

# Explaining the nature of third party logistics contracts for supplementary services using organisational economics

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Authors:

Remko I. van Hoek  
Erasmus University Rotterdam  
Faculty of Economics  
e-mail: remko.van.hoek@PI.net

Ed G.J. Vosselman  
Erasmus University Rotterdam  
Faculty of Economics  
the Netherlands

## **Explaining the nature of third party logistics contracts for supplementary services using organisational economics**

Remko I. Van Hoek  
Erasmus University Rotterdam  
Faculty of Economics/RIBES  
phone: +31 (0)10 4081332  
fax: +31 (0)10 4526280  
e-mail: Remko.van.Hoek@PI.net

Ed G.J. Vosselman  
Erasmus University Rotterdam  
Faculty of Economics

### **ABSTRACT**

The growth of inter-firm relations in a number of segments of the supply chain has resulted in a stream of publications in the area of outsourcing, purchasing and facility management. One of the critical elements of supply chain management is how to manage and control inter-functional and inter-firm relations. In logistics there has been a growth of third party logistics service suppliers that offer services supplementary to traditional warehousing and transport services. This development can be explained based on the strict and detailed contracts that are used for traditional services, leaving ample room for close customer relations and innovation. This paper, following prior publications from Vosselman (1996) among others, in management control and Maltz (1992) among others, in logistics, empirically assesses the approach that logistics service suppliers use in coordinating innovative service packages with customers. In particular, the contracting of logistics and related services are studied. Results of a survey among 78 logistics service suppliers (32% response rate) indicate that offering supplementary services, including final manufacturing activities is not an escape for third parties from strict contracts. Eventhough service suppliers can penetrate high value adding segments of the supply chain and improve customer relations, contracts remain detailed and fixed. Based organisational economics, transaction costs theory in particular, a model is developed that explains almost 60% of variance. The model assesses the nature of control applied in this particular type of inter-firm relations rather integral, including the type of services, contract, frequency, level and content of coordination and communication among parties in the chain. Based on findings implications for logistics and third party management, as well as, future management control research are formulated.

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## INTRODUCTION

It is common practice in third party logistics practice to have tough negotiations about price and terms of the contract. This can partly be explained based on the over-supply of transport-capacity (transport has become a commodity service). Also traditional transport and warehousing services have a low-interest nature for manufacturers (the clients of third party logistics service suppliers) due to the low contribution (a small number of percentages in most cases) of these activities to the overall value added created in the supply chain.

Increasingly however, logistics as a whole is becoming an area important in the marketplace, based on its contribution to customer service and customer responsiveness (see for example van Damme and van der Zon, 1997). Especially for companies that adopt a supply chain-wide approach of the business, logistics can contribute to cross-functional efforts to make the chain more efficient and responsive to turbulent markets. An example of such cross-functional efforts is the relocation of final manufacturing activities, such as final-assembly and configuration of products, into the distribution channel. By placing these manufacturing activities in the distribution channel, close to the final customer, the company can directly respond to customer orders and offer customised products. Placing these activities in the distribution channel often contributes to inventory, transport and related logistics cost-savings which can, not only compensate for possible manufacturing cost-increase, but can also raise the efficiency of the supply chain as a whole. The application of such postponed manufacturing systems not only requires the combined efforts of logistics, distribution and manufacturing, in relation to marketing programs. On top of this cross-functional aspect, there are often cross-company aspects involved in the application of such programs. Often the distribution channel (warehouses etc.) is operated by third party logistics service suppliers. Thus relocation of final manufacturing activities into this part of the chain almost immediately impacts the relation between manufacturer and third party and the service portfolio of the third party. In fact, one of the approaches used by third party logistics service suppliers to move away from commodity and low-interest services is to “escape” into the offering of more exclusive and higher value adding services, such as final manufacturing activities. This explains why there is a tendency among logistics service suppliers to start offering supplementary services like packaging, final assembly and other activities (also, this is promoted by professional organisations like the Holland International Distribution Council).

