	x	x		In industrial markets, cost-plus and customer-based prices calculated based on customer-specific performance indicators are favorable.
Docters et al. (2004)		x		x	x		x	x		Given that non-performance is costly, service pricing should include insurance or risk-sharing.
Forman and Hunt (2005)		x	x		x		x	x		Relationship structure and context affect pricing strategy, so cost-plus pricing is primarily driven by internal factors, i.e., capacity or cost structure.
Friedman and French (1987)		x		x					x	Delivering better than expected services allows for charging premium prices.
Groth (1995a)		x		x				x		Delivering exclusive services allows for pricing a premium, not only because of the physical attributes of the service, but also because of perceptions of the service.
Groth (1995b)		x		x				x		Pricing services is different because attainable price depends on the match with customer needs, as well as the inherent uncertainty about to-be-delivered quality.
Hinterhuber (2004)		x		x			x	x		Pricing should consider the customer, company and competition perspectives, as well as respective feedback.
Hoffman and Arnold (1989)		x		x				x		The more essential the service to the customer, the higher the potential premium the provider can command.

Table 2.3: Reviewed Marketing Articles (continued)

Author(s)	Classification				Categorization					Key points regarding pricing
	descriptive	prescriptive	empirical	conceptual	composition	governance	context	structure	outcome	
Hiller and Tollison (1978)	x			x			x	x	x	Given high (low) uncertainty about future adaptations and cost developments cost-plus contracts are less (more) expensive than outcome contracts.
Hoffman and Arnold (1989)		x		x				x		The more essential the service to the customer, the higher the potential premium the provider can command.
Kim, Cohen and Netessine (2007)		x		x	x		x		x	The higher the customer's risk aversion compared to that of the provider, the more compensation should be outcome-based; however, in any case, some part of compensation should remain cost-based.
Löbler, Posselt and Welk (2006)		x		x	x			x		Integrated services, i.e., input from both partners is necessary but substitutable, favors pricing based on provider input, rather than outcome.
Lovelock (1984)		x		x			x		x	As the service demand-capacity relationship changes over time, higher (lower) pricing in peak (low) times increases overall profits and directs demand.
Lovelock and Gummesson (2004)		x		x	x					Proposing to position rentals between ownership and external sourcing, a stronger input, i.e., time-based, compensation is suggested.
Roth, Woratschek and Pastowski (2006)	x			x				x	x	The more services are customized, the more price negotiation is preferred over ex-ante fixed prices.
Schlissel and Chasin (1991)		x		x	x					Service pricing should apply different approaches; a combination of time-based rates for regular costs and cost-based ones for unique costs is suggested.

Table 2.3: Reviewed Marketing Articles (continued)

Author(s)	Classification				Categorization					Key points regarding pricing
	descriptive	prescriptive	empirical	conceptual	composition	governance	context	structure	outcome	
Taher and El Basha (2006)		x		x			x	x		Pricing strategies should refer to situation-specific service characteristics and associated transaction costs, as well as demand heterogeneity.
Tung and Capella (1997)		x		x			x	x		A multi-step synthetic service pricing approach is proposed that considers demand, profit and service characteristics, as well as cost structure.
Zeithaml, Parasuraman and Berry (1985)	x		x		x		x			Service firms vary considerably, yet, concerning pricing, cost-orientation dominates and is used by 63 % of the respondents.

2.2.2 Literature Classification

For the methodological classification of the literature, the approach taken by Croom, Romano and Giannakis (2000) and Selviaridis and Spring (2007) is followed. This approach distinguishes, in one dimension, between conceptual and empirical work and, in another, between descriptive and prescriptive work. Apparently, research orientation differs widely between the two areas of literature (figure 2.1); the majority (81 percent) of logistics pricing publications are empirical, while the majority (69 percent) of the articles on industrial service pricing are conceptual. In addition, 81 percent of studies on pricing in logistics are confined to describing the phenomenon, whereas the majority of 69 percent of articles on industrial service pricing offer explanatory norms.

	Logistics pricing articles		Industrial service pricing articles	
	Empirical	Conceptual	Empirical	Conceptual
Descriptive	78%	3%	24%	7%
Prescriptive	3%	16%	7%	62%

Figure 2.1: Classification of Reviewed Literature

The lack of conceptual and prescriptive work on logistics pricing comes as no surprise because logistics research in general is still primarily descriptive: 69 percent of all logistics articles and 80 percent of the specific literature on 3PL are descriptive in nature (Selviaridis and Spring 2007; Marasco 2008). This situation is consistent with the insufficient theoretical foundation of logistics research (Bolumole, Frankel and Naslund 2007; Mentzer, Min and Bobbitt 2004). Moreover, the conceptual work on logistics pricing is prescriptive in five out of six cases, in contrast to the general conceptual literature on logistics and SCM, which is predominantly descriptive (Croom, Romano and Giannakis 2000; Selviaridis and Spring 2007). In this respect, the methodological approach in the logistics pricing literature is closer to industrial service pricing literature, where the majority (90 percent) of conceptual work is prescriptive.

Research on service pricing and, more specifically, on industrial service pricing has a longer history than does specialized logistics pricing. The first article identified in this area is Beard and Hoyle (1976), which was published fourteen years before Bowersox (1990), the first to touch on the pricing issue in logistics outsourcing relationships. However, the number of published articles (figure 2.2) on industrial service pricing indicates that the subject has not had much attention for a long time; only recently has there been an increasing interest in the topic, particularly by Avlonitis and Indounas, who have contributed or contributed to six of the last 12 articles on indus-

trial service pricing (Avlonitis and Indounas 2005a; 2005b; 2006; 2007a; 2007b and Avlonitis, Indounas and Gounaris 2005).

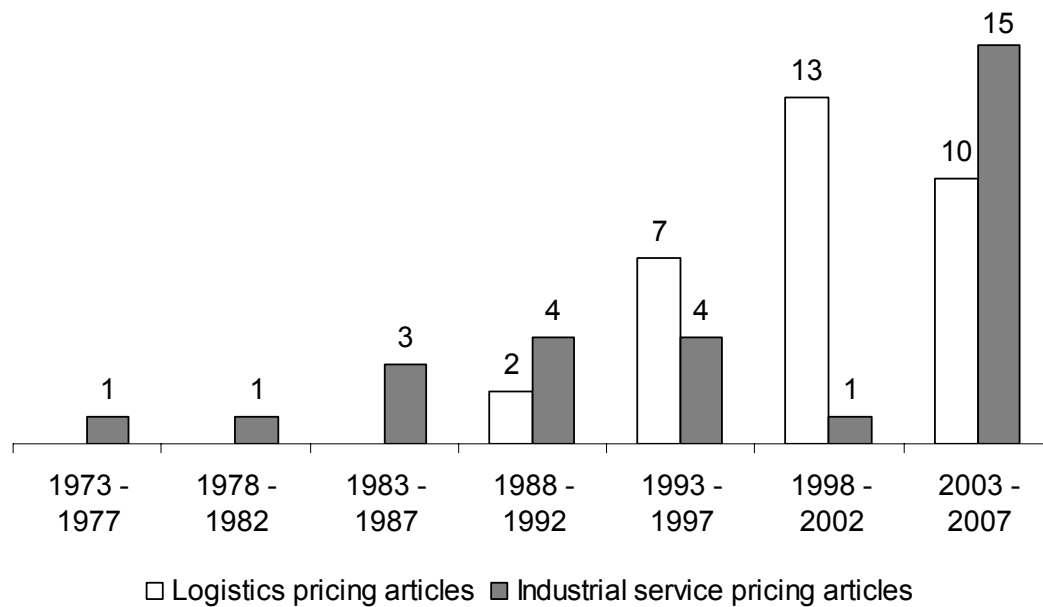


Figure 2.2: Dates of Publication of Reviewed Articles

Despite the increase in publications, theoretical development of industrial service pricing research has been impeded by the wide dispersion of the articles and their publication in primarily second-tier journals. The 29 industrial service pricing articles have been published in 20 different journals, and only one, the *Journal of Service Marketing*, has published more than two articles on the subject. In contrast, logistics research profits from a stronger focus within dedicated journals (Zsidisin et al. 2007; Carter 2002; Fawcett, Vellenga and Truitt 1995). Out of the 32 logistics publications, 28 have been published in 14 different academic journals, and more than half (57 percent) have been published in three of the most renowned logistics outlets (Carter 2002): *International Journal of Physical Distribution and Logistics Management*, *Journal of Business Logistics*, and *Transportation Journal*. There are also major methodological differences between the logistics and service pricing articles. While only five out of the 32 logistics studies (16 percent) take a theory-driven approach to

logistics pricing, 18 out of the 29 service pricing articles do (62 percent). The two literature streams also differ in choice of theories applied. Four out of five logistics articles refer to the general economic theories of Transaction Cost Theory, Principal Agent Theory, Resource Based View and Game Theory; the only exception is Maltz and Ellram (1997), who proposed their Total Cost of Relationship approach. In contrast, the service pricing literature lacks this inclination toward economics theories in favor of a focus on the identification of pricing determinants and pricing approaches (table 2.4).

Table 2.4: Methodological Assessment of Theory-driven Articles Reviewed

Author(s)	Theory applied/developed	Methodology	Categorization				
			composition	governance	context	structure	outcome
<i>Logistics</i>							
Halldorsson and Skjoett-Larsen (2006)	Principal Agent Theory, Transaction Cost Theory	Case Study		x	x		x
Lim (2000)	Game Theory	Modeling	x				x
Logan (2000)	Resource-Based View, Principal Agent Theory, Transaction Cost Theory	Deduction	x	x	x	x	
Maltz and Ellram (1997)	Total Cost of Relationship	Deduction	x		x	x	
van Hoek (2000)	Transaction Cost Theory	Survey	x			x	
<i>Marketing</i>							
Arnold, Hoffman and McCormick (1989)	Differentiation Premium Pricing	Deduction			x	x	
Berman (2005)	Capacity-Dependant Pricing	Deduction			x	x	
Bolton and Lemon (1999)	Payment-Equity-Dependant Pricing	Survey		x			x
Cannon and Morgan (1990)	Strategic Pricing	Deduction				x	
Cram (1996)	Relationship Pricing	Deduction		x	x	x	
Docters et al. (2004)	Service Pricing	Deduction	x		x	x	
Forman and Hunt (2005)	Premium Pricing	Deduction					x
Friedman and French (1987)	Industrial Pricing	Survey	x		x	x	
Groth (1995a)	Exclusive Value Pricing	Deduction				x	
Groth (1995b)	Service Pricing	Deduction				x	

**Table 2.4: Methodological Assessment of Theory-driven Articles Reviewed
(continued)**

Author(s)	Theory applied/developed	Methodology	Categorization				
			composition	governance	context	structure	outcome
Hinterhuber (2004)	Value-Based Pricing	Deduction			x	x	
Hiller and Tollison (1978)	Incentive- vs. Cost-Plus Pricing	Modeling			x		x
Kim, Cohen and Netessine (2007)	Performance Contracting	Modeling	x		x		x
Löbler, Posselt and Welk (2006)	Input- vs. Value-Based Pricing	Modeling	x			x	
Lovelock (1984)	Capacity-Dependant Pricing	Deduction			x		x
Lovelock and Gummesson (2004)	Maturity/Time-Dependant Pricing	Deduction	x				
Roth, Woratschek and Pastowski (2006)	Negotiation-Based Pricing	Modeling				x	x
Tung and Capella (1997)	Multi-Step Service Pricing	Modeling			x	x	

2.2.3 Categorization

To categorize the existing service pricing literature, Marasco's (2008) relationship framework and conceptualization, which builds on the framework of the Industrial Marketing and Purchasing (IMP) group (figure 2.3), is used. Marasco (2008) distinguished four main categories—process, context, structure and outcome—that are essential for relationships. While following this division in general, in the present context Marasco's view of the process phase (Marasco 2008) is adjusted to account for the specific problem of price model design. Although price level and the imposed costs are some of the most important criteria for outsourcing decisions and LSP selection (Lieb and Bentz 2005b; Wilding and Juriado 2004; Boyson et al. 1999), pricing is not only a matter of price level (Kotler and Keller 2006); it is also a matter of designing purposeful incentives structures that can govern the further development of the relationship.

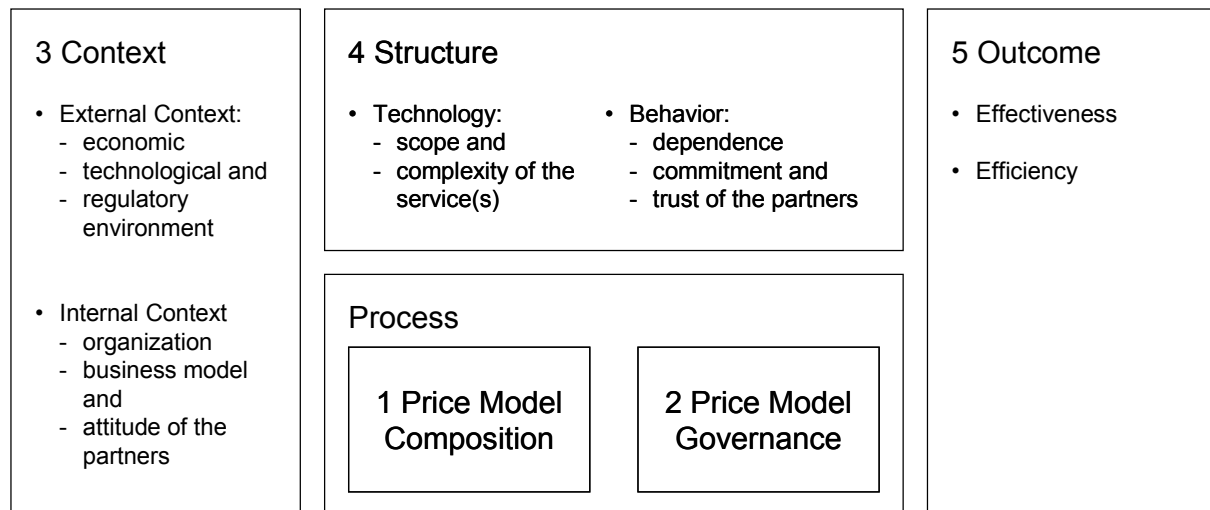


Figure 2.3: Content Analysis Framework

The process category contains the composition of the price model, which requires extensive pre-relationship negotiations and influences the set-up of the service (e.g., the level of proprietary service solutions, initial investments of the LSP). Once the relationship is agreed upon, the negotiated price model has to be implemented. During the ongoing relationship, the price model serves as a governance mechanism and influences the behavior of both the LSP and the customer. To cover this interrelationship, price model governance is introduced as a second process-related category that complements the price model composition.

Context, the third category, relates to the specific relational context in which the 3PL relationship is embedded. Context includes external and internal factors that are independent from the individual relationship. The external context is comprised of the economic, technological and regulatory environments, and the internal context is comprised of the organization, business models, and attitude (i.e., risk aversion) of the customer and the LSP.

The fourth category, structure, relates to the structure of the relationship and is comprised of its technical as well as behavioral set-up dependant on the specific situation and partners. Considering the potential scope of services provided within the relationship (Berglund et al. 1999), contracts will be more or less complex, long-term or detailed (Hakannsson and Snehota 1995). The mutual or unilateral dependence of the

partners and behavioral aspects like demonstrated commitment or accumulated trust through previous collaboration will influence the outsourcing arrangement (Marasco 2008) and possibly also the price model composition.

Outcome is the fifth category within the applied conceptual framework. Clearly, the price model composition is a relevant element of logistics relationships only if it actually affects the outcome of the relationship. Such effects may be related to efficiency, effectiveness or both.

As depicted in table 2.5, almost all (88 percent) of the reviewed logistics articles consider the composition of the LSP compensation while only 34 percent of the industrial services articles do, and the governance aspects of pricing are covered by the logistics articles almost twice as often as in the industrial services articles. On the other hand, 62 percent of the industrial services studies cover the relationship context, which is four times more often than the logistics articles do (16 percent). Moreover, 66 percent of industrial services articles are concerned with the relationship structure and its implication for pricing, while only 22 percent of logistics articles address those topics. Finally, the outcome dimension is somewhat more often considered in articles on industrial service pricing than in logistics articles (24 percent vs. 13 percent, respectively).

Table 2.5: Categorization of Reviewed Articles

Content category	Logistics pricing articles		Industrial services pricing articles	
	Number of articles	Share of articles	Number of articles	Share of articles
1 Composition	28	88 %	10	34 %
2 Governance	4	13 %	2	7 %
2 Context	6	19 %	18	62 %
3 Structure	7	22 %	19	66 %
4 Outcome	4	13 %	7	24 %

2.2.3.1 Composition

Twenty-eight of the 32 articles on logistics pricing refer to the composition of price agreements. One series of exploratory studies that uses Lieb's (1992) standard 3PL framework begins in 1992 and proceeds to cover America, Asia, Europe, Africa and Australia (Bhatnagar, Sohal and Millen 1999; Dapiran et al. 1996; Lieb, Millen and van Wassenhove 1993; Lieb and Randall 1996; Lieb and Randall 1999a; Lieb and Randall 1999b; Millen et al. 1997; Peters, Lieb and Randall 1998; Sohail and Sohal 2003; Sohail, Austin and Rushdi 2004; Sohail and Al-Abdali 2005; Sohal, Millen and Moss 2002). These studies investigated the degree to which 3PL relationships are based upon signed contracts and whether ex-ante variable components in the form of performance-based bonuses or penalties are included. In general, the use of outcome-based bonuses and penalties seems to have increased over the years, beginning in the US (Lieb 1992) and Europe (Lieb, Millen and van Wassenhove 1993), and with some delay in Asia (Millen et al. 1997; Bhatnagar, Sohal and Millen 1999) and Africa (Sohail, Austin and Rushdi 2004; Sohail and Al-Abdali 2005), before eventually reaching saturation, as observed for the US by Lieb and Randall (1999b) with regards to the use of bonuses (down from 65 percent of all relationships studied to 52 percent) as well as penalties (down from 51 percent to 49 percent). Van Laarhoven, Berglund and Peters (2000) ascertained an increase in 3PL contract sophistication for Europe and Crum and Allen (1997) for the US.

Langley et al. (2003; 2004; 2005; 2007) conducted annual surveys on global 3PL usage and found that risk- and reward-sharing agreements have decreased over the last decade. In contrast, cost-based contracts (often referred to as "cost-plus" in practice), which relate remuneration to the actual inputs made by the LSP, and transactions-based fees have gained in importance. While the popularity of cost-based agreements compared to fixed rates was also shown by Jaafar and Rafiq (2005) in a survey of firms from the UK, Lambert, Emmelhainz and Gardner (1999) highlighted the importance of risk- and reward-sharing in building strong relationships. Several different propositions have been related to the choice between cost- and outcome-based LSP

remuneration. While Lieb and Bentz (2004) noted the advice from managers with outsourcing experience that first-time users of 3PL services should avoid cost-based contracts, Fernie (1999) found that, in practice, simpler logistics services are compensated based on outcome, and more complex ones are based on costs.

Among the prescriptive works, Maltz and Ellram (1997) generally promoted outcome-based compensation, while Richardson (1993) proposed the use of cost-based contracts in situations of high technical uncertainty, such as those in start-up phases or new markets. Bowersox (1990) recommended basing this decision on the relative risk-aversion of the partners, and van Hoek (2000) suggested using detailed, fixed-price contracts and restraining from ex-ante variable components with complex services. Logan (2000) showed ambivalence in this matter, positing that the LSP should aim for long-term outcome-based contracts, while customers should demand open-book, cost-plus agreements. Further, Lim (2000) suggested that a combination of a small-base remuneration and high bonuses and penalties would be truth-revealing with respect to LSP capabilities.

