

Evaluating Third Party Logistics Relationships: When provider size matters.

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Abstract

This paper examines the influence of selected relationship marketing characteristics and customer attributes on outcomes of third-party Logistics relationships, and the extent to which provider size affects these relationships. An online survey was conducted, aimed at professionals working in German firms engaged in third-party logistics relationships. The data were analyzed using Partial Least Squares path modelling. The results indicate that provider size has only a limited impact on third-party relationship performance: Where an influence was observed it appears that size has a negative effect on the relationship, particularly for customer referrals and retention. Implications are formulated.

Introduction

More and more companies are outsourcing their logistics functions to third-party logistics providers (3PLs), to make their supply chains more effective and efficient. These 3PLs offer specialized services (Large, 2007), to handle a variety of transportation, distribution, inventory management and warehousing needs. Few empirical studies have addressed the difference between small and large logistics companies. Prior work on 3PL has focussed on selection criteria (Menon 1998), or the gap between 3PL services offered and those used by customers (Murphy and Poist, 2000). We focus on relationship mechanisms when the 3PL provider is already selected, and the relationship is ongoing. The performance indicators addressed in our study are customer retention rates, service recovery, customer referrals, and operational performance improvements. By focussing on the difference between small and large 3PL providers, this study adds the literature by complementing previous work by Knemeyer and Murphy (2005a & b), who tested the impact of relationship marketing characteristics on relationship outcomes from the customer perspective. Where and when provider size matters can be a crucial insight for companies, both providers and customers, as their relationships evolve.

Most 3PL studies have a US perspective. Western Europe and Germany in particular can be considered an emerging area for 3PL services, warranting empirically based 3PL research. After settling on a definition of 3PL this paper reviews the extant 3PL literature, and examines relationship attributes from the relationship marketing literature, to develop a set of propositions, and a conceptual model. The methodology is described, the data collection and subsequent analysis are explained, and the results are reviewed and interpreted in light of the literature and the practical implications of the findings.

Third Party Logistics (3PL)

According to Knemeyer and Murphy (2004), 'third-party logistics' can be referred to as 'logistics outsourcing' or 'contract logistics'. Yet, there is no common definition of the concept. Knemeyer and Murphy (2005a) provide a comparison of two different concepts of definitions regarding third-party logistics. They propose a somewhat "broad" version of the definition, based on works of various authors. Coyle, Bardi, and Langley (2003, p.425) for example define third-party logistics to involve "an external supplier that performs all or part of a company's logistics functions" and to "encompass suppliers of services such as transportation, warehousing, distribution, financial services, and so on." Further contributions to this "broad" stream of third-party logistics definitions come from Menon, McGinnis, and Ackermann (1998) and Sink and Langley (1997). Menon et al. define the concept as "a for-hire provider performing logistics activities for the buyer or seller of raw materials, goods in process, or finished products". Sink and Langley interpret it as "using the services of an external supplier to perform some or all of a firm's logistics functions." These interpretations of third-party logistics do not distinguish between short-term and long-term considerations or between transactional and relational exchanges (Knemeyer and Murphy, 2005b). The other group of third-party logistics definitions takes a more "narrow" approach (e.g. Murphy and Poist, 1998; Bagchi and Virum, 1996).

Murphy and Poist (1998, p.26) define third-party logistics as being “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.” Similarly, Bagchi and Virum (1996, p.193) consider third party logistics to be characterized by “a long-term formal or informal relationship between a shipper and a logistics provider to render all or a considerable number of logistics activities for the shipper. The shipper and the logistics provider see themselves as long-term partners in these arrangements.” Our paper extends the efforts of Knemeyer and Murphy (2005a), examining the effect of relationship characteristics and customer attributes on the outcomes of third-party logistics relations, and therefore adopts the relationship focus.

The 3PL business and its development

Companies have different options to consider in handling their logistics activities effectively and efficiently. They can (1) provide the functions in-house, (2) own logistics subsidiaries, or (3) outsource the function and buy the service (Razzaque and Sheng, 1998). Traditionally, logistics activities like distribution, inventory management, order processing, or materials management were handled internally by firms as support functions and were given low priority compared to other business functions. The underlying rationale for the increasing number of companies focusing on the last option is the emerging demand of advanced logistics services. One can divide the principles underlying organization’s decision to outsource into two groups, the internal and the external (Bolumole, Frankel, and Naslund, 2007). The internal principle refers to recognizing a lack of in-house resource availability. The external principle puts emphasis on a firm’s external competitive environment. Accordingly, trends like globalization, lead time reductions, and emerging technology contribute to the interest in outsourcing. Globalization increases the complexity of supply chains, given that “the best supplier may be found halfway around the world, and customer needs are often as diverse as the countries in which they live” (Fawcett, Ellram, and Ogden, 2007, p.309). Lead time reductions, incorporating the shift to just-in-time production schemes, add to the increasing complexity and cause inventory and logistics control to be crucial to manufacturing and distribution operations (Razzaque and Sheng, 1998). As a consequence of these trends, the tasks of logistics providers are increasing in content and complexity (Hertz and Alfredsson, 2003). In the end, the need for developing a sustainable competitive advantage resulted in increased outsourcing and the evolution of contract logistics or third-party logistics. A recent study, conducted by Lieb and Butner (2007) among CEOs of third-party logistics providers in North America, reveals several industry dynamics that are currently operating in the marketplace. The Top 5 of these dynamics consists of (1) a continuing downward pressure on prices, (2) a growing customer interest in outsourcing a broader array of logistics services, (3) an increased pressure to internationalize company service offerings, (4) large-scale mergers of 3PL providers in North America, and (5) increasing customer expectations with respect to IT support. Two of these dynamics, a continuing downward pressure on prices and pressures to internationalize service offerings, are also among the Top 5 of the main industry problems. When asked about future developments the CEOs in Lieb and Butner’s study (2007) specified two major changes. They expect the merger and acquisition movement to continue and even accelerate not only in America but on a global basis. Consequently, the resulting large providers are likely to increasingly dominate the industry which will cause especially middle-tier providers to exit the market.