Obviously, these inter-firm and inter-functional dynamics in the supply chain challenge management control research. The *central question* addressed in this paper is what type of management control systems can be used to structure the inter-firm (third party-manufacturer) relations in the context of the application of (cross-functional) supplementary (final manufacturing) services in the supply chain.

Organisational economics can be used to explain the management control systems in place. In particular, applying the transaction costs theory, predicts that the offering of supplementary services result in even more detailed and fixed contracts than currently used in third party logistics. The offering of supplementary services may require specific investments and capabilities of the third party, thus raising transaction specificity of the service portfolio. The transaction cost theory says that transaction specificity raises the need for manufacturers to detail contracts and avoid the risk of opportunistic behaviour and

bounded rationality of service suppliers. In that case, offering supplementary services would only further raise tightness of inter-firm contracts.

An alternative approach might be for service suppliers to develop innovative contracts and management control systems for these supplementary services. Using service level agreements for integrated service packages for example, leads to transparency of relations and lowers management control load of customers. However, Kokke and Theeuwes (1997) found that service suppliers do not see supplementary services as a separate core-business that needs dedicated performance measures and monitoring. They rather tend to include it in their portfolio of existing services with the intention of pleasing customers and raising customer commitment to the relation, but not with the intention of drastically changing the nature of the relation. This suggests that innovative contract-forms, such as service level agreements, are not used and third party relations remain subject to strict and detailed contracts.

The managerial relevance of this paper and problem area is that this study can offer support to the upgrading of the third party logistics business into higher margin services and into improved customer relations. As mentioned, the growth of supplementary services has received managerial attention for a number of years. The study might develop relevant input for the growing development of supplementary services by logistics service suppliers as well as to the understanding of third party logistics contracts and management control. The public relevance is that the third party logistics business is an industry with significant employment figures and a large number of small, medium and larger sized firms. Also, the logistics service business facilitates the global reach of manufacturing industries, most important in an area of globalization.

Regarding the scientific and research relevance of this paper, both Maltz (1992) and Aertsen (1993; 1995) have studied third party logistics using a transaction cost approach and used the transaction cost theory to explain the nature of the outsourcing relation. Sink and Langley (1997) state that this is a relevant stream of research but that further empirical validation is needed. Whereas studies of management control systems used in inter-firm relations, based on organisational economics, and transaction costs theory in particular, are documented in Vosselman (1996) and van der Meer-Kooistra and Vosselman (1997). These publications suggest that the transaction costs theory offers explanation for the type of control, as well as support to the design of management control systems applied. The studies were also based on case studies and, therefore, deserve further empirical validation based on quantitative research. The purpose of this paper is thus to assess the impact of modern dynamics in the inter-functional and inter-firm dynamics, in the context of supplementary logistics services, the on management control systems used in the supply chain. The relevance of this context is indicated by prior publications about management control in third party logistics. Van Damme and van der Zon (1997) for example, explain that there is a lack of insight in and methods to control the physical distribution part of the supply chain. Kokke and Theeuwes (1997) point at variation in performance measures relevant for different types of third party operations (transport, warehousing and supplementary services). In short, the research presented in this paper aims to contribute to "controlling change in chains."

The next section develops hypotheses using outsourcing and economic theory. The transaction costs theory will be used in developing hypotheses. Hypotheses will be tested using survey research among logistics service suppliers and transport companies. The study thus takes the perspective of the supplier of services. This is comparable with Vosselman (1996) but not with third party logistics research of Aertsen (1995) and Maltz (1992). It is reasoned however, that the perspective of the customer/manufacturer is so often used that

this causes risks of biases in theory development. Also the supplier of services is the one that actually experiences the management control system and the operation with the context of the contract and might thus be the in best position to judge about its nature. Finally, the service supplier might develop innovative contracts to lower management control load of customers as part of its investment in customer relations. The final section draws conclusions and reflects on consequences of the findings for future management control research.