While neither the articles that apply Lieb's (1992) framework nor the studies of Langley et al. (2003; 2004; 2005; 2007) offer recommendation or explanation concerning price composition, the articles that go beyond a focus on specific elements of 3PL contracts have varying and often contradicting conclusions. For example, 3PL services in dynamic businesses are often complex; however, following Richardson (1993), compensation should be cost-based, while, according to van Hoek (2000), it should be fixed. Therefore, a broader and more in-depth investigation into 3PL price agreements is necessary in order to provide a comprehensive understanding of relevant pricing components.

The ten industrial service pricing articles that relate to price composition affirm the importance of cost-based pricing. Avlonitis and Indounas (2005a; 2006) and Zeithaml, Parasuraman and Berry (1985) found cost-based pricing to be the most frequently used pricing design by service firms.

Based on a review of interdisciplinary articles, Schlissel and Chasin (1991) recommended a combination of time-based rates to cover for spending that is not specific to the individual service provided, and cost-based rates for specific costs incurred only as a result of the specific service request. Similarly, Lovelock and Gummesson (2004) proposed time-based compensation for rental and access relationships, like 3PL, in order to reflect their intermediate position between market and hierarchy.

Löbler, Posselt and Welk (2006) advised cost-based over outcome-based compensation if the service requires input from both partners and all or part of these inputs are substitutable. For example, in order to manage the customer's outbound logistics, the LSP may require volume forecasts from its customer, yet the required warehouse workers may be employed by either of them. Thus, the use of cost-based compensation is generally recommended because it increases transparency in terms of whether services are performed profitably (Beard and Hoyle 1976). When recommending remuneration to be more outcome-based (cost-based) the more (less) the customer is risk-averse compared to its LSP Kim, Cohen and Netessine (2007), like Bowersox (1990), referred to the risk transfer, which is also a part of 3PL services. On the other hand, Docters et al. (2004) suggested including risk sharing, insurances or warranties in service partnership contracts in order to cover for potential non-performance costs.

The industrial service pricing literature lacks a comprehensive and consistent evaluation of price model composition. While both the logistics and the service pricing literature note the predominance of cost-based compensation, there is no agreement on which determinants are or should be considered for the choice and design of price models. From a methodological point of view, Logan's (2000) theory-comparative article, Kim, Cohen and Netessine's (2007) performance contracting approach, and Forman and Hunt's (2005) industrial pricing concept offer multiple directions for further research.

2.2.3.2 Governance

With only six articles (four of the logistics articles and two of the industrial services articles) considering how price models govern 3PL relationships, governance is the

least examined of the five categories. In fact, all but Logan's (2000) article only touch on this aspect of pricing.

In the logistics pricing literature, risk- and reward-sharing (Lambert, Emmelhainz and Gardner 1999) and bonuses and penalties (Andersson and Norrman 2002) have been seen as integral parts of relational governance since outcome-based compensation and cost-based rates may establish incentives that influence the behavior of the LSP (Logan 2000). Even so, while price models offer the potential to support the relationship, they can also be a source of constant quarrel between the two parties involved (Halldorsson and Skjoett-Larsen 2006).

In the industrial services literature, Bolton and Lemon (1999) emphasized payment equity, the perceived fairness of the price paid for the purchased services, as influencing the customer's service satisfaction as well as its willingness to reuse the service in the future. In other words, price should not be thought of only as part of a single transaction point because the price model balances the interests of both partners in order to secure customer loyalty (Cram 1996).

Thus far, the extant literature underestimates the governance-related impact of price models on the logistics service relationships. Overall, it neither provides a clear description of the governance function of price models nor offers a thorough explanation of the effects of that function on relationship development and success. Further analysis might profit from a thorough application of Transaction-Cost Theory (e.g., Halldorsson and Skjoett-Larsen 2006) or the Payment Equity Concept (Bolton and Lemon 1999).

2.2.3.3 Context

Only six of the 32 reviewed logistics publications considered the influence of the relational context in the pricing decision. This influence was shown in the case study by Halldorsson and Skjoett-Larsen (2006), and Maltz and Ellram (1997) who pointed out that the demand for logistics services is a derived demand, determined externally and influenced by the market success of the logistics customer. In combination with the complexity of the service, a structural aspect of the relationship, this external influence

inflates measurement costs performed with a pure cost-based evaluation and favors a more outcome-based pricing. More generally, Logan (2000) mentioned that technological progress and (de-)regulation drive the sophistication of logistics services, leading to a call for a more sophisticated price model design. In contrast, focusing on customer experience, Lieb and Bentz (2004) advised inexperienced customers to avoid cost-based pricing. Regarding customer attitude, Bowersox (1990) suggested that the relative risk aversion of the partners influences optimal remuneration, while Boyson et al. (1999) further specified that risk-averse customers have a stronger preference for detailed and explicitly outlined contracts.

Within the industrial service pricing literature, the internal and external context represents the second-most frequently addressed category. Environmental characteristics in particular are frequently thought to influence pricing (Tung and Capella 1997; Hinterhuber 2004; Forman and Hunt 2005; Taher and El Basha 2006; Avlonitis and Indounas 2007a). More specifically, competition amongst LSPs has been shown to foster pricing based on the market's average price (Avlonitis and Indounas 2005a) and on long-term- and service-quality-related objectives, rather than short-term profit maximization (Avlonitis and Indounas 2005b). In addition, competition reduces the extent to which cost-based pricing is used in practice (Avlonitis and Indounas 2006). Similarly, a customer who has a relatively high risk-aversion compared to that of its LSP should prefer outcome-oriented compensation over cost orientation (Kim, Cohen and Netessine 2007). However, a limited availability of alternative LSPs (absence of competition) is likely to lead to price premiums and higher prices (Arnold, Hoffman and McCormick 1989).

In cases where service demand is at least partially predictable and separable into more than one unit, such as with logistics services, Lovelock (1984) and Berman (2005) suggested that pricing should be service capacity-dependant. Given high uncertainty about future adaptation needs, Hiller and Tollison (1978) contended that cost-based compensation is the appropriate compensation basis. Taking a different vantage point on future uncertainty, Docters et al. (2004) focused on probability and associated

costs of service non-performance and suggested including risk-sharing elements in cases where there are costly and/or frequent service failures.

In general, industrial services show a much higher affinity than retail services to either cost-plus or customer-oriented pricing (Cram 1996). In this context, Avlonitis, Indounas and Gounaris (2005) and Avlonitis and Indounas (2007b) showed that logistics companies should concentrate on asset utilization and customer retention in pricing their services.

In contrast to logistics publications, the industrial services literature has generally acknowledged the great importance of the relational context for pricing services, but its approaches and results still vary widely. Often, the discussion focuses on the appropriateness of cost-plus pricing schemes; however, while the literature contains a variety of views on this question, it does not provide an integrative assessment of the relationship between context and the appropriate design of price models. From a theory-focused point of view, concepts related to performance contracting (Kim, Cohen and Netessine 2007), value-based pricing (Hinterhuber 2004), and the total cost of the relationship (Maltz and Ellram 1997) should be further examined.

2.2.3.4 Structure

With respect to the relationship structure, logistics publications regard the complexity of the service as driving the need for advanced logistics solutions (Andersson and Norrman 2002) and influencing the choice between cost-based and outcome-based compensation (Ferne 1999; van Hoek 2000). Similarly, both the ex-ante uncertainty regarding technical performance (Richardson 1993) and the ex-post measurability of this performance (Maltz and Ellram 1997), which is determined by the actual layout of the service, should influence the remuneration of the LSP. In this regard, Bowersox (1990) associated the use of bonuses and penalties in any 3PL relationships with a risk transfer from the customer to the LSP. Taking a different point of view, Logan (2000) argued that pricing has a reciprocal relationship with relational trust in that it is affected by it and influences it.

Taking into account the strong relationship between marketing and behavioral sciences, it does not come at a surprise that a large part of the selected industrial service pricing articles have posited that behavioral characteristics like mutual trust and confidence (Cram 1996) affect the choice of LSP compensation (Tung and Capella 1997; Hinterhuber 2004; Taher and El Basha 2006; Avlonitis and Indounas 2007a); thus, the LSP should try to match its customers' needs in pricing (Avlonitis and Indounas 2005a, Avlonitis and Indounas 2005b; Groth 1995b). Especially in the early stages of the service life-cycle, such an effort refers to more quality- or value-oriented pricing (Avlonitis, Indounas and Gounaris 2005). Considering the technical dimension of the relational structure, Avlonitis and Indounas (2006) pointed out that the uniqueness, that is, the customer-specificity, of the service fosters cost-based remuneration. Consistent with Avlonitis and Indounas, Forman and Hung (2005) and Löbner, Posselt and Welk (2006) posited that technical complexity and technical entanglement, respectively, favor cost-oriented pricing. Given a high degree of fixed costs, prices should consider capacity restrictions (Berman 2005). For customized service offerings (Roth, Woratschek and Pastowski 2006) and for large projects (Cannon and Morgan 1990), pricing should be based on negotiations. Here, LSPs may realize price premiums if the service is essential to the customer (Hoffman and Arnold 1989), exclusive (Groth 1995a), and non-testable (Arnold, Hoffman and McCormick 1989). Finally, risks and consequences of non-performance that are due to the chosen service layout may require the inclusion of insurances or risk-sharing (Docters et al. 2004).

As with the delimiting context, the subsequent structuring of the relationship has been analyzed more profoundly by the industrial service pricing literature. While there seems to have been no consensus regarding the effect of behavioral determinants, technical aspects like high complexity and specificity have been most commonly associated with cost-based, rather than fixed, compensation. Van Hoek's (2000) transaction-cost-based survey study and Löbner, Posselt and Welk's (2006) modeling assessment of integrated services might be of further methodological interest.

2.2.3.5 Outcome

Finally, price model composition should also affect relationship outcome. In order to improve performance for both parties, the logistics relationship has to be appropriately established (Lambert, Emmelhainz and Gardner 1999) and the price model adjusted to the specifics of the relationship (Halldorsson and Skjoett-Larsen 2006) to ensure a mutually beneficial development and improvement of relationship performance (Andersson and Norrman 2002). On this note, Lim (2000) showed appropriate remuneration schemes to induce truth-telling by the LSP and a subsequent increase in pareto-efficiency.

In the industrial service pricing research, price model design that considers the relative risk aversion of the relational partners has been shown to be beneficial and pareto-efficient because risks inherent in the relationship are distributed at lower risk costs (Kim, Cohen and Netessine 2007). Considering the individual characteristics of the partners, Roth, Woratschek and Pastowski (2006) demonstrated negotiated prices to be beneficial with highly customized services.

It is not possible to derive general conclusions concerning whether cost-plus or outcome-oriented contracts impose higher total costs because these costs are dependent on uncertainty about future adaptations and cost developments (Hiller and Tollison 1978). For the LSP, capacity-dependent pricing can help to balance demand and to increase profits (Lovelock 1984). Payment equity, the relative perceived fairness of the price model, should be considered because it influences customer satisfaction and, consequently, future service usage (Bolton and Lemon 1999). Finally, past outcome may also influence actual pricing, since superior performance in the past may be a justification for charging premium prices (Friedman and French 1987).

Thus, there seems to have been consensus on (logistics) service pricing in terms of its affect on relational success. Even though existing literature on this topic has utilized a variety of approaches and has referred to different pricing patterns, it is limited in regard to the scope of factors considered. Significant further research, especially empirical research, is necessary to gain a thorough understanding of the underlying mechanisms. References to prospective theories like Game Theory (e.g., Lim 2000), and

Transaction Cost Theory (e.g., Halldorsson and Skjoett-Larsen 2006) appear promising.

2.3 Implications and Future Research Directions

Several implications for future research in the field of relationship management can be derived from the 61 reviewed articles on logistics service pricing and industrial service pricing. First, the literature lacks integrative approaches to pricing decisions; not only is there no agreement on which determinants are and should be considered for the choice and design of price models, but significant interdependencies exist between different relational factors within each of the analyzed five segments of the pricing framework, which are generally not accounted for in the extant literature. For example, van Hoek (2000) identified the need for more detailed and fixed contracts as the complexity of service offerings increased. However, those complex services are associated with technical performance uncertainty which, according to Richardson (1993), calls for cost-based remuneration. Further, there are also interdependencies across the five segments to be considered mean that major differences exist between the motives and goals of the customer, on one hand, and the LSP, on the other. These motives and goals also interact with numerous other factors, so they should be considered in pricing frameworks (Logan 2000).

A second implication for further research derived from the literature review is that, even though the present review of pricing literature on logistics services and industrial services shows that both streams face common problems and apply comparable approaches to analyzing these problems, there are few cross-references between the two. Here, industrial service pricing might profit from the profound empirical foundation of the logistics service pricing research, while logistics service pricing might build on the rich conceptual basis of industrial service pricing literature.

Third, although price, that is, the cost of the service, is the major driver for outsourcing, price model design is still perceived as of minor importance, especially within the logistics discipline. In fact, the central role price models play in defining and

managing logistics relationships is overlooked in most publications, and only a few explicitly focus on pricing issues. Only recently has an interest in the topic begun to develop (Logan 2000; Halldorsson and Skjoett-Larsen 2006).

A fourth implication for further research derived from the literature review comes from the observation that the existing literature seems to underestimate the governance function of price models within service relationships. Only six articles, 10 percent of the reviewed studies, relate to this domain. A clear description of the governance function and differentiated explanations of its effects on relationship development and success are still missing. Operational research might offer further insights on the coordinative impact of e.g., revenue-sharing contracts (Hsieh and Wu 2009; Xianghua, Sethi and Houmin 2005; Cachon and Lariviere 2005), which could be implemented in 3PL relationships in terms of sharing cost improvements.

While there is a clear need for further theoretical development of logistics service pricing, two areas in particular stand out. First, the conceptual base should be expanded to incorporate multiple interdependent relational determinants and their implications for the business relationship as a whole. Here, it might be promising either to integrate available concepts from the industrial service pricing literature (e.g., Beard and Hoyle 1976; Hinterhuber 2004; Tung and Capella 1997) or to utilize general theoretical foundations like Transaction Cost Theory, as proposed by Maloni and Carter (2006) or Principal Agent Theory, as addressed by Logan (2000). The second important area of theoretical development is the need for scrutinizing the design and effect of logistics pricing in more detail. Although many of logistics studies have already touched the domain of price model design, the literature draws no conclusions about the effects and mechanisms of price model design in non-trivial logistics service relationships. To respond to this shortcoming, in the next chapter, a conceptual model will be presented that builds on Transaction Cost Theory, explicitly addressing the question of price model design in 3PL relationships.

3 Conceptual Framework

This chapter is based on the articles “Contract Design for Logistics Services: A Transaction Cost Analysis of Fixed, Cost-Based, Outcome-Based, and Hybrid Price Models” by Lukassen, Meyer and Wallenburg (2009), to be submitted to the *International Journal of Logistics Management*; “Pricing and Incentives in Logistics Partnerships: A Transaction Cost Economics Approach” by Lukassen and Meyer (2007); and “Preis-systemgestaltung in Kontraktlogistikpartnerschaften: Eine transaktionskostentheoretische Betrachtung” by Meyer and Lukassen (2007). In the following, Transaction Cost Economics (TCE) is used to analyze price model design in 3PL relationships deducing seven distinct design hypotheses.

3.1 Theoretical Background

Section 3.1.1 classifies logistics services in order to provide an understanding of how price model design can affect relational governance. Thereafter, the relevant sources of transaction costs that are necessary to deduce respective price model design hypotheses are conceptualized.

3.1.1 TCE-based Logistics Services Classification

Logistics services outsourced by industrial companies have been and continue to become more comprehensive and complex (Langley et al. 2007). Moreover, logistics outsourcing has steadily gained a more relational focus (Murphy and Wood 2004). The corresponding relationships are long-term, with durations of ten or more years not un-

common (Deepen et al. 2008; Lieb and Bentz 2005b). Consequently, a rising proportion of outsourcing relationships can benefit from specific investments that increase efficiency and effectiveness. Analyzing comparable relationships, strategic management literature has recognized the importance that relationship-specific characteristics have in the choice of contractual arrangements aimed at governing business relationships (e.g., Corts and Singh 2004; Kalnins and Mayer 2004; Kohtamäki et al. 2006). TCE, in particular, has proven valuable in analyzing contract design. Williamson (2008) applied TCE to supply chain management and emphasized that TCE offers helpful insights in the analysis of individual supply chain relationships.

Adapting the TCE framework of Williamson (2002), four basic types of transactions can be distinguished depending on their specificity and their relational safeguard employed (figure 3.1). The first type of transaction (A) separates non-specific transactions, where specific investments do not increase overall surplus, from specific services, which profit from specific investments.

With reference to logistics, non-specific transactions are exchanged on spot-markets and correspond, for example, to line haul services or classic network-based services. In the absence of specific investments, no risk for opportunistic exploitation exists with non-specific transactions. Specific services, on the other hand, involve investments like tailored IT-systems or special training of personnel that are specific to the single customer. While these investments increase overall surplus through efficiency gains, they also foster dependency of one or both of the exchange partners on the other. For the customer, this dependency may involve increased difficulty in finding another LSP capable of providing comparable service. This difficulty may be complicated by process adaptations the customer may have made to account for particularities of its LSP and by the problem that specific assets of either partner can be utilized in other relationships only at the cost of decreased productivity (Klein, Crawford and Alchian 1978). Consequently, with specific services, either or both parties may be at risk to be exploited by their partner. This situation is detrimental if specific investments that allow for an overall improvement are not made because of their inherent risk for being opportunistically exploited.

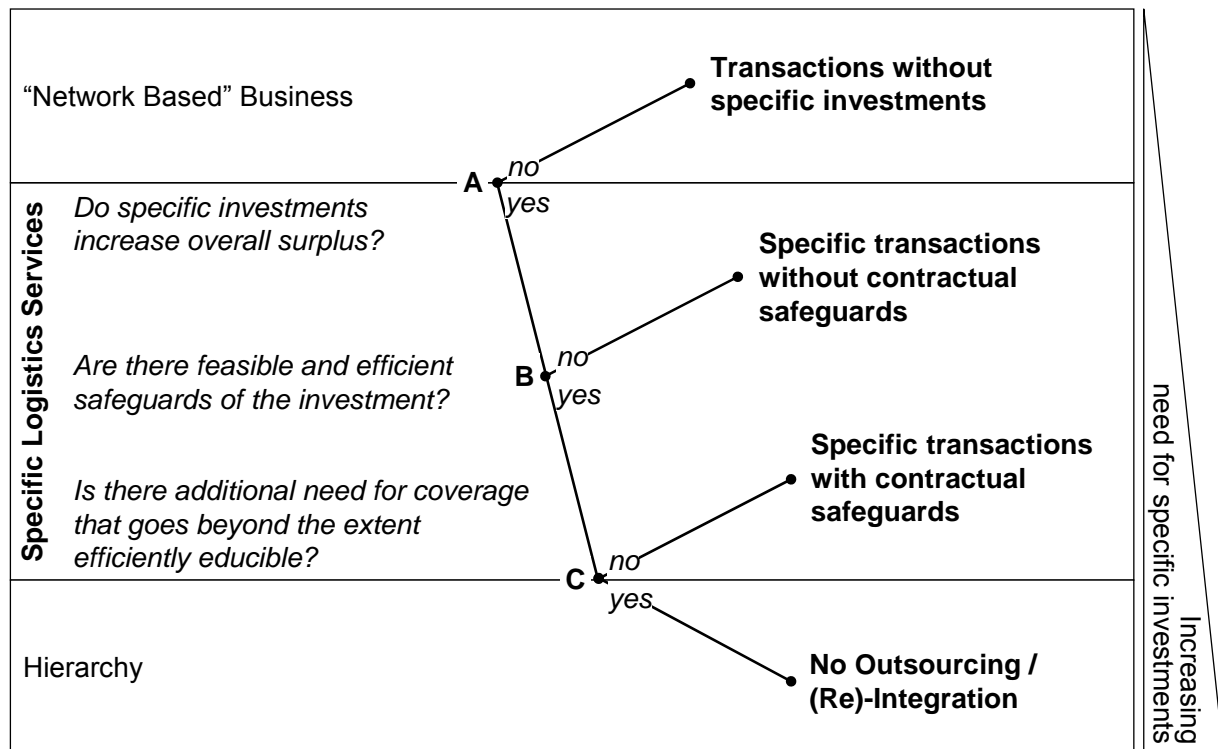


Figure 3.1: TCE-based Logistics Classification

The resulting problem of a credible commitment overcoming this risk (B) can be dealt with either by keeping the risk with one side when no efficient safeguards are available, which most certainly will result in a demand for an implicit risk premium (Williamson 2002) or by incorporating efficient and explicit safeguards if they are available. In terms of the call of Cannon and Perreault (1999) for alternative drivers of governance, price models can provide the necessary safeguards that will facilitate adaptation to future developments and unanticipated disturbances. As explicated later on, prices not only consist out of a defined rate but constitute components which also determine distinct incentive effects. Then again, if the safeguards are efficient but not sufficiently effective, and the perceived risk remains too high, the customer may decide to keep the service in-house or, if already outsourced, to reintegrate it (C). This last option also includes shared hierarchies like joint ventures.

