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Allocation of Specific Assets and Vertical Coordination in Industrial Purchasing Relationships

By

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ABSTRACT

This dissertation investigates the relationship between the way specific assets are allocated in industrial supplier-buyer-relationships and interfirm dependency and coordination. The main issue in this research is to investigate and compare two different kinds of asymmetrical interfirm dependencies: (1) situations with unilateral supplier held specific assets and, (2) situations with unilateral buyer held specific assets. Our research propositions state that under conditions with inbalanced allocation of specific assets held by the supplier, we will expect greater bilateral dependency and more extensive interfirm coordination than in situations where the buyer unilaterally carries out specific assets.

A comparison of channel dyads with respective mutual deployments of specific assets and unilateral supplier held specific assets constitute the next research topic. We argue that under conditions of mutual and high asset specificity, bilateral dependency and vertical coordination between supplier and buyer is greater than under conditions with unilateral supplier held specific assets.

A cross-sectional survey was carried out , and questionnaires were mailed to professional buyers (key informants) associated with the Norwegian Association of Purchasing and Logistics (NIMA). Each informant was asked to describe his firms relationship to a specific supplier. 183 informants responded to the survey, and descriptions of 171 supplier-buyer-dyads were completed and have been used in the data analysis.

Our empirical findings indicate that when the buyer unilaterally carries out specific assets, conditions of trade show some similarities with conventional market transactions. Suppliers' sales volume is divided among several buyers, customization of products is modest, and the buyer exercises modest influence on terms of trade. In channel dyads where the supplier dominates the deployment of specific assets, we find that conditions of interfirm trade correspond with small

number bargaining conditions. Suppliers' products are more customized, buyers absorb a significant part of sellers' production volume, and exercise more influence on terms of trade. In accordance with our research model and research hypothesis, we find that vertical interaction, formalization, and centralization by the buyer show significantly higher levels under conditions of unilateral supplier held specific asset than is the case when the buyer unilaterally carries out specific assets. Measures of governance performance indicate that the observed pattern of bilateral governance corresponds well with governance efficiency. Both vertical interaction and formalization are shown to reduce transaction costs more evidently under conditions of unilateral supplier held specific assets than was the case with buyer held specific assets. A further analysis of governance performance reveals that in situations with unilateral supplier held specific assets, there exists an interaction effect between the level of bilateral governance and the level of uncertainty surrounding the transactions between supplier and buyer on governance efficiency. Both vertical interaction and formalization show significantly higher governance efficiency under conditions of low/modest uncertainty than is the case when frequent and consequential disturbances occur in the task environment of the transacting parties.

Our empirical findings show no significant differences in bilateral governance and centralization between cases with unilateral supplier held specific assets and mutual high asset specificity. Under small number conditions, the buyer seems to keep his position as channel captain independent of whether the allocation of specific assets is balanced or inbalanced. Deployment of specific assets on the supplier side seems to be the critical factor in creating small number conditions and warrant bilateral governance and necessary safeguarding against opportunism.

Under conditions of mutual deployment of specific assets, the efficiency properties of bilateral governance are shown to be different from what we find is the case for unilateral supplier held specific assets. When both parties have high asset specificity, formalization shows no evident governance efficiency, neither under

conditions of low nor high uncertainty. In addition, increased levels of vertical interaction are shown to reduce transaction cost significantly, independent of the level of uncertainty. Our findings indicate that mutual asset specificity implies deployment of complementary resources which create mutual dependency where mutual adaption through more informal and interactive vertical coordination is warranted.

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TABLE OF CONTENT:

LIST OF TABLES:

LIST OF FIGURES:

LIST OF APPENDICES:

Chapter 1:

INTRODUCTION

1.1 The research problem

The focus of attention for this dissertation is coordination of industrial supplier-producer relationships. Investments and adaptions tailored to a specific supplier-buyer-relation are exposed to risk in the sense that they cannot be redeployed without losing productive value if the relationship is interrupted, or shows unsatisfactory performance. This kind of assets will tie the investing actor(s) up to the relationship, and we will argue that the size and the way such idiosyncratic investments are allocated between the parties will influence the dependency and governance structures in buyer-seller relationships.

The main purpose of this dissertation is more precisely to outline the relationship between the *way specific assets* are allocated in supplier-producer-relationships and interfirm dependency and governance. Several theoretical and empirical works; Heide (1987, 1994), Heide & John (1988, 1992) and Buchanan (1992) have highlighted the problem of asymmetrical dependency in vertical marketing relationships. The main contribution of this dissertation is a further elaboration of this problem by examining and comparing two different kinds of asymmetrical dependency:

1) Situations where the supplier unilaterally is carrying out specific assets
2) Situations with unilateral deployments of specific assets on the buyer side

The next step is to explain and hypothesize the assignment of cost efficient governance modes in supplier-producer-relation with different allocations of specific assets, and test these hypotheses empirically.

1.2 Purchasing and the cost of coordination

On average, industrial firms spend more than 50% of their sales incomes on purchased products, and economizing on the total procurement costs is an effective way to improve profit and competitive advantages; Dobler et al. (1984), and Heinritz et al. (1981).

The focus of attention in Norway concerning procurement economy is mainly addressed to efficient competition and bidding (Haugland, 1992). Strategies of this kind are efficient for the purchase of standardized products in perfect markets. Transactions with customized products or other forms of tailored adaptions to a specific buyer or seller, however, take place within the frame of imperfect markets, and governance through market contracts is the least cost-efficient governance mode under such conditions (Williamson, 1975, 1979, 1985).

Deployments of specific physical and immaterial assets, combined with frequent exchange and uncertainty surrounding the transaction between them, create conditions of market failure (Williamson, 1975) and bilateral dependency (Williamson, 1991[a]). A key issue in creating cost-efficient and competitive purchasing arrangements in imperfect markets is therefore to design and implement governance structures which can handle the bilateral dependency between buyer and seller efficiently. Bilateral governance through e.g. purchasing agreements, long-term contracts or joint ventures are appropriate governance modes for purchasing relationships under specific conditions of bilateral dependency (Williamson, 1981, 1985, 1991[a]).

Purchasing of items frequently required in production or for maintenance purposes (e.g. raw materials, customized components, bearings, paints and services) create *hidden procurement costs* attached to e.g. quality control, inspection of incoming products, acquisition and effectuation of orders. The *hidden procurement costs* represent important transaction costs and do sometimes exceed the invoice figures (Hannaford, 1983). An important issue will therefore be to find governance modes for purchasing relations that economize both on the trade price and on the cost of coordinating the transactions between buyer and seller under such conditions. This will be further outlined in chapter 1.3.

1.3 Theoretical approaches

The theoretical framework for this dissertation is anchored to transaction cost economy; Coase (1937), Williamson (1975, 1979, 1985, 1991[a], 1993[a]) and resource-dependency theory; Emerson (1962), Pfeffer & Salancik (1978), and Thompson (1967).

Transaction cost economy keeps the transaction as the basic unit of analysis, and postulates that certain attributes of a specific transaction will be the most critical determinants in establishing cost efficient governance structures. The main assumption is that there are rational economic reasons for organizing one kind of transaction in one way (for example through market exchange) and other kinds of transactions in other ways (for instance through bilateral governance or vertical integration).

"*.....transactions are assigned to and organized within governance structures in a discriminating (transaction-cost economizing) way.*" Williamson, 1981: 1574

Specific assets, internal and external uncertainty surrounding the transaction and the frequency or volume of the exchange of activities and resources between buyer and seller, represent the core dimensions of the transaction. The composition of

these dimensions for a given transaction is decisive for the way of assigning cost-efficient governance forms (Williamson, 1985). The connection between cost-efficient governance and the composition of the dimensions connected to the transaction will be further outlined in chapter 2.

Resource-dependency theory; Emerson (1962) Pfeffer & Salancik (1978) and Thompson (1967) regards interfirm governance forms as a strategic adaption to uncertainty and dependency structures. When organizations lack self-sufficiency with respect to critical inputs (e.g. supplies) or output resources (e.g. distribution channels), potential dependency on the actor who possesses or controls the critical resource will arise. As a result, uncertainty in the firm's decision making will be enlarged because the critical flow of resources is beyond the control of the firm.

Grandorri (1985) finds the TCE-perspective and contingency theories to give similar predictions, and Heide and John (1988) argue that there is a connection between TCE and resource-dependency theory concerning the replaceability aspects of dependency. One important implication from the resource-dependency theory is that one actor's deployment of specific assets increases the dependency to his incumbent exchange partner because of increased switching costs and the lack of alternative options for productive utilization of specific assets. According to this way of reasoning, the size and allocation of specific assets in buyer-seller-relationships will influence the parties' replaceability of exchange partners and give implication for the power-dependency-structures in vertical marketing relationships.

1.4 Research contributions and scope of the study

The TCE-perspective classifies the transaction (the unit of analysis) with respect to the size of the specific assets *connected to the transaction.* Williamson (1979, 1981, 1985) illustrates high-level specific assets in supplier-buyer-relation with

reference to customization of products and/or tailoring of production processes *on the supplier side.* Bilateral governance or internal organization is assumed to handle interfirm dependency and potential opportunism appropriately under this condition. Suppose, however, that the buyer carries out the heaviest part of specific assets. Do we then expect the same bilateral dependency and need for bilateral or internal governance to take place? This problem is reflected in our research question preceding the formulation of the research problem for this dissertation :

"Are the dependency structures and cost efficient governance forms in buyer-seller relations independent of what party (the buyer or the seller) who carries out the specific assets?"

Within the organization failure framework of transaction cost economy (Williamson, 1975) , this dissertation will argue that market structures and exposure to opportunism are different when we compare buyer-seller-relations with respectively buyer dominated specific assets and channel dyads where the supplier deploys the main part of such assets. The theoretical contribution consequently consists of a theoretical interpretation and clarification of the specific assets dimension attached to vertical transactions between buyer and seller. We will focus on a symmetry - asymmetry classification of vertical marketing relations for the purpose of broadening the analysis of vertical coordination.

Figure 1.1 below illustrates the allocation of specific assets based on a symmetry-asymmetry-classification of supplier - producer relations. The classification of each actor's level of specific assets is dichotomized into the categories *low* and *high*, and describes buyer-seller-relation with respect to both the level and degree of symmetry of specific assets. Current research within the TCE-perspective has mainly been concerned with predictions of cost efficient governance structures based on the level of specific assets *attached to the transaction*, without analysing possible impacts of the way specific assets are allocated between buyer and seller. The main contribution of this dissertation is to elaborate and test empirically

whether the governance structure in cell I in figure 1.1 (supplier-dominance) deviates from the governance structure in cell IV (buyer-dominance). Current analysis of unilateral dependency structures; Heide (1987), Heide & John (1992), Anderson & Weitz (1992), and Buchanan (1992) will consequently be expanded to a further analysis and comparison of two different kinds of asymmetrical dependency where respectively the buyer and supplier exposes assets at risk.

Figure 1.1:
Allocation of specific assets

		BUYER (PRODUCER)	
		LOW	HIGH
S U P P L I E R	HIGH	Asymmetrical allocation of specific assets Supplier dominance I	Mutual high level of asset specificity II
	LOW	Mutual low level of asset specificity III	Asymmetrical allocation of specific assets Buyer dominance IV

Arndt (1979) illustrates how traditional spot markets are eroded and transformed into *domesticated markets* and replace competitive markets, and many industrial firms establish long-term contracts with one or a small number of suppliers; Heide (1987), and Heide & John (1990). A relevant question is then under what

conditions the introduction of closer relationships is appropriate, and when such relationships are dysfunctional. The main managerial contribution of this dissertation is to localize conditions under which particular vertical forms are appropriate. The practical managerial implication is firstly to identify interfirm structures and processes reflecting bilateral dependency in the form of technological and economic ties between producer and supplier. Secondly, this information will be a useful guideline for development and implementation of appropriate vertical arrangements of the transactions between buyer and seller.

1.5 Organization of the dissertation

In chapter 2, some theoretical approaches to inter-organizational relationships will be introduced. The focus of attention is transaction cost economy and resource-dependency theory, and some validation issues of these theories will be discussed. Chapter 3 lines out various dimensions of vertical coordination and give theoretical definitions of the dependent variables in our research. Chapter 4 presents a research model for the study and lines out research hypotheses. The research design and sampling of informants are described in chapter 5, and the way to operationalize the variables in our research model is shown in chapter 6. Chapter 7 gives an evaluation of the quality of the data and describes the validation procedures. Empirical tests of the research hypotheses are accomplished in chapter 8, and some performance implications of interfirm governance are examined in chapter 9. Finally, the main implications and limitations of the dissertation follow in chapter 10.