Relationship Marketing

The use of relationship marketing in supply chain management literature belongs to an evolving stream of research that focuses on using external theories in the logistics discipline (Knemeyer and Murphy, 2005b). Relationship marketing emphasizes the interaction between buyers and sellers and focuses on multiple exchanges between them over some period of time. The concept of transactional marketing is focused on a single, short-term exchange between buyer and seller (Gundlach and Murphy, 1993). By focusing on the long-term relationship between the customer and the provider, the use of relationship marketing in this context is appropriate.

Priluck (2003) indicates that relationship marketing is regarded as a means to create customer loyalty. Its aim is to create positive outcomes for both customers and providers. Similarly, following Morgan and Hunt (1994, p.22), “relationship marketing refers to all marketing activities directed toward establishing, developing, and maintaining successful relational exchanges”. Eiriz and Wilson (2004) extended this definition by adding “terminating” to the mentioned activities. Yet, they indicate that the activities do not have to be active or conscious but they can affect marketing relationships indirectly or

tangentially. Relationship marketing focuses on dyadic and multilateral relationships, and on networks of relationships.

The Conceptual Framework

Provider Size

With regard to the research aim, examining the potential impact of the size of the third-party logistics provider on the influence of relationship characteristics and customer attributes on relationship outcomes, the size of the third-party logistics provider will be measured by the number of employees indicated by the respondents. In order to distinguish between small “niche” providers and large integrators, a demarcation point of 250 employees will be used. Using this threshold is in line with the “EU Classification Scheme for Small-and Medium-sized Enterprises (from 2005 and onwards)” The threshold of 250 employees can also be found in academic literature in the field of logistics. Evans, Feldman, and Foster (1990) for example referred to this number in their study on perceptions of the relevant criteria used to select motor carriers. Further, Evangelista and Sweeney (2006) used a similar scheme to the EU classification in their study on technology usage in the supply chain. Focusing on “small 3PLs” explicitly, their sample contained companies up to 249 employees separated in “micro”, “small”, and “medium” sizes. Few empirical studies have examined the differences between small and large companies in the logistics context. Most of the literature tends to focus solely on small companies (e.g. Evangelista and Sweeney, 2006; Gunasekaran and Ngai, 2003) or does not explicitly take the difference between small and large companies into account (e.g. Large, 2007; Knemeyer and Murphy, 2005a & b; Murphy and Poist, 2000; Boyson, Corsi, Dresner, and Rabinovich, 1999).

Development of propositions

Outcomes associated with relationship marketing

Boles, Barksdale, and Johnson (1997) evaluate relationship marketing outcomes across three measures – customer referrals, customer retention, and service recovery. More recently, Janda, Murray, and Burton (2002) added a further relationship outcome – performance improvements. From the provider’s point of view, especially the first three relationship outcomes are of utmost importance, because each of them has a direct impact on a company’s long-term success and increases shareholder value (Knemeyer, Corsi and Murphy, 2003).

Customer referrals represent the positive word-of-mouth effect of satisfied customers. More precisely, a critical outcome of third-party logistics relationships is the intention of the customers to do one or more of the following: become an advocate for the provider, promote the service provider to others, and defend the provider from detractors (Cross and Smith, 1995). According to Boyson, Corsi, Dresner, and Rabinovich (1999), especially companies searching for potential third-party logistics providers regard word-of-mouth referrals from their professional networks as important input. Thus, providers should make the required efforts to get referrals from their customers.

Additionally, word-of-mouth referrals represent a good indicator of “intense loyalty” (Palmatier, 2006). The underlying reasoning is that only customers who are highly satisfied and feel highly committed to the provider are willing to risk their own reputation by giving a referral to this provider.

Customer retention refers to keeping existing customers by meeting and exceeding their needs. Given that meeting and exceeding the customers’ needs finally results in satisfaction, it can be stated that customer satisfaction is the key to customer retention (Kotler, 2003). Knemeyer and Murphy (2005a) underline this effect when they provide empirical support for a significant positive relation between customer retention and the customers’ satisfaction with prior outcomes. Boles, Barksdale and Johnson (1997) indicate that retaining a customer enables companies to find out more about his business and thus to learn how to serve him better. Consequently the customer will be satisfied and most likely increase purchases from the supplier. According to a generally accepted rule of thumb, the acquisition of new customers costs five times more than satisfying and retaining current customers (Knemeyer and Murphy, 2005a). More precisely, the increase of the net present value of profits resulting from a five percent increase in customer retention varies between 25 percent and 85 percent over different industries (Oliver, 1999). Thus, customer retention has a strong influence on the performance of a company and should be of great interest to decision-makers.

Service Recovery is concerned with mistakes that happen in the focal third-party logistics relationship. While mistakes can happen in any kind of transaction, the consequences depend on how the situation is handled. Especially in relational exchanges, recovery from mistakes is an important factor influencing the success of the relationship (Priluk, 2003). Yet, frequent and real-time information sharing between the parties involved in the relationship is crucial to detect problems and react to them immediately (Maltz, 1995). As stated by Dwyer, Schurr, and Oh (1987), relational exchanges will always exhibit some kind of conflict. However, when these conflicts are resolved they can finally be beneficial to the relationship. In other words, when conflicts lead to improvements of a relationship they can be referred to as “functional conflicts” (Morgan and Hunt, 1994, p.26). These functional conflicts can have a positive impact on the focal relationship by preventing stagnation, stimulating interest, and providing a potential forum for discussions.