3.1.2 Relationship-specific Sources of Transaction Costs

Williamson (1979 and 1985) distinguished three primary dimensions of the sources of transaction costs: specificity, uncertainty, and frequency. However, in more recent publications, the focus changed such that the problem of specific investment has become the fundamental problem. As a result, the question of uncertainty has been addressed only on the condition of prevalent specificity (Williamson 2002); in that approach, frequency is no longer of constitutive importance. In line with the newer position developed by Williamson (2002), Rindfleisch and Heide (1997) identified in their extensive review of TCE literature (1) asset specificity, (2) environmental uncertainty and (3) behavioral uncertainty—the last contingent upon bounded rationality and opportunism—as the three sources of transaction costs. This latter perception of Rindfleisch and Heide is also the theoretical position taken here.

As problems from asset specificity, behavioral uncertainty (driven by bounded rationality) and environmental uncertainty may arise on the side of the customer, the LSP or both, resulting in a 2x3 matrix of possible problems. The agreed-upon price model might also be a potential source of opportunistic behavior by the LSP since, when compensation is based on costs and when it is based on outcomes, the LSP may be able to manipulate the underlying reporting in order to generate increased compensation.

Thus, a total of seven potential problem areas exist that increase overall transaction costs (figure 3.2) and that will either increase the cost of providing the service or lower the resulting performance if the LSP decides to cut back its efforts to cope with increased costs. Analyzing these areas follows the call by Maloni and Carter (2006), who proposed that future research on LSPs focus on asset specificity, uncertainty and opportunism within the transaction costs framework.

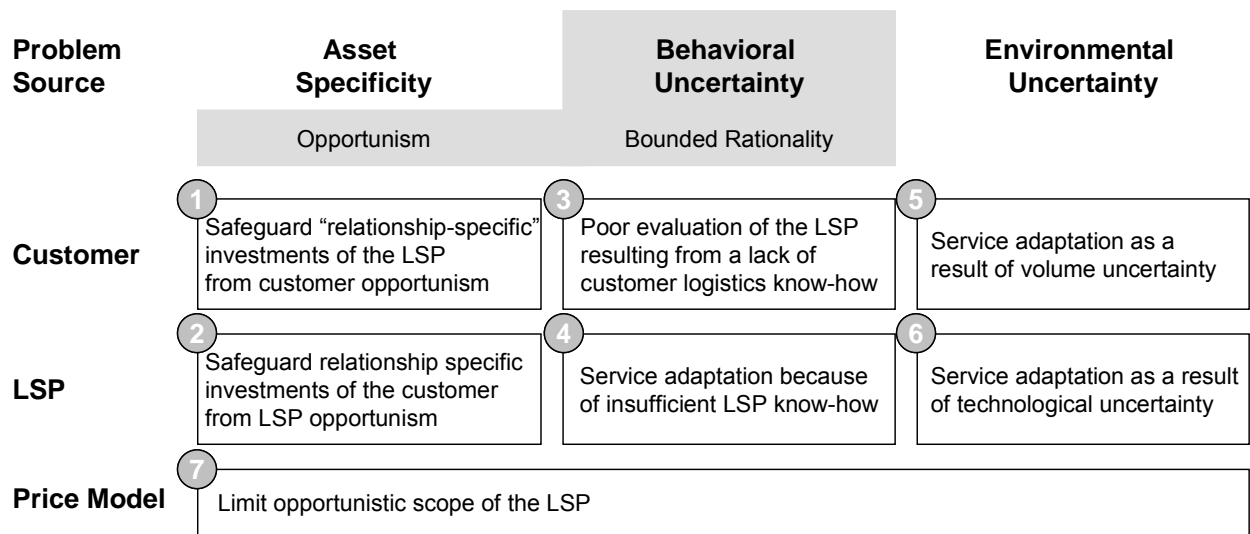


Figure 3.2: Transaction-cost-driven Problem Classification

3.2 Price Dimensions

The orthodox understanding of price is that it is a monetary remuneration in return for a well defined product (e.g., Kotler and Keller 2006). However, in this study, the understanding of prices and their embedding within a price agreement goes beyond the usual definition. While the usual definition of price represents only the final level of the remuneration, here, prices are conceptualized in a multi-dimensional way as influencing behavior and having a reciprocal effect on both the customer and the LSP. From the perspective of the customer, price determines the cost of logistics and influences performance by providing inducements to the LSP. For the provider, price determines revenue and so encourages compensation-maximizing efforts. In other words, the price agreement constitutes incentives that may foster performance as well as good conduct, both of which are central to the relationship. Thus, a significant influence of the price agreement on the relationship's chances for success can be assumed.

The literature on contractual remuneration design that focuses on project management (e.g., Project Management Institute 2004), operations research (e.g., Kim, Cohen and Netessine 2007), and contract theory (e.g., Kalnins and Mayer 2004) has sug-

gested four basic types of price models: (i) *fixed-price* contracts that grant an ex-ante specified remuneration for a well defined product or service, (ii) *cost-based* contracts that remunerate based on the actual costs of production/service provision accrued ex-post, (iii) *outcome-based* contracts, where remuneration is related to the actual performance, and compensation increases for better products/service, and (iv) *hybrid* contracts that combine cost and outcome elements.

Two dimensions of remuneration—outcome-oriented and cost-oriented—underlie these four price models to create a pricing matrix (figure 3.3). Both dimensions range from low levels, which equate to a strong ex-ante focus, to high levels of outcome and/or cost-orientation, which suggest a strong ex-post focus of actual remuneration.

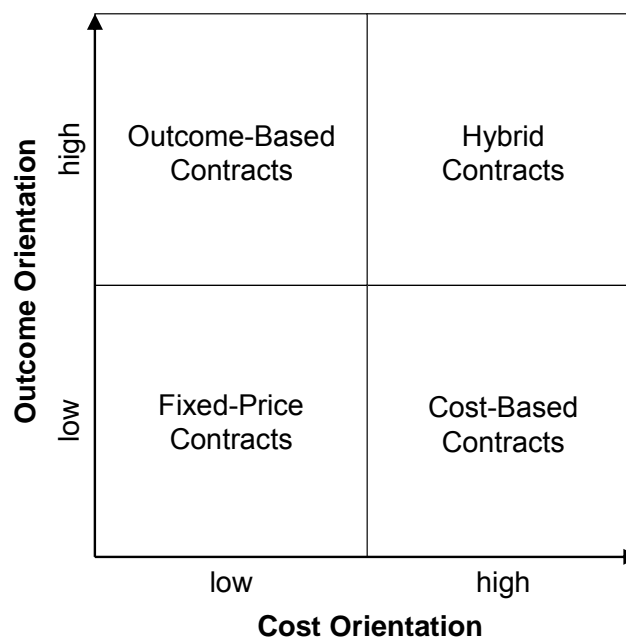


Figure 3.3: Price Model Matrix

Fixed-price contracts are completely determined ex-ante, so they are neither cost- nor outcome-oriented. They are positioned in the bottom left corner of the pricing matrix. In the logistics market, standardized line-haul and network-based services are usually compensated through fixed-price contracts. Cost-based contracts are characterized by a strong reference to actual costs calculated ex-post, and performance contracts

are characterized with reference to realized outcomes. Consequently they have to be positioned in the bottom right respectively the top left corner. Finally, hybrid contracts base compensation on both actual costs and realized outcomes and are positioned in the top right position.

Outcome orientation, which gives direct performance incentives to the LSP, can manifest in many ways, including bonuses, gain-sharing, and compensation rates that increase with performance. Measures of performance include damage rates, lead and throughput times, cost reductions and service levels (Wilding and Juriado 2004). Outcome-orientation introduces additional uncertainty to the LSP regarding its compensation (Ross 1973), which originates from three sources: The LSP might fail to provide the required performance; volatile or declining market success of the customer might negatively influence volumes and, as a result, per-item outcomes irrespective of the LSP's performance; and a lack of cooperation by the customer, such as insufficient information-sharing, might cause otherwise avoidable performance problems. Consequently, a pure outcome orientation means that the LSP bears the risk of failing to achieve the defined performance goals and, assuming the LSP to be risk-averse, will require a risk premium (Ross 1973; Williamson 2002).

For products and services that are complex, basing prices on the costs as accounted ex-post represents the traditional and still most popular pricing approach (Avlonitis and Indounas 2005a; Noble and Gruca 1999). While cost-based compensation conventionally includes either a variable or a fixed margin on top of allowable costs, it also offers the potential to implement hybrid elements (Project Management Institute 2004). For example, a "cost-plus incentive fee" contract compensates the LSP for accounted costs, yet includes an incentive-based margin—which may also be negative—that is dependent on the LSP's performance.

3.3 Price Model Design Hypotheses

Having explicated relationship-specific drivers of transaction costs as well as possible price model specifications, price model design hypotheses will be developed individu-

ally for all seven of the identified drivers, using the form of a comparative analysis where the reference point is a “median” compensation at the intersection of the four contract types in figure 3.3.

3.3.1 Asset Specificity

Investments may be made by either party engaged in the outsourcing relationship in order to enhance the efficiency and/or effectiveness of the provided service. Such investments may be specific and tangible, such as dedicated facilities and equipment, or intangible, such as relationship-specific training of personnel. In this context, asset specificity refers to the appropriable portion of the “quasi-rent,” which can be determined by subtracting the highest value of the specific investments when used outside the relationship from the value of the investments used within the relationship (Klein, Crawford and Alchian 1978). It denotes the loss incurred to the investing party in case the relationship is terminated. According to Anderson (1988), increasing asset specificity can promote opportunistic behavior by the exchange partner so, to guard itself from this kind of behavior and avoid the potential vulnerability induced by specific assets, the investing party will demand either safeguards (Dyer 1997) or additional compensation.

3.3.1.1 Specific Investments by the LSP

Within 3PL relationships, efficiency and effectiveness will be increased by relationship-specific investments by the LSP. If such investments are made, the LSP risks a hold-up by its customer that exploits the LSPs’ vulnerability. For example, after a LSP has implemented a dedicated warehouse solution to enhance replenishment processes, the customer might threaten to switch LSPs when the current contract expires in order to negotiate lower prices. Therefore, the LSP will demand safeguards or will be willing to invest specifically only when it profits from those investments independent of the specific relationship with the customer. In this situation, the customer has to balance the costs for providing safeguards and the additional value it gains by the specific investments. If the benefits exceed the costs, the customer has to decide among different possible safeguards. In this context, the use of long-term contracts is most common

(Cicchitto, Hornyak and Piwowar 2004; Joskow 1987; Vásquez 2007). While this solution, and a multitude of other means, such as pledges (Anderson and Weitz 1992) and information-sharing (Noordewier, John and Nevin 1990), have been proposed in the literature, the potential safeguard offered by price model design has thus far been neglected.

The two-dimensional price model system incorporates two ways to integrate safeguards for the LSP's investments: cost-based remuneration or risk-covering bonuses related to performance improvements within the outcome dimension. With cost-based remuneration, the customer refunds a growing share of the actual investment costs and thereby reduces the LSP's risk of not getting full compensation for the relation-specific investment made. However, cost-based remuneration always gives some opportunistic leeway to the LSP since, by receiving compensation based on costs, the LSP may try to inflate the costs by allocating unnecessary resources or overhead to the relationship. This problem (denoted problem 7 in figure 3.2) is discussed individually in section 3.3.4. The second kind of remuneration, risk-covering bonuses related to performance improvements, compensates the LSP for the specific investments and any potential hold-up by integrating a risk-premium into the pricing design.

While the risk-covering bonus approach provides incentives for the LSP to strive for the most cost-efficient (and, thus, performance-enhancing) specific investments, cost-based compensation promotes implementing the most effective (and, thus, performance maximizing) specific investments, while subordinating cost-efficiency. Thus, in order to ensure specific investments are effective as well as cost-efficient, a combination of outcome- and cost-based remuneration, i.e., a hybrid contract, is appropriate to provide the necessary safeguards (figure 3.4).

Hypothesis 1: As the need for specific investments by the LSP increases, the price model should be a) more outcome-based and b) more cost-based.

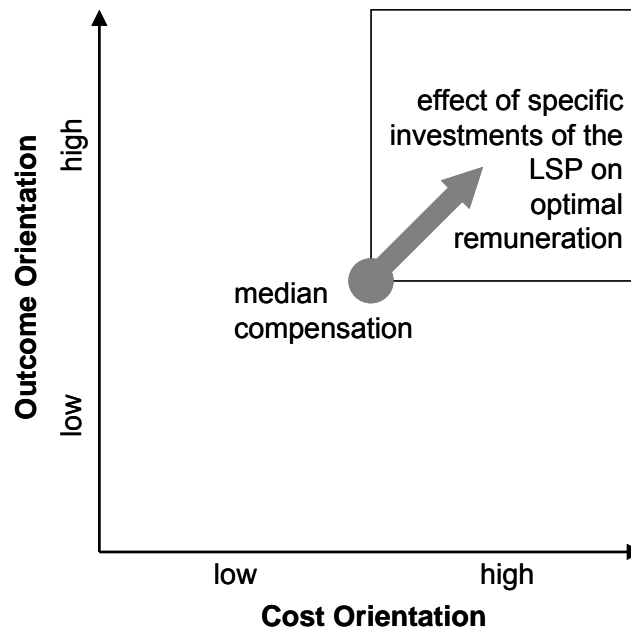


Figure 3.4: High Asset Specificity of the LSP

3.3.1.2 Specific Investments by the Customer

Like the LSP, the customer can also make investments in equipment, personnel or IT to enhance the efficiency or effectiveness of the relationship. If such investments are relationship-specific, the customer, like the LSP, is also potentially exposed to a hold-up situation, but this time by the LSP. Here, however, two cases have to be distinguished. First, the amount of specific investments made by the customer may be symmetrical to that of the LSP, or asymmetrical in the sense that they only match part of the specific investments of the LSP (i.e., lower amount of investment). Second, they may be asymmetrical by exceeding the LSP's specific investments.

In the first case, the customer's specific investments serve as exchanged "hostages" for the LSP and reduce the need to contractually safeguard the LSP's specific investments (Williamson 1983). Given that the customer is the one to determine the price model design, relationship-specific investments may substitute for otherwise necessary safeguards for the LSP. As the need for such protection is diminished through the "hostages," the use of cost-based remuneration should also decrease. By contrast, the use of outcome-based compensation, which gives incentives for reaching high performance levels, is in the best interest of both parties in that it accounts for the prefer-

ences of the customer and leaves the LSP to choose the most cost-efficient service level, i.e., the service level where the marginal utility of the investments of both the customer and the LSP equals the marginal costs of providing them.

In the second case, where the customer's specific investments exceed those of the LSP, the customer profits from the investment but is also in danger of exploitation. To countervail this risk and protect its specific investments, the customer should check for supplier capabilities and motivation (Stump and Heide 1996) and establish relational norms (Heide and John 1992). In reference to the price model design, cost-based compensation enlarges the ability of the LSP to behave opportunistically, while outcome-based pricing limits the opportunistic tendencies of the LSP by remunerating only good performance and provides additional incentives to enhance performance.

Taken together, in both cases of asymmetric and symmetric specificity on the customer side, a price model that is more outcome-based and less cost-based than otherwise is preferable.

Hypothesis 2: As the need for specific investments by the customer increases, the price model should be a) more outcome-based and b) less cost-based.

3.3.2 Behavioral Uncertainty in Terms of Bounded Rationality

Behavioral uncertainty exists for the customer as a result of its own and the LSP's bounded rationality. Bounded rationality refers to behavior that intends to be rational but, in fact, is rational only within the bounds of its limited knowledge and cognitive capabilities (Simon 1957). Regarding TCE, bounded rationality is associated with the individual's limited foresight and ability to anticipate future conditions of dependency caused by specific investments; this limited ability also manifests itself in incomplete contracts (Williamson 1991; Williamson 1993). Focusing on the relationship, this implies, on the one side, uncertainty regarding adaptation and a corresponding adaptation problem since the implemented solution of the bounded rational LSP might fail to prove efficient. On the other side is a performance evaluation problem, since the

bounded rational customer might have difficulties assessing the contractual compliance of the LSP (Rindfleisch and Heide 1997).

3.3.2.1 Bounded Rationality of the LSP

The farsightedness of the LSP is affected by its expertise regarding the specific service, the specific industry, and other relevant aspects of providing the service, such as cultural or regional peculiarities. In this context, the bounded rationality of the LSP causes an ex-post adaptation problem (Rindfleisch and Heide 1997). With limited farsightedness, the LSP lacks sufficient insight into the underlying dependencies and will not be able to develop a sustainable and enduring service solution. Therefore, more or less extensive adaptation will be necessary later—these adaptations may range from minor process changes to major modifications—aimed at achieving the requested and agreed-upon performance level. These necessary adaptations may turn out to the detriment of either the LSP, if it has to bear the associated costs, or the customer, if the LSP refuses to adapt sufficiently, fails to attain the required performance, and the customer cannot switch its provider. While Rindfleisch and Heide (1997) highlighted bounded rationality as an important driver of further adaptation problems, this problem has not been addressed by TCE research (Carter and Hodgson 2006).

Referring to the outsourcing relationship, the more limited the know-how of the LSP, the higher the probability that later adaptations will be necessary because of the initial misspecifications of the LSP. Cost-based compensation implies sharing these costs, so cost-based compensation should be reduced with decreasing LSP expertise; otherwise, the customer will be less willing to trust the LSP to provide the service compared to other, more experienced LSPs. Yet, the adaptations are necessary to ensure the further provision of the service. Here, an outcome-based price model ensures that adequate performance is also beneficial for the LSP by incentivizing the implementation of necessary adaptations.

Hypothesis 3: As the LSP's bounded rationality increases, the price model should be a) more outcome-based and b) less cost-based.

3.3.2.2 Bounded Rationality of the Customer

The bounded rationality of the customer is caused in part by its missing expertise regarding outsourcing logistics services, which gives rise to a performance evaluation problem (Rindfleisch and Heide 1997). The problem refers to the difficulties the customer will have in adequately evaluating the LSP's compliance with the contractual arrangements. This problem leads to additional ex-ante screening and selection costs as well as additional ex-post measurement costs. In practice, a customer with very limited expertise may even need to enlist a logistics consultancy if the tender process and the proposed solution are very complex. Although Rindfleisch and Heide (1997) emphasized the significance of bounded rationality in terms of its leading to a measurement problem for the customer, this problem has not been addressed explicitly in the literature (Carter and Hodgson 2006). Instead, existing studies have addressed only the implications of behavioral uncertainty as a whole, identifying a positive effect on vertical integration (Anderson 2008) and more intensified ex-ante efforts to evaluate supplier capabilities (Heide and John 1990).