Chapter 2:

THEORETICAL APPROACHES TO INTERFIRM RELATIONSHIPS

2.1 Introduction

In chapter 1.3, a brief introduction to the theoretical approaches for this dissertation was presented. Transaction cost economy and resource-dependency theory will be further outlined in this section. As a starting point, a short review of some theoretical approaches to vertical marketing relations will be presented.

The contributions of Bucklin (1965, 1970) and Mallen (1973) to functional and institutional marketing theory elaborate how to allocate marketing functions across different stages of the distribution chain efficiently *(speculation-postponement* and *functional spin-off)*. These micro economic approaches, along with the TCE-perspective, put the costs connected to internal and external organization of marketing functions in focus. The former attends to economizing on production costs, while the TCE-perspective considers the trade-offs between production costs and transaction costs. The criticism of these approaches was the lack of treatment of political processes that characterize relationships between channel members (Stern & Reve, 1980). A response to these limitations was first introduced by Stern (1969), and a behavioral research paradigm evolved with the primary focus on the mechanism for controlling the role performance of individual channel members.

The political economy framework developed by Stern and Reve (1980) is an extension of this behavioral paradigm in the sense that both economic, political and behavioral aspects of inter-organizational relations were considered. The internal economic structure within this framework is based on the governance structures within the TCE-perspective, and consists of:

"*.....the vertical economic arrangements or the transactional form in the channel.*"
Stern & Reve, 1980:55

The internal sociopolitical structure has been developed within the framework of resource-dependency theory and represents the pattern of power-dependency-relations within the channel dyad. The political economy paradigm is a theoretical framework capturing several theoretical approaches to the analysis of inter-organizational relationships. The problem in focus for this dissertation will be modeled and analyzed based on the economic and political systems within this framework, and use transaction cost economy and resource theory as the main theoretical guidelines.

2.2 Transaction cost economy (TCE)

Ronald Coase (1937) challenged the neoclassical assumption that market transactions between economic actors could be handled without costs, and tried to outline the optimal economic conditions for different ways of organizing transactions between economic actors. According to Coase, the costs of organizing a transaction has to be taken into consideration, and:

"*.....a firm will tend to expand until the costs of organizing an extra transaction within the firm become equal to the costs of carrying out the same transaction by means of exchange on the open market or the costs of organizing in another firm.*" Coase: 1937:395

Coase's concept *costs of organizing* was further developed by Williamson (1975, 1979, 1985) and classified into three main groups of transaction costs:
(1) bargaining costs
(2) control and monitoring costs and
(3) maladaption costs

The main contribution of the TCE-perspective is the development of a behavioral and institutional framework which points out under what conditions different institutional arrangements (governance forms) will minimize the sum of production costs and transaction costs.

As a starting point, two behavioral assumptions about human actors were selected as axioms for the TCE-perspective:
(1) bounded rationality and
(2) opportunism

Bounded rationality refers to human behaviour that is "*intended rational but only limited so*" (Simon, 1961). This implies that human ability to formulate and solve complex problems in a completely rational way is limited by cognitive capacities of human actors. Bounded rationality induces transaction costs because comprehensive contracting is excluded as a realistic organizational alternative when provision for bounded rationality is made (Radner, 1968).

Williamson (1975, 1985) describes opportunism as *self interest seeking with guile* and as *making self disbelieved statements*. This behavioral assumption does not imply that everybody actually behaves opportunistically. The important issue is that some actors might behave opportunistically, and that it is difficult to distinguish honest people from dishonest ones ex ante.

The next step in the TCE-perspective is to combine the two behavioral assumptions above with two environmental factors; uncertainty/complexity and

small-number bargaining conditions into an organizational failure framework. The interaction between bounded rationality and environmental uncertainty/ complexity imposes significant contracting problems. When economic actors are exposed to decision problems surrounded with a high degree of uncertainty, the problem of making comprehensive contracts will be enforced due to information impactedness. The combination of limited or asymmetrical information and uncertain or incomplete terms of trade will induce an adverse selection problem ex ante (Arrow, 1985). Ex post, there is a hidden action problem which refers to the actions the parties make after they have agreed upon a deal to execute specific transactions. If these actions (e.g. a specific production process for orders with high degree of complexity) are unobservable or difficult to control for the buyer, there is a hidden action problem which might harm his interests and prevent a smooth and successful fulfilment of the transaction.

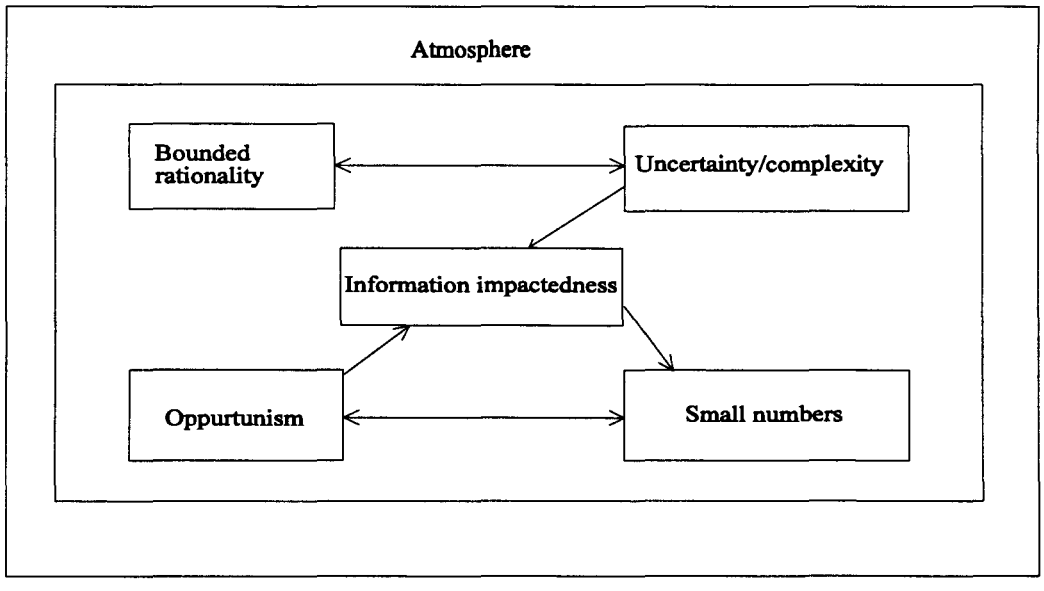
The interaction between opportunistic behaviour and situations with small numbers of trading partners creates contracting problems in the sense that there is a lack of alternatives, and it is difficult to replace an exchange partner:

"When, however, opportunism is joined with small-numbers condition, the trading situation is greatly transformed. All the types of difficulties associated with exchange between bilateral monopolists in stochastic market circumstances now appear."
Williamson: 1975:27

The problems connected to this condition induce different kinds of transaction costs; e.g. settlements of conflicts and an inefficient price-quantity adaption. Of special interest to the analysis of opportunism and small-number conditions is that a large-number condition at the outset might easily be transformed into a small-number condition ex post through *a fundamental transformation* (Williamson, 1975). First mover advantages or specific experience or knowledge obtained through the execution of the transaction in the first place might create bilateral dependency in the next stage due to competitive advantages .

Atmosphere refers to conditions where the participants in a transaction give the different modes of governance value in itself. Even if a certain mode of governance creates significant transaction costs in its original terms, the atmosphere in this kind of organization might be validated high enough due to positive social or attitudinal reasons, and compensate for what seems to be a lack of efficiency. To summarize, bounded rationality and opportunism represent exogenous behavioral assumptions in the organizational failure framework and constitute *the theoretical core* for the TCE-perspective (Knudsen, 1991, 1993, 1995). In interaction with uncertainty/ complexity and small-number conditions, these factors create a framework for organizational failure which represents our guideline for analysing bilateral dependency and need for safeguarding and coordinated adaption in vertical channel dyads. An illustration of the organizational failure framework is presented in figure 2.1 below.

Figure 2.1:
The organizational failure framework
Source: O.Williamson (1975)



The compositions of specific dimensions of the transaction (the unit of analysis) are decisive for the magnitude of organizational failure and the need for replacing the market mechanism as a mean of mediating exchange between economic actors. These dimensions are:

(1) transaction specific assets
(2) uncertainty/complexity
(3) frequency of exchange

Transaction specific assets involve physical and immaterial assets tailored to specific relations, and cannot be redeployed for other purposes without the sacrifice of productive value. Deployment of specific assets incurs costs of organization in order to handle increased bilateral dependency and protection against opportunism. A necessary condition for carrying out transaction specific investments is therefore that such investments will create economic values, e.g. cost economizing and/or utility surpluses which exceed the value of similar transactions mediated through conventional market exchange.

"..... *note that asset specificity increases the transaction costs of all forms of governance. Such added specificity is warranted only if these added governance costs are more than offset by production-cost savings and/or increases in revenues.*" Williamson, 1991[a]: 282

Williamson (1991[a]) distinguishes between 6 kinds of asset specificity:

1. Site specificity (e.g. close localization of successive production units)
2. Physical asset specificity (e.g. special tools required for production of a component)
3. Human asset specificity (e.g. human knowledge and experience)
4. Brand name capital (e.g. sales promotion and advertising)
5. Dedicated assets (e.g. production equipment deployed by a specific customer)
6. Temporal specificity (e.g. production assistance to improve on-time deliveries)

The idiosyncratic nature of these kinds of assets creates bilateral dependency and contractual hazards, and gives rise to both an adaption problem and a problem of safeguarding (Williamson, 1985, 1991[a]).

External uncertainty is a property of the decision environment within which the transaction between the actors takes place. Numerous relevant contingencies and/or high degree of unpredictability especially in the task environment of the transaction create adaption problems; Noordewier et al. (1990), Achrol et al. (1983), and Achrol & Stern (1988) . Complexity refers to difficulties or ambiguity connected to specification and evaluation of terms of trade and fulfilment of contracts (Stinchcombe, 1985).This represents an internal uncertainty dimension for the transacting partners. Both external uncertainty and complexity surrounding the transaction calls for mechanisms of adjustment to cope with unfolding events.

Mediating transactions outside the mode of conventional markets, requires investments in governance procedures which increase transaction costs. Leaving the market as governance mode is consequently a cost-benefit problem, and increased frequency of exchange between economic actors will reduce the unit costs of specialized governance structures.

"*.....The costs of specialized governance structures will be easier to recover for large transactions of a recurring kind. Hence the frequency of transactions is a relevant dimension.*" Williamson, 1985:60

The TCE-framework assumes that the interaction between the three dimensions connected to a transaction determine the comparative advantages of different kinds of governance structures. First, the frequency of exchange between the parties has to be sufficiently high to recover potential costs for special governance arrangements if mediation of transactions outside the conventional market mechanism is to take place.

Secondly, the level of asset specificity is of significant importance. Deployments of specific assets provoke a fundamental transformation from large- number conditions at the outset to small-number conditions ex post. The market failure conditions make market transactions inappropriate as governance modes in this situation, because of the lack of means for handling the prospective opportunism and bilateral dependency. Special governance structures are therefore warranted to cope with this problem.

The original TCE-framework (Williamson, 1975) points out the options for governance structures as a choice between *market,* based on governing through price mechanism, and a *hierarchy*, governing through internal organization (e.g. vertical integration). This dichotomous classification was later expanded by introducing a third mode of governance; *bilateral governance* (Williamson, 1985) or the *hybrid* mode (Williamson, 1991[a]). These represent various governance arrangements intermediating market and hierarchy, e.g. long-term contracts, reciprocal trading and franchising. These modes of governance supposedly have different properties with respect to what kind of incentives they mediate, and adaptability of enforcement and bureaucratic costs. The market mode has its competitive advantages in situations where the bilateral dependency between the actors are trivial, and strictly autonomous adaption to external events is the most appropriate action.

Under conditions where adaption to external contingencies require more coordinated actions, the hybrid mode becomes more efficient, and the hierarchy takes over in situations with high bilateral dependency and need for strictly coordinated adaption.