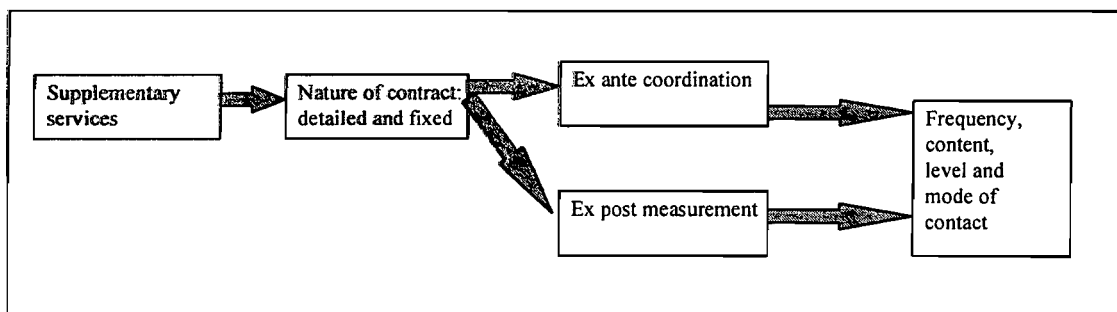
## HYPOTHESES DEVELOPMENT

First of all, it can be hypothesised that there is a relation between detailed contracts and the services offered. In particular, when a company offers supplementary services, such as manufacturing and related activities that are positioned in the distribution channel by manufacturers, a customer may want to formulate a detailed contract. The reasoning behind this is that these services are outside the direct core-business of logistics service suppliers. Van Hoek and van Dierdonck (1997) for example, show how postponed manufacturing activities like final assembly and the sizing of products are applied to a lower extent by logistics service suppliers than by wholesalers and industrial companies. Also Lieb et al. (1993) indicate that final assembly and related manufacturing activities are currently not among the most often offered services by third party logistics suppliers. This indicates that these activities are outside the core-business of logistics service suppliers. Given this fact it is not strange that supplementary services often require transaction specific investments. These investments may be example in equipment (like manufacturing equipment for performing final manufacturing), sites (like dedicated warehouse facilities with final manufacturing space) or people (like final manufacturing supervisors and operators). Applying transaction costs reasoning it can be assumed that in the situation of transaction specific investments customers will secure the relation against risks of opportunism or bounded rationality through formulating detailed contracts. Thus, based on transaction cost theory, a positive relation can be hypothesised between detailed contracts and the offering of supplementary services:

H1 The offering of supplementary services is positively related to detailed contracts,

Turning to the management control system used in the inter-firm relation, a number of factors might be relevant; (1) the content of ex ante coordination of the inter-firm relation, (2) the type of performance measures of the inter-firm relation, used ex post, (3) the frequency, content, level and (4) mode of communication among firms and reports on the relation. Hypotheses about these elements of the management control systems will be formulated below. Figure 1 displays the overall line of reasoning; detailed and fixed contracts are expected for supplementary services. These contracts need ex ante coordination and (little) ex post measurement. For which a certain level, frequency and mode of contact is needed.

Figure 1 Management control system used in the context of supplementary services



Starting with the ex ante coordination, it seems logical that when offering supplementary services the service supplier and its customer discuss issues like specific services, the logistics concepts of the customer, how to handle complaints and how to realise specific or dedicated investments. These items reflect the ex ante need for coordination of aspects fundamental to a specific inter-firm relation. Thus, a certain amount of (ex ante) coordination has to be assured in order to realise transaction specific investments and to stipulate the detailed contracts needed for that:

H2 Coordinative discussion with clients are related positively to detailed contracts.

Turning to performance measurement, monitoring of the third party's performance can be expected to be important in case of transaction specific investments. The monitoring of supplementary services can be expected to be based on different criteria than those used for traditional services. It can be assumed that criteria used for outsourcing supplementary services to third parties are different from those used for traditional services and might include, for example, product expertise. When the selection criteria and the operating systems are different from traditional services it can also be expected to impact performance measurement. In particular, it can be expected that for supplementary services in the area of postponed manufacturing, quality issues become important, apart from traditional logistics performance measures like lead-time and delivery reliability. Not only quality of products when receiving and shipping them, but also the percentage of scrap from final manufacturing activities then becomes important. The result from applying postponed manufacturing would be the use of a more comprehensive set of performance measures for logistics activities, including operational, qualitative and direct measures.