Ex-ante evaluation costs can be reduced by requesting non-complex and comparable bids from the LSPs. If the proposals and quotations of different LSPs are comprised of many different calculation bases that incorporate both cost-based and outcome-based elements, it is considerably more difficult for the customer to estimate and compare final costs. The lower the ability of the customer to evaluate the offers, the less cost-based and the less outcome-based the prospective price model should be, leading, in the extreme, to a fixed-price quotation.

The same mechanism holds true regarding ex-post measurement costs. The less the customer's logistics capabilities are, the harder it becomes for the customer to determine appropriate performance indicators, attainable outcome levels, and adequate incentives that reflect the value provided for outcome-based remuneration. Ninety percent of 3PL relationships envision the development and adaptation of performance indicators (Wilding and Juriado 2004). On the other side, even if an open-book policy (Seal et al. 1999) is adopted with cost-based compensation, which provides at least partial transparency, the customer still might have problems judging whether the costs

the LSP reports are really related to the service provided. Thus, consistent with March and Simon (1958), when the customer's logistics competency is low, price models should be simpler, that is, less outcome-based and less cost-based, and determine prices more on an ex-ante base.

Hypothesis 4: As the customer's bounded rationality increases, the price model should be a) less outcome-based and b) less cost-based.

3.3.3 Environmental Uncertainty

Environmental uncertainty refers to the fact that any relationship may be influenced by unforeseeable changes in the environment that affect the development of the exchange relationship (Noordewier, John and Nevin 1990). While there are different classifications in the literature, environmental uncertainty is most commonly conceptualized as multi-dimensional. Walker and Weber (1984) were the first to divide the concept of environmental uncertainty into volume and technological uncertainty. For their part, David and Han (2004) identified 23 different operationalizations of uncertainty in a meta-analysis of empirical TCE studies. While most of these different operationalizations can be assigned to one of three groups—market conditions, technology and behavior-related uncertainty (see the precedent paragraph for the last one)—only the first two belong to environmental uncertainty. Thereby, uncertainty induced by market conditions is most often conceptualized using scales related to volume. This approach also applies for the present study.

A conceptualization based on novelty is used for conditions of technological uncertainty, rather than that based on volatility. For manufacturing industries, technological volatility is a central driver of uncertainty, but for LSPs, which apply rather than develop technology, the novelty of the requested service and questions about what technology is appropriate for the service are more important than the volatility of the technologies available.

3.3.3.1 Volume Uncertainty

Demand for outsourced logistics services is a derived demand that is dependent on the output of customer operations. Volume uncertainty refers to the fact that, ex-ante, there is uncertainty about the service volume the customer will request. Changes in the customer's environment and, as a result, in the necessary logistics volumes will require the LSP to adapt the service. This kind of change usually depends on the customer's market success; if the customer is successful (unsuccessful) selling its products, the respective logistics volumes will increase (decrease).

With cost-based remuneration, the cost of providing the logistics service varies with changing volumes. Thus, with this pricing concept, negotiations about how to modify remuneration and the resulting adaptation costs can be avoided. On the other hand, changing volumes will cause outcome-oriented rates to be adjusted explicitly, causing ex-post transaction costs since changing volumes shifts per-item costs and their potential margins, as well as attainable performance levels. If outcome rates are left unchanged, the effect may be either excess returns or losses for the LSP. While both results are undesirable, excess losses of the LSP will also deter logistics performance as the LSP tries to diminish its deficit by reducing its input. Thus, higher environmental uncertainty favors a less incentive-oriented and a more cost-based LSP compensation.

Hypothesis 5: As volume uncertainty increases, the price model should be
a) less outcome-based and b) more cost-based.

3.3.3.2 Technological Uncertainty

Technological uncertainty, in terms of the novelty of the service, induces subsequent adaptations because there is no test case to which the LSP can refer to define technology needs and performance levels. There is uncertainty about what technology is appropriate and to what extent its use is necessary. For example, the development and implementation of a comprehensive supply chain strategy for any customer will cause ongoing adaptations as the LSP searches for an effective and efficient solution. In such a situation, the LSP has to rely on heuristics during service design and again during

implementation. While outsourcing literature has proposed to strengthen customer's administrative control rights in this case (Ulset 1996), empirical evidence is weak (David and Han 2004). However, in their exploratory study, Avlonitis and Indounas (2006) found uniqueness of services to be positively associated with cost-based compensation.

Similar to the case of volume uncertainty, the self-adjusting property of cost-based compensation is favorable in the case of technological uncertainty. Novel projects often encounter cost overruns that cannot be influenced by the LSP (Ulset 1996) because what is required to provide the required performance is made clear only ex-post. Thus, the more novel the service, the more the LSP should be reimbursed on a cost basis, giving it the flexibility to search for an effective solution. With outcome-based compensation in the case of technological uncertainty, there is significant uncertainty about what performance indicators are relevant, as well as what performance levels are attainable by the LSP. Therefore, the use of outcome-based rates would be costly to implement and monitor and should be diminished as novelty increases.

Hypothesis 6: As technological uncertainty increases, the price model should be a) less outcome-based and b) more cost-based.

3.3.4 Remuneration-induced Opportunism

While the current literature on TCE states that any inclination toward opportunistic behavior materializes dependent on the amount of a partner's specific investments (Rindfleisch and Heide 1997), in the present pricing context, an additional factor has the potential to cause opportunistic behavior by the LSP: the price model design itself. The price model design is influenced by relational characteristics, yet it also influences the possible opportunism of the LSP, an interdependency that may be referred to as second-order opportunism. Since this is the first research to examine the effects of relationship attributes on price model design for logistics services, there are no previous studies on which to draw to apply to this problem.

Neither cost-based nor outcome-based compensation are finally determined until the services have been provided. In order to increase its compensation, an LSP with opportunistic inclinations will attempt to influence either the determination of actual costs or the performance measures, or both. Such an inclination, however, is only detrimental to the relationship if there is actually opportunity for manipulating cost or performance reporting. With logistics services, this opportunity is generally quite large with respect to accounted costs (e.g., inclusion of indirect costs through allocation), but it is more limited with respect to actual performance. Knowing that the accrued costs are compensated for, the LSP might be tempted to inflate those costs by, for example, allocating unnecessary resources or overhead to the relationship. On the other hand, outcome-based compensation is less prone to manipulation by an opportunistic LSP because outcomes mostly are easily more observed and directly evaluated by the customer. Moreover, there are many objective performance indicators applicable to logistics services, such as delivery timeliness, picking accuracy, and error and damage rates, which are difficult to manipulate (Wilding and Juriado 2004). Therefore, when the opportunistic tendencies of an LSP are pronounced, the cost-based elements of the remuneration scheme should be reduced, while the outcome-oriented remuneration can remain unchanged.

Hypothesis 7: As the opportunistic inclination of the LSP increases, the price model should be less cost-based.

3.3.5 Summary of Price Model Design Hypotheses

Figure 3.5 provides an overview of the derived price model design hypotheses by depicting their individual effects within the pricing matrix. In summary, LSP remuneration should be more outcome-oriented when significant specific investments by the LSP or the customer (Hypotheses H1 and H2) are desirable and the competencies of the LSP are low (H3). Contrary, limited logistics know-how of the customer (H4) and uncertainty about future volumes or technologies (H5 and H6) call for less outcome orientation.

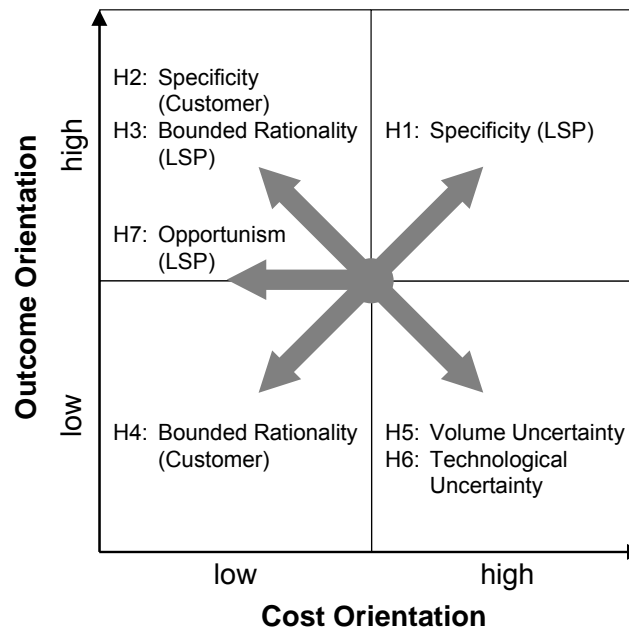


Figure 3.5: Overview of Price Model Design Hypotheses

As for the cost-orientation dimension, a more cost-based compensation is favorable when the LSP must invest specifically in order to provide the service (H1), when there is uncertainty about the future volumes (H5), and when there is uncertainty about the sustainability of the service solution (H6). On the other hand, specific investments of the customer (H2), limited logistics know-how of the LSP (H3) or the customer (H4), and opportunistic inclinations of the LSP (H7) favor less cost-based price models. Almost always more than one of the relational determinants will apply, so the different factors have to be weighed against one another to adapt the price model appropriately to the specific situation.

3.4 Conclusions on the Conceptual Framework

The aim of this chapter was to develop a theoretical foundation for the analysis of price model design in 3PL service relationships and to deduce design hypotheses. Unlike earlier studies that have been based on several theories in order to present a general framework for 3PL (Bolumole, Frankel and Naslund 2007, Mentzer and Kahn

1995) or to address the question of contract design (Logan 2000), the present framework focuses on TCE. From the perspective of TCE, price models used in contracts are institutions that are able to govern logistics relationships, so they must be specified in a way that incentivizes positive outcomes. However, given the diversity of the determining factors and service demands, it is impossible to derive design hypotheses that are independent of specific contexts; rather, there is a range of price model specifications, all of which represent the best solution in a particular environment.

Through this work, the prevalent understanding of pricing logistics services is advanced in three ways. First, different classes of 3PL services—network based logistics, specific logistics, and proprietary logistics—are positioned in relation to one another based on their levels of specificity (figure 3.1). In addition, the three different sources of transaction costs—asset specificity, behavioral uncertainty, and environmental uncertainty (Rindfleisch and Heide 1997)—are located on the side of both logistics partners (customer and LSP). Along with the second order opportunism of the LSP regarding input and outcome reporting, seven relationship-specific determinants of transaction costs are identified, constituting a comprehensive basis for an individual assessment of logistics relationships.

The second way in which the understanding of pricing logistics services is advanced is that the perspective on prices for logistics services is enlarged by including the composition of prices along with their level. Considering the four basic contract types—fixed-price, cost-based, outcome-based, and hybrid contracts—two constituent dimensions—outcome orientation and cost orientation—are identified.

The third way in which understanding of pricing logistics services is advanced is by deriving seven hypotheses from analysis of the effects of outsourcing relationships and relating them to the two pricing dimensions. These hypotheses offer a more differentiated assessment than have been offered in preceding studies. Managers of companies that outsource logistics, as well as managers of LSPs, may use this framework to design more situation-specific outsourcing contracts that increase mutual benefits and improve the governance of sustainable relationships.

The theory-driven discussion of the design recommendations at hand is only the initial step in the context of a broader discussion of price agreements and their effects on industrial—especially logistics—relationships. The deduced hypotheses must be tested empirically in order to assess in which form and to what extent companies will benefit from applying the theory-driven recommendations in 3PL relationships. Considering the complexity and diversity of logistics partnerships, it will be a challenging task to capture the diversity of project-specific parameters, decompose individual effects, and account for their interdependencies. This challenge will be addressed in the next chapter using structural equation modeling (SEM) to analyze a sample of 298 3PL relationships.

4 Empirical Analysis

This chapter is based on the article, “The Impact of Logistics Service Pricing on Outsourcing Success,” by Lukassen and Wallenburg (2009a), to be submitted to the *Journal of Business Logistics*.

A two-step approach builds on the beforehand identified price model design hypotheses. First, the seven hypothesized effects of specificity, bounded rationality, environmental uncertainty and opportunism on price model design are tested to determine whether relational characteristics are effective determinants of price model design. Next, the moderated effect of price model design on the success of logistics outsourcing is analyzed to determine whether a relationship-specific price model design benefits logistics outsourcing success.

4.1 Research Methodology

This section addresses the empirical research design. The section explains the sample design, along with the respondent characteristics and the research method, and describes the selection and content of the scales utilized.

4.1.1 Sample Design

The object of the analysis is the contractual and relational link between the user and the provider of non-trivial logistics services. Users of logistics services were selected as respondents because it is the customer who evaluates the performance of the LSP. As in Deepen et al. (2008), each respondent was asked to self-select an important lo-

logistics service that the respondent's strategic business unit sources externally and to answer all questions with reference to the service and the main LSP that delivers it. This approach was chosen in order to facilitate 1) analysis of the performance of a selected LSP that supplies a specific service, 2) identification of the underlying service-specific price model design, and 3) examination of the potential link between the two. These goals would not have been possible had the questions been answered with reference to all contracted LSPs or all projects for which the selected LSP is responsible.

As a state-of-the-art method, an online-survey was fielded starting in mid-2007 (Griffis, Goldsby and Cooper 2003). In order to ensure face validity, the questionnaire was extensively pre-tested with nine logistics researchers and ten practitioners. In addition, the two new constructs of cost-orientation and outcome-orientation were discussed in detail with eight logistics experts.

From non-logistics companies operating in Germany, 2,380 potential participants were selected. The respective sample was drawn from the company database of the Kuehne-Center for Logistics Management at WHU – Otto Beisheim School of Management. The database had been enriched by a sub-sample of high-level logistics managers drawn from the Hoppenstedt company database, one of the largest databases of German companies, in order to counteract sample attrition. After combining the two sources, duplicate names were deleted. The resulting sample was a good approximation of the basic population of German logistics executives. In order to filter for invalid contacts, all potential participants were contacted one day before the invitation in an email that outlined the motivation and goal of the study (Appendix A.1). After deleting all emailing errors and those addressees who responded that they were not responsible for logistics outsourcing decisions, 1,784 valid contacts remained. The survey was phased in three waves: those who didn't respond to the initial invitation (Appendix A.2) were sent a first reminder after three weeks, and those who didn't respond to the first reminder were sent a second reminder three weeks later (Appendix A.4 and A.5). After three months, the survey was closed.

4.1.2 Respondent Characteristics

The obtained 311 respondents represented a response rate of 17.4 percent, which can be considered a good result, taking into account overall declining response rates in recent years (Cycyota and Harrison 2006; Griffis, Goldsby and Cooper 2003). Thirteen questionnaires were deleted because major parts were missing, leaving 298 responses usable for the analysis, of which 0.2 percent of item-values were estimated using the EM-algorithm (Cohen et al. 2003).

Small, medium and large companies are almost equally represented in the sample: 35.3 percent of the strategic business units (SBU) had revenues of less than 100 million Euros, another 35.3 percent had revenues from 100 to 500 million Euros, and the remaining 29.4 percent had revenues of at least 500 million Euros. The data also show a broad representation of manufacturing and trading industries (table 4.1).

Table 4.1: Sample Description

SBU Industry	Percentage
Retailing	20.0
Chemicals and Healthcare	14.0
Electronics and Telecommunication	13.7
Automotive	11.5
Consumer Goods	8.5
Industrial Equipment	8.1
Others	24.2

SBU Annual Revenue (in Millions of Euros)	Percentage
< 100	35.3
100 – 249	21.1
250 – 499	14.2
500 – 999	7.8
≥ 1000	21.6

While most of the respondents had been working with their selected LSPs for 6 years, the average contract duration was 36 months, which finding is consistent with commonly reported standard outsourcing durations (Langley et al. 2007). Twenty-nine percent of the contracts reported by the sample expire after one year, 28 percent after three years, 14 percent after two years, and another 14 percent after five years, which result is in accordance with Lieb and Bentz (2005b). An average of five external LSPs were contracted and accounted for 40 percent of total logistics spending. Of these, the selected LSP/3PL service combination had a share of 45 percent. Only 24 percent of 3PL customers continued their relationships with their LSPs past their initial contracted period. In 46 percent of the cases, the service had been provided in-house before and, in 26 percent, the LSP had been switched. The remaining four percent accounted for new service offerings. This finding disputes previous observations that clients usually stick with the logistics providers they selected in the first place (Knemeyer, Corsi and Murphy 2003).

Among the client-selected services, three of the most common service bundles were identified: traditional transportation-only relationships accounted for 36.4 percent of all observations, transportation and warehousing accounted for 28.9 percent, and 24.2 percent could be labeled comprehensive logistics services that included transportation, warehousing and value-added offerings. Beyond that, a small group sourced warehouse services only (4.1 percent). Overall, 74 percent of the analyzed relationships included primarily distribution logistics services, 16 percent procurement logistics and 10 percent production logistics.

The study addressed primarily senior logistics managers because of their experience with logistics outsourcing. As a result, 82.5 percent of respondents held executive positions and 14.9 percent held board-level positions, while only 17.5 percent of the respondents were non-executive salaried employees. In this context, a multi-informant survey would have jeopardized the level of informant seniority because of the limited number of senior logistics executives. The competence of the respondents is reflected by an average of eight years of experience in their current positions, with no respon-

dents holding their present functions for less than one year (Kumar, Stern and Anderson 1993).

In order to control for a potential non-response bias (Lohr 1999), the assumption of Armstrong and Overton (1977) regarding late respondents as more similar to non-respondents than to early respondents is followed. So, the sample was split into three equal parts based on their time of submission. Comparing the means of all 44 items examined using t-tests between the first and last thirds showed no item to be significantly different at the 0.10 level. Thus, there is no indication of a non-response bias.

4.1.3 Measurement Scales

Successful logistics service pricing is supposed to be heavily influenced by the relational context (chapter 3). Since it is the aim of the empirical analysis to account for the direct effect of the context on the price model design, as well as the indirect context-contingent effect of the price model design on the success of the logistics relationship, three areas were measured by respective constructs: the nature of the price model employed, the relational characteristics, and the success of the relationship. With this in mind, the design of the questionnaire was based on an extensive review of existing scales in the logistics and marketing literature (e.g., Keller et al. 2002; Bruner II, Hensel and James 2005; Bruner II, James and Hensel 2001; Bruner II and Hensel 1996; Bruner II and Hensel 1992).

While pricing has often been discussed, especially in the marketing literature, there are no scales available with which to measure the nature of the contract or the degree of outcome or cost-orientation, the two relevant pricing dimensions discussed in chapter 3. Therefore, new scales had to be developed. Rather than performing a quantitative pilot study (DeVellis 2003), consistent with Wuyts and Geyskens (2005), an extensive qualitative pre-study was conducted: In the context of two company-specific projects, a series of interviews with internal and external experts was conducted over the course of two years, six specific outsourcing agreements were analyzed individually, and the developed indicators were discussed in depth with eight logistics experts. The resulting outcome-orientation construct consists of three indicators

that focus on explicit incentives given for improving quality, for increasing flexibility, and for lowering costs of the service. The construct that measures cost-orientation is comprised of three items that deal with the degree to which the compensation of the LSP is based on costs incurred. In the present data analysis, the deduced items measure both constructs effectively.

In order to gain a comprehensive view of the relational context, seven scales measure the seven relational characteristics that influence optimal price model design, as discussed in chapter 3:

- For specific investments by the LSP, the operationalization of Stump and Heide (1996), which built on the work of Heide and John (1990), was chosen.
- Heide (1994) described the basis of the construct for specific investments by the customer. As with Heide's buyer-dependence construct, all three items were reverse-coded here, so respondents were asked to indicate non-specificity. Prior to the analysis, the respective scores were inversed in order to correspond to the intended dimension.
- Bounded rationality of the LSP was conceptualized based on the assumption that performance uncertainty and risk of inferior services increases as the LSP's knowledge and capabilities decrease. Thus, performance uncertainty was measured using the reversed results from assessing the "potential quality" of the LSP. For the corresponding measurement, the scale developed by Wallenburg (2004) was used.
- Referring to the bounded rationality of the customer, the familiarity construct of Martin and Stewart (2001) was adopted to the logistics context.
- Volume uncertainty was conceptualized using the market dynamism scale of Maltz and Kohli (1996), and the scale was enriched by adding uncertainty originating from second-tier customers.