The TCE-framework (Williamson, 1975, 1985) originally asserted that there is an interaction effect between uncertainty and asset specificity with respect to economic organization. Under conditions of low or moderate uncertainty, increased asset specificity is expected to have minor influence on how the

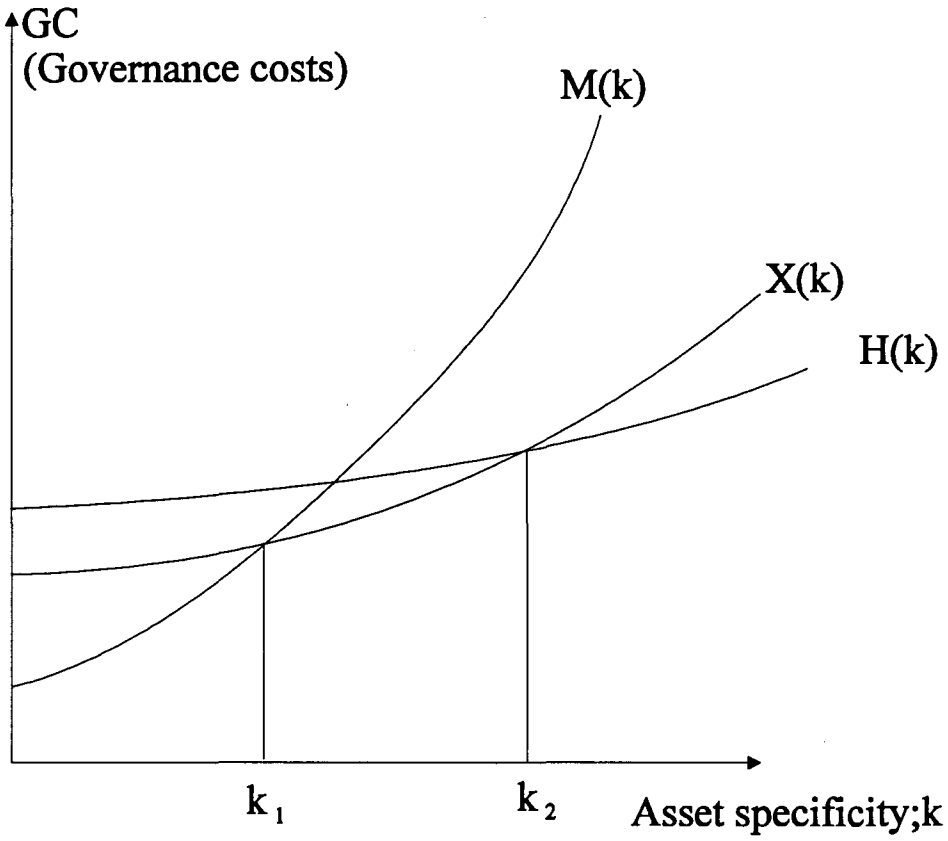
organization of economic transactions take place, and market transactions will be the most efficient governance mode. In situations with high uncertainty, however, conventional market transactions are expected to be inappropriate for governing transactions with high asset specificity, and are replaced by a hierarchy (internal governance) which is more appropriate for handling the problems of bilateral dependency and need for coordinated adaptions (Williamson, 1975, 1985).

The interaction between uncertainty and asset specificity with respect to the governance properties of the hybrid form was elaborated by Williamson (1991[a]). The hybrid form is expected to be inappropriate as a governance form under conditions of high uncertainty, because it lacks the necessary incentives and enforcement attributes to cope with high bilateral dependency when changing circumstances and unpredicted events occur. Depending on the level of specific assets, the hybrid form will therefore be replaced by market transactions or internal governance under conditions of high uncertainty. Under conditions of low or moderate level of uncertainty, the hybrid mode is expected to have better governance properties, and to be most advantageous for handling transactions with intermediate levels of asset specificity (Williamson, 1991[a]). However, the interaction effect of uncertainty and asset specificity on governance structures is disputed, and recent research has shown main effects of both asset specificity and uncertainty with respect to a number of governance dimensions (Heide, 1994).

Bilateral dependency is supposed to be positively related to asset specificity (Williamson, 1991[a] 1993[a]). The relationship between governance costs and asset specificity is illustrated for different modes of governance in figure 2.2 below. Transaction cost economy predicts the market mode; M(k) to be the most cost-efficient for transactions with low-asset specificity; for $k < k_1$. Transactions with medium level of specific assets (k) will be assigned to the hybrid mode X(k); when $k_1 < k < k_2$. The hierarchy mode; H(k) will enter when asset specificity reaches higher levels; when $k > k_2$.

Figure 2.2:

Governance costs and asset specificity for different modes of governance.



Williamson: 1991[a]:284

GC symbols governance cost.

M(k) = GC = f(k) for the market mode

X(k) = GC = f(k) for the hybrid mode

H(k) = GC = f(k) for the hierarchy mode

The TCE-perspective states that transactions are assigned to the most cost efficient governance mode. What mechanisms or selection processes release these assignments of governance structures? Williamson sometimes uses a functional interpretation, and sometimes an intentional interpretation of the way governance structures are established (Knudsen, 1995). The intentional interpretation refers

to the economic actors and their decision processes, where the selected governance forms are the outcomes of conscious comparisons between alternative governance forms. The assumption of bounded rationality, however, make this kind of interpretation somewhat controversial. Uncertainty with respect to future circumstances will make it difficult for the transacting parties to calculate the objective transaction cost they will face (Dow, 1987). The TCE-perspective asserts, however, that the transacting parties are *far sighted* (Williamson, 1991[b]) and have sufficient knowledge ex ante to calculate the consequences of various governance modes. Williamson (1985, 1993[a]) deepens the implication of bounded rationality, and asserts that the assignment of appropriate governance forms is based on the best of all available choices:

"*.....The economizing to which I refer operates through weak form selection according to which the fitter, but not necessarily the fittest, in some absolute sense, are selected.*"
Williamson, 1993[b]: 126

Williamson (1987[a], 1987[b]) explains the establishment of governance structures as an outcome of an evolutionary process, where the most cost-efficient governance modes survive. The TCE-perspective, however, has not integrated process-aspects and feed-back mechanisms into the framework of the theory (Knudsen, 1995), and Williamson (1985, 1988, 1993[b]) points out the relevance of this problem.

An extension of the TCE-perspective was later presented by Williamson (1993[b]), who introduced the relationships and feed-back mechanisms between:

-governance structures
-institutional environment
-individual factors

This extended approach is more suitable for capturing process-aspects and the way the institutional environment (e.g. change in property rights, customs and contract

law) and attributes of economic actors influence the efficacy of alternative modes of governance.

The TCE-framework defines the transaction as the unit of analysis, and regards the firm as a set of independent transactions (Knudsen, 1995). This lack of focus on interrelated tasks, functions and transactions is criticized by Winter (1988) :

"..... *At any particular time, the costs and benefits of adjustments of governance modes for particular classes of transactions are substantially influenced by the network of transacting patterns already in place. Thus the process of change in a firms way of doing things most typically involves incremental adjustment in a complex, interdependent system. Such a process may well produce progress, but it does not produce an answer to any well-specified question about how activities should be organized.*"
Winter: 1988 : 177

The way a certain transaction is related to other transactions within firms and its possible effects on economic dispositions are introduced as a specific attribute of economic transactions by Milgrom & Roberts (1992). Independent considerations of governance costs and successive implementation of a specific governance mode for a certain transaction could occasionally weaken the efficacy of the way other interconnected transactions are organized. Standardization of the portfolio of e.g. purchasing relationships due to administrative economy of scale is one example. For economy of scale reasons, standardization of the governance structures for a heterogeneous supplier portfolio might be an efficient pattern of interfirm organization, even if independent evaluations of single purchasing relationships might detect some assignments of governance structures which contradict the TCE-predictions.

2.3 Resource-dependency theory

Resource-dependency theory is most commonly tied to the works of Pfeffer & Salancik (1978), and Thompson (1967) and is based on social exchange theory developed by Blau (1964), Emerson (1962), and Thibaut and Kelley (1959). Organizations as open systems depend on input and output resources (e.g. external supplies and marketing channels) to fulfil their goals. The lack of self-sufficiency with respect to these resources creates potential dependency on the parties controlling these resources (Emerson, 1962). The lack of control of the firm's flow of input and output resources will introduce an uncertainty problem for its decision making; Pfeffer and Salancik (1978), and Pennings (1981). A basic premise for resource-dependency theory is that firms who are confronted with external dependency will try to establish inter-organizational arrangements as strategic responses to conditions in their external environment. The concept dependency as outlined by Emerson (1962) stated that the dependency of actor A upon actor B is:

1) proportional to the importance of resources controlled by B with respect to the goal fulfilment of A and:
2) inversely proportional to A's ability to replace B and fulfil his goals by using available substitutes for B's resources.

The second part of Allison's definition of dependency refers to the ease with which an exchange partner can be replaced (Jacobs, 1974), and has been used in several empirical studies in marketing; El-Ansary and Stern (1972), Etgar (1976), Phillips (1981), Buchanan (1986), Lusch and Brown, (1982) , and Heide & John (1988). One implication of resource-dependency theory for the organization of interfirm relationships is that firms facing different dependency conditions, will structure their relations to exchange partners in as favourable a manner as possible. Several strategies have been treated in the literature giving insight into ways of coping with external dependency and uncertainty (Heide, 1987, 1994):

-Use of contracts; Thompson (1967), Perrow (1970), and Miles et al. (1974)
-Co-optation; Selznick (1949), Hirsch (1975), Evan (1966), and Thompson (1967)
-Temporary coalitions; Aiken and Hage (1971)
-Joint ventures; Pfeffer and Nowak (1976)
-Merger; Pfeffer (1972)

Even if the above strategies vary in the way they offer credible commitments and tie up the exchange partners, they all represent some kinds of *domestication* of conventional market transactions (Arndt, 1979). The relevance of resource-dependency theory for this paper is connected to a possible relationship between dependency structures and the way inter-organizational governance *is motivated and established.* The level of specific assets in buyer - seller relationships influences the bilateral dependency between the parties (Williamson, 1991[a]), and there is a connection between resource-dependency theory and transaction cost economy (TCE) with respect to the replaceability aspect of the former (Heide & John, 1988):

"..... *the party with specific assets is potentially dependent on good-faith non-opportunistic behavior by the exchange partner. The extent of potential dependency is a function of the magnitude of the specific assets.*" Heide and John: 1988: 23

A basic difference between TCE and resource-dependency theory has to do with the considerations of respectively *efficiency and effectiveness.* The TCE-perspective is efficiency oriented and assumes that economization on the sum of production costs and transaction costs is fundamental for the assignment of transactions to different kinds of interfirm governance. Resource-dependency theory advocates an effectiveness consideration in the sense that the main purpose of establishing formal or semi formal linkages between organizations is to obtain an effective handling of external uncertainty and dependency to stabilize the firm's flow of input and output resources. *The economic benefits and costs con*nected to inter-organizational ties established through this criterion of *effectiveness* are however

parsimoniously outlined both theoretically and empirically (Scott, 1987).

The boundaries between TCE and resource-dependency theory are ambiguous in several ways. The two theoretical perspectives give conditionally the same predictions based on different theoretical assumptions, and the discrepancy between the *efficiency based* bilateral dependency in the TCE-perspective and the *replaceability based* dependency structures in resource-dependency-theory is difficult to test empirically. The TCE-perspective (Williamson, 1991[b], 1993[a]) assumes that the contracting parties are far-sighted, and anticipate potential dependency conditions at the outset. Accordingly, the dependency problem will be solved ex ante through the design of appropriate governance structures and/or high hazard premiums (e.g. prices and profit rates). The TCE-perspective does not neglect the replaceability problem. It differs, however, from the resource-dependency theory with respect to how the actors are supposed to handle the power-dependency problem. The expectation of increased economic benefits (e.g. through increased asset specificity) , premium for exposure to risk (e.g. advantageous terms of trade) and potential problems of future replacements of exchange partner (e.g. due to opportunism) are all supposed to be brought into far sighted consideration ex ante:

"*That power of a resource-dependency kind does not play a larger role in the transaction cost economics scheme of economic organization is both because initial endowments are ordinarily taken as given and because the contracting process is examined in its entirety.*"
Williamson: 1991[b]: 80

The handling of the problem of power-dependency within the framework of resource-dependency theory is consequently implicitly settled within the TCE-perspective through economic calculativeness.

As outlined above, the TCE-framework classifies governance modes into three generic forms; market - hybrid - hierarchy with different governance properties.