Performance Improvements are related to perceived logistics operational performance improvements on the customer side resulting from the outsourcing relationship with the third-party logistics provider. Contrary to the previous outcomes which are primarily relevant for the providers, performance improvements focus on the customer perspective. Knemeyer and Murphy (2005a) state that outsourcing arrangements will most likely become unsuccessful when one party fails to do what is expected from the other party. Hence, when the customers do not perceive the relationship as leading to measurable improvements in their logistics performance, they are most likely to be dissatisfied with the relationship. Consequently, this will have a negative effect on the other three outcomes as well. Examples of improvements in logistics performance are cost reductions, risk reductions, and improvements of the system responsiveness. A recent study by Zsidisin, Voss, and Schlosser (2007), testing the effect of relational closeness on several performance metrics, found varying results. Especially on-time delivery which was expected to improve with increasing closeness of the relationship exhibited no significant difference between arm’s-length relationships and partnerships. However, the authors found that relationship closeness positively affects the willingness of providers to commit assets during times of constrained capacity.

Relationship Marketing Characteristics

The following relationship characteristics are going to be examined with regard to their effect on the third-party logistics relationships’ outcomes specified before: the trust in the provider, the perceived commitment of the provider, the communication with the provider, the dependence on the provider, and the reputation of the provider. The selection of these characteristics is consistent with Knemeyer’s and Murphy’s (2005a) suggestion to test the effect of additional relationship characteristics on the relationship outcomes.

Trust in the provider: Mayer, Davis, and Schoorman (1995, p. 712) define trust as the “willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party”. Moorman, Deshpandé, and Zaltman (1993, p. 82) provide a similar but more compressed perspective and define trust as the “willingness to rely on an exchange partner in whom one has confidence”. These definitions reflect two separate components – credibility and benevolence (Ganesan, 1994). Credibility refers to trust in a provider’s expertise and reliability. Benevolence focuses on the motives and intentions of the provider and can be present even when the relationship lacks credibility. Maltz and Ellram (1997) indicate that trust between firms is important when there is much at stake for the firms. Especially when firms outsource all or part of their logistics functions and become dependent on third-party provider, this is often the case. Accordingly, in most B2B relationships buyers try to reduce the risk of their purchase by choosing the firms they can trust (Doney, Barry, and Abratt, 2007). More precisely, they will select the provider that is capable of providing the product or service and who is regarded as being interested in the buyer’s well-being. Since trust is a major prerequisite in successful relationships (Soonhong and Mentzer, 2000), 3PL providers should aim for establishing trust in their customers’ minds. In the field of third-party logistics relationships the “inability to form meaningful and trusting relationships” is still regarded as a major area for improvement (Langley, 2007).

Perceived commitment of the provider: According to Morgan and Hunt (1994, p. 23) “relationship commitment is central to relationship marketing”. They define it as “an exchange partner believing that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it; that is, the committed party believes the relationship is worth working on to ensure that it endures

indefinitely" (p. 23). A further description of commitment, from the perspective of logistics alliances, indicates that it is "characterized by a long-term orientation with a lack of a distinct endpoint, requiring trust, loyalty, and a sharing of information, risks, and rewards" (Moore and Cunningham, 1999, p. 108). What these definitions have in common is that they focus on the enduring desire to maintain a valued long-term relationship (Moorman, Zaltman, and Deshpandé, 1992). One integral part of relationship commitment is that the members do not accept short term gains at the expense of the long-term benefits of the relationship, and rather work on maintaining it (Morgan and Hunt, 1994). The importance of committed members to an outsourcing relationship becomes clear. In the end, relationships characterized by a high degree of commitment are harder to switch for both parties compared to those with low commitment (Hertz and Alfredsson, 2003). It is expected that customers who perceive their third-party logistics provider to be highly committed to the relationship will be more likely to give referrals and stick to this provider than customers perceiving their providers to be less committed.

Communication with the provider: Communication in exchange relationships, according to Anderson and Narus (1990, p. 44), "can be defined broadly as the formal as well as informal sharing of meaningful and timely information between firms". Meaningful and timely exchange of information helps to resolve disputes and align perceptions and expectations and consequently enhances the relationship building process (Etgar, 1979). Murphy and Poist (2000) identified a mismatch between those third-party logistics services offered by providers and those used by the customers. The existence of this mismatch underlines the importance of continuous and collaborative communication. A recent study on logistics outsourcing by Langley (2007) identified communication as one of the most important elements of successful collaboration. Similarly, Knemeyer and Murphy (2005a) provide empirical support for a strong positive effect of communication on each of the four outcomes of a third-party logistics relationship described before. Since both studies were conducted in North America, the reasoning behind testing the construct again is to identify potential cultural differences between North America and Europe. However, following the findings above, it is expected that communication positively affects the outcomes of third-party logistics relationships.

Dependence on the provider: To be successful, relational exchanges must provide benefits for both parties. In this work, dependence is related to the benefits that can be achieved by the specific third-party logistics relationship under investigation. Following Heide and John (1988), dependence on a third-party logistics provider will be higher under the following circumstances: (1) when the services obtained by the provider are important, highly valued, and the magnitude of the exchange is high; (2) when the services obtained exceed services available from the best alternative provider; and (3) when fewer sources or potential sources of exchange are available to the customer. More precisely, "dependence refers to the need to maintain a relationship to achieve goals" (Palmatier, Dant, and Grewal, 2007, p.175). The ongoing trend of global logistics, especially its specialized nature and the distances involved, creates dependence by shippers on third-party logistics providers who are capable of providing a broad range of value-added services to assure logistical continuity (Bowersox and Calantone, 1998). Dependence is expected to be positively related to retention and service recovery given that dependent customers will most likely remain with the provider even when adverse effects occur. Further, a positive relation between dependence and performance improvements is expected because the customer should become dependent only when the provider has something to offer that is unique or at least important to him (Ganesan, 1994).