- The scale on technological uncertainty, which refers to novelty in this study, was adapted from the product uniqueness/differentiation construct of Nunlee (2005), which built on the earlier work of Perdue (1989).
- Last, opportunism was conceptualized according to Moore and Cunningham III (1999).

For outsourcing success, this study used the performance construct of Stank, Daugherty and Ellinger (1996), enriched by items that capture the LSP's performance during the last year and during project implementation. Proactive cost and performance efforts of the LSP that characterize successful 3PL relationships (Wallenburg 2004) were measured using the constructs of Wallenburg and Lukassen (2009). For further details on the individual indicators, as well as descriptive statistics, see table 4.2 and Appendix 3.

4.2 Empirical Analysis

In order to evaluate the effect of the price model design hypotheses identified in chapter 3 of this study, this section presents the empirical findings from analysis of the sample of 3PL relationships. After the quality of the applied measurement items and constructs was assessed, the data was examined in two steps: the direct effect of the relationship context on price model design was explored, followed by the moderated effect of the price model design on the success of the relationship.

4.2.1 Measurement Items

All items used in this study were first assessed based on their Cronbach alpha values. With scales of three to six items, alpha values between 0.72 and 0.93 (tables 4.2) were assumed to be reliable because they exceed the threshold value of 0.70 (Peterson 1994, Nunnally and Bernstein 1994).

Table 4.2: Measurement Items

Label	Item	Mean	S.D.
OO	Outcome Orientation ; new scale (Cronbach Alpha = 0.87) How far does the accord foster explicitly...*		
IO - 1	... the improvement of the quality of the selected logistics service?	3.62	1.55
IO - 2	... the improvement of the flexibility of the selected logistics service?	3.73	1.56
IO - 3	... the reduction of the costs of the selected logistics service?	3.44	1.57
CO	Cost Orientation ; new scale (Cronbach Alpha = 0.73)		
CO - 1	This LSP accounts for its verified costs of service provision.	3.38	2.34
CO - 2	The exact amount of compensation of the LSP can be calculated only ex-post on the basis of actual incurred expenses.	2.84	2.09
CO - 3	The compensation of the selected LSP is very cost-focused.	3.65	2.07
CI	Proactive Cost Improvement ; Wallenburg and Lukassen 2009 (Cronbach Alpha = 0.91) The selected LSP...		
CI - 1	... shows initiative by approaching us with suggestions to reduce costs.	3.67	1.72
CI - 2	... puts strong effort into continuously optimizing costs of logistics processes.	3.97	1.69
CI - 3	... shows a high level of innovation with respect to cost reductions.	3.52	1.63
PI	Proactive Performance Improvement ; Wallenburg and Lukassen 2009 (Cronbach Alpha = 0.91) The selected LSP...		
PI - 1	... shows initiative by approaching us with suggestions to enhance performance.	3.75	1.63
PI - 2	... puts strong effort into continuously improving performance of logistics processes.	4.33	1.61
PI - 3	... shows a high level of innovation with respect to performance improvements.	3.98	1.59
OS	Outsourcing Success ; Stank, Daugherty and Ellinger 1996 (Cronbach Alpha = 0.83) The association with the selected LSP regarding the selected service...		
OS - 1	... has been highly successful.	5.57	1.23
OS - 2	... leaves a lot to be desired from an overall performance standpoint. (r)	2.52	1.43
OS - 3	... I would call outstanding if I had to give a performance appraisal for the project implementation.	5.10	1.39
OS - 4	... I would call outstanding if I had to give a performance appraisal for the last year.	4.84	1.41
LS	Specific Investments by the LSP ; Stump and Heide 1996 (Cronbach Alpha = 0.90) In order to provide our requested service, the LSP...		
LS - 1	... has developed specific procedures and routines tailored to our situation.	4.35	1.89
LS - 2	... has acquired highly specialized knowledge, tools and/or equipment.	3.93	1.93
LS - 3	... has undertaken extensive adaptations in order cope with some unusual technological norms and standards of our SBU.	3.81	1.94
LS - 4	... has undertaken employee training which cannot be easily adapted for use with other clients.	3.94	1.93
LS - 5	... has tailored its own organization.	4.05	1.90

Table 4.2: Measurement Items (continued)

Label	Item	Mean	S.D.
CS	Specific Investments by the Customer ; Heide 1994 (Cronbach Alpha = 0.82)		
CS - 1	Another LSP could easily take over the provision of the service. (r)	4.12	1.81
CS - 2	Our logistics system can be easily adapted to integrate logistics services from a new LSP. (r)	4.35	1.73
CS - 3	Dealing with a new LSP would require only limited redesign and adaptation effort on our part. (r)	3.82	1.81
BL	Bounded Rationality of the LSP ; Wallenburg 2004 (Cronbach Alpha = 0.90) The selected LSP...		
BL - 1	... has a very high level of know-how. (r)	5.45	1.22
BL - 2	... is technically state-of-the-art. (r)	5.21	1.30
BL - 3	... has very competent employees. (r)	5.38	1.26
BL - 4	... is, with respect to its service capabilities, ahead of general development. (r)	4.54	1.31
BC	Bounded Rationality of the Customer ; Martin and Stewart 2001 (Cronbach Alpha = 0.90) My division/department...		
BC - 1	... is very familiar with outsourcing in general. (r)	4.96	1.54
BC - 2	... is very familiar with logistics outsourcing specifically. (r)	5.24	1.55
BC - 3	... is very familiar with tender processes. (r)	5.05	1.57
BC - 4	... has a lot of experience with logistics outsourcing. (r)	5.03	1.57
VU	Volume Uncertainty ; Maltz and Kohli 1996 (Cronbach Alpha = 0.79) In our market...		
VU - 1	... the products of our competitor change very quickly.	3.98	1.76
VU - 2	... customers' preferences or product features change very quickly.	4.43	1.71
VU - 3	... there is perceptible uncertainty as a result of our or our clients' competitive environment.	3.74	1.62
TU	Technological Uncertainty ; Nunlee 2005 (Cronbach Alpha = 0.72) The selected logistics service...		
VU - 1	... differs substantially in its specifications from those of any other service that this LSP offers.	2.97	1.62
VU - 2	... is delivered similarly by this LSP to many of its other customers. (r)	4.60	1.82
VU - 3	... is, to a large extent, a combination of off-the-shelf items. (r)	4.45	1.68
OL	Remuneration-induced Opportunism ; Moore and Cunningham III 1999 (Cronbach Alpha = 0.93) If it turns out to be beneficial for it, the selected LSP would...		
OL - 1	... alter numbers slightly to get what it wants.	2.49	1.56
OL - 2	... promise to do things, having no actual intention of following through.	2.28	1.50
OL - 3	... withhold important information.	2.16	1.26
OL - 4	... breach formal or informal agreements to its benefit.	2.01	1.26
OL - 5	... exaggerate needs to get what it wants.	2.20	1.41
OL - 6	... not always be sincere.	2.16	1.37

Note:

- All items are measured using a seven-point (*six-point) Likert-type scale, where 1 = strongly disagree, 7 = strongly agree.
- (r) indicates reverse-coded items.

Discriminant validity was assessed using the Fornell-Larcker (1981) criterion. The results, shown in table 4.3, display no violation thereof: none of the squared correlations of any possible pair exceeds any individual average variance extracted (AVE) of the pair.

Table 4.3: Application of the Fornell-Larcker Criterion

		OO	CO	CI	PI	OS	LS	CS	BL	BC	VU	TU	OL
	AVE*	0.69	0.47	0.80	0.79	0.58	0.65	0.61	0.70	0.70	0.60	0.47	0.70
OO	0.69	--											
CO	0.47	0.02	--										
CI	0.80	0.10	0.10	--									
PI	0.79	0.13	0.06	0.77	--								
OS	0.58	0.04	0.01	0.27	0.28	--							
LS	0.65	0.10	0.03	0.20	0.24	0.11	--						
CS	0.61	0.01	0.00	0.00	0.01	0.00	0.13	--					
BL	0.70	0.02	0.00	0.31	0.34	0.51	0.18	0.00	--				
BC	0.70	0.11	0.02	0.03	0.03	0.04	0.09	0.01	0.09	--			
VU	0.60	0.04	0.04	0.01	0.01	0.01	0.01	0.02	0.01	0.04	--		
TU	0.47	0.03	0.00	0.02	0.04	0.02	0.18	0.30	0.00	0.00	0.00	--	
OL	0.70	0.00	0.01	0.15	0.10	0.24	0.01	0.01	0.20	0.01	0.00	0.00	--

*AVE: Average Variance Extracted

4.2.2 Measurement Models

4.2.2.1 Confirmatory Factor Analysis

The following examination of measurement and structural models used SEM under AMOS 5.0. In order to assess second-generation convergent and discriminant validity

criteria of the constructs measured and the latent variables at hand, a confirmatory factor analysis (CFA) was performed for all employed scales (Gerbing and Anderson 1988). Overall, CFA measures suggest a good fit. With 1.653, $\chi^2/\text{degrees of freedom}$ (df) is quite good (Wisner 2003). The goodness-of-fit index (GFI) with 0.830 and the adjusted goodness-of-fit index (AGFI) with 0.798 show satisfactory values. The comparative fit index (CFI), which accounts for sample size bias, with 0.938 (Bentler 1990), and the Tucker-Lewis index (TLI), with 0.930, exhibit good results, as do the standardized root mean square residual (SRMR), with 0.052, and the root mean square error of approximation (RMSEA), with 0.040 (Bagozzi and Yi 1988).

4.2.2.2 Direct Influence Model

According to Popper (1994), individual behavior is the result of a situational analysis (SA) of a specific problem situation, which analysis considers the individual's motivation and specific constraints and implicates the individual's rational action. Following the rationality principle (RP), the respective rational action will be taken by the individual (Hands 2001; Koertge 1979). While this conceptualization requires subjective consistency of the individual's action only with his or her own individual motivation and constraints, in general, considering all individuals, the majority should act objectively rational within the bounds of the objective problem situation.

Assuming that the hypotheses identified in chapter 3 represent the theoretically deduced rational behavior in the problem situation of price model design, the individual design of a price model should adhere to the presented principles. The direct influence model displayed in figure 4.1 shows good fit ($\chi^2/\text{df} = 1.472$, GFI = 0.878, AGFI = 0.853, CFI = 0.961, TLI = 0.955, SRMR = 0.048 RMSEA = 0.040). The hypothesized effect relationships presented in chapter 3 are expressed on the left side of the figure and depicted by path arrows on the right side. For example, for hypothesis 1, the two path arrows are labeled H_{1a} and H_{1b} accordingly. Solid paths display significant relationships for which standardized path coefficients and their respective significance levels are reported. Dashed paths represent non-significant relations. In addition, for the two endogenous price model variables of outcome and cost orientation, the R^2 values are denoted.

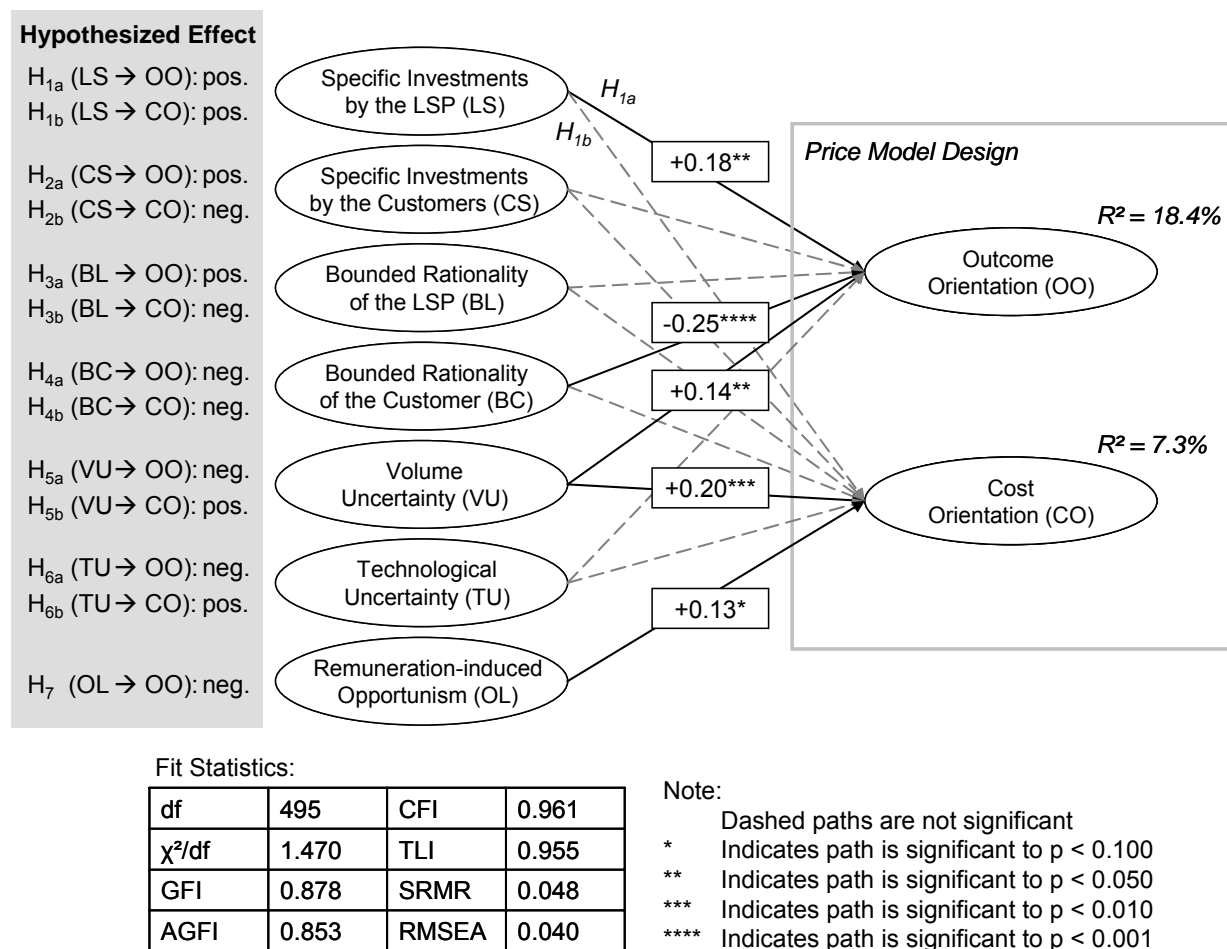


Figure 4.1: Direct Influence Model

Overall, only five out of thirteen proposed effect relationships turn out to be significant; these explain 18.4 % of the outcome orientation and 7.3 % of the cost orientation of the price models in the analyzed sample. Specifically, hypotheses 1 claimed specific investments by the LSP to result in a) more outcome-oriented models and b) more cost-oriented price models. Therefore, only hypothesis 1a is supported. Hypothesis 2 stated specific investments by the customer to result in a) more outcome-orientation and b) less cost-orientation, yet neither of the two effects turns out to be significant. The same holds true for hypothesis 3, which proposes that bounded rationality of the LSP will lead to a) more outcome orientation and b) less cost orientation. There is support for hypothesis 4a, which suggests that bounded rationality of the customer increases outcome-orientation, but there is no support for hypothesis 4b, which suggests that there should be less cost-orientation in this case. Referring to hypothesis

5, there is a significant positive effect on outcome, as well as on cost-orientation. While this effect supports hypothesis 5b, which proposes that volume uncertainty increases cost orientation, it contradicts hypothesis 5a, which suggests that remuneration is less outcome-oriented when there is high volume uncertainty. There is no support for hypothesis 6, which proposes that price models are a) less outcome-oriented and b) more cost-oriented in cases of technological uncertainty. Last, there is contradictory evidence related to hypothesis 7; while the hypothesis proposes a negative effect of remuneration-induced opportunism on cost-orientation, there is a significantly positive effect within the analyzed sample.

Based on these mixed results, several conclusions can be drawn. Strictly adhering to the SA-RP approach, hypothesis 7 and part of hypothesis 5 are not supported. For hypotheses 1, 4 and 5, partial support is found, and for the remaining hypotheses 2, 3 and 6, neither supporting nor contradictory evidence has been derived. Still, considering that 3PL represents a relatively new form of logistics cooperation that developed rapidly since the early 1990s (Maloni and Carter 2006), the amount of related research and awareness in business practice is still limited (Lukassen and Wallenburg 2009b; Avlonitis and Indounas 2005a; Bolton and Myers 2003). Therefore, when 3PL price models are being devised, the question remains concerning whether the majority of companies act rational only within the bounds of local subjective consistency or whether their actions represent rational choices considering overall factual adequacy (Vanberg 2004). In other words, do companies involved in 3PL relationships usually know about the context-contingent incentive effect of price models and include its implications in their price model design decisions, or do they not? If they do not, the results of the direct influence model would have to be reevaluated; but if they do, these results would be affirmed. In order to answer this question, the potential indirect, context-contingent effect of price model design is analyzed in the next section.

4.2.2.3 Indirect Influence Models

As discussed in chapter 3, price models set behavioral incentives. While all types of contracts come at a cost, and while incentives in particular imply the possibility for the LSP to increase its revenues if it performs accordingly, a more positive impact on out-

sourcing success has to be expected if the price model fits with its specific relationship context, compared to the impact of a 3PL relationship with a misspecified price model. Thus, outsourcing success is assumed to be contingent on the fit of the price model design.

This view corresponds to contingency theory, which has been widely adopted in logistics and supply chain management research (Wagner and Bode 2008; Hult, Ketchen and Arrfelt 2007; Stonebraker and Afifi 2004). Referring to contingency theory, those relationships with well-fitting price models will be more successful because relational effectiveness and efficiency is supported by remuneration-based incentives, while the outcome of 3PL relationships with poor fit will suffer from comparatively higher costs and lower performance (Donaldson 2001; Child 1972). Contingency theory implies no further requirements with respect to the applied RP. Both local and objective rationality can prevail in the contingency perspective; with the former, the majority of companies are still in transition to reach objective fit within their individual contexts and, with the latter, the majority of companies have already attained fit.

A closer look at the possible approaches to contingency analysis differentiates three different perspectives: selection fit, interaction fit and system fit (Hoque 2006; Drazin and Van de Ven 1985). Amongst these three, the beforehand explicated problem view corresponds best with the interaction fit approach, which assumes that, while organizations strive to optimize their individual resources, some are well adapted to their contexts, some have a more or less long way to go, and others still have to adjust their targets because their individual contexts, structures or strategies have changed (Hoque 2006). With respect to the empirical sample at hand, one part of the analyzed relationships will be closer to an optimal organization than the other part. If interaction fit is applied to price model design, higher or lower values of the relational context will require the price model to be more or less outcome-oriented and/or cost-oriented to achieve greater outsourcing success.

To test for interaction fit, differing groups have to be compared to identify the effect of the relational context on the parameters to be analyzed. While there are many approaches to this kind of analysis (e.g., Hartmann and Moers 1999), this study applies

multi-group SEM (moderation analysis), so the relational context variables will be used to split the sample.

Since price model design determines behavioral incentives for both the LSP and the customer, the underlying assumption is that context-adjusted price models will foster outsourcing success. However, because price model design is only one among many determinants of such success, including cooperation (Deepen et al. 2008), information exchange (Stank, Daugherty and Ellinger 1996), and commitment (Daugherty, Myers and Richey 2002), the price model design has an effect, but outcome and cost-orientation explain only 5% of overall outsourcing success (figure 4.2).