The empirical setting for this dissertation consists of supplier-buyer relationships between *independent* actors (confer chapter 5). Internal governance is therefore omitted as an actual governance form in this study. The average length of the relationships composing the sample of this study is 13.3 years, and 79% of examined dyads are governed through written contracts with several and more extensive contracting issues than is the case for conventional purchasing orders. Based on a market-hybrid-continuum, this study will describe interfirm governance as the extent of bilateral governance characterizing the relationship between supplier and buyer. This issue will be further outlined in chapter 3.

Chapter 3:

DIMENSIONS OF VERTICAL COORDINATION

3.1 Introduction; contributions from inter-organizational research

Current inter-organizational research has developed several theoretical approaches and concepts describing interfirm relationships based on norms, cooperative arrangements, vertical coordination and contractual forms (Heide, 1994). These research contributions will be our guidelines for describing *attributes and processes* (Williamson, 1993[a]) of the relationships between independent suppliers and buyers along a market-hybrid-continuum.

Stinchcombe (1985) offers a starting point. He finds market and hierarchy to be appropriate ends for a classification of interfirm relationships which capture the degree to which coordination take place inside or outside the firm. He argues for a classification of vertical relations between firms based on a continuous variable which captures a variety of contractual provisions, representing elements of market and hierarchy to varying degrees. His main argument is that the way contractual arrangements are designed simulate the magnitude of hierarchical dimensions and represent a transactional continuum:

"That is, the function of the legally precarious flow of instructions generated by hierarchical structures built into contracts is to set up a formal organization, a hierarchy, which incorporates elements of the client organization and of the contractor organization into a new unity, under circumstances in which the traditional theory in this field would predict vertical integration." Stinchcombe: 1985: 169

Stinchcombe's contractual perspective is consistent with the political economy framework in marketing channels literature; Stern and Reve (1980), Reve (1980), Dwyer and Welsh (1985), and Dwyer & Oh (1987) in the sense that both describe interfirm relationships by using hierarchical elements (e.g.; formalization). According to Stinchcombe's contractual perspective, the following five hierarchical elements are used to describe inter-organizational relationships:

-Authority structure (degree of centralization)
-Standard operating procedures (formalization)
-Incentive systems (control and monitoring)
-Non-market pricing (costs documentation and cost pricing)
-Dispute resolution (internal meetings for settlements of conflicts)

Stincombe argues that these five contractual elements are functionally related, and constitute an unidimensional reflection of interfirm coordination:

"The concretization of all five features in the normal corporate hierarchy therefore argues in favor of the empirical unity of the concept of hierarchy." Stinchcombe: 1985: 167

Stincombe's empirical unity for describing interfirm coordination is, however, disputed. Bradach and Eccles (1989), Powell (1990), Smith Ring and Van de Ven (1992) and Haugland & Reve (1994) argue that the composition of interfirm coordination is less uniform. Firstly, trust is introduced as a key governance issue in inter-organizational relations, and is assumed to represent a distinctive dimension of the atmosphere surrounding the transacting parties. Macaulay

(1963), Macneil (1980), Granovetter (1985) and Arrow (1974) give focus to the efforts carried out by the parties in a relation to build and sustain durable relations. Trust[1] and mutual understanding play a major role for this purpose:

"Trust is an important lubricant of a social system. It is extremely efficient; it saves people a lot of trouble to have a fair degree of reliance on other peoples word." Arrow: 1974:23

Secondly, price (market), authority (hierarchy) and trust are considered as three different and independent governance mechanisms which can be combined in different ways and represent plural forms (Bradach & Eccles, 1989). The hybrid form, for instance, is supposed to represent a distinct institutional form based on its own characteristics and is misplaced in the middle of the market-hierarchy-continuum (Haugland and Reve, 1994).

Heide (1994) extends the analysis of inter-organizational forms by characterizing the function of various governance forms in three different stages of vertical marketing relationships:

1. Relation initiation
2. Relation maintenance
3. Relation termination

Governance elements representing *market, hierarchical or bilateral dimensions* are supposed to substitute and/or be complementary to each other over time. In franchise relations, for instance, value training and socialization (trust) are prominent in the initial stage, and are substituted by hierarchical dimensions (e.g. contractual arrangements) in the maintenance stage.

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[1]Williamson (1993[a]) and Craswell (1993), however argue that trust usually reflects calculative considerations. Access to reliable information and expectation of favourable outcomes of certain transactions are often interpreted as materializaton of trust.

3.2 Dimensions of vertical coordination in this study

Within the framework of transaction cost economy, this study considers the relationship between the way specific assets are allocated between the transacting actors and interfirm organization. The allocation of specific assets are supposed to reflect the degree of bilateral dependency and the need for coordinated adaption between the transacting firms. Consequently, our research will be based on an instrumentality consideration. The empirical setting for this research is vertical relationships between independent industrial firms (confer chapter 5), and the exchange processes between the transacting parties are mainly related to coordination of product functions or productive resources. In accordance with the political economy framework; Stern and Reve (1980), and Reve (1980), emphasis will therefore be put on the interaction and exchange of resources taking place between buyer and seller:

"Inter-organizational interactions are the actual task related flows of activities, resources, and information taking place in organizational dyads." Reve: 1980:31

For our purpose, *interaction*s between industrial firms represent the vertical flow of activities, resources and information which take place between production entities in order to accomplish the outcome of both the supplier's and the buyer's product functions. The interdependency and need for coordinated adaption underlying the need for inter-organizational interactions have their origin connected to:

-complementarity of resources
-allocation of specific assets
-risk exposure

We find the political economy framework appropriate for representing the *attributes and processes* describing the vertical coordination between supplier and

buyer, and the three dimensions representing *vertical form* within this theoretical framework; Reve (1980), Reve & Stern (1980), and John & Reve (1982) will be applied to represent interfirm coordination between supplier and buyer in this study:

(1) vertical interaction
(2) formalization
(3) centralization

The process of interfirm interaction; vertical interaction is usually described with respect to the exchange pattern between the actors:

-Direction; specification of recipients and producers of different activity flows
-Scope; the magnitude of issues and tasks representing the vertical interaction between the actors
-Intensity; refers to the frequency or magnitude of exchange for the various activities representing the interactions between the transacting parties
-Variability; refers to change over time in the linkages and vertical interaction between the actors

The *direction* of the flows between the parties will be defined in terms of cooperative and mutual exchange of assistance, information and resources between supplier and buyer. Our approach builds on a *joint action* concept applied by Heide (1987), Heide and John (1990) and *a participation concept* developed by Dwyer and Oh (1987), and captures both the cooperation and coordinated adaption which take place in industrial relations to carry out productive activities.

The *scope* of the activities which takes place between suppliers and buyers refers to several relevant issues:

- conflict settlement ; Stinchcombe (1985), and Hirschmann (1975)
- cost documentation; Stinchcombe (1985), and Milgrom & Roberts (1992)
- product design; Drozdowski (1986)

- value analysis; Dowst (1988)
- quality control; Treleven (1987)
- production planning; Spekman (1988)
- just-in-time planning ; Frazier et al. (1988), and Schonberger & Gilbert (1983)
- electronic data interchange; O`Callaghan et al., (1992)

and represent a broad set of activities and exchange of resources taking place in industrial purchasing relationships. The various items representing the activity flow between the actors reflect the scope of the vertical interaction, and is operationalized in chapter 6.

The *intensity* of flows between the actors is captured by assigning values of frequency or magnitude to the various activity flows and exchange of resources between supplier and producer, and is reflected by the measurement scale of the items representing the scope of vertical interaction (confer chapter 6).

The research design for this dissertation is based on cross-sectional data, and unable to capture the history and variability of the vertical interaction between the parties (confer chapter 5).

The structure of vertical relationships between suppliers and buyers refers to administrative arrangements established to define authority structures (centralization) and standard operation procedures (formalization) for the interaction between the actors. Formalization refers to rules, fixed policies and procedures to govern interfirm interactions, and reflects the degree of programming exchange and flow of activities between the transacting parties. The degree of formalization will then be materialized as contracted issues which specify the rules of the game for interfirm transactions.

The purpose of formalized governance is to:

-handle the bilateral dependency between the contracting parties
-specify authority structures and appropriate procedures for settlements of conflicts
-safeguard specific assets against opportunistic behaviour

Formalization is an appropriate reflection of the hybrid mode (Williamson, 1991[a]), where formalized coordination in e.g.; long-term contracts and franchise arrangements are of interest. Furthermore, formalization captures some dimensions of standard operating procedures incorporated in Stinchcombe's *elements of hierarchy*. We consider vertical interaction and formalization as dimensions of coordination which correspond to a market-hybrid-continuum. Market and hybrid represent originally discrete governance modes (Williamson, 1991[a]). For the purpose of our study, we find the frequency of vertical interaction and extent of formalization to give an appropriate representation of a market-hybrid-continuum[2]. The activities and exchange of resources reflecting the issues represented in our formalization dimension correspond to the scope of vertical interaction, and is operationalized in chapter 6.

Centralization in supplier-producer-relations refers to the extent to which power to make and implement decisions concerning the transactions between the actors is concentrated at one of the actors (Hage, 1980). This governance dimension is referred to as *command structures and authority systems* in Stinchcombe's *elements of hierarchy*, and reflects what kind of systems or actors who certify various flows of information and activities as legitimate. The centralization of decision making in buyer - seller relation is of interest for two reasons. Firstly, in accordance with the political economy framework, centralization is supposed to

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[2]Let P (G=X) represent the probability that governance structure G corresponds to the hybrid mode X. The correspondence between vertical interaction (VI), formalization (F), and the hybrid mode X, will then be expressed as:
P (G=X) = f (VI, F) where:
δ P (G=X)/δ VI > 0 and
δ P (G=X)/δ F > 0.

influence the climate for cooperation and joint action, and consequently influence the transaction costs (e.g.; conflict settlements). Secondly, in accordance with resource-dependency theory; Emerson (1962), and Pfeffer & Salancik (1978), centralization will be a reflection of power-dependency-structures, and explain the actor's ability to enforce their interests; Heide and John (1988, 1992). In this dissertation, centralization will be defined as the buyer's relative influence over terms of trade and issues reflecting the flow of information, and activities between the transacting actors. Our operationalization of this concept will consequently capture *centralization by the buyer* and is presented in chapter 6.

The three dimensions representing vertical form in supplier-buyer-relationships are hypothesized to be positively interrelated (Reve, 1980). Increasing the flow of information, activities and exchange of resources between the actors implies codification problems (Williamson, 1993[a]), discussions, settlements of potential conflicts, and coordinated adaptions which increase transaction costs at the outset. Consequently, standardization of vertical interaction through formalization is expected to economize on transaction costs by lowering the costs of bargaining , control and monitoring. Empirical studies by Reve (1980), John & Reve (1982) Haugland (1988), and Nygaard (1992) give empirical support for a positive relationship between vertical interaction and centralization in various settings of channel dyads.In distribution channel settings, formalization and centralization are hypothesized to be interrelated (Reve, 1980). Similar assumptions are asserted by Hage (1965), and Hall (1975). Stinchcombe (1985) argues and gets some empirical support from industrial settings for a functional relation between standard operation procedures and authority systems. Finally, Heide (1987) finds empirical support for a positive correlation between formalization and centralization by the buyer in relationships between original equipment manufacturers and their suppliers.

To summarize; vertical interaction, formalization and centralization are considered as underlying components of *vertical form* (Stern & Reve , 1980). At the same

time, each of the variables are theoretically and practically meaningful on their own, and open for independent analysis of each of them.

Vertical form represents the dependent variable in our research model. This will be presented in the next chapter.

3.3 The cost efficiency of bilateral governance

The assignment of transactions to governance modes within the TCE-framework is based on the assumption of economizing on transaction costs. In order to explore this assumption further, possible performance implications of vertical coordination in this dissertation will be examined. Our first approach to this issue is to connect an instrumentality factor to each of the dimensions of vertical interaction and formalization. The underlying reasoning for this approach is based on Rosenberg (1956), Fishbein (1967), and Fishbein & Ajzen (1975). Rosenberg (1956) predicts that the better the correspondence between the instrumentality and value of various dimensions attached to an object (e.g.; an action, policy or product), the more beneficial is the object for obtaining the purposes which the instrumentality dimensions refer to. For our purpose, we will define instrumentality as the weight of importance attached to various dimensions of vertical interaction and formalization for the purpose of promoting efficient exchange and utilization of productive resources among the transacting parties.In the next stage, we will examine the relationship between the level of various dimensions of bilateral governance and their weights of importancy in order to reflect their governance efficiency (confer chapter 9). The items representing the various instrumentality dimensions will be operationalized in chapter 6.