Reputation of the provider: Reputation refers to how one party, in this case a third-party logistics provider, is viewed by other parties. Organizational reputation refers to providing reliable results and consistent performance over time. A company will estimate the future performance of a third-party logistics provider based on the provider's reputation, which in turn is a result of past performance and behavior in other relationships (Ganesan, 1994). Knemeyer and Murphy (2005a) found that reputation has no significant effect on any of the four focal relationship outcomes. However, some authors identified the importance of reputation in relationships. A recent study identified that the reputation of a supplier can reduce the influence of competing suppliers' marketing actions on customers which in turn increases customer retention (Shih-Ping, 2008). Furthermore, Houston and Johnson (2000) found a strong negative link between a firm's reputation and opportunistic behavior. Companies that developed a good reputation over time will be careful not to jeopardize it.

Customer Attributes

Besides testing the effect of relationship characteristics on relationship outcomes, the present study investigates what impact certain customer attributes have on these outcomes, and how the size of the provider influences the effects. Large customers, in contrast to small customers, can better exploit their power advantage in order to control the relationship to their satisfaction and performance needs (Maloni and Carter, 2006). The attributes to be examined, with regard to the customers, are the size of the customer firm, the length of the relationship between the customer and the provider, the number of third-party logistics relations in place, the number of logistics functions outsourced, and the type of functions outsourced.

Propositions and Conceptual Model

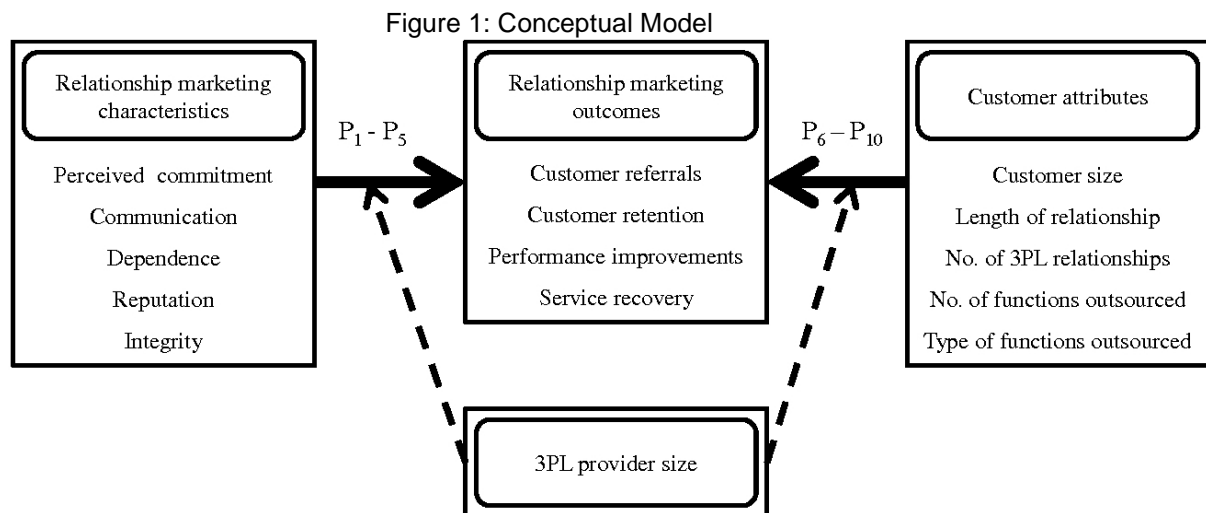
The review of the literature has highlighted the importance of the four focal relationship outcomes for third-party logistics providers. The following propositions will be investigated:

- P1 = the influence of the communication with the provider on the four relationship outcomes.....*
- P2 = the influence of the perceived commitment of the provider on the four relationship outcomes.....*
- P3 = the influence of trust in the provider on the four relationship outcomes.....*
- P4 = the influence of the dependence on the provider on the four relationship outcomes.....*
- P5 = the influence of the reputation of the provider on the four relationship outcomes.....*
- P6 = the influence of the customer size on the four relationship outcomes.....*
- P7 = the influence of the length of the relationship on the four relationship outcomes.....*
- P8 = the influence of the number of 3PL relationships on the four relationship outcomes.....*
- P9 = the influence of the number of functions outsourced on the four relationship outcomes.....*
- P10 = the influence of the type of functions outsourced on the four relationship outcomes.....*

..... differs between large and small third-party logistics providers.

Conceptual Model

The conceptual model presented in Figure 1 visualizes the propositions above. The dashed arrows represent the proposed moderation effect of the provider size on the relationships.



Methodology

To investigate the propositions an online questionnaire was developed. Access to this questionnaire was made possible via a hyperlink that was added to an email invitation sent to the prospective respondents. The target group of the survey was defined as “professionals who are working at companies that are using at least one third-party logistics provider, and who are directly involved in at least one relationship to a provider”. A threefold approach was used to reach relevant companies: First, prospective companies were randomly chosen from a company database provided by the German IHK (www.ihk.de; Industrie- und Handelskammer; Chamber of Industry and Commerce). In total, 330 invitations for taking part in the survey were sent out to companies spread all over Germany. Second, an invitation and a link to the survey were presented on the front page of the “Competence

Center Kontraktlogistik, Logistics Outsourcing” which is part of the German logistics forum “Logistics.de”. Logistics.de is a neutral and independent platform, aiming at bringing together users and providers of logistics know-how, products, and services (www.logistics.de). Third, an invitation and a link to the questionnaire were put on several German logistics bulletin boards (www.logipool.de, www.forum-speditionen.de, and www.cargoforum.de). The scales and items used in the questionnaire with regard to the relationship characteristics and outcomes were partly adopted from the research by Knemeyer and Murphy (2005a) and partly derived from other studies. Following Knemeyer and Murphy’s suggestion to use different constructs in future studies, trust in the provider, dependence on the provider, and the perceived commitment of the provider were added to the framework. The related items were adapted from Moorman et al. (1993), Ganesan (1994), and Moore and Cunningham (1999), respectively. All items were translated into German. Two native German colleagues re-translated the questionnaire into English to check for translation errors. Further, two German professionals working in the logistics departments of large German companies reviewed the questionnaire to check for clarity and accuracy. After implementing some alterations the questionnaire was put online and the email invitations were sent out on December 27, 2007. An English version was uploaded and included in the email invitation as well to account for potential non-native professionals working in the target companies.