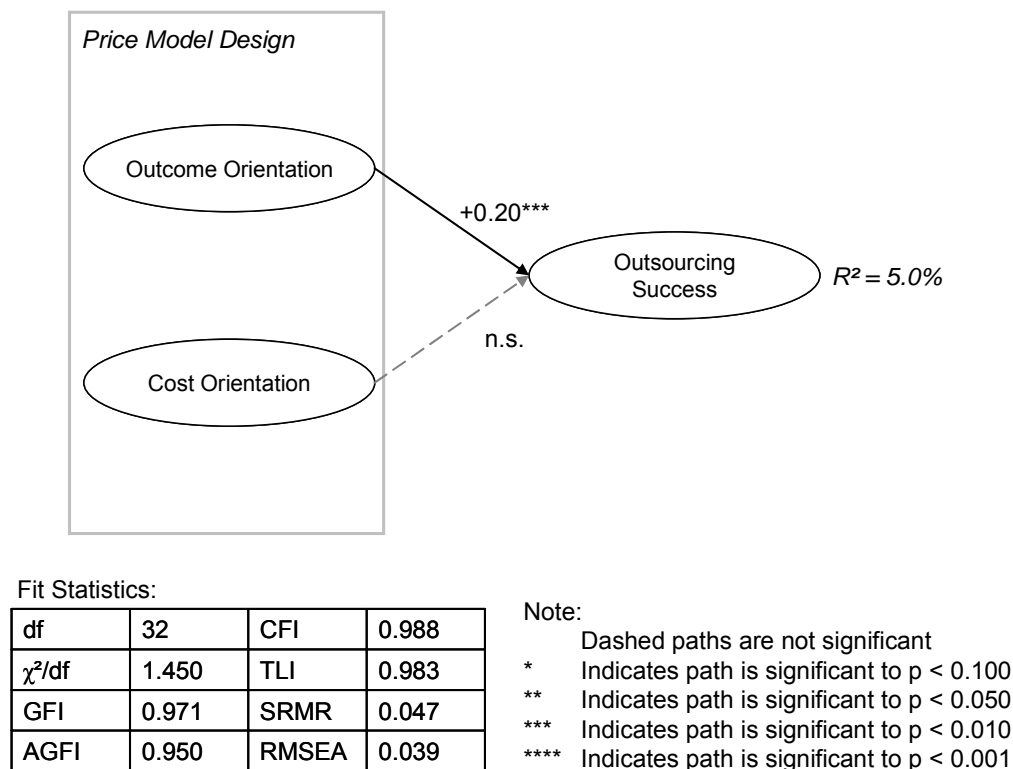


Figure 4.2: Basic Moderation Model

While the basic moderation model shown in figure 4.2 could be used for moderation analysis, it would be difficult to identify the individual moderating effects in doing so. If the moderated path itself is non-significant, as is the case for the path coefficient of cost-orientation on outsourcing success, the moderator must have a very high impact in order to turn a relatively substantial effect into one that is also significant

when tested via χ^2 -difference between the two split samples. Thus, the model presented in figure 4.2 could serve to identify the moderating effects on the relationship between outcome-orientation and outsourcing success, although, especially with respect to the second relationship of cost-orientation and for methodic reasons it would be difficult to identify significant results.

Therefore, a different approach is chosen. Because of the incentive-setting nature of the price model design, neither cost-orientation nor outcome-orientation directly influences outsourcing success. It is not the type of remuneration per se, but (1) the type of influence remuneration has on the behavior of the relational partners that will, (2) in a second step impact outsourcing success. Since the customer was chosen as respondent, a valid evaluation is possible only for the behavior of the LSP. Based on the chosen price model, the LSP will adjust its behavior and, given that this adjustment fits the relationship context, the adjustment will—if done according to the hypotheses—positively influence outsourcing success. Coming from the perspective of the customer, these behavioral adjustments represent the LSP's effort to improve outsourcing success. Moreover, since the price model itself initiates the LSP's efforts, rather than the customer's having to request the improvements explicitly, the LSP's improvement efforts are proactive. The LSP's proactive performance improvement, which represents the required link between price model design and outsourcing success, was first identified by Engelbrecht (2004) and later affirmed by Deepen et al. (2008) to represent an important driver of outsourcing success. In addition, the LSP's proactive improvement efforts can be directed either toward efficiency, i.e., costs, or toward effectiveness, i.e., performance (Wallenburg and Lukassen 2009; Wallenburg 2009). Therefore, both proactive cost improvement and proactive performance improvement are hypothesized to mediate the effect of price model design on outsourcing success.

Hypothesis 8: The effect of price model design on outsourcing success is mediated by a) proactive cost improvement and b) proactive performance improvement.

With reference to the behavioral impact of price model design on the LSP's improvement efforts, both cost-orientation and outcome-orientation are hypothesized to

have a positive effect on proactive performance improvement and proactive cost improvement because cost-orientation dedicates the financial resources necessary to improve processes and structures, and outcome-orientation directly rewards performance improvements with higher income to the LSP (Logan 2000). With reference to the impacts of proactive cost and performance improvements on outsourcing success, both are hypothesized to influence outsourcing success positively since outsourcing will benefit from lower costs and higher performance in any case.

Hypothesis 9: Cost-orientation has a positive effect on a) proactive cost improvement and b) proactive performance improvement.

Hypothesis 10: Outcome-orientation has a positive effect on a) proactive cost improvement and b) proactive performance improvement.

Hypothesis 11: Outsourcing success is positively effected by a) proactive cost improvement and b) proactive performance improvement.

In a second step, the influence of the relational context on the link between price model design and outsourcing success will be evaluated. As discussed in chapter 3, price models are effective institutions of logistics relationship governance by setting distinct behavioral incentives. According to H1-7, the behavioral effect of price model design is influenced by the relational context. In other words, depending on the context of the relationship, the positive impact of price model design on proactive improvement (H9 and H10) will be moderated. For example, given a higher need for specific relationship investments by the LSP (H1a, b), the positive effect of cost and outcome orientation on proactive cost and performance improvement of the LSP is assumed to be stronger.

Hypothesis 12: The effect of price model design on a) proactive cost improvement and b) proactive performance improvement is moderated by relational characteristics.

The applied mediation model (figure 4.3) displays good fit ($\chi^2/df = 2.575$, GFI = 0.907, AGFI = 0.868, CFI = 0.952, TLI = 0.940, SRMR = 0.051 RMSEA = 0.073),

and convergent validity is supported by all factor loadings being significant at the $p < 0.001$ level (Anderson and Gerbing 1988). Moreover, the effects of the price model design on both dimensions of proactive improvement are significant at the $p < 0.001$ level, as are the path coefficient of proactive cost improvement on outsourcing success at the $p < 0.100$ level and the path coefficient of proactive performance improvement on outsourcing success at the $p < 0.050$ level. Taking the potential direct effects of cost-orientation and outcome-orientation on outsourcing success in an alternative structural model into consideration, both direct path coefficients turn out to be non-significant. Accordingly, the effect of the price model design on outsourcing success is fully mediated by the LSP's proactive improvement and supports hypotheses H8a and H8b.

Figure 4.3 shows that both outcome-orientation and cost-orientation have a significantly positive influence on proactive cost and performance improvement (M1-4), supporting H9a, b and H10a, b. H11a, b is supported by the significantly positive effect of both dimensions of proactive improvement on outsourcing success. While a generally positive basis effect of cost- and outcome-orientation on the LSP's cost and performance improvement and, thus, outsourcing success, can be ascertained, the impact of the relational context (H1-7) remains to be validated. The effect of the relationship context on the link between the price model design and the LSP's proactive improvement will be studied using moderation analysis.

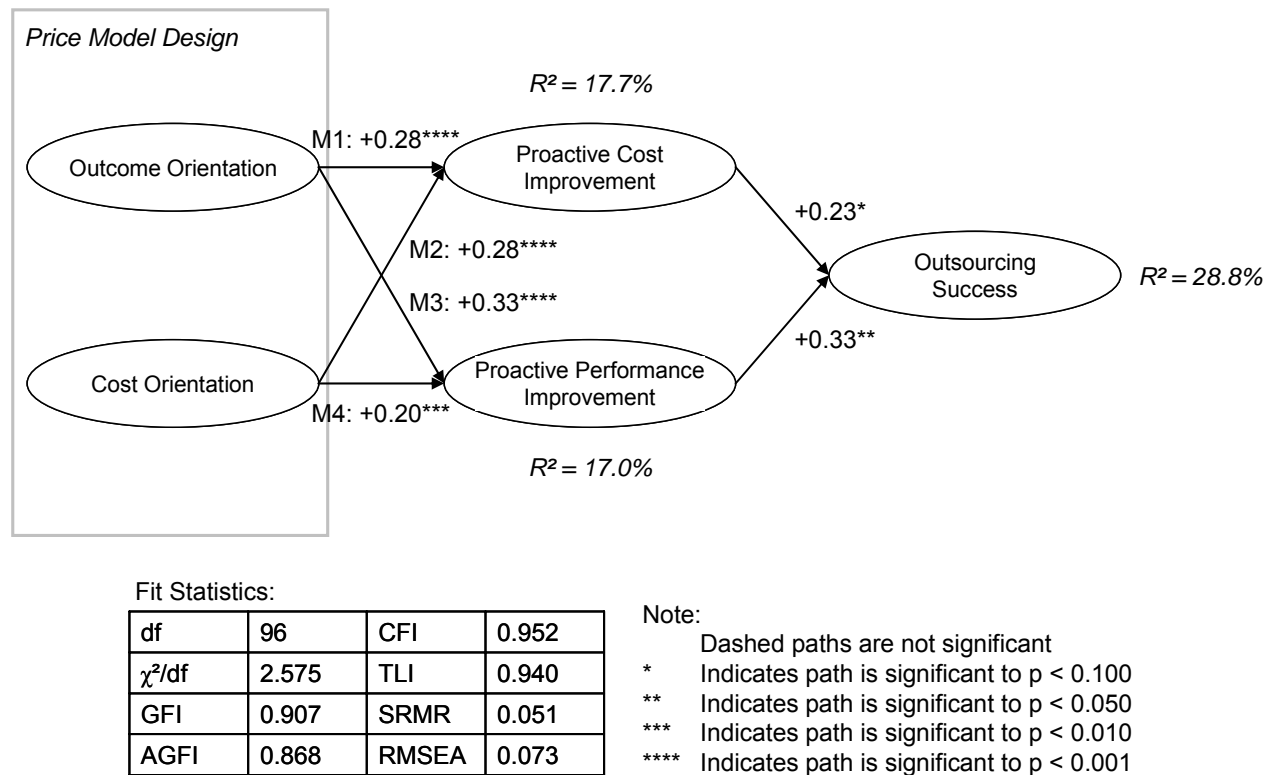


Figure 4.3: Mediation Model

4.2.2.4 Moderation Analysis

Multi-group SEM is used to test for the hypothesized contextual interaction effect. Similar to Cahill (2006), moderators are latent variables, and rotated factor loadings are used to weight individual item values, resulting in a single-score-per-moderator scale. Based on these scores, the sample is split into two equal groups (high versus low values) for each moderator variable. Moderators are assumed to be pure, that is, the moderator either strengthens or weakens the relationships between, on one hand, outcome-orientation and cost-orientation and, on the other, proactive cost and performance improvement, without having a direct effect on proactive improvement (Sharma, Durand and Gur-Arie 1981).

Six models were compared on the basis of their χ^2 -statistics (Homburg, Giering and Menon 2003). The first model represents the unrestricted case (figure 4.3). Based on H12, the second model restricts all four moderated paths (M1-4) to equality ($\Delta df =$

4) to test for a general moderating effect of the moderator. Thereafter, the four individual paths (M1-4) are restricted individually ($\Delta df = 1$) to test for specific moderation effects. The results are presented in table 4.4.

Table 4.4: Moderation Results

	Total Moderation			Individual Path Moderation	
	Δdf	$\Delta \chi^2$	p-value	Path	Coefficient (low / high)
Specific Investments by the LSP	4	0.45	0.978	OO \rightarrow CI	(0.25*** / 0.18*) n.s.
				OO \rightarrow PI	(0.25*** / 0.24***) n.s.
				CO \rightarrow CI	(0.23*** / 0.22**) n.s.
				CO \rightarrow PI	(0.15** / 0.18**) n.s.
Specific Investments by the Customer	4	10.76	0.029	OO \rightarrow CI	(0.32*** / 0.24**) n.s.
				OO \rightarrow PI	(0.37*** / 0.24**) n.s.
				CO \rightarrow CI	(0.32*** / 0.15*) n.s.
				CO \rightarrow PI	(0.30*** / 0.01n.s.)***
Bounded Rationality of the LSP	4	9.236	0.055	OO \rightarrow CI	(0.17** / 0.40***)**
				OO \rightarrow PI	(0.23*** / 0.47***)**
				CO \rightarrow CI	(0.36*** / 0.12*)**
				CO \rightarrow PI	(0.27*** / 0.07n.s.)*
Bounded Rationality of the Customer	4	1.696	0.791	OO \rightarrow CI	(0.28** / 0.30***) n.s.
				OO \rightarrow PI	(0.37*** / 0.29***) n.s.
				CO \rightarrow CI	(0.31*** / 0.17**) n.s.
				CO \rightarrow PI	(0.21*** / 0.13n.s.) n.s.
Volume Uncertainty	4	0.274	0.991	OO \rightarrow CI	(0.27*** / 0.32***) n.s.
				OO \rightarrow PI	(0.32*** / 0.34***) n.s.
				CO \rightarrow CI	(0.27*** / 0.22***) n.s.
				CO \rightarrow PI	(0.18** / 0.16**) n.s.
Technological Uncertainty	4	5.665	0.226	OO \rightarrow CI	(0.18* / 0.38***) n.s.
				OO \rightarrow PI	(0.16* / 0.47***)**
				CO \rightarrow CI	(0.27*** / 0.23**) n.s.
				CO \rightarrow PI	(0.20*** / 0.14n.s.) n.s.
Remuneration-induced Opportunism	4	10.567	0.032	OO \rightarrow CI	(0.19** / 0.40***) n.s.
				OO \rightarrow PI	(0.25*** / 0.43***) n.s.
				CO \rightarrow CI	(0.28*** / 0.20**) n.s.
				CO \rightarrow PI	(0.29*** / 0.04n.s.）**

Note: n.s. = not significant, * = significant to $p < 0.100$, ** = significant to $p < 0.050$, *** = significant to $p < 0.010$, **** = significant to $p < 0.001$

Stars outside brackets indicate significance of the individual moderating effect, and values and stars inside brackets indicate non-standardized path coefficients and significance for the lower and upper half of observations (Median-Split). The values displayed in bold denote the context under which the effect for the respective link is strongest.

Table 4.4 shows the overall moderation effects for three of the seven proposed contextual factors, supporting H12a and H12b. Moderation is affirmed for specific in-

vestments by the customers ($p = 0.029$), bounded rationality of the LSP ($p = 0.055$) and opportunistic inclination of the LSP ($p = 0.032$). On the other hand, with neither general nor individual path moderation showing any significance on the $p < 0.100$ level, moderating effects of specific investments by the LSP, bounded rationality of the customer, and volume uncertainty are not supported. Results for technical uncertainty are mixed since there is an individual path moderation effect but no general moderation effect.

A second assessment is taken on the basis of individual path moderation. Looking at specific investments by the customer, one out of the four paths—the relationship between cost-orientation and proactive performance improvements—is negatively moderated on the $p < 0.010$ level. Accordingly, cost-orientation should be high when there is only low need for specific investments by the customer and should not matter when there is high need for specific investments by the customer. This result supports H2a. The positive basis effect of cost-orientation on proactive performance improvement (H9b) is strengthened for a less specific relationship, while it is neutralized for highly specific 3PL relationships.

With respect to the bounded rationality of the LSP, all four individual paths are significantly moderated: cost-orientation on proactive performance improvement is significant at $p < 0.10$, and the three other paths are significant at $p < 0.05$. While outcome-orientation has a stronger positive effect on proactive cost improvement, and proactive performance improvement has a stronger positive effect on the condition of high bounded rationality, the moderation effect on cost-orientation is reversed. Both outcome-orientation and cost-orientation turn out to be favorable in any case, yet outcome-orientation is especially effective with high boundedness, thereby strengthening the basis effect (H10a, b), and cost-orientation is especially effective with low boundedness, thereby hampering the basis effect (H9a, b). Therefore, H3a and H3b find support.

When the LSP has an opportunistic inclination, the effect of cost-orientation on proactive performance improvement decreases significantly ($p > 0.050$) as opportunism increases. While the effect of cost-orientation is highly significant when the LSP

has a low opportunistic inclination, there is no effect in the case of high opportunism. The basis effect of cost-orientation (H9b) is substantiated for low opportunism while it is canceled out for high opportunism. This result supports H7a.

Finally, even though technological uncertainty has no significant moderating effect on the general level, the effect of outcome-orientation on proactive performance improvement is positively moderated by technical uncertainty at the $p < 0.050$ level. Outcome-orientation is especially effective when accompanied by high technological uncertainty. Accordingly, the basis effect (H10b) is boosted for high technological uncertainty and diminished for low technological uncertainty. This finding contradicts H6b.

4.3 Implications

4.3.1 Discussion of Results

The present study advances the understanding of logistics outsourcing in particular, the understanding of contractual partner behavior in general, and knowledge concerning the relationship between opportunism and bounded rationality in Transaction Cost Economics. In the context of pricing logistics outsourcing, the effect of price agreements on the success of these relationships is shown for the first time. The positive basis effect of outcome-orientation and cost-orientation on proactive cost and performance efforts—and ultimately on outsourcing success—as discussed by Logan (2000), is identified. However, this study does not measure additional contracting costs associated with more sophisticated price models where trade-offs must be made depending on the individual relationship.

In contrast to the direct effect model, the mediation model shows that the remuneration design has a highly significant impact on the LSP's efforts and on outsourcing success. While this finding indicates that decisions related to price model design in practice are only locally rational with respect to incentive effects, it also calls for a relationship-specific approach to pricing of logistics outsourcing. An example of a

prevalent shortcoming can be seen when remuneration-induced opportunism drives cost-orientation (figure 4.1) which will significantly deteriorate proactive performance improvement (table 4.4) and therewith outsourcing success. In addition to remuneration-induced opportunism, specific investments by the customer and the bounded rationality of the LSP are significantly moderated by the relationship context, which finding highlights their importance in 3PL price model design.

With respect to the four relationship characteristics of specific investments by the LSP, bounded rationality of the customer, volume and technological uncertainty which did not find empirical support in the moderation analysis, several conclusions can be drawn. That these four characteristics have no effect on LSP behavior may be because they are not relevant for 3PL price model design, the applied constructs are biased, the sample is been too small to identify a moderated effect, or the sample lacks a necessary provider perspective. While it is certainly possible that the four factors are irrelevant, it is also possible that specific investments by the LSP and technological uncertainty may have benefited from the customer's evaluation of the LSP, that the construct of bounded rationality of the customer suffered from a social desirability bias (King and Bruner II 2000; Edwards 1957), and that the potential effect of volume uncertainty was hidden because of small sample size. Future studies should address these issues to gain further insights.

Methodologically, the effect of bounded rationality on contract choice found strong empirical support, which significantly enlarges the view of behavioral uncertainty. Previously, the two underlying dimensions of opportunism and bounded rationality (Rindfleisch and Heide 1997) have been analyzed together (Anderson 2008; Heide and John 1990), but here the two factors turn out to be discriminant determinants with a significant effect on the comportment of LSPs. Moreover, in this study bounded rationality is conceptualized individually for the first time.