Based on Williamson (1985), we will define transaction costs as ex post costs connected to handling the interaction between supplier and buyer. Bargaining costs refer to costs induced through negotiations of ambiguous terms of trade, and

control costs include time and resources spent on monitoring and evaluating various dimensions of the transactions taking place between buyer and seller. Maladaption costs reflect to what degree the transacting parties have obtained efficient utilization of the productive resources at hand. Work of Nygaard (1992), Walker and Poppo (1991), and Noordewier et al. (1990) represent useful guidelines for operationalization of transaction costs (confer chapter 6). Governance efficiency reflected through the level of transaction costs will be further analyzed in chapter 9.

In the next chapter we will present the research model for the study, and outline research hypotheses.

Chapter 4:

RESEARCH MODEL AND HYPOTHESES

4.1 Introduction; allocation of specific and co-specialized assets

In this chapter a research model representing the research problem of this dissertation will be outlined. Based on this model, research hypotheses will be developed. The main issue in this dissertation is to explain and test empirically the relationship between allocation of specific assets and vertical form in supplier-producer-relationships (confer chapter 1). This problem will be modeled within the framework of transaction cost economy (Williamson, 1975, 1985, 1991[a]), and our analysis is at the outset based on the assumption that allocation of specific assets is mainly based on criteria of efficiency. Accordingly, deployment of specific assets is assumed to reflect adaptions and dispositions in order to improve production functions[3] and/or reduce production costs for the transacting actors.

Inbalanced allocation of specific assets based on unilateral dispositions by one of

[3]All value adding activities of relevance for the exchange of information and resources between the transacting parties are assumed to reflect production factors in this connection. These activities are assumed to reflect the economic transactions between supplier and buyer, and represent the theoretical unit of analysis in this research. The terms *supplier-buyer relationships and channel dyads* refer to the setting where transactions between supplier and buyer take place, and represent the empirical unit of analysis in this dissertation (confer chapter 5).

the actors in a vertical interfirm relation reflects a situation where the investing party improves his production skills or economic performance by adapting to the other part's original skills and production technology.

Mutual deployment of specific assets in buyer-seller-relations implies that:

(1) Both actors make specific adaptions to certain dimensions of the other parts productive resources (e.g. transportation equipment, information technology o production technology) or;
(2) Both actors make mutual and coordinated adaptions to each other's productive activities and resources (e.g. mutual adaption to a specific JIT-design).

In the latter case, we expect that there is a co-specialization of assets in the sense that each actor's specific assets function as complementary resources to the other part's investments.

"*An important special case of specific assets are cospecialized assets. Two assets are co-specialized if they are most productive when used together and lose much of their value if used separately to produce independent product or services....*" Milgrom and Roberts: 1992: 125

When the actors' assets are cospecialized, efficient utilization of these resources is to be based on an interaction between both actors' specific assets. This utilization problem shows some correspondence to *team production* (Alchian and Demsetz, 1972)[4] Under condition of team production, the marginal productivity of each actor's specific assets is assumed to be dependent upon the way the other

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[4]Let TRI represent the outcome of a product function where the supplier's specific assets (SSA) and the buyer's specific assets (BSA) are production factors such that:
TRI = f (SSA, BSA)
Team production implies interdependency between the two actors' single product functions where the marginal productivity of each actor's specific assets is:

$$\delta^2 TRI/\delta SSA\ \delta BSA \neq 0$$
$$\delta^2 TRI/\delta BSA\ \delta SSA \neq 0$$

party disposes of his assets. Under this condition, the problem of information asymmetry and exposure to opportunism will enhance the need for vertical coordination[5]. Co-specialization of assets shows some similarity to *close complementarity* (Richardson, 1972) which implies matching particular activities and resources across the transacting firms for the purpose of obtaining efficient division of work. We assume that mutual high asset specificity corresponds to high co-specialization of complementary resources. Extensive bilateral governance is warranted under this condition to obtain an efficient coordination and utilization of specific assets between the transacting parties:

"Coordination in these cases has to be promoted either through the consolidation of the activities within organizations with the necessary spread of capabilities, or through close co-operation, or by means of institutional arrangements....." Richardson: 1972: 892

4.2 The research model

In figure 4.1 below the relationship between the allocation of specific assets and vertical form is presented in a research model. The dependent variables are outlined in chapter 3, and consist of three dimensions representing *vertical form:*

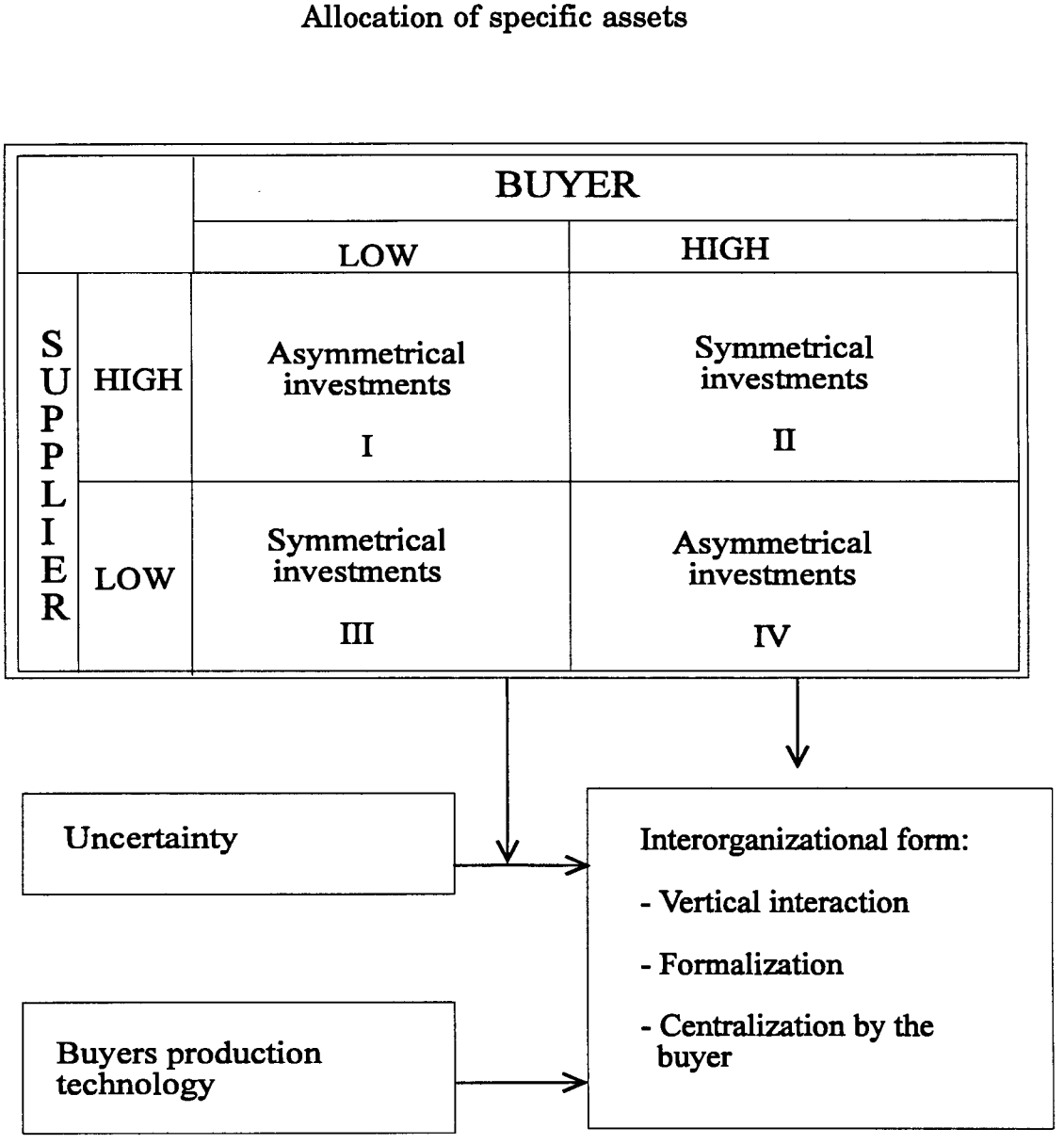
-vertical interaction
-formalization
-centralization by the buyer

The allocation of specific assets is the main independent variable, and is described as a nominal classification of buyer-seller-relations based on the level of specific assets deployed by respectively the supplier and buyer. The theoretical definition

[5]The adaption problem under this condition, shows some similarity to *mutual dependence and mutual adaption* elaborated by March & Simon (1958) and Thompson (1967) and will be further dicussed in chapter 9 and 10.

of specific assets is outlined in chapter 2.2, and the empirical construct representing *allocation of specific assets* will be elaborated in chapter 7.2.3.

Figure 4.1:
Research model



Buyers (producers) manufacturing technology is assumed to influence the way industrial buyer-seller-relations are coordinated; Woodward (1965), Håkanson (1982), Hayes and Wheelwright (1984), and Heide (1987). Production technology will be defined as the extent of structuring work-flow activities (e.g. production and procurement) in the buying firms in accordance with preplanned schedules and technological structures, and reflects the work flow rigidity of the buying firm (Hickson et al., 1969). One basic assumption is that operations with a high degree of automation require more predictability and consequently more preplanned activity than e.g. conventional unit production. Similar findings from organization theory; March & Simon (1958), Thompson (1967), and Van de Ven et al. (1976) show a relationship between intrafirm coordination and the technology of tasks and activities. Buyers' production technology is not explicitly built into the focal theories of this dissertation; transaction cost economy and resource-dependency theory. Production technology, however, is a potential influential variable in supplier - buyer settings (Heide & John, 1990). We will therefore account for the effect of this variable in the analysis by treating it as a covariate to strengthen the tests of the relationship between allocation of specific assets and vertical form.

Uncertainty surrounding the transaction between buyer and seller will be caused by turbulence and unpredictable conditions within the channel dyad and in its primary and secondary task environment (Achrol et. al., 1983). The perception of uncertainty is of interest because the focus of the actors' attention is decisive for their way of acting:

"Rather than talking about adapting to an external environment, it may be more correct to argue that organizing consists of adapting to an enacted environment which is constituted by the actions of interdependent human actors." Weick: 1969:27-28

Introducing uncertainty into the research model is of interest for testing the TCE-predicted negative interaction effect between uncertainty and asset specificity on vertical interaction and formalization in supplier-buyer-relationships representing

the hybrid form. Williamson (1985), Balakrishnan and Wernfelt (1986), and Noordewier et al. (1990) argue for application of a relatively narrow conceptual definition of uncertainty which reflects unanticipated changes in relevant factors surrounding the channel dyad. Achrol and Stern (1988) have shown empirically that in addition to dynamism in the task environment, the lack of economic capacity, e.g. unfavourable market conditions play a major role for the way transacting parties perceive uncertainty. If market conditions are unfavourable, the actors' dispositions might be more consequential at the outset. Scarce economic capacity in their task environment might influence their tolerance of risk and consequently their perception of uncertainty. Based on Achrol & Stern (1988), we define the uncertainty variable as composite of economic scarcity and unpredictability of events in the upstream and downstream sectors of the transacting parties.

4.3 Hypotheses

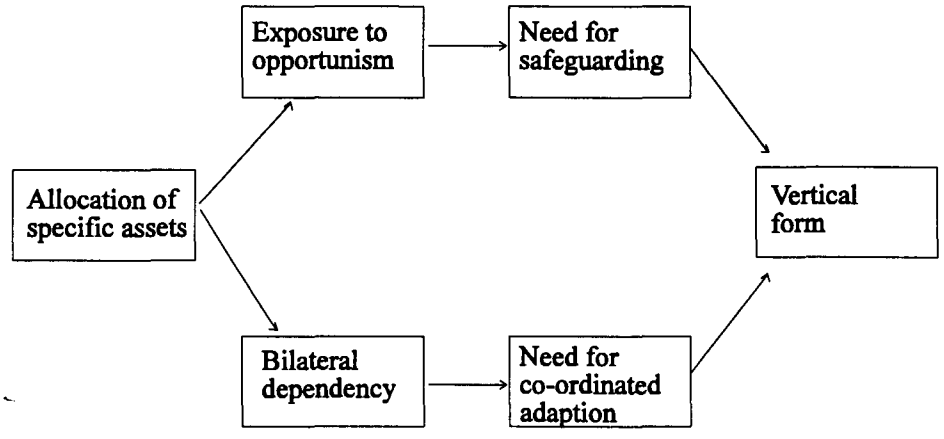
The relationship between the variables in the research model will be further elaborated below, and stated as research hypotheses. First, hypotheses about the expected main effect of allocation of specific assets on vertical form will be outlined. Possible interaction effects between uncertainty and allocation of specific assets on bilateral governance will be stated in the next section.