The questionnaire was separated into two major sections. The first section dealt with the focal third-party relationship and was further subdivided in two parts containing the items for measuring the five relationship characteristics and four relationship outcomes, respectively. The second section addressed background information of the relationship. All items in the first section were measured on seven-point Likert scales ranging from 1 = “strongly disagree” to 7 = “strongly agree”. The seven-point Likert scale was chosen because the study by Knemeyer and Murphy (2005a) and the studies by Ganesan (1994) and Moorman et al. (1993) on relationship marketing used this scale as well. Some of the items were provided with negative wording, given that “it is better to use dual statements, some of which are positive and others negative” (Malhotra and Birks, 2003). The items in the second section were adapted from Knemeyer and Murphy’s study (2005a) in order to obtain comparable results. Questions on the size of the respondent’s company and the provider company were added.

Analysis

Partial least squares (PLS) was conducted using the software SmartPLS (Ringle, Wende, and Will, 2005). PLS analysis was complemented by analyses conducted with SPSS. According to Lohmöller (1988), PLS is complementary with other Latent Variable Path (LVP) programs like LISREL for example. Major advantages of using PLS instead of other programs are the ability to cope with non-normally distributed data (White, Varadarajan, and Dacin, 2003), small sample sizes (Cao, Gruza, and Klemz, 2004), and potentially existing multicollinearity (Cassel, Hackl, and Westlund, 2000). Further, PLS is quicker than other programs what is especially useful when complex models are analyzed. The analysis conducted via PLS actually tests two models, the factor model and the path model (Lohmöller, 1988). The factor model which is also referred to as the “outer model” or “measurement model” focuses on the relationship between the latent (unobserved constructs) variables and the associated manifest (observed or measured) variables. The path model also referred to as the “inner model” or the “structural model” focuses on the relationships or “paths” between the latent variables (Lohmöller, 1988). In order to ensure reliable and valid measures of constructs before conclusions about the construct relationships are drawn, the analysis of PLS models is usually conducted in two sequential stages (Hulland, 1999). The first stage is the evaluation of the measurement model and the second stage analyses the structural model.

Results

Overall, 75 questionnaires were completed with 8 being unusable due to incomplete responses, leaving a sample of 67. Based on the assumption that most complete responses were approached via the 330 email invitations and disregarding the bulletin boards, a rough approximation of a response rate is 20%. With respect to firm size, 14.9% of responding organizations employ less than 100 and 14.9% employ 100 to 250 workers. 250 to 500 and more than 500 people are employed by 13.4% and 56.7%, respectively. Figure 3 presents the distribution of the respondent companies engaged in relationships with small and large third-party logistics providers. According to these distributions, companies with less than 100 and between 250 and 500 employees are more often engaged in relationships with small providers. Companies with 100 to 250 and more than 500 employees are

more often engaged in relationships with large providers. Respondents were asked to indicate their level of responsibility and the duration of their involvement in the focal relationship. Responsibility was measured on a semantic differential scale from (1) “no responsibility” to (7) “primary responsibility”. The mean score of 5.22 indicates a rather high level of responsibility. Further, the respondents had on average almost five years (4.75) of involvement in the focal relationship. With regard to the functions outsourced by the respondent companies, approximately 70% of the companies outsource more than 3 functions to the respective provider they focus on in the questionnaire. Moreover, more than half of the respondent companies outsource transport related functions as “Outbound traffic control” and “Inbound traffic control” with 75% and 60%, respectively. “Inventory management” and “Pick & pack” score third and fourth, with 46% and 42%, respectively. Of the 67 useful responses, only 3 indicated to outsource merely transport related functions. Table 1 gives an overview of the relationships between the independent variables (relationship characteristics and customer attributes) and the four relationship outcomes. Further the table presents the moderation effect of the size of the third-party logistics provider on the mentioned relationships.

Table 1: Results of the Structural Model

Independent Variables	Performance Improvements	Service Recovery	Customer Referrals	Customer Retention
<i>Relationship characteristics</i>				
Perceived commitment	0.254 ^a	-0.010	0.461**	0.327*
Commitment * ProvSize	-0.033	-0.082	0.060	-0.304*
Communication	0.351*	0.101	0.168	-0.046
Communication * ProvSize	-0.027	0.083	-0.324*	-0.005
Dependence	0.074	0.089	-0.099	0.148*
Dependence * ProvSize	-0.192	-0.301*	0.208	0.008
Reputation	0.230	0.554**	0.272*	0.408*
Reputation * ProvSize	0.090	0.204	0.071	0.217
Integrity	0.047	0.141	0.094	0.052
Integrity * ProvSize	-0.086	-0.082	-0.066	0.095
<i>Customer attributes</i>				
Customer size	0.028	-0.038	-0.119	-0.235**
CustSize * ProvSize	0.161	-0.051	-0.226*	-0.017
Number of fcts. Outsourced	-0.021	-0.068	-0.110	-0.040
NumFcts * ProvSize	0.042	-0.072	-0.003	0.061
Number of providers	0.342	0.307	-0.438*	-0.478*
NumProv * ProvSize	0.612	0.351*	-0.560*	-0.599*
Relationship length	-0.065	0.007	0.011	0.020
RelLength * ProvSize	-0.002	0.035	0.177	-0.022
Provider size	0.113	-0.022	0.075	0.183*
Number of observations	67	67	67	67
R-square	0.721	0.708	0.770	0.783

Notes: ^a These numbers signify the coefficients for the particular relationship paths.