The results of this study can be related to Logan (2000), who analyzed failed logistics relationships and suggested either diagnosing such relationships from both sides or designing contracts that would support the development of mutual trust. While Logan's study was the first to point out the importance of incentives set by contractual

arrangements, its results were general: they advised the customer to call for cost-based prices plus outcome-based bonuses and the LSP to seek long-term behavior-based contracts. Instead of a two-dimensional customer-provider perspective, the present study's evaluation of the seven price model design hypotheses deduced in chapter 3 shows a significant effect of contractual incentives on outsourcing success which is moderated by the need for specific investments by the customer, bounded rationality of the LSP and remuneration-induced opportunism. In addition, the work of Halldorsson and Skjoett-Larsen (2006) is referenced, as they were first to emphasize the importance of contractual safeguards in logistics outsourcing. However, while their work was based on a single dyadic case study, the present study aims for a general empirical assessment via the analysis of data from a large-scale survey.

4.3.2 Managerial Implications

The contracts for logistics outsourcing usually last five to seven years (Deepen et al. 2008; Cahill 2006; Lieb and Bentz 2005b) and are comprised of all kinds of logistics services, from basic transportation to various value-added services. Because the services they cover are so wide-ranging, the contracts governing such relationships have to address many situation-specific factors; in this context the price model is particularly important because it determines the incentives that can significantly influence the development of the collaboration.

Overall, the 3PL price model should integrate both outcome-oriented and cost-oriented elements because the two have a direct positive basis effect on proactive cost and performance improvements and, although indirect, on outsourcing success. While this understanding could lead to the assumption that more cost-orientation and outcome-orientation is always preferred, the present analysis did not consider additional costs for closing and monitoring more complex price models but focused on the relative effect of price model design, assuming constant absolute costs. There is always a trade-off to be made since the improvement efforts of the LSP as well as the associated logistics costs will both impact outsourcing success.

With respect to the individual 3PL relationship, the positive basis effect of cost-orientation is reduced as the specific investments of the customer (i.e., dependency on the LSP), boundedness of the LSP (i.e., limited experience) and opportunistic traits of the LSP increase. On the other hand, the basis effect of outcome orientation strengthens as boundedness of the LSP increases. In other words, remuneration for new and innovative logistics services for which the customer has to rely on a sole and probably new logistics provider with limited experience should be based primarily on the logistics performance of the LSP, while contracts for established services with experienced, trustworthy LSPs should be based more on costs than performance. Thus, with more complex contract logistics, performance profits from detailed, outcome-based arrangements, while the more transparent, classic CEP logistics show better performance when remunerated primarily on a cost basis.

While these results are in line with Maltz and Ellram (1997) and Lim (2000), who found that the uncertainties related to LSP capabilities and performance inherent in 3PL relationships were counteracted best by outcome-oriented contracts, they stand in opposition to the empirical findings of Fernie (1999), van Hoek (2000) and Kalnins and Mayer (2004) in that they arguing that more complex services should favor detailed and fixed contracts with fewer variable components because, otherwise, contracts would be difficult to devise.

4.3.3 Limitations and Future Research

This study, the first empirical work on the performance effect of logistics outsourcing pricing, has several limitations. First, it used two dimensions to measure the characteristics of price models. While the result that cost-orientation and outcome-orientation generally benefit the proactive improvement efforts of the LSP—with reference to cost-orientation especially for basic logistics outsourcing, and to outcome-orientation especially for complex logistics—advances knowledge on logistics pricing, more differentiated scales are needed in order to assess individual elements of contracts. A multi-dimensional approach might offer further insight into the question of how outcome-oriented and cost-oriented components interact in hybrid contracts. In this re-

gard, Kalnins and Mayer (2004) proposed that cost-based terms can serve as a useful extension of outcome-oriented contracts by, for example, offering a lower fee floor to cover fixed-costs spending by the LSP. A scale that explicitly measures additional contracting costs that are due to increased complexity of the price model would also be of interest because such a scale would be able to measure the trade-offs of benefits in more complex remuneration agreements against the associated costs.

There is also a need for further in-depth analyses of outsourcing relationships over time, such as that by Halldorsson and Skjoett-Larsen (2006). In particular, the adaptation of price models that respond to changing relational conditions, like the scale and scope of the services outsourced, and its subsequent consequences promises a deeper understanding of the effects of incentives.

Moreover, in the effort to present a clear-cut and consistent discussion, this study builds on TCE, but the transaction cost view is limited, and there are other promising theories which, applied to logistics pricing, may lead to different, contradictory and/or enriching results. These theories include agency theory (Jensen and Meckling 1976), the resource-based view (Penrose 1959), and social network analysis (Scott 2000).

Finally, while the propositions presented here have been developed against the background of 3PL, there are other relationships to which these propositions might apply. Other long-term customer-supplier relationships in the business-to-business area, such as IT-outsourcing, or the public sector, such as defense contracting, appear to be especially promising.

5 Conclusion

The goal of this research was to study 3PL service pricing, a topic that has been inadequately addressed to date in the logistics and service marketing literature. In order to assess the question of how price models should be designed in 3PL relationships, three research questions have been investigated.

Existing literature in the logistics and service marketing field was reviewed in chapter 2 to reveal the current state of related research. While several logistics studies have described the use of price models, and several service marketing studies have described multiple pricing frameworks, the implications of various price model designs have not been addressed by the existing literature. In particular, the integration of 3PL relationship-specific characteristics and the governance effect of price-dependent incentives need to be considered in order to evaluate 3PL price model design comprehensively.

In chapter 3, a price model design framework was developed to offer an answer to the second research question regarding how price models in 3PL relationships should be designed from a theoretical point of view. From the perspective of TCE, price models govern logistics relationships so they must be specified in an incentive-compatible manner. However, given the diversity of the determining factors and the service demands, it is impossible to develop any kind of general design hypotheses independent of the specific context. Rather, there is a continuum of price model specifications, all of which may represent optimal solutions in particular environments.

Focusing on the two primary price model design dimensions of outcome-orientation and cost-orientation, chapter 4 responds to the third research question con-

cerning whether the price model design hypotheses can be supported or rejected by observing business practices and their implications. The present study finds that both outcome-orientation and cost-orientation have a positive basis effect on the improvement efforts of LSPs and the resulting success or failure of the outsourcing relationship. Moreover, the contextual factors of specific investments by the customer, the bounded rationality of the LSP, and remuneration-induced opportunism turned out to be important and distinct determinants of the adequacy of pricing in these relationships. While this finding represents the first empirical evidence of the influence of pricing on logistics performance, the importance of bounded rationality has to be seen in a broader TCE context. This study conceptualizes and validates bounded rationality individually for the first time.

Concluding, price model design is an important driver of relationship success in 3PL. While not all of the hypotheses offered here could be definitively supported or rejected, the price model design recommendations and the validated effects of situation-specific remuneration on the LSP's proactive improvement efforts and the resulting success of the outsourcing relationship should allow for more sophisticated pricing of 3PL services. The benefits of this research are twofold: In business practice, the customer and the LSP will both benefit from incentives that are better aligned and lead to more successful partnerships. In academia, analysis of incentives determined by the price model and the effect of those incentives' governance offer a new and—based on the initial results presented here—promising approach to understanding 3PL relationships.

Appendix

A.1 Advance Notice Email

Sehr geehrte/r Frau/Herr XYZ,

über Branchengrenzen hinweg gewinnt die Logistik in allen Unternehmensbereichen – in der Beschaffung, produktionsbegleitend sowie in der Distribution – wesentlich an Bedeutung. Gleichzeitig wird die Zusammenarbeit mit Logistikdienstleistern immer intensiver und die von ihnen bezogenen Leistungen umfassender. Damit einhergehend steigt die Schwierigkeit die Vereinbarung mit dem Logistikdienstleister so zu gestalten, das sie den Erfolg der Beziehung bestmöglich fördert.

Das Kühne-Zentrum für Logistikmanagement der WHU - Otto Beisheim School of Management beschäftigt sich seit nunmehr über zwei Jahren intensiv mit Vergütungs- und Anreizstrukturen in Logistikbeziehungen. Ein Thema, dass trotz seiner sehr hohen Relevanz bisher weder national noch international genauer betrachtet worden.

Die bisherigen Einblicke, die unser Zentrum in unterschiedlichsten Fallstudien gewonnen hat, sollen nun, durch die Befragung von Experten wie Ihnen, auf eine breite Basis gestellt werden. Hierdurch wollen wir der Beantwortung der Frage nach der „richtigen“ Gestaltung von Vertragsstrukturen in der Logistik näher kommen. Wir sind also auf Sie angewiesen und werden Ihnen morgen eine Einladung zur Teilnahme an unserer Befragung zusenden. Wir möchten Sie darum bitten, uns durch Ihre Teilnahme zu unterstützen. Basierend auf der Expertenbefragung werden wir eine umfassende Managementstudie erstellen, die wir, neben einem weiteren Dankeschön, allen Teilnehmern nach Abschluss der Untersuchung zukommen lassen werden.

Mit freundlichen Grüßen

Prof. Dr. Dr. h.c. Jürgen Weber

Dr. Carl Marcus Wallenburg

Dipl.-Kfm. Peter Lukassen

A.2 Invitation Email

Sehr geehrte/r Frau/Herr XYZ,

wie sind Vereinbarungen mit Logistikdienstleistern zu gestalten, um den Logistikerfolg zu maximieren? Welche Rolle spielt die Art und Weise der Vergütung und wie stark werden hierdurch Anreize gesetzt, die den weiteren Verlauf der Beziehung nachhaltig beeinflussen?

Diesen aktuellen und sicher auch für Ihr Unternehmen interessanten Fragestellungen geht das Kühne-Zentrum für Logistikmanagement der WHU - Otto Beisheim School of Management in einer umfassenden Studie nach. An bislang über 30 vorangegangenen Umfragen unseres Instituts haben hier in 21 Jahren mehr als 10.000 Manager aus dem In- und Ausland teilgenommen.

Ziel dieser Untersuchung ist die Beantwortung folgender Fragen:

- Welche Potenziale bieten sich durch die gezielte Gestaltung von Vertragsstrukturen und Vergütungsmodellen in der Logistik?
- Wie gehen erfolgreiche Unternehmen hierbei vor?

Bitte unterstützen Sie uns als Experte bei dieser Umfrage. Ihre Teilnahme ist für den Erfolg der Studie sehr wichtig und erfordert nur etwa 25 Minuten Ihrer Zeit zum Ausfüllen eines Online-Fragebogens. Diesen erreichen Sie über den folgenden Link:

http://www.unipark.de/uc/ko_whu_ccm/9501/?code=XZY

Als Dankeschön für Ihre Unterstützung haben wir dieser E-Mail unsere neueste Studie zu den aktuellen Trends im Replenishment beigelegt. Darüber hinaus erhalten Sie nach Abschluss der Untersuchung die Auswertung der Ergebnisse in Form einer umfassenden Managementstudie, die Ihrem Unternehmen Erfolgspotenziale bei der Vergütungsgestaltung in der Logistik aufzeigt und konkrete Handlungsempfehlungen gibt.

Zusätzlich können Sie sich als Dankeschön für Ihre Teilnahme für eine der folgenden Prämien entscheiden:

- ein Exemplar der Studie „Flexibilität in der Logistik: Grenzen und Potentiale von Personaldienstleistungen“ im Wert von 98 Euro.
- ein Exemplar der Studie „Value Chain Management in der Automobilzulieferindustrie“ im Wert von 98 Euro.
- die kostenfreie Teilnahme am 5. Campus for Supply Chain Management der WHU Anfang 2008 in Vallendar bei Koblenz im Wert von 260 Euro.
- die Teilnahme an der Verlosung von Apple iPod nano MP3-Playern (8 GB Speicher) im Wert von 230 Euro (pro 50 Teilnehmer wird ein Gerät verlost).

Für Rückfragen steht Ihnen Dipl.-Kfm. Peter Lukassen gerne als Ansprechpartner zur Verfügung (Tel.: 0261-6509-489, E-Mail: Logistikerfolg@whu.edu). Darüber hinaus erhalten Sie unter <http://www.whu.edu/cms/index.php?id=1601> weiterführende Informationen über unser Zentrum.

Wir danken Ihnen herzlich für Ihre Unterstützung.

Mit freundlichen Grüßen,

Prof. Dr. Dr. h.c. Jürgen Weber

Dr. Carl Marcus Wallenburg

Dipl.-Kfm. Peter Lukassen

http://www.unipark.de/uc/ko_whu_ccm/9501/?code=XZY

A.3 Questionnaire

Fremdbezug von Logistikleistungen *- Eine Bewertung aus Sicht des Managements -*



Prof. Dr. Dr. h.c. Jürgen Weber



Dr. Carl Marcus Wallenburg



Dipl.-Kfm. Peter Lukassen

Von Ihrer Teilnahme hängt der Erfolg dieses Forschungsprojekts ab!
Nur durch die Auskünfte von Experten wie Ihnen können wir praxisbezogene Erkenntnisse gewinnen, die auch Ihnen zu Gute kommen.

Ihre Angaben werden anonym ausgewertet und streng vertraulich behandelt!
Die Ergebnisse werden ausschließlich in aggregierter Form veröffentlicht, so dass keine Rückschlüsse auf Sie persönlich oder Ihr Unternehmen möglich sind.

Der Fragebogen umfasst 6 Seiten. Das Ausfüllen wird insgesamt etwa 25 Minuten dauern.

Als **Dankeschön** für Ihre Teilnahme erhalten Sie in jedem Fall:

- die auf den Ergebnissen dieser Untersuchung aufbauende **Studie zu den Erfolgsfaktoren des Fremdbezugs von Logistikleistungen**.
- sowie zusätzlich wahlweise:
 - ein Exemplar der **Studie "Flexibilität in der Logistik: Grenzen und Potentiale von Personaldienstleistungen"** (63 Seiten) im Wert von 98 Euro.
oder:
 - ein Exemplar der **Studie "Value Chain Management in der Automobilzulieferindustrie"** (73 Seiten) im Wert von 98 Euro.
oder:
 - die **kostenfreie Teilnahme am 5. WHU Campus for Supply Chain Management** Anfang 2008 in Vallendar bei Koblenz im Wert von 260 Euro.
oder:
 - die Möglichkeit, mit einer Chance von jeweils 1 zu 50 einen **8 GB iPod nano von Apple** im Wert von 230 Euro zu gewinnen.

Für Rückfragen steht Ihnen Dipl.-Kfm. Peter Lukassen gerne zur Verfügung:
Tel.: 0261/6509-489; Fax: 0261/6509-479
E-Mail: Peter.Lukassen@whu.edu

Wichtig: Bitte lesen Sie die folgenden Hinweise vor der Beantwortung der Fragen!

- Bitte füllen Sie alle Fragen so gut wie möglich aus, auch wenn manche Fragen ähnlich erscheinen. Aus methodischen Gründen lässt sich dies nicht
- immer vermeiden. Es gibt keine "richtigen" oder "falschen" Antworten. Wenn Sie einmal die genaue Antwort nicht kennen, bitten wir Sie bewusst um Ihre subjektive Einschätzung.
- Sie können die Beantwortung des Fragebogens nach jeder Seite unterbrechen und dann durch den in der E-Mail enthaltenen Link wieder fortsetzen.
- Bitte verwenden Sie zur Navigation innerhalb des Fragebogens ausschließlich die sich unten auf der Seite befindenden "Zurück" und "Weiter" Felder, da es sonst zu Problemen kommen kann. Das Dankeschön gibt es für alle vollständig ausgefüllten Fragebögen. Dieses können Sie am Schluss des Fragebogens auswählen.

Vielen Dank für Ihre Unterstützung!

Seite 1 von 6

Bitte wählen Sie *eine* bestehende Vereinbarung mit *einem* Logistikdienstleister zum Fremdbezug *einer* möglichst komplexen oder unternehmensspezifischen Logistikleistung aus und beantworten Sie hierfür *alle* Fragen dieser Untersuchung!

Welche Teilleistungen umfasst die gewählte, fremd bezogene Logistikleistung und wie wird sich die Bedeutung dieser Teilleistungen für Ihr Unternehmen in den nächsten 5 Jahren verändern?

Die Logistikleistung umfasst aktuell:							Die Bedeutung dieser Teilleistung wird in den nächsten 5 Jahren...		
	gar nicht	sehr schwach				sehr stark	abnehmen	gleich bleiben	zunehmen
Planung der Transporte	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Koordination der Transporte	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Durchführung der Transporte	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lieferzusammenführung (Merge-in Transit)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internationaler Frachtversand (Freight Forwarding)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Zollabwicklung und Brokerage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cross-Docking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Entsorgungslogistik (Reverse Logistics)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lagerhaltung	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lager-/Bestandsmanagement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vor-/Endmontage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Verpackung/Etikettierung/Kommissionierung	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bereitstellung von logistischen Informationssystemen und Informationen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Koordination der Logistik (Lead Logistics Management)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beratungsleistungen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bestandsfinanzierung	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sonstige Zusatzleistungen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Welchen Leistungsschwerpunkt hat die gewählte Logistikleistung?

- Beschaffungslogistik ☐
- Produktionslogistik ☐
- Distributionslogistik ☐

Bitte beziehen Sie die folgenden Fragen wiederum auf die *gleiche* bestehende Vereinbarung mit dem *gleichen* Logistikdienstleister zum Bezug der *gleichen* Logistikleistung!

Warum wurde die gewählte Logistikleistung fremd vergeben und wie hat sich diese Entscheidung ausgewirkt?

[illegible]

Seite 3 von 6

Bitte beziehen Sie die folgenden Fragen wiederum auf die *gleiche* bestehende Vereinbarung mit dem *gleichen* Logistikdienstleister zum Bezug der *gleichen* Logistikleistung!

Inwieweit treffen die folgenden Aussagen auf den gewählten Logistikdienstleister zu?

[illegible]

Bitte beziehen Sie die folgenden Fragen wiederum auf die gleiche bestehende Vereinbarung mit dem gleichen Logistikdienstleister zum Bezug der gleichen Logistikleistung!

Inwieweit sind die folgenden Elemente in der Vereinbarung mit dem gewählten Logistikdienstleister enthalten?