4.3.1 Main effects of allocation of specific assets on vertical form

The theoretical reasoning underlying the specification of the relationship between allocation of specific assets and vertical form in our research model is mainly based on transaction cost economy (Williamson, 1975, 1985, 1991[a], 1993[a]). Based on the organizational failure framework (Williamson, 1975), exposure to opportunism in conjunction with small numbers of trading partners create a

safeguarding problem. Deployments of specific assets are supposed to create small-number conditions ex ante or through a fundamental transformation ex post (Williamson, 1975). Consequently, the level of specific assets is expected to cause a safeguarding problem. Secondly, increased level of specific assets connected to a transaction is expected to increase bilateral dependency between the transacting parties (Williamson, 1991[a], 1993[b]). The TCE-framework assumes safeguarding and coordinated adaptions to be materialized as bilateral or hierarchical governance to cope with the problems of exposure to opportunism and bilateral dependency. In accordance with this reasoning, we expect that the allocation of specific assets will reflect bilateral dependency and exposure to opportunism. Firstly, our development of research hypotheses will be based on a comparison between various modes of allocation of specific assets with respect to bilateral dependency and exposure to opportunism. Secondly, this analysis will be our guideline for predicting the need for safeguarding and coordinated adaption through formalization and vertical interaction (confer chapter 3). Figure 4.2 below illustrates the theoretical reasoning underlying the development of our hypotheses:

Figure 4.2:
Allocation of specific assets and vertical form:



We will examine the TCE-proposition (Williamson, 1979, 1985, 1993[a]) asserting that the level of specific assets *connected to the transaction* predicts the assignment of cost efficient governance structures. We will ask:

Are the conditions of trade in situations with unilateral deployments of specific assets held by the buyer different from more conventional market conditions with mutual low investments in specific assets?

Our first approach to this problem is a comparison of the two situations with respectively buyer held specific assets and mutual low asset specificity (confer cell IV and III in figure 4.1 above). In cell IV the buyer carries out the main part of the specific assets connected to the transaction. We consequently expect the degree of customization and other buyer tailored adaptions on the supplier side to be low under this condition. For what reason should the buyer then adapt to a certain supplier through deployment of specific assets (the situation in cell IV)? In small market segments of products with heterogeneous preferences, both economics of scale and economy of scope considerations might be incompatible with extensive customization. Insufficient customization might therefore be an incentive for buyers to make unilateral, specific adaption to certain suppliers with product specifications and marketing strategies closest to their ideal preferences. Successful adaption to an existing supplier by redesigning own production processes and/or product design is an example. The question is then whether such dispositions expose the investing buyer to opportunistic behaviour by the supplier, and create a safeguarding problem. Our main guideline in the elaboration of this topic is the behavioral assumption of opportunism underlying the organization failure framework (Williamson, 1975). Following the TCE-approach:

"..... *all parties will behave opportunistically if such action is possible and profitable.*"
Heide & John: 1988:24

We will argue that the profitability and possibility for the supplier to act

opportunistically in a situation with allocation of specific assets carried out by the buyer is restricted for three reasons:

(1) Low customized products are expected to appeal to several buyers. The small-number condition and exposure to opportunism through e.g.; deterioration of product quality is therefore of less concern due to reputation effects; Williamson (1975), Rubin (1990), and Milgrom and Roberts (1992), and consequently the safeguarding problem is of less concern.

(2) When suppliers' sales of more homogeneous products are assumed to be divided among several buyers, the economic incentive to act opportunistically against single buyers will be of minor interest.

(3) Buyers can still rely on conventional verification efforts to safeguard themselves against performance deterioration (Heide & John, 1990), and if necessary, acceptable performance standards are possible to enforce through court.

According to this line of reasoning, we find the trade conditions in situations with unilateral deployments of specific assets on the buyer side to show some similarities with conventional markets, and state the following hypothesis:

Hypothesis 1; H_1:
There is no significant difference between supplier-buyer-relations with mutual low levels of specific assets and marketing relationships with specific assets held by the buyer with respect to:
1 a: Vertical interaction
1 b: Formalization
1 c: Centralization by the buyer

We will analyze asymmetrical dependency in supplier-buyer-relations further by

examining two different conditions where respectively the buyer (cell IV in figure 4.1) and the supplier (cell I) carries out the main part of the specific assets connected to the transactions between them. Our research question preceding this problem is:

Are bilateral dependency and assignments of cost-efficient governance structures independent of which party (the buyer or the seller) that carries out the specific assets?

Customization of the supplier's products (exchange object) is of significant interest in this connection. Firstly, we expect the buyer to have better knowledge than the supplier with respect to :

-The preferences among the end users of his products and

-Economic and technological issues concerning his own production process and its ability to create added values among end users

Customization of products on the supplier side can relieve cost saving for both parties and/or give differentiation advantages on the buyer side and create comparative advantages through e.g. special product design and transportation arrangements. Exchange of customized materials or intermediate products are examples of transactions with medium or high asset specificity on the supplier side (Williamson, 1979, 1985). The governance problem under this condition is caused by bilateral dependency of two kinds:

(1) The market failure problem caused by the fundamental transformation into a small number condition, which creates exposure to opportunism and a need for safeguarding (Williamson, 1975, 1979, 1985).

(2) The information problem caused by the need for coordinating the needs and preferences of the buyer and his end users with knowledge, skills and production resources on the supplier side. This creates a need for coordinated adaption and bilateral or hierarchical governance structures (Williamson, 1985, 1991[a]).

Under these conditions, replaceability considerations based on resource-dependency theory; Heide (1987, 1994), and Heide & John, (1988), predict an power-dependency structure where the buyer might exercise more influence over decisions concerning terms of trade. We further expect the buyer's possession of information on product preferences among his end users to be one of the most critical factors for carrying out the transactions between the parties in an efficient way. Conditions of asymmetrical information might yield bargaining inefficiencies, and assignment of authority to the most informed party under such conditions is expected to be the most efficient solution (Tirole, 1988). Centralization by the buyer through substantial influence over terms of trade is therefore predicted to be materialized under these circumstances. The reasoning preceding hypothesis 1 above, states that when the buyer deploys the main part of specific assets connected to a marketing relationship, we expect the need for safeguarding and/or coordinated adaption to be modest and show some similarities with conventional market conditions. Accordingly, we state our next hypothesis:

Hypothesis 2; H_2:
In buyer - supplier relations where the supplier dominates the deployment of specific assets:
2 a : The level of vertical interaction is greater
2 b : The level of formalization is greater
2 c : The level of centralization by the buyer is greater
than in relationships where the buyer carries out the main part of the specific assets.

As argued in section 4.1, we expect mutual deployments of specific assets in vertical marketing relationships to correspond to a high degree of cospecialization of complementary assets. Efficient utilization of the assets therefore demands joint efforts to coordinate the production functions of the transacting parties. Our next research topic is a comparison between supplier-buyer-relationships with respectively mutual high asset specificity and unilateral supplier held specific assets (confer Cell II and I in figure 4.1 above). The mutual high investment case represents a small-number bargaining situation with reciprocal ties between the

transacting parties. Based on the TCE-framework, two possible predictions about what governance structures are to be established in this situation will emerge. Firstly, the level of specific assets *connected to the transaction* is substantial in this situation because both actors tailor assets to the relationship. Consequently, we expect the level of bilateral governance between supplier and buyer to be high under this condition. On the other hand, mutuality of specific assets might function as mutual exchanges of hostages; Heide (1987), Williamson (1983, 1985), and Anderson & Weitz (1992) , and reduce the need for safeguarding arrangements. Reciprocal arrangements of this kind, however, has shown to be insufficient as governance mode when assets are exposed to risk (Heide, 1994). The problem of asymmetric valuation of sacrificed hostages seem to maintain the need for governing arrangement for the purpose of establishing credible commitments in reciprocal relationships of this kind (Williamson, 1985). As mutual deployment of specific assets implies small-number bargaining condition, we expect extensive safeguarding through formalization to take place when both parties deploy assets at risk.

As argued in the introduction of this chapter, mutual deployment of assets is expected to create interdependency and a need for adaption between the transacting parties. Several contributions from intra-organizational research have highlighted this problem. Thompson (1967), March and Simon (1958), and Van de Ven et al., (1976) propose mutual adaption through feed-back mechanisms to handle the problem of mutual dependency. The TCE-framework is in accordance with this proposition, and prescribes bilateral dependency to be handled through coordinated adaption (Williamson, 1991[a]). We therefore expect extensive vertical interaction (joint action and cooperation) to take place to cope with the problem of mutual dependency in this situation.

As outlined above, unilateral deployment of specific assets on the supplier side corresponds to a small-number condition. The level of specific assets connected to the relationship in this situation is, however, lower than under conditions with

mutual high asset specificity. As bilateral dependency is assumed to be positively related to the level of asset specificity (Williamson, 1991[a], 1993[b]), we consequently assume that safeguarding arrangements and coordinated adaption through formalization and vertical interaction is greater when both actors expose assets at risk than is the case when the supplier unilaterally carries out the specific assets.

Resource-dependency theory predicts power-dependency structures to be more balanced in situations with mutual high asset specificity than under conditions with inbalanced asset specificity; Heide (1987), Heide and John (1988, 1992), and Buchanan (1992). Centralization by the buyer is consequently expected to be lower and the authority structure more balanced in the former case than in the latter. The political economy perspective; Stern & Reve (1980), Reve (1980), and Dwyer and Welsh (1985) supports this prediction. High level of centralization is expected to increase the level of conflicts and deteriorate the climate for cooperation and joint action[6].We therefore expect high degree of centralization to be most dysfunctional in situations with mutual high asset specificity with successive need for coordinated adaption, and state our next hypothesis as:

Hypothesis 3; H_3:

In supplier-buyer-relations with mutual high levels of specific assets:

3 a: The level of vertical interaction is greater

3 b: The level of formalization is greater

3 c: The level of centralization by the buyer is less

than in supplier-buyer-relations with specific assets carried out by the supplier.

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[6]The relationship between the exercise of power and the level of conflict is, however ambigious. Lusch (1976) found that exercising coercive power increased intra-channel conflicts whereas use of non-coercive power bases (rewards, legitimate, referent, and expert) showed to decrease the level of conflict. Etgar (1978) attends to the dynamic aspects of power-conflict relationships, and argues that the causal direction indicated above (Lusch ,1976) is insufficiently explained.

4.3.2 Interaction effects[7] of uncertainty and allocation of specific assets on bilateral governance

In this section, the interaction effect between uncertainty and allocation of specific assets on vertical form will be outlined. Williamson (1991[a]) argues that under condition of bilateral dependency (medium or high asset specificity), increased uncertainty will make the hybrid form less appropriate as a governance mode. The hybrid form is expected to lack unilateral adaption mechanisms, and is therefore inappropriate and maladapted for handling the need for coordinated adaption under conditions with frequent and consequential disturbances (uncertainty) in the task environment of the transacting actors:

"I conjecture that the effects of more frequent disturbances are especially pertinent for those disturbances for which mainly coordinated or strictly coordinated responses are required. Although the efficacy of all forms of governance may deteriorate in the face of more frequent disturbances, the hybrid mode is arguably the most susceptible."
Williamson: 1991[a]

This assumption will be our guideline for stating expected interaction effects between allocation of specific assets and uncertainty on vertical interaction and formalization (hybrid form). Preceding the statements of hypothesis 1-3, we argued that in a situation with unilateral buyer-held specific assets, the conditions of trade would show some similarities with conventional markets (mutual low asset specificity).We further argued that small-number conditions and bilateral dependency would occur in two situations:

(1) When the supplier unilaterally carries out specific assets in the channel dyad
(2) When supplier and buyer mutually deploy specific assets in their relationship

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[7]In our analysis we examine the conditional relationship between uncertainty and bilateral governance in situations with bilateral dependency and need for coordinated adaptions between the transacting parties.