Applying transaction costs reasoning however, leads to the expectation that these measures are negatively related to detailed and fixed contracts. As hypothesised in hypothesis 1, detailed contractual terms are used to protect the manufacturer against opportunistic behaviour of the third party and dependency risks when supplementary services are offered. A manufacturer may then rely on contractual terms and a narrow channel of communication is expected between customer and supplier (Sako, 1992). In such a channel the manufacturer may restrict performance measurement to a small set of measures, for example ex post indirect measurement based on financial and quantitative criteria, such as costs charged to the manufacturer. This implies that more comprehensive and difficult to install operational, qualitative and direct measures, commonly used in logistics management, are used only limitedly. Also this suggest that innovative approaches like the balanced scorecard (Kaplan and Norton, 1993) are not used. Therefore it is hypothesised that:

H3: Comprehensive operational, direct and qualitative performance reports are negatively related to detailed contracts.

Apart from the content of monitoring and reports, the frequency and level of coordination are also relevant characteristics of the management control system in place, which may be under the influence of the economics of the outsourcing relationship. In particular, when open communication channels are used it can be expected that there is frequent contact at all levels of the organisation, including the operational level, the top-management level and the intermediate level of account managers. The operational level tends to communicate about daily operations, qualitative and aspects of the operation. The top-level on the other hand tends to focus on ex post issues and indirect aspects of the daily operation such as costs and general performance. Account-managers tend to function at an intermediate level of contact

in preparing for top-management contact and coordinating operational issues. Often account-management is used as part of advanced relationship marketing tools, building trust and close partnerships. Naturally these are negatively associated with detailed and fixed contract. Based on transaction costs reasoning however, it can be expected that a customer relies on contractual agreements, especially when specific services and investments are involved, while frequency of communication is kept to a minimum (Sako, 1992). It can be expected that a customer will negotiate contractual terms, most likely at a top management level, and do this at a low frequency, for example annually when revising the contract. It can thus be hypothesised that:

H4a: The frequency of communication at the operational level is negatively related to detailed contracts,

H4b: The frequency of communication at the top-management level is negatively related to detailed contracts,

H4c: The frequency of communication at the account-management level is negatively related to detailed contracts.

As a final aspect of monitoring and coordination, the type of reports/mode of reports can be used. When communication is intense and direct it can be expected that electronic communication is used as opposed to paper-based reports. When less performance measurement is involved in the supply chain it might very well be that there is less need for electronic information exchange. IT is argued to make possible transparency and continues and on-line measurement (La Londe and Powers, 1995; Bowersox and Daugherty; 1995). Indeed logistics service suppliers are for example beginning to open their databases for customers so that they can continuously keep track of inventory-levels in the warehouse of their service-supplier. This is practised however, for most important customers and long-standing relations. When this is not needed reports may rather rely on paper-based reports, such as formal monthly or annual statements. Using transaction cost reasoning the latter would be expected, as opposed to on-line and continues availability of performance data. Also paper-based reports rather contain ex post, indirect data (relevant in transaction costs economics, Vosselman, 1996) as opposed to real-life performance data in electronic databases.

H5a: The frequency of paper-based reports is positively related to detailed contracts,

H5b: The frequency of electronic reports is negatively related to detailed contracts.

## METHOD

Because testing and quantitative assessment of inter-firm relations in the context of third party logistics is suggested to be a relevant contribution to previous studies a telephone survey was conducted among 250 logistics service suppliers and transport companies. The companies were member of the Dutch Logistics Association (VLM), The Physical Distribution Group (a trade association with selected service suppliers that meet certain quality standards). These were supplemented with a random selection of companies from a public database. Including these companies helps avoid maturity bias resulting from the inclusion of VLM member. These companies are regularly surveyed and might therefore be experienced in responding to questionnaires as used in this survey. Furthermore a selection bias resulting from the survey of Physical Distribution Group companies is avoided. The Physical Distribution Group companies are selected by the trade-organisation based on their quality standard and level of expertise, this might bias responses towards more professional companies. Using a telephone survey furthermore served the seven R's of research; reaching the right person, with the right information, at the right time, with the right questions, using



the right instrument to collect the right data at the right (low) costs (Williams Walton, 1997). Companies were phoned using number of general contactpersons. The study was briefly introduced so that the contact person could assess whether he/she was the proper person to answer the questions. If not, another contact person was asked for. As a result the right person who could supply information from his/her own experience, serving quality of response.