Wichtig: Wenn sich die Vereinbarung im letzten Jahr geändert hat, beziehen Sie Ihre Angaben auf die ursprüngliche und nicht auf die aktuelle Fassung!

	gar nicht	sehr schwach				sehr stark
Pauschalen (z. B. für Verwaltungskosten oder Beratung)	○	○	○	○	○	○
Bonusregelungen (z. B. bei signifikanter Zielübererfüllung)	○	○	○	○	○	○
Malusregelungen (z. B. bei signifikanter Zielverfehlung)	○	○	○	○	○	○
Feste Gewinnaufschläge (z. B. 100.000 EUR pro Jahr)	○	○	○	○	○	○
Variable Gewinnaufschläge (z. B. 5 % der Gesamtkosten als Gewinnmarge)	○	○	○	○	○	○
Beteiligung des Logistikdienstleisters an Verbesserungen/Gewinn (z. B. Beteiligung an Kosteneinsparungen oder zusätzlichen Erlösen)	○	○	○	○	○	○
Erstattung außerplanmäßiger Auslagen (z. B. für unvorhergesehene, die Leistung signifikant positiv beeinflussende Investitionen)	○	○	○	○	○	○
An Mengenstaffeln gekoppelte Preise	○	○	○	○	○	○
Zugesicherte Mindestmengen/-volumen/-umsatz	○	○	○	○	○	○
Kostenorientierte Kennzahlen (z. B. Stückkosten pro Auftragsposition)	○	○	○	○	○	○
Leistungsorientierte Kennzahlen (z. B. Auftragsdurchlaufzeit)	○	○	○	○	○	○
Periodische Anpassungsverhandlungen	○	○	○	○	○	○
Vorvereinbarte Preisreduktionen (z. B. Senkung der Vergütung um 2 % pro Jahr)	○	○	○	○	○	○
Vorvereinbarte Preisaufschläge (z. B. Inflationsausgleich, Ausgleich für Tarifabschlüsse)	○	○	○	○	○	○
Situationsbedingte Preisanpassungen (z. B. aufgrund von Änderung der Leistungsanforderungen, des Projektvolumens, der Wechselkurse oder von Mautzuschlägen)	○	○	○	○	○	○
Regelungen zur Vertragsverlängerung	○	○	○	○	○	○
Regelungen zur außerordentlichen Kündigung des Vertrages	○	○	○	○	○	○
<i>Inwieweit fördert die Vereinbarung explizit...</i>						
...die Steigerung der Qualität der gewählten Logistikleistung?	○	○	○	○	○	○
...die Steigerung der Flexibilität der gewählten Logistikleistung?	○	○	○	○	○	○
...die Senkung der Kosten der gewählten Logistikleistung?	○	○	○	○	○	○

[illegible]

	trifft gar nicht zu						trifft voll zu
Flexibilität bei Anpassungsbedarfen ist ein Charakteristikum dieser Vereinbarung.	○	○	○	○	○	○	○
Sowohl wir als auch der gewählte Logistikdienstleister haben die Möglichkeit, Anpassungen an dieser Vereinbarung zu initiieren, falls sich die Rahmenbedingungen ändern sollten.	○	○	○	○	○	○	○
Diese Vereinbarung würde in unerwarteten Situationen eher überarbeitet werden, als dass man auf die Einhaltung der ursprünglichen Regeln beharrt.	○	○	○	○	○	○	○
Diese Vereinbarung legt klare Handlungsregeln fest, denen auch in unerwarteten Situationen stets zu folgen ist	○	○	○	○	○	○	○
Diese Vereinbarung zeichnet sich durch eine hohe Transparenz aus.	○	○	○	○	○	○	○
Diese Vereinbarung erfordert unsererseits einen unverhältnismäßig hohen Kontrollaufwand.	○	○	○	○	○	○	○
Diese Vereinbarung entsprach in ihrer ursprünglichen Gestaltung nicht den Anforderungen des Projekts und wurde bzw. wird deswegen angepasst.	○	○	○	○	○	○	○

Sollte Ihr Unternehmen aus *mehreren* Geschäftseinheiten bestehen (z. B. die Nutzfahrzeug- und PKW-Sparte eines Automobilherstellers), beziehen Sie die folgenden Fragen bitte auf *Ihre* Geschäftseinheit bzw. den *Teilbereich* Ihres Unternehmens, für dessen Logistik Sie (mit-)verantwortlich sind.

Inwieweit treffen die folgenden Aussagen auf Ihre Geschäftseinheit und Ihre Wettbewerber zu?

[illegible]

Inwieweit treffen die folgenden Aussagen auf Ihre Geschäftseinheit und deren Marktumfeld zu?

[illegible]

Inwieweit treffen die folgenden Aussagen Ihre Geschäftseinheit/Unternehmen zu?

[illegible]

Inwieweit treffen die folgenden Aussagen Ihre Geschäftseinheit/Unternehmen zu?

[illegible]

Seite 6 von 6

Wir bitten Sie jetzt noch, einige statistische Fragen zu beantworten. Wie der gesamte Fragebogen unterliegen auch diese Fragen strengster *Vertraulichkeit*!

Bitte tragen Sie dabei in die Eingabefelder *nur ganze oder Kommazahlen* (bspw. 2 oder 2,4) ein und *keine* zusätzlichen Zeichen oder Wörter (z. B. 2 % oder 2,4 Jahre). Wenn Sie eine Zahl nicht wissen, lassen Sie das entsprechende Feld leer.

Angaben zu Ihrer Geschäftseinheit:

In welcher Branche ist Ihre Geschäftseinheit primär tätig?

- | | |
|--|-----------------------|
| Baugewerbe | <input type="radio"/> |
| Chemie und Kunststoffe | <input type="radio"/> |
| Elektrotechnik, Feinmechanik und Optik | <input type="radio"/> |
| Energie und Rohstoffe | <input type="radio"/> |
| Fahrzeugbau | <input type="radio"/> |
| Gesundheit und Biotechnik | <input type="radio"/> |
| Handel | <input type="radio"/> |
| Konsumgüter | <input type="radio"/> |
| Maschinen- und Anlagenbau | <input type="radio"/> |
| Nahrungs- und Genussmittel | <input type="radio"/> |
| Telekommunikation | <input type="radio"/> |
| Transport, Verkehr und Logistik | <input type="radio"/> |
| Sonstige Dienstleistungen | <input type="radio"/> |

Wie viele Mitarbeiter beschäftigt Ihre Geschäftseinheit ungefähr?

Wie hoch ist das Umsatzvolumen Ihrer Geschäftseinheit (in Mio. EUR pro Jahr)?

Wie hoch ist der durchschnittliche Marktanteil Ihrer Geschäftseinheit (in Prozent)?

Wie hoch war das durchschnittliche Umsatzwachstum Ihrer Geschäftseinheit über die letzten 3 Jahre (in Prozent pro Jahr)?

Wie hoch ist die Umsatzrendite Ihrer Geschäftseinheit (in Prozent pro Jahr)?

Wie hoch ist die Kapitalrendite (Return on Investment) Ihrer Geschäftseinheit (in Prozent pro Jahr)?

Wie viele externe Logistikdienstleister nutzt Ihre Geschäftseinheit?

Welchen Anteil an den Logistikkosten Ihrer Geschäftseinheit haben externe Logistikdienstleister (in Prozent)?

Welchen Anteil an den Logistikkosten Ihrer Geschäftseinheit hat die gewählte Logistikleistung (in Prozent)?

Falls Ihr Unternehmen aus mehreren Geschäftseinheiten besteht:

Wie viele Mitarbeiter beschäftigt Ihr Unternehmen insgesamt ungefähr?

Wie hoch ist das Umsatzvolumen Ihres Unternehmens insgesamt (in Mio. EUR pro Jahr)?

Angaben zur Logistikleistung:

Die gewählte Logistikleistung ist vor der aktuellen Vereinbarung mit dem gewählten Logistikdienstleister...

- | | |
|--|-----------------------|
| ...von uns selbst erstellt worden. | <input type="radio"/> |
| ...von einem anderen Logistikdienstleister erbracht worden. | <input type="radio"/> |
| ...schon von demselben Logistikdienstleister erbracht worden | <input type="radio"/> |
| ...von uns noch nicht nachgefragt worden. | <input type="radio"/> |

Angaben zur Logistikleistung:*Die Auswahl des Logistikdienstleisters erfolgte...*

- | | | | |
|---------------------------------------|-----------------------|--|-----------------------|
| ...über eine Online-Auktion,... | <input type="radio"/> | ...ausschließlich aufgrund der Kosten. | <input type="radio"/> |
| | | ...primär aufgrund der Kosten, aber auch der Leistung. | <input type="radio"/> |
| | | ...primär aufgrund der Leistung, aber auch der Kosten. | <input type="radio"/> |
| | | ...ausschließlich aufgrund der Leistung. | <input type="radio"/> |
| ...über persönliche Verhandlungen,... | <input type="radio"/> | ...ausschließlich aufgrund der Kosten. | <input type="radio"/> |
| | | ...primär aufgrund der Kosten, aber auch der Leistung. | <input type="radio"/> |
| | | ...primär aufgrund der Leistung, aber auch der Kosten. | <input type="radio"/> |
| | | ...ausschließlich aufgrund der Leistung. | <input type="radio"/> |

Angaben zum gewählten Logistikdienstleister:*Dieser Logistikdienstleister ist...*

- | | | | |
|----------------------|-----------------------|---|-----------------------|
| ...ein globaler... | <input type="radio"/> | ...Komplettanbieter verschiedenster Logistikleistungen. | <input type="radio"/> |
| | | ...Spezialanbieter bestimmter Logistikleistungen. | <input type="radio"/> |
| ...ein nationaler... | <input type="radio"/> | ...Komplettanbieter verschiedenster Logistikleistungen. | <input type="radio"/> |
| | | ...Spezialanbieter bestimmter Logistikleistungen. | <input type="radio"/> |
| ...ein lokaler... | <input type="radio"/> | ...Komplettanbieter verschiedenster Logistikleistungen. | <input type="radio"/> |
| | | ...Spezialanbieter bestimmter Logistikleistungen. | <input type="radio"/> |

Welcher Logistikdienstleister erbringt die gewählte Logistikleistung?

- | | |
|--|-----------------------|
| arvato logistics | <input type="radio"/> |
| Ceva Logistics (ehemals TNT Logistics) | <input type="radio"/> |
| Dachser | <input type="radio"/> |
| Deutsche Bahn/Schenker/Bax Global | <input type="radio"/> |
| Deutsche Post/DHL/Exel | <input type="radio"/> |
| DFDS | <input type="radio"/> |
| FedEx | <input type="radio"/> |
| Fiege | <input type="radio"/> |
| Geodis | <input type="radio"/> |
| Kühne+Nagel | <input type="radio"/> |
| Panalpina | <input type="radio"/> |
| Rhenus | <input type="radio"/> |
| Thiel | <input type="radio"/> |
| UPS | <input type="radio"/> |
| Wincanton | <input type="radio"/> |
| Sonstiger LDL | <input type="radio"/> |

Wie lange ist die *Gesamtlaufzeit* der gewählten Vereinbarung mit diesem Logistikdienstleister (in Monaten)?Wie lange ist die *Restlaufzeit* der gewählten Vereinbarung mit diesem Logistikdienstleister (in Monaten)?Welchen Anteil an Ihren Logistikkosten hat dieser Logistikdienstleister *insgesamt* (in Prozent)?

Seit wie vielen Jahren arbeiten Sie mit diesem Logistikdienstleister bereits zusammen?

Angaben zur Person:**In welcher Funktion sind Sie tätig?***Ich bekleide eine...*

...geschäftsführende Position...

- ☐ ...im Controlling / Finanzbereich. ☐
☐ ...im Einkauf. ☐
☐ ...in der Logistik. ☐
☐ ...im Marketing. ☐
☐ ...in der Produktion. ☐
☐ ...über mehrere Bereiche hinweg. ☐
☐ ...in einem sonstigen Bereich. ☐

...leitende (jedoch nicht geschäftsführende) Position...

- ☐ ...im Controlling / Finanzbereich. ☐
☐ ...im Einkauf. ☐
☐ ...in der Logistik. ☐
☐ ...im Marketing. ☐
☐ ...in der Produktion. ☐
☐ ...über mehrere Bereiche hinweg. ☐
☐ ...in einem sonstigen Bereich. ☐

...angestellte Position...

- ☐ ...im Controlling / Finanzbereich. ☐
☐ ...im Einkauf. ☐
☐ ...in der Logistik. ☐
☐ ...im Marketing. ☐
☐ ...in der Produktion. ☐
☐ ...über mehrere Bereiche hinweg. ☐
☐ ...in einem sonstigen Bereich. ☐

Seit wie vielen Jahren sind Sie bereits in dieser Funktion tätig?

Seit wie vielen Jahren sind Sie bereits für Ihre Geschäftseinheit tätig?

Sie können uns dabei helfen, die Aussagekraft dieses Forschungsprojekts beträchtlich zu erhöhen!

Die Befragung einer weiteren Kontaktperson in Ihrem Unternehmen würde die Ergebnisse dieses Forschungsprojekts stark verbessern. Daher möchten wir Sie um die Kontaktdaten eines weiteren Ansprechpartners bitten.

Nachname:	
Vorname:	
E-Mail-Adresse	

Vielen Dank, dass Sie an unserer Studie teilgenommen haben!

Bitte geben Sie nun noch Ihre Präferenz hinsichtlich Ihres "Dankeschöns" an.

In jedem Fall erhalten Sie die Studie zu den Erfolgsfaktoren des Fremdbezugs von Logistikleistungen, die auf den Ergebnissen dieser Untersuchung aufbaut, sowie wahlweise:

- ☐ ein Exemplar der Studie "Flexibilität in der Logistik: Potentiale und Grenzen von Personaldienstleistungen" im Wert von 98 Euro.
- ☐ ein Exemplar der Studie "Value Chain Management in der Automobilzulieferindustrie" im Wert von 98 Euro.
- ☐ die kostenfreie Teilnahme am 5. WHU Campus for Supply Chain Management Anfang 2008 im Wert von 260 Euro.
- ☐ die Möglichkeit mit der Chance von 1 zu 50 einen 8 GB iPod nano von Apple im Wert von 230 Euro zu gewinnen.

Bitte füllen Sie die folgenden Felder aus, damit wir Sie bezüglich des Dankeschöns kontaktieren können. Bitte geben Sie auf jeden Fall Name und E-Mail-Adresse an. Falls Sie sich für eine der Studien entscheiden, benötigen wir auch Ihre Anschrift:

Nachname:	
Vorname:	
E-Mail-Adresse:	
Unternehmen:	
Straße:	
Postleitzahl:	
Ort:	
Telefonnummer:	

Abschicken des Fragebogens:

Mit einem Klick auf das Feld "Weiter" bestätigen Sie Ihre Eingaben und senden den Fragebogen ab.

Sie können danach *keine Angaben mehr korrigieren und nicht auf vorherige Seiten zurückkehren.*

Wenn Sie den Fragebogen erst vollständig ausfüllen möchten, klicken Sie hier nicht "Weiter" sondern auf "Zurück", bis Sie die noch unausgefüllten Fragen erreichen.

A.4 First Reminder

Sehr geehrte/r Frau/Herr XYZ,

um das Logistikoutsourcing zukünftig zu verbessern, sind wir auf Sie als Experten angewiesen. Vor zwei Wochen hatten wir Ihnen bereits eine Einladung zur Teilnahme an unserer Studie zu den Erfolgsfaktoren des Fremdbezugs von Logistikleistungen gesandt. Wahrscheinlich sind Sie aus Zeitgründen bisher noch nicht dazu gekommen.

Ziel der Untersuchung ist die Beantwortung folgender Fragen:

- Welche Potenziale bieten sich durch die gezielte Gestaltung von Vertragsstrukturen und Vergütungsmodellen in der Logistik?
- Wie gehen erfolgreiche Unternehmen hierbei vor?

Bitte unterstützen Sie uns mit Ihren Erfahrungen bei dieser Untersuchung. Ihre Teilnahme ist für den Erfolg der Studie sehr wichtig und erfordert nur etwa 25 Minuten. Den Online-Fragebogen erreichen Sie über den folgenden Link:

http://www.unipark.de/uc/ko_whu_ccm/9501/?code=XZY

Falls Sie schon mit dem Ausfüllen begonnen haben, sind Ihre bisherigen Angaben im System hinterlegt und Sie brauchen nur noch die fehlenden Seiten zu beantworten. Entsprechend werden sie vom System direkt auf die Seite geleitet, bei der Sie beim letzten Mal die Beantwortung unterbrechen mussten.

Als Dankeschön für Ihre Unterstützung erhalten Sie nach Abschluss der Untersuchung die Auswertung der Ergebnisse in Form einer umfassenden Managementstudie, die Ihrem Unternehmen Erfolgspotenziale bei der Vergütungsgestaltung in der Logistik aufzeigt und konkrete Handlungsempfehlungen gibt.

Zusätzlich können Sie sich als Dankeschön für eine der folgenden Prämien entscheiden, die Sie von uns kostenfrei erhalten:

- ein Exemplar der Studie "Flexibilität in der Logistik: Grenzen und Potentiale von Personaldienstleistungen" im Wert von 98 Euro.
- ein Exemplar der Studie "Value Chain Management in der Automobilzulieferindustrie" im Wert von 98 Euro.
- die kostenfreie Teilnahme am 5. Campus for Supply Chain Management der WHU Anfang 2008 in Vallendar bei Koblenz im Wert von 260 Euro.
- die Teilnahme an der Verlosung von Apple iPod nano MP3-Playern (8 GB Speicher) im Wert von 230 Euro (je 50 Teilnehmer wird ein Gerät verlost).

Für Rückfragen steht Ihnen Dipl.-Kfm. Peter Lukassen gerne als Ansprechpartner zur Verfügung (Tel.: 0261-6509-489, E-Mail: Logistikerfolg@whu.edu).

Wir danken Ihnen herzlich für Ihre Unterstützung.

Mit freundlichen Grüßen,

Prof. Dr. Dr. h.c. Jürgen Weber

Dr. Carl Marcus Wallenburg

Dipl.-Kfm. Peter Lukassen

http://www.unipark.de/uc/ko_whu_ccm/9501/?code=XZY

A.5 Second Reminder

Sehr geehrte/r Frau/Herr XYZ,

sicherlich haben auch Sie in ihrem Unternehmensalltag die Erfahrung gemacht, dass die Vertragsgestaltung mit Logistikdienstleistern oft kompliziert und die Wirkung der gefundenen Regeln kaum vorhersehbar ist. Um die in der Praxis verwendeten Vertragsstrukturen bewerten und erfolgreiche Gestaltungselemente identifizieren zu können, führt unser Zentrum seit einigen Wochen eine Umfrage durch, zu der wir auch Sie eingeladen haben. Über 250 für die Logistik in ihren Unternehmen verantwortliche Manager haben sich bereits an unserer Umfrage beteiligt. Die Auswertung der Daten wird deshalb eine fundierte Betrachtung der folgenden Fragen ermöglichen:

- Welche Potenziale bieten sich durch die gezielte Gestaltung von Vertragsstrukturen und Vergütungsmodellen in der Logistik?
- Wie gehen erfolgreiche Unternehmen hierbei vor?

Hiermit möchten wir Sie ein letztes Mal herzlich einladen, sich an der Umfrage zu beteiligen und sich damit eine exklusive Best-Practice Auswertung zu sichern. Dies geht einfach und unkompliziert, indem Sie auf den folgenden Link klicken:

http://www.unipark.de/uc/ko_whu_ccm/9501/?code=XZY

Falls Sie schon mit dem Ausfüllen begonnen haben, sind Ihre bisherigen Angaben im System hinterlegt und Sie brauchen nur noch die fehlenden Seiten zu beantworten. Entsprechend werden sie vom System direkt auf die Seite geleitet, bei der Sie beim letzten Mal die Beantwortung unterbrechen mussten.

Als Dankeschön können Sie sich zusätzlich zur Auswertung der Daten eine der folgenden Prämien aussuchen, die Sie von uns kostenlos erhalten:

- ein Exemplar der Studie "Flexibilität in der Logistik: Grenzen und Potentiale von Personaldienstleistungen" im Wert von 98 Euro.

- ein Exemplar der Studie "Value Chain Management in der Automobilzulieferindustrie" im Wert von 98 Euro.
- die kostenfreie Teilnahme am 5. Campus for Supply Chain Management der WHU Anfang 2008 in Vallendar bei Koblenz im Wert von 260 Euro.
- die Teilnahme an der Verlosung von Apple iPod nano MP3-Playern (8 GB Speicher) im Wert von 230 Euro (je 50 Teilnehmer wird ein Gerät verlost).

Für Rückfragen steht Ihnen Dipl.-Kfm. Peter Lukassen gerne als Ansprechpartner zur Verfügung (Tel.: 0261-6509-489, E-Mail: Logistikerfolg@whu.edu).

Wir danken Ihnen herzlich für Ihre Unterstützung.

Mit freundlichen Grüßen,

Prof. Dr. Dr. h.c. Jürgen Weber

Dr. Carl Marcus Wallenburg

Dipl.-Kfm. Peter Lukassen

p.s.: Wenn Sie nicht teilnehmen möchten, brauchen Sie nichts weiter zu tun. Wir werden Sie nicht mehr anschreiben.

p.p.s.: Referenzunternehmen, die sich schon an unseren Forschungsprojekten beteiligt haben, finden Sie hier: <http://www.whu.edu/cms/index.php?id=2618>.

Ihr Link zum Fragebogen lautet:

http://www.unipark.de/uc/ko_whu_ccm/9501/?code=XZY

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