Under these conditions, we expect the need for *coordinated responses* through bilateral governance to be great (Williamson, 1991[a]). Consequently, we expect the comparative advantage of the hybrid form to be weakened when uncertainty increases under these conditions (confer cell II and I in figure 4.1 above). In accordance with this reasoning, we state the conditional relationship between uncertainty and bilateral governance (vertical interaction and formalization) in hypothesis 4 and 5 as:

Hypothesis 4; H_4:
In supplier - buyer relations where the supplier dominates the deployment of specific assets (cell I), there is a negatively shaped relationship between uncertainty and:
4 a: vertical interaction
4 b: formalization

Hypothesis 5; H_5:
In supplier - buyer relations where supplier and buyer mutually deploy specific assets (cell II), there is a negatively shaped relationship between uncertainty and:
4 a: vertical interaction
4 b: formalization

The hypotheses developed above will be tested empirically in chapter 8. In the next chapter we present the research design conducted for this purpose. The variables composing the research model will be operationalized in chapter 6.

Chapter 5:

RESEARCH DESIGN AND SAMPLE DESCRIPTION

5.1 Introduction

This chapter outlines the research design used to conduct empirical tests of the hypotheses derived from the research model in figure 4.1. Our research is designed to conduct theory testing, and we find a cross-sectional design appropriate for this purpose. This issue is further outlined in section 5.2.

This study uses informants from a setting of professionals in purchasing and logistics employed in manufacturing firms in Norway (members of Norwegian Association of Purchasing and Logistics; NIMA). The unit of analysis is supplier - producer dyads, and data describing and referring to one specific supplier - producer relations is collected from key informants on the buyer side in marketing channel dyads. This is further outlined in section 5.2 and 5.3. Figure 5.2 at the end of section 5.3 gives an overview of the selected research design for this dissertation.

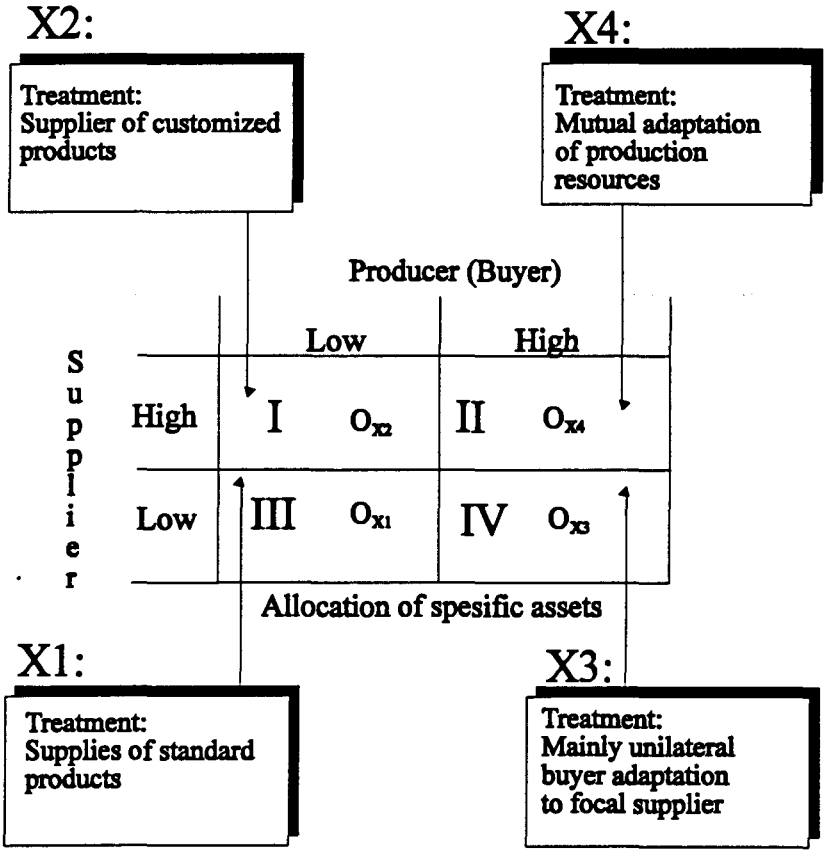
5.2 Empirical setting

Marketing channel dyads will compose the empirical setting for this research. According to the Central Bureau of Statistics of Norway (CBSN, 1992), 70-80% of the purchased materials and services for manufacturing purposes are mediated directly between producing establishments (manufacturing firms). Marketing relationships between production firms and distributors; agents, wholesalers and retailers are excluded from this study because we have chosen to limit the scope of our research problem to coordination of value adding activities between *independent* production firms (confer chapter 3 and 4). Dyads of marketing channels consisting of firms integrated through vertical ownership (hierarchy) are consequently omitted from our empirical setting to get this better adapted to the research problem of this study.

When conducting research design for the purpose of theory testing, the choice of appropriate research setting is often a trade-off between the intention of obtaining sufficient variation with respect to the variables in the research model, and at the same time control for irrelevant sources of variation (Cook and Campell, 1979). For the purpose of this study, sufficient variation with respect to the way specific assets are allocated between supplier and producer (the main independent variable in our research) is warranted. Empirical studies by Heide (1987), and Anderson and Weitz (1992) show positive and significant correlation between the level of specific assets deployed respectively on the supplier and buyer side in industrial interfirm channels. Consequently, we expect to find a concentration of cases in cell III (low/low) and II (high/high) in figure 5.1 below, and relatively few cases are expected to appear in cells I and IV. These cases are of main interest in this study, for the purpose of conducting proper empirical tests of our hypotheses. In order to obtain greater variability with respect to the allocation of specific assets among our cases, an experimental design was carried out to obtain a more balanced allocation of cases between the four cells symbolized as outcome O_{X1} , O_{X2} , O_{X3} ,

and O_{X4} in figure 5.1[8]. Buyers representing our units of analysis were firstly divided randomly into four equal groups.Treatment was administered by giving the various groups different instructions in the introduction of the questionnaires, symbolized as X1, X2, X3 and X4 in figure 5.1 below.

Figure 5.1:
Questionnaire prescriptions to buyers for selection of focal supplier.



The following four different prescriptions of how to select focal supplier were presented to our informants:

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[8]Experimental designs are originally research designs where the independent variable (treatment) is the experimental variable expected to cause certain outcome(s); value(s) of the dependent variable (Cook & Campbell, 1979). For our purpose, the experimental variable is a manipulation factor expected to cause certain values of the **independent variable**; allocation of specific assets for the purpose of quoting the sample values of this variable in a special way.

1. Suppliers of mainly standardized products (X1)
2. Suppliers of customized products (X2)
3. Suppliers involving mainly unilateral buyer adaption to the supplier's products (X3)
4. Suppliers involving mutual adaption between buyer and supplier (X4)

Our intention with this design was to guide the informants to select a focal supplier - buyer dyad corresponding to a certain allocation of specific assets. The various prescriptions given in the introduction of the questionnaires were expected to guide the informants to focus on purchasing relationships in accordance with the way we wanted specific assets to be allocated between buyer and supplier in our sample. The way we classify the allocation of specific assets is based on theoretical and empirical inventions, and is of course difficult to communicate unambiguously to the informants through simple instructions. Introduction of our treatment design was an attempt to administer our final sample in direction of a more balanced composition of specific assets. The relationship between our treatments and the intended allocation of specific assets is illustrated in figure 5.1 above. A pilot test to prepare this approach was accomplished by letting the purchasing managers of two production firms assign 4 suppliers to each of our four treatment groups; X1, X2, X3, X4. The 16 various supplier names were then presented to four other purchasing officers who were asked to assign them to the various descriptions representing our treatment set. 70% of the their classifications corresponded to the original classification of the purchase managers.

5.3 Unit of analysis and sampling of informants

The frequency of economic exchange between supplier and producer is decisive for the way of organizing the transaction between the parties (Williamson, 1975, 1985). According to the TCE-perspective, special governance structures are too

costly to set up and administer when the frequency of exchange between the actors is low (e.g.; investments goods). This is further outlined in chapter 2. We therefore instructed our informants (the buying firms) to select a focal supplier delivering items repetitively needed for production or maintenance purposes (e.g. raw materials, intermediate products, customized materials and packaging materials). The setting was then restricted to cases with frequent economic exchange between buyer and seller, and met one of the basic and necessary TCE-conditions for mediating transactions outside the market. Secondly, this limitation of the setting for the study makes the cases more homogenous and is advantageous with respect to the way of operationalizing the variables.

Using the vertical relationship between buyer and seller as the unit of analysis is in accordance with existing models of interfirm exchange in marketing (Bonoma et al. 1979) and with empirical research within the political economy framework; Stern and Reve (1980), Reve (1980), and Dwyer and Welsh (1985). The research problem for this dissertation mainly concerns economic exchange between supplier and buyer, and will be analyzed within the TCE-perspective. We find vertical relationships between pairs of suppliers and buyers appropriate as units of analysis for this purpose. Vertical transactions between firms can be more comprehensively studied as organization sets or networks. However, these contexts consist of several interfirm dyads which have to be fully understood before introducing more extensive systems of exchange (Achrol et al., 1983).

A crucial question is then how to describe the economic structures and processes capturing interfirm dependency and interactions. Several empirical studies within inter-organizational research; Reve (1980), Heide (1987), Haugland (1988), Nygaard (1992), and Anderson & Weitz (1992) approach this problem by collecting data representing interfirm interaction from both sides of the channel dyad. The underlying assumption is that buyers and sellers to some degree perceive various aspects characterizing the interfirm relations differently. Opportunistic behaviour or strategic consideration to improve bargaining positions are sources of

information impactedness or hidden actions; Williamson (1975), Holmstrøm (1979), and Milgrom & Roberts (1992). Such crucial issues, e.g. strategic dispositions or the price policy of the supplier are therefore troublesome to detect appropriately by asking the buyer.

Several empirical studies, however, find satisfactory correspondence between measures of the same variables on respectively the seller and buyer side in marketing relationships. Reve and John (1982) and Reve (1980) show empirically positive and significant correlation between measures of vertical interaction, formalization and centralization from respectively the buyer and seller side in wholesaler - retailer dyads:

"....*The results indicate that the key informants from different firms within channel dyads provided reliable and valid data about the structural form of the relationship....*"
Reve and John: 1982: 522

Heide (1987) finds empirical support from industrial supplier - producer dyads for coherence between the way buyers and sellers perceive interfirm dependency and various dimensions of vertical coordination. Anderson and Weitz (1992) argue theoretically and get empirical support for an positive relationship between the way manufacturers and industrial distributors view each other's idiosyncratic investments and commitment to the channel dyad. These findings, however, give no reason to connive at the problem of discrepancies between the actors in channel dyads with respect to the way they perceive economic structures, interfirm interaction or the outcome of their economic relationships. A dual representation is of interest for the purpose of convergent validity assessments by conducting parallel tests of the research hypotheses based on data from both sides of the interfirm relation; Heide (1987), and Heide & John (1992).

Following Heide & John (1991), the nature of the research problem or the way each party in a relationship perceives and interprets his own situation should be

the guideline for deciding how to select informants:

".... firms will act upon their specific interpretation of a situation, regardless of whether the firms perception is accurate, or converge with that of its exchange partner. For the purpose of predicting responses to dependency, an individual firms perception is for all practical purposes "truth". Heide and John: 1991:18

This is relevant for our research problem. For instance, the way the informants perceive the allocation of specific assets in the channel dyads might reflect their perceived dependency. And the way they evaluate the instrumentality (weights of importance) of the various dimensions of vertical coordination might reflect intended responses to perceived dependency. For the purpose of this dissertation, it is important to get reliable assessments of the *relationships* between the variables specified in the research model. It is therefore important that both dependent and independent variables are measured within the same frame of reference. A composition of e.g., average measures based on data from both actors might rule out or weaken originally differently shaped relationships between variables on the two sides of the channel dyad. Interpretation problems due to ecological correlation between the variables might be a problem under such conditions (Heide & John, 1991).

Another significant issue concerning the informant design, is the problem of refused participation or low response rate. To obtain corresponding measures from both sides of the dyad, a relatively extensive research design has to be conducted. As a first step, the survey has to be administered to informants on one side of the dyad. Secondly, these informants have to select a contact person representing the other part of the dyad and agree upon his participation in the survey.The response rate of the sample of channel dyads is the product of the response rates of the informants on each side of the dyad, and is consequently sensitive to refusals on both sides of the channel dyad. This might enhance the refusal problem due to confidentiality reasons (Churchill, 1989). Based on these considerations, we found

it tenable to use data from one side of the marketing channel for the purpose of testing relationships between the variables represented in our research model.

Deployment of specific assets and implementation of appropriate coordination mechanisms are of significant importance for obtaining efficient adaption between the transaction mediated between the supplier - buyer dyad and the end users of the buyer's product. The buyer is assumed to play the major role concerning the management of the interface between the purchased product and the end users of it (Heide, 1987). Informants from the buyer side will therefore be selected to represent supplier - buyer relationships in this study.