* significant at the 0.1 level ** significant at the 0.05 level

Based on the R-squares the model appears to show good fit to the data, as the values exceed 0.7 for all four outcomes (Malhotra and Birks, 2003). The significance of the individual path coefficients is assessed by t-values obtained via a bootstrap procedure consisting of 500 runs. Recalling the propositions to be tested in the course of this thesis, the main question focuses on the influence of provider size on the relationships between the independent variables and the four relationship outcomes. The results show a rather limited influence of the provider size on the relationships. For the

perceived commitment of the provider, only the effect on customer retention is significantly moderated by the size of the provider. A similar picture is presented for the communication with the provider. Only the effect on customer referrals is significantly moderated. Furthermore, with respect to the dependence on the provider, again only one effect is moderated. In this case it is the effect on service recovery. The other two relationship characteristics, reputation of the provider and trust in the provider exhibit no moderated effects on the relationship outcomes at all. According to these results it can be concluded that Propositions 1 – 3 are only partially supported, given that for each of the three characteristics one of the four tested effects on the relationship outcomes is moderated by provider size. Propositions 4 and 5 are not supported. Customer size has one moderated effect, namely the effect on customer referrals. Hence, Proposition 6 is only partly supported. The effects of the number of functions outsourced and the length of the relationship on relationship outcomes do not exhibit any significant moderations by provider size at all. Consequently, Propositions 7 and 9 are not supported. The size of the third-party logistics provider significantly moderates the effect of the number of providers on service recovery, customer referrals, and customer retention. Given that three of four effects are moderated, Proposition 8 is supported.

Table 2: Evaluation of the Propositions

	Proposition		Conclusion
P1	Perceived commitment	→ Relationship outcomes	Partly supported
P2	Communication	→ Relationship outcomes	Partly supported
P3	Dependence	→ Relationship outcomes	Partly supported
P4	Reputation	→ Relationship outcomes	Not supported
P5	Integrity	→ Relationship outcomes	Not supported
P6	Customer size	→ Relationship outcomes	Partly supported
P7	Number of outsourced functions	→ Relationship outcomes	Not supported
P8	Number of Providers	→ Relationship outcomes	Supported
P9	Relationship Length	→ Relationship outcomes	Not supported
P10	Type of outsourced functions	→ Relationship outcomes	Discarded

Notes: Propositions ‘supported’ if at least two relationships per independent variable are significantly moderated by the size of the provider.

Summary and Conclusion

The effect of the relationships examined and customer attributes on the outcomes of a 3PL relationship is only conditionally affected by the size of the provider. Only 7 out of 36 observed relationship effects indicate a significant differences between small and large 3PL providers. From a customer perspective, the size of the provider does not seem to have any significant effect on operational performance improvements. Small and large providers alike are able to provide these services and no performance distinction can be made. Performance improvements are also independent of customer attributes, such as size of the customer, number of providers used, or number of outsourced activities.

From provider perspective it appears that large providers seem to have difficulties in establishing close relationships with their customers: As the size of the provider increases, the positive effects of certain relationship characteristics are reduced, or negative effects are intensified. An example is the result for customer referrals, which were found as very important in a 3PL context (Boyson et al, 1999): customers tend to provide fewer referrals to large providers. As for customer retention, the results indicate that when customers have outsourced activities to many 3PL providers, they are less willing to maintain relationships with the large providers. Large providers seem to have difficulties in terms of relationship building. The commitment of a provider has a large impact on relationship performance. The results for communication and reputation are contrary to the findings of Knemeyer and Murphy (2005a). In our study, reputation was found to be the strongest antecedent of relationship performance improvement.

Perceived commitment, dependence, and reputation have the largest impact: Yet the larger the provider, the smaller the effect. To retain customers, large 3PL firms should be careful not to harm their reputation, and offer either a very specialized or a very broad range of services to increase dependence of their customers. The findings for customer referrals are similar, as to the direct antecedents. Perceived commitment and reputation increase the probability of referrals.

Limitations

The sample of 67 respondents is considered representative for German 3PL customers. The geographic scope was limited to Germany: future studies should widen the scope, and make international comparison possible. Industry factors (high margin industries versus low cost industries) would impact the use of 3PL providers and types of services demanded.