A total of 78 companies (32%) of various sizes responded. Table 1 lists descriptive statistics for demographic characteristics of respondents.

Table 1 Descriptives

	Mean	Std Dev	Minimum	Maximum	N
Total number of employees	3061.21	17598.95	3.00	140,000.00	76
Employees in warehousing	236.71	1402.40	0.00	12,000.00	75
Turn-over in mln NLG	796.63	3,656.29	1.50	25,000.00	56
Warehousing turn-over	541.58	3,645.28	0.00	25,000.00	47
Number of customers	7,240.53	36,700.33	1.00	300,000.00	78
Number of warehousing customers	151.21	594.61	1.00	4,000.00	72
Number of establishments	19.42	114.46	1.00	1,000.00	76

Table 2 specifies constructs and items used, as well as the alpha of the constructs used.

Table 2 Constructs used, items and reliability

Construct	Items used	Coefficient Alpha
Detailed and fixed contract	- Contracts contain an exact description of services that have to be offered, - Contracts are precisely and detailed, - Contracts contain fixed prices.	.67 (3 items)
Supplementary services	- Final assembly, - Packaging activities, - Reconditioning, - Building displays, - Return shipments, - Sizing of products.	.85 (6 items)
Coordinative meetings	- We talk about customer complaints with customers - We talk about specific services with customers, - We talk about specific investments with customers, - We talk about logistics concepts of customers.	.66 (4 items)
Performance measurement and reports	- We measure and report about the quality of the product when received, - We measure and report about the quality of products before shipment, - We measure and report about the share of scrap from production activities	.78 (3 items)
Frequency of communication at operational level	Single item	
Frequency of communication at level of top-management	Single item	
Frequency of communication at account-management level	Single item	
Frequency of paper reports	Single item	
Frequency of electronic reports	Single item	

## RESULTS

As a first test of the hypotheses Pearson bi-variate (direct) correlation coefficients were calculated, results are presented in table 3.

As expected, a positive correlation was found between the offering of supplementary services and the strict nature of contracts. Also, ex ante coordinative meetings correlate positively with strict contracts. Additionally, it was found that meetings also correlate with both written and electronic reports, comprehensive performance measurement and the offering of supplementary services. They correlate negatively with contacts at a top-management level. Apparently, meetings serve as an important facilitator of all sorts of management control tools and mechanisms, as well as the expansion of service portfolios. Top-management contacts might be an alternative to meetings, it may be that top-managers rather rely on telephone or brief contacts as opposed to frequent, formal meetings. The use of performance measures and reports on production-related aspects is correlated significantly to meetings, the offering of supplementary services and the use of electronic reports. Apparently, these measures indeed do support the application of manufacturing-related supplementary services by third parties.

Table 3 Direct correlation coefficients

	1	2	3	4	5	6	7	8	9
1 Contract	-								
2 Services	.3248 <sup>a</sup>	-							
3 Meetings	.1976 <sup>c</sup>	.2624 <sup>b</sup>	-						
4 Reports	.0117 n.s.	.3733 <sup>a</sup>	.3879 <sup>a</sup>	-					
5 Operational level	-.1056 n.s.	-.0799 n.s.	-.1617 n.s.	-.0843 n.s.	-				
6 Top-management level	.2779 <sup>b</sup>	.1531 n.s.	-.2159 <sup>c</sup>	-.0769 n.s.	.1269 n.s.	-			
7 Account-management level	.0348 n.s.	-.1803 n.s.	-.1460 n.s.	-.1578 n.s.	.0405 n.s.	.2769 <sup>c</sup>	-		
8 Paper reports	.1109 n.s.	.0177 n.s.	.2430 <sup>b</sup>	.1070 n.s.	-.1074 n.s.	-.0307 n.s.	-.1275 n.s.	-	
9 Electronic reports	-.1026 n.s.	.2143 <sup>b</sup>	.2291 <sup>b</sup>	.2048 <sup>c</sup>	.2119 <sup>c</sup>	.0510 n.s.	-.0202 n.s.	-.0896 n.s.	-