References

- Anderson, J. C., & Narus, J. A. (1990). A Model of Distributor Firm and Manufacturer Firm Working Partnerships. *Journal of Marketing*, 54(1), 42-58.
- Bagchi, P. K., & Virum, H. (1996). European Logistics Alliances: A Management Model. *International Journal of Logistics Management*, 7(1), 93-108.
- Barnes, J. G. (2001). *Secrets of Customer Relationship Management: It's All about How You Make Them Feel*. New York, NY: McGraw Hill.
- Berglund, M., van Laarhoven, P., Sharman, G., & Wandel, S. (1999). Third-Party Logistics: Is There a Future? *International Journal of Logistics Management*, 10(1), 59-70.
- Boles, J. S., Barksdale, H. C., & Johnson, J. T. (1997). Business relationships: An examination of the effects of buyer-salesperson relationships on customer retention and the willingness to refer and recommend. *Journal of Business & Industrial Marketing*, 12(3/4), 248.
- Bolumole, Y. A., Frankel, R., & Naslund, D. (2007). Developing a Theoretical Framework for Logistics Outsourcing. *Transportation Journal*, 46(2), 35-54.
- Bowersox, D. J., & Calantone, R. J. (1998). Executive Insights: Global Logistics. *Journal of International Marketing*, 6(4), 83-93.
- Boyson, S., Corsi, T., Dresner, M., & Rabinovich, E. (1999). MANAGING EFFECTIVE THIRD PARTY LOGISTICS RELATIONSHIPS: WHAT DOES IT TAKE? *Journal of Business Logistics*, 20(1), 73-100.
- Bradley, P. (1994, 20 October). Contract logistics: It's all about costs. *Purchasing*, 56A53-A14.
- Cao, Y., Gruca, T. S., & Klemz, B. R. (2004). Internet Pricing, Price Satisfaction, and Customer Satisfaction. *Int. J. Electron. Commerce*, 8(2), 31-50.
- Cassel, C. M., Hackl, P., & Westlund, A. H. (2000). On measurement of intangible assets: a study of robustness of partial least squares. *Total Quality Management*, 11(7), S897.
- Coviello, N. E., & Roderick J. Brodie. (1998). From transaction to relationship marketing: an investigation of managerial perceptions and practices. *JOURNAL OF STRATEGIC MARKETING*, 6, 171-186.
- Coyle, J. J., Edward J. Bardi, and C. John Langley. (2003). *The Management of Business Logistics - A Supply Chain Perspective* (7th ed.). Mason, OH: South-Western.
- Cross, R., & Smith, J. (1995). Toward a responsible, customer-focused marketing framework. *Direct Marketing*, 57(11), 26.
- Doney, P. M., Barry, J. M., & Abratt, R. (2007). Trust determinants and outcomes in global B2B services. *European Journal of Marketing*, 41(9/10), 1096-1116.
- Dunn, S. C., Seaker, R. F., & Waller, M. A. (1994). LATENT VARIABLES IN BUSINESS LOGISTICS RESEARCH: SCALE DEVELOPMENT AND VALIDATION. *Journal of Business Logistics*, 15(2), 145-172.
- Dwyer, F. R., Schurr, P. H., & Oh, S. (1987). Developing Buyer-Seller Relationships. *Journal of Marketing*, 51(2), 11-27.
- Eiriz, V., & Wilson, D. (2006). Research in relationship marketing: antecedents, traditions and integration. *European Journal of Marketing*, 40(3/4), 275-291.
- Etgar, M. (1979). Sources and Types of Intrachannel Conflict. *Journal of Retailing*, 55(1), 61.
- Evangelista, P., & Sweeney, E. (2006). Technology usage in the supply chain: the case of small 3PLs. *International Journal of Logistics Management*, 17(1), 55-74.
- Fawcett, S. E., L.M. Ellram, J. A. Ogdin. (2007). *Supply Chain Management: From Vision to Implementation*. Upper Saddle River, NJ: Pearson Prentice Hall.
- Ganesan, S. (1994). Determinants of long-term orientation in buyer-seller relationships. *Journal of Marketing*, 58(2), 1.
- Gefen, D., & Straub, D. (2005). A Practical Guide to Factorial Validity Using PLS-Graph: Tutorial and Annotated Example. *Communications of AIS*, 2005(16), 91-109.
- Gunasekaran, A., & Ngai, E. W. T. (2003). The successful management of a small logistics company. *International Journal of Physical Distribution & Logistics Management*, 33(9), 825-842.
- Gundlach, G. T., & Murphy, P. E. (1993). Ethical and legal foundations of relational marketing exchanges. *Journal of Marketing*, 57(4), 35.
- Heide, J. B., & John, G. (1988). The Role of Dependence Balancing in Safeguarding Transaction-Specific Assets in Conventional Channels. *Journal of Marketing*, 52(1), 20.
- Hertz, S., & Alfredsson, M. (2003). Strategic development of third party logistics providers. *Industrial Marketing Management*, 32(2), 139-149.
- Houston, M. B., & Johnson, S. A. (2000). Buyer-Supplier Contracts Versus Joint Ventures: Determinants and Consequences of Transaction Structure. *Journal of Marketing Research (JMR)*, 37(1), 1-15.
- IfM – Institut für Mittelstandsforschung Bonn, (Institute for SME-Research, Bonn) Germany
"SMEs in Germany – Facts and Figures 2004" by Brigitte Günterberg and Gunter Kayser
- Janda, S., Murray, J. B., & Burton, S. (2002). Manufacturer -- supplier relationships An empirical test of a model of buyer outcomes. *Industrial Marketing Management*, 31(5), 411-420.

Knemeyer, A. M., Corsi, T. M., & Murphy, P. R. (2003). LOGISTICS OUTSOURCING RELATIONSHIPS: CUSTOMER PERSPECTIVES. *Journal of Business Logistics*, 24(1), 77-109.

Knemeyer, A. M., & Murphy, P. R. (2004). Evaluating the Performance of Third-Party Logistics Arrangements: A Relationship Marketing Perspective. *Journal of Supply Chain Management: A Global Review of Purchasing & Supply*, 40(1), 35-51.

Knemeyer, A. M., & Murphy, P. R. (2005a). Exploring the Potential Impact of Relationship Characteristics and Customer Attributes on the Outcomes of Third-party Logistics Arrangements. *Transportation Journal*, 44(1), 5-19.

Knemeyer, A. M., & Murphy, P. R. (2005b). Is the glass half full or half empty? *International Journal of Physical Distribution & Logistics Management*, 35(10), 708-727.

Kotler, P. (2003). *Marketing Management* (11th ed.). New Jersey: Pearson Education.