Key: Pearson bivariate correlation coefficients <sup>a</sup> p = <0.01 <sup>b</sup> p = <0.05 <sup>c</sup> p = <0.1 n.s. = not significant

The frequency of communication at the operational level is related significantly to the use of electronic reports. This seems logical given the fact that these reports have an on-line and continuous character, this is more relevant for daily reports than for contacts at the top-management level which are less frequent. The frequency of communication at the level of top-management correlates negatively to strict contracts (as expected). Apparently, top-management uses meetings to discuss and develop contract terms. Top-management contact and contact at the account management level are related, it may be that account managers support top-management contacts by preparing or following-up on top-management meetings.

The use of written reports is related to coordinative meetings. These meetings may be used to discuss reports prepared on paper. Electronic reports are related not only to meetings but also to active performance measurements and the offering of supplementary services. This suggests that these reports provide a more accurate and real-time basis on which the service portfolio can be expanded.

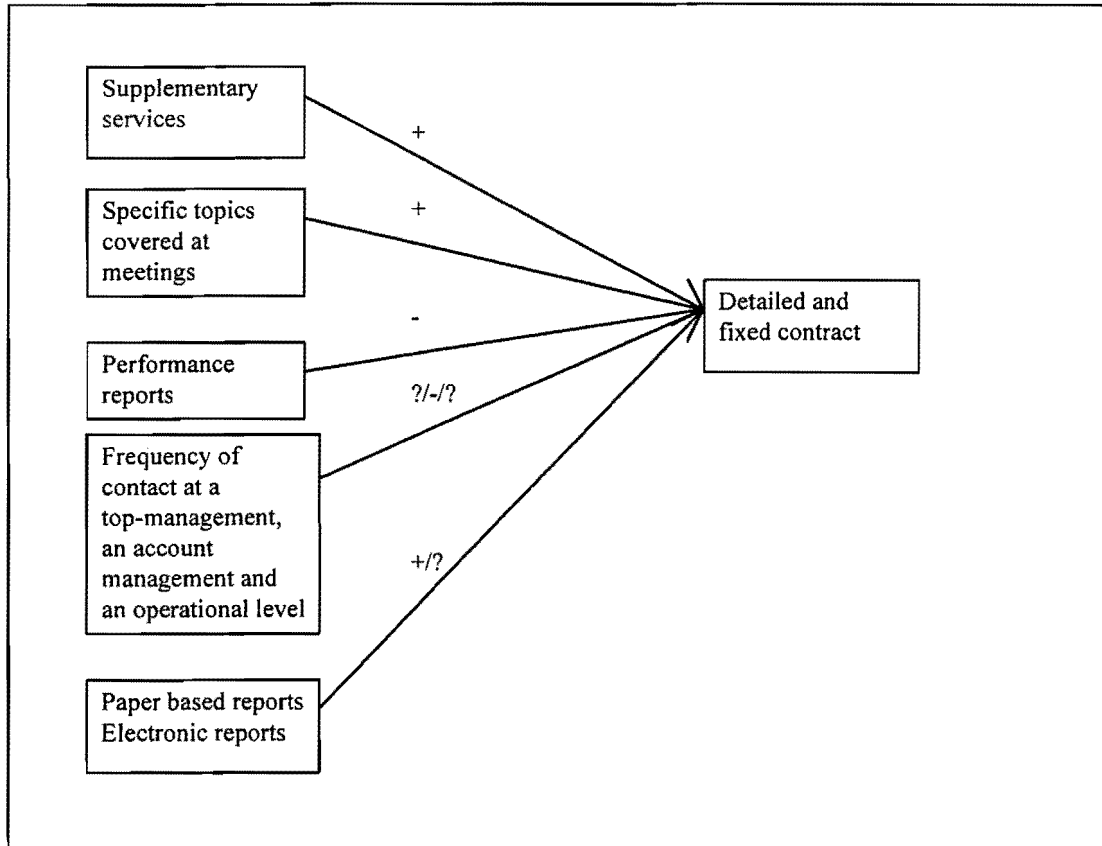
Overall, the correlation matrix indicates how there are quite a number of significant relations among the constructs and variables used. Also the direct correlation coefficients provide initial confirmation of the hypothesis. In order to test the overall set of hypotheses in an integrated manner multiple regression modelling was used. Table 4 specifies statistical results and figure 1 summarises findings graphically.

Table 4 Results of multiple regression analysis

Measures	Coefficient B	Significance	Confirmed
H1 Supplementary services	.35	.01 level	yes
H2 Coordinative meetings	.43	.01 level	yes
H3 Performance measurement and reports	-.17	-	not significant
H4a Frequency of communication at operational level	-.10	-	not significant
H4b Frequency of communication at level of top-management	-.60	.01 level	yes
H4c Frequency of communication at account-management level	.02	-	not significant
H5a Frequency of paper reports	.15	.05 level	yes
H5b Frequency of electronic reports	-.13	.10 level	yes
Total model	.46	.01 level	yes

The model explained close to 50 percent of variance at a 99% significance level. As expected (H1) supplementary services relate positively to detailed contracts. Also H2 is supported, service suppliers that have coordinative meetings about specific aspects of their service offerings operate detailed contracts. The relation between performance measurement and detailed contracts (H3) is negative, as expected, yet not significant. H4 is confirmed only for communication of top-management; as expected the frequency of top-management communication is negatively related to detailed contracts. When the intensity of communication between top-management goes up, there is less need for detailed contracts as trust and relations may begin to develop. Also communication at an operations level is negatively related to detailed contracts, yet not significant, thus it seems that communication at the top-management level is the most relevant type of communication level in explaining detailed contracts. H5 about the mode of reports (paper versus electronic/on-line) finally, is supported. The use of paper-based reports is positively related to detailed contracts, whereas the use of electronic/on-line performance data decreases the need for detailed contracts.

Figure 2 Management control of third party relations



## CONCLUSIONS AND IMPLICATIONS FOR MANAGEMENT CONTROL RESEARCH

The findings presented in this paper provide insight in the management control systems used in the context of inter-functional and inter-firm relations in the supply chain. The findings provide a rather integral overview of the development of control systems, involving the contractual terms, the ex ante coordination, the ex post performance measurement, the frequency, level, mode and content of communication, in the context of supplementary services. Also the findings

For third parties the findings suggest that the offering of supplementary services indeed do not require different types of contractual arrangements. Thus, the supplementary services are not a real escape from tight and strict relations. It was found that detailed contracts are common practice, this can be explained based in the need to secure inter-firm relations and dedicated investments in supplementary services against opportunistic behaviour and bounded rationality. The need for detailed contracts could be off-set when there is frequent communication between customer and supplier when electronic databases for on-line and continuous performance measurement of the third party logistics operation are installed. As a result third parties could escape detailed and tight contracts, improve customer relations and start using more innovative contractual arrangements, such as service level agreements, to truly start upgrading into higher interest segments of the chain. Apparently, the offering of supplementary services does involve an upgrading into higher value adding activities in the chain (final assembly etc.) but not into a more professional relationship. The third parties are kept at arms-length and are not treated as equally important, high-interest and high-involvement players in the chain.