Langley, J. C. J., & CAPGEMINI (2007). Third-Party Logistics 2007: results and findings of the 12th annual study. *Journal*, Large, R. O. (2007). The influence of customer-specific adaptations on the performance of third-party-logistics relationships - document studies and propositions. *International Journal of Logistics Research and Applications*, 10(2), 123 - 133.

Lieb, R., & Bentz, B. A. (2005). The Use of Third-Party Logistics Services by Large American Manufacturers: The 2004 Survey. *Transportation Journal*, 44(2), 5-15.

Lieb, R., & Butner, K. (2007). The North American Third-Party Logistics Industry in 2006: The Provider CEO Perspective. *Transportation Journal*, 46(3), 40-52.

Lohmöller, J.-B. (1988). The PLS Program System: Latent Variables Path Analysis with Partial Least Squares Estimation. *Multivariate Behavioral Research*, 23(1), 125.

Malhotra, N. K., & Birks, D. F. (2003). *Marketing Research: An Applied Approach* (2nd European ed.). Harlow, England: Pearson Education Limited.

Maloni, M. J., & Carter, C. R. (2006). Opportunities for Research in Third-Party Logistics. *Transportation Journal*, 45(2), 23-38.

Maltz, A. (1995). Building successful relationships. *Transportation & Distribution*, 36(5), 63.

Maltz, A. B., & Ellram, L. M. (1997). TOTAL COST OF RELATIONSHIP: AN ANALYTICAL FRAMEWORK FOR THE LOGISTICS OUTSOURCING DECISION. *Journal of Business Logistics*, 18(1), 45-66.

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). AN INTEGRATIVE MODEL OF ORGANIZATIONAL TRUST. *Academy of Management Review*, 20(3), 709-734.

Menon, M. K., McGinnis, M. A., & Ackerman, K. B. (1998). SELECTION CRITERIA FOR PROVIDERS OF THIRD-PARTY LOGISTICS SERVICES: AN EXPLORATORY STUDY. *Journal of Business Logistics*, 19(1), 121-137.

Moore, K. R., & Cunningham Iii, W. A. (1999). Social exchange behavior in logistics relationships: a shipper perspective. *International Journal of Physical Distribution & Logistics Management*, 29(1/2), 103.

Moorman, C., Deshpandé, R., & Zaltman, G. (1993). Factors Affecting Trust in Market Research Relationships. *Journal of Marketing*, 57(1), 81.

Moorman, C., Zaltman, G., & Deshpandé, R. (1992). Relationships Between Providers and Users of Market Research: The Dynamics of Trust Within and Between Organizations. *Journal of Marketing Research (JMR)*, 29(3), 314-328.

Morgan, R. M., & Hunt, S. D. (1994). The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing*, 58(3), 20.

Murphy, P. R., Daley, J. M., & Knemeyer, M. A. (1999). Comparing Logistics Management in Small and Large Firms: An Exploratory Study. *Transportation Journal*, 38(4), 18-25.

Murphy, P. R., & Poist, R. F. (1998). Third-Party Logistics Usage: An Assessment of Propositions Based on Previous Research. *Transportation Journal*, 37(4), 26-35.

Murphy, P. R., & Poist, R. F. (2000). THIRD-PARTY LOGISTICS: SOME USER VERSUS PROVIDER PERSPECTIVES. *Journal of Business Logistics*, 21(1), 121-133.

Nunnally, J. C. (1978). *Psychometric Theory* (2nd ed.). New York, NY: McGraw-Hill.

Oliver, R. L. (1999). Whence Consumer Loyalty? *Journal of Marketing*, 63(4), 33-44.

Palmatier, R. W., Dant, R. P., & Grewal, D. (2007). A Comparative Longitudinal Analysis of Theoretical Perspectives of Interorganizational Relationship Performance. *Journal of Marketing*, 71(4), 172-194.

Palmatier, R. W., Dant, R. P., Grewal, D., & Evans, K. R. (2006). Factors Influencing the Effectiveness of Relationship Marketing: A Meta-Analysis. *Journal of Marketing*, 70(4), 136-153.

Priluck, R. (2003). Relationship marketing can mitigate product and service failures. *Journal of Services Marketing*, 17(1), 37.

Razzaque, M. A., & Cheng, C. C. (1998). Outsourcing of logistics functions: A literature survey. *International Journal of Physical Distribution & Logistics Management*, 28(2/3), 89.

Regan, A. C., Song, Jiongjiog. (2000). An Industry in Transition: Third Party Logistics in the Information Age. Paper presented at the Transportation Research Board, 80th Annual Meeting.

Ringle, C. M., Wende, S., & Will, S. (2005). SmartPLS 2.0 (M3) Beta. Hamburg.

Shih-Ping, J. (2008). Effects of corporate reputations, relationships and competing suppliers' marketing programmes on customers' cross-buying intentions. *Service Industries Journal*, 28(1), 15-26.

Sink, H. L., & Langley, J. C. J. (1997). A managerial framework for the acquisition of third-party logistics services. *Journal of Business Logistics*, 18(2), 163-189.

Skjoett-Larsen, T. (2000). Third party logistics-from an interorganizational point of view. *International Journal of Physical Distribution & Logistics Management*, 30(1/2), 112.

Soonhong, M., & Mentzer, J. T. (2000). The role of marketing in supply chain management. *International Journal of Physical Distribution & Logistics Management*, 30(9), 765.

White, J. C., Varadarajan, P. R., & Dacin, P. A. (2003). Market Situation Interpretation and Response: The Role of Cognitive Style, Organizational Culture, and Information Use. *Journal of Marketing*, 67(3), 63-79.

Zsidisin, G. A., Voss, M. D., & Schlosser, M. (2007). Shipper-Carrier Relationships and their Effect on Carrier Performance. *Transportation Journal*, 46(2), 5-18.