For management control research this study provided a number of interesting findings. First of all we were able to develop a rather integral assessment of the development and application of management control systems and mechanisms. This is especially relevant because inter-firm and inter-functional relations are not only dynamic but also kaleidoscopic in nature. Also we found the transaction cost theory to predict the relation to a significant amount. Further research might however, further use economic theory on trying to explain the outsourcing of logistics activities. The transaction costs approach is static in nature and tends to focus on the outcome of the outsourcing process, in terms of outsourced activities and contracts. The outsourcing process is dynamic in nature and third party logistics relations develop and grow over time. van Laarhoven and Sharman (1994) for example show how criteria for evaluation of services tend to change over time from costs to service aspects. The network approach or the interaction approach might offer relevant insights in how relationships develop and how experience and trust can off-set the need for detailed contracts over a period of time. With more detail, further research might focus empirically assessing which type of specific performance measures and monitoring information are used in various types of third party logistics relations. In particular, are qualitative and quantitative measures used in the context of complex relations? Are direct and indirect measures used, together with ex ante and ex post data, short term or long term data? This can contribute to the more normative approach as used in Kokke and Theeuwes (1997) by providing insight in the existing practices. In general, it is interesting to further generate empirical data on the nature of third party logistics relations and the role of innovative management control system and contracts as a practical application of inter-firm relations in a supply chain context. For example, how can innovative contracts be used by third parties to lower the administrative burden of customers, as well as raise customer commitment? This can further contribute to the insight into how management control systems can be used to structure “change in chains.”

## REFERENCES

- Aertsen, F. (1993) Contracting out the physical distribution function: A trade-off between asset specificity and performance measurement, in: *International Journal of Physical Distribution and Logistics Management*, vol.23, no.1, p.23-29
- Aertsen, F. (1995) *Executie van fysieke distributie?* Ph.D. thesis Tilburg University [in Dutch]
- Bowersox, D.J. and Daugherty, P.J. (1995) Logistics paradigms: The impact of information technology, in: *Journal of Business Logistics*, vol.16, no.1, p.65-80
- van Damme, D.A. and van der Zon, F.L.A. (1997) Kostenbeheersing in de fysieke distributie: decision support op basis van activity based costing, in: Bonnet, M.P.B., de Bos, A. and Maat, J. (eds.) *FMA kroniek 1997*, Rotterdam, Samsom [in Dutch]
- van Hoek, R.I. and van Dierdonck, R. (1997) Postponed manufacturing as a supplementary service, in: Ribera, J. and prats, M. J. (eds.) *Managing Service Operations, Lessons from the service and the manufacturing operations*, EurOMA conference proceedings, June 1997, Barcelona, IESE
- Kaplan, R.S. and Norton, D.P. (1993) Putting the balanced scorecard to work, in: *Harvard Business Review*, Sept.-Oct, p.134-147
- Kokke, C.J.T.M. and Theeuwes, J.A.M. (1997) Prestatiemeeting met financiële en niet-financiële indicatoren, in: Bonnet, M.P.B., de Bos, A. and Maat, J. (eds.) *FMA kroniek 1997*, Rotterdam, Samsom [in Dutch]
- van Laarhoven, P. and Sharman, G. (1994) Logistics alliances: The European experience, in: *McKinsey Quarterly*, no.1, p.30-49

- Lieb, R. Millen, R, van Wassenhove, L. (1993) Western European manufacturers' use of third party logistics services, proceedings of the first international symposium on logistics, Nottingham, p.209-213
- La Londe, B.J. and Powers, R.F. (1993) Disintegration and re-integration: Logistics of the twenty-first century, in: The international journal of logistics management, vol.4, p.1-12
- Maltz, A.B. (1992) Outsourcing the corporate logistics function: Economic and strategic considerations, unpublished Ph.D. thesis, Ohio State University
- van der Meer, J. and Vosselman, E.G.J. (1997) Management control of extra-organisational linkages: outsourcing maintenance activities, Proceedings of the International Seminar on Manufacturing Accounting Research, Edinburgh
- Sako, M. (1992) Prices, quality and trust: Inter-firm relationships in Britain and Japan, Cambridge University Press, Cambridge
- Sink, H.L. and Langley, Jr. C.J. (1997) A managerial framework for the acquisition of third-party logistics services, in: Journal of Business Logistics, vol.18, no.2, p.163-189
- Vosselman, E.G.J. (1996) Ontwerp van management control systemen. Een economische benadering, Kluwer Bedrijfswetenschappen, Deventer [in Dutch]
- Williams Walton, L. Telephone survey: answering the seven Rs to logistics research, in: Journal of Business Logistics, vol.18, no.1, 217-231