Norwegian Association of Purchasing and Logistics (NIMA) is an organization of Norwegian purchasing and logistics professionals. NIMA has 2000 members from various industries, and 684 of them are employees in manufacturing firms representing the main SIC-code 3; manufacturing. SIC-code 3 is divided into the following 9 two-digit groups (CBSN, 1994):

31: Manufacture of food, beverages and tobacco
32: Manufacture of textiles; Wearing apparel, leather and leather products
33: Manufacture of wood and wood products, including furniture
34: Manufacture of paper and paper products; printing and publishing
35: Manufacture of chemicals and of chemical petroleum, coal, rubber and plastic products
36: Manufacture of mineral products
37: Manufacture of basic metals
38: Manufacture of fabricated metal products, machinery and equipment
39: Other manufacturing industries

The NIMA members within these industries are expected to represent relevant informants for this study because their memberships are based on their concerns

and dealings with the main issues of this study; purchasing, logistics and procurement. Their membership in NIMA as well as their employment in a manufacturing firms is then convenient for the purpose of identifying and reaching relevant informants when addressing manufacturing firms, without intrafirm search to find appropriate informants. The sample frame of this study, will then be identified as NIMA members representing the buying firms, and all the 684 members are selected as sample elements. NIMA's register of associates was used to identify these informants (NIMA, 1993). This design corresponds to a key informant approach; Campell (1955), John and Reve (1982), Heide & John (1992), Phillips (1981), and Walker & Poppo (1991), where selection of a key-informant in an organization is based on his particular knowledge about the issues representing the core of the research problem. The variables of interest are measured directly through the informant's reports, as opposed to aggregating across multiple individuals on the buyer side. If appropriate informants can be identified, this approach is usually an effective design in organizational research. The essence of the key informant approach is that personnel of an organization possessing reliable information about the focal research problem give a relatively objective account of the phenomena explored as seen from the total organization (Reve, 1980). The selected informants are consequently not representative in a statistical sense, but are assumed to be in a unique position for describing the theoretical phenomenon of the study, or in other ways represent special knowledge that make them well suited for data collection purposes.

The census representing the whole sample frame of this study corresponds to a population of NIMA associated firms, which deviates from the Norwegian population of industrial firms. Less than 10% of the Norwegian manufacturing firms exceed 100 employees (CBSN, 1994; The Central Bureau of Statistics of Norway). A pilot study of NIMA's members representing manufacturing firms, indicated that more than 80% of NIMA associated firms belong to this size category. The main purpose of the selected empirical design, however, is to accomplish appropriate tests of our hypotheses (theory tests), and for this purpose

the external validity is of secondary importance:

"Few theories specify crucial target settings, populations, or times to or across which generalization is desired. Consequently, external validity is of relatively little importance. In practice, it is often sacrificed for the grater statistical power that comes through having isolated settings, standardized procedures, and homogeneous respondent populations."
Cook and Campell: 1979 : 83

The data collection for this study is based on administration of survey mail questionnaires to the selected key informants. The NIMA membership register for manufacturers contains names, titles, employer firms and addresses of the selected key informants. Questionnaires with cover letters from the national director of NIMA and the researchers were sent to the key informants' firm-address, and later followed up by reminders and call backs. The data collection will be further described in the next section. An overview of the empirical design for the study is presented in figure 5.2 below:

Figure 5.2:
Research design - an overview:

Elements of research design:	**Specification of design:**
Subject of analysis:	Coordination of interfirm transactions representing repetitively purchased materials and services
Empirical setting:	Manufacturing firms
Unit of analysis:	Relationships between independent suppliers and buyers
Sample frame:	A census of manufacturing firms with employees associated to the Norwegian Association of Purchasing and Logistics (NIMA)

Figure 5.2 - continuation

Selection of informants:	Identified professionals in purchasing and logistics corresponding to the sample frame were selected as key-informants
Designing sample structure:	Prescription of modes for allocation of specific assets in a firm's focal supplier relationship through different introduction versions in the questionnaire (confer figure 5.1 above)
Data collection:	Structured mail questionnaire (confer next section, chapter 6 and Appendix 1 and 2)

5.4 Sample description

Our initial sampling frame consists of a census of 684 industrial purchasing and logistics professionals associated to NIMA (the Norwegian Association of Purchasing and Logistics). Questionnaires were mailed to all of them, and 183 responded and returned the questionnaire. We addressed all of the 501 non-responders and received reports from 165. 114 of them stated that they were inappropriate as informants for this study because:

-the firm had gone out of business or the selected informant was impossible to locate : 13

-their firms were not engaged in industrial production (sales company, consulting and service firms), or the selected informants were not engaged with their firms' relations to suppliers : 101

51 of the non-responders reported their reasons for not responding to our research. The distribution of answers follows below:

-Confidentiality reasons	: 12%
-Busy work situation or lack of time	: 67%
-Negative attitudes to participation in questionnaire research	: 14%
-Other reasons	: 7%

Our 183 responders represent 32% of the remaining part of our census (570) who were considered to be appropriate informants for our research.

The questionnaires were carefully completed with an average missing rate for the variables below 5%. 171 of the 183 informants (93.5%) responded completely to all of the 43 items corresponding to the variables in our research model, and will represent the data matrix for this study.

The questionnaires were mailed to a census of industrial NIMA associates in June 1994. 117 questionnaires were returned within September 1994 when a second mailing to the informants was administered. 43 informants responded to the second mailing within October 1994, and a third mailing round in November 1994 captured 23 more informants.

The relatively high non-response rate (68%) among the NIMA firms might represent an adverse selection problem among the informants in the sense that e.g., the most qualified purchasing professionals or the most successful firms in the NIMA population responded to this survey. NIMA's membership files have no key demographic variables describing the firms employing their personal associates. It is therefore difficult to compare characteristics of the final sample with the population of firms associated to NIMA. Non-response bias were instead evaluated by comparing data from informants who responded first to the questionnaires with slow responders. Table 5.1 below presents the results from this comparison. The theoretical rationale for this approach is that slow responders are expected to be representative for non-responders (Armstrong and Overtone, 1977).117 questionnaires were returned before the second mailing, and 66

were returned after the second and third mailing.These two groups were compared with respect to annual sales volume in the buying firm, proportion of purchasing volume from the supplier, length of the relationship, and key informant's knowledge and involvement with the focal supplier.

Table 5.1:
Comparison between early and slow responders

Variables:	Mean value First responders	Mean value Slow responders	T-values for mean differences
Annual sales volume in the buying firm (Million NOK)[9]	668	753	0.591 (p=0.555)
Proportion of purchasing volume from the supplier[10]	12.5%	9.5%	-1.153 (p=0.532)
Length of the relationship (years)	12.9	11.9	-1.009 (p=0.544)
Key informant's involvement with the selected supplier[11]	6.0 (N=117)	6.1 (N=66)	0.58 (p=0.569)

[9]Four cases were excluded from the analysis as outlayers, because their value on this variable deviated more than 3 units of standard deviaten from the original mean value.

[10]This variable is defined as a buyer's yearly purchasing volume (NOK) in percent of the focal supplier's gross production value (NOK). 3 cases were excluded from the analysis as outlayers because their value for this variable deviated more than 3 units of standard deviation from the original mean.

[11]This variable express to what degree the informant is knowledgeable and participate in the interactions with his focal supplier (confer Appendix 1 and 2).

The analysis above does not show significant differences between early and late responders for any of the variables used for this sample control.

For further sample control, the size of firms were measured among the non-responding informant's firms, and data from 116 of them was obtained. The size of the firms representing the non-responding informants were then compared with the responding ones. The results of this analysis are presented in table 5.2 below.

Table 5.2:
Comparison between responders and non-responders with respect to firm size[12]:

Groups:	Mean firm size :
Responders	350.47 (N=116)
Non-responders	340.62 (N=160)
Difference	T-value: 0.229
	(p=0.819)

No significant difference were found between responders and non-responders with respect to firm size, and indicate that non-response bias is not a serious problem.

[12]Firm size is measured as the total number of employees in 1993 (confer Appendix 1 and 2). 4 cases were deleted from this analysis as outlayers because their values deviated more than three units of standard deviation from the original mean value.

Chapter 6:

OPERATIONALIZATION OF VARIABLES IN THE RESEARCH MODEL[13]

6.1 Introduction and procedures for measure development

In this section the dimensions of the variables composing the research model of this dissertation will be operationalized. The research problem and setting for this study will be major constraints and guidelines for the development of items. Validity consideration will play a major role for the way of developing measures, with construct validity as the most important issue. Following Churchill (1979), a four-stage procedure is a proper method for measure development before the main data collection is carried out.

This procedure is shown below:

[13]The variables represented in the research model are composed as constructs of items representing various dimensions of these variables (confer chapter 7). These items are the objects of operationalization in this chapter.

Measure development stages:

Stage 1: Specify domain of construct
Stage 2: Generate sample of items
Stage 3: Collect data
Stage 4: Purify measure

To capture the domain of the constructs in the research model, an extensive search for literature about supplier-producer relationships was carried out. Chapter 2, 3 and 4 outline the theoretical context and definitions of the variables composing our research model. The development of operational definitions of constructs will mainly be based on findings from empirical research with relevance to this study. This is advantageous for the purpose of controlling and assessing reliability and validity.

An extensive explorative research was first accomplished to generate a relevant sample of items for this study. Propositions of items based on previous research was first developed and presented to:

-purchasing professionals in manufacturing firms
-staff in consultant firms for purchasing and procurement issues
-academics engaged in topics like procurement, logistics, economy of transportation and production planning.

An archival study of the contents of standard purchasing contracts across 4 different industries was then accomplished to examine whether our preliminary items representing formalization issues corresponded to contractual terms applied in industrial purchasing agreements.

The main outcome of this process was a fruitful elimination of items which was of minor relevance for Norwegian manufacturers. Quality control through

interactive monitoring systems of industry suppliers is an example.

At the next stage, a pilot study of 14 manufacturing firms associated to NIMA was administered on a national NIMA conference in November 1993. Preliminary measures of vertical coordination were obtained through structured questionnaires. Explorative factor analysis and reliability tests were accomplished to examine these items, and gave important guidelines for further item development. Different dimensions of specific assets were charted through unstructured open questions, and outlined the way of capturing the most relevant aspects of this concept. Some of the preliminary measures of vertical coordination were revised and new items were developed to supplement the ones used in the pilot test. The various dimensions of specific assets which appeared in the pilot study were transformed into a new set of items. The revised measure proposals were then tested among five manufacturing firms from different industries through mail questionnaires in search for proposals for revisions or supplementary issues. Based on the results from these informants, a simplification of the vertical interaction dimension was carried out. No proposals for supplementary items were received. Finally, pretests of the preliminary questionnaire were accomplished through personal interviews with 3 purchasing directors representing 3 different industries. The main purpose of this research was to detect possible defective questions (Hunt et al. 1982). The focus of attention was therefore paid to the detection of:

-ambiguous questions
-inappropriate vocabulary
-familiarity with the scaling method

The pretests were carefully accomplished, and showed insufficiencies with respect to all the three issues mentioned above. The Likert type scale using -3 and +3 as end points confused two of the informants and was later revised to a 1 - 7 scale. No items showed irrelevancy, but the wording of 3 - 4 items had to be elaborated

further to obtain better communication with the informants. Finally, the pretest showed a need for a more careful introduction to a couple of questions.

The forthcoming assessment of reliability, validity and construction of final measures as proposed by Churchill (1979) will be outlined in chapter 7.

In absence of further specifications, a seven-point Likert type scale with end-points 1 and 7 is used for capturing the values of the items. The end-point 1 indicates that the informant rates the statement represented by the various items to be incongruent with his perceptions, and the opposite end-point 7 indicates a fair agreement between the statement and the way the informant perceives the focal issue. Careful instructions about questionnaire design were presented in the introduction of the questionnaires.

6.2 Operationalization of variables

Items were developed for the purpose of representing the various dimensions of the variables composing our research model. In the following sections, we present a sample of these items to exemplify the way we have operationalized the dimensions of our variables. Appendix 1 and 2 (questionnaire) give a complete list of all items representing these variables[14].

[14]The enumeration used for presentation of items e.g VERTINT1, VERTINT2, VERTINT3..... follows the same sequence as the questionnaire design; item 1.1, item 1.2, item 1.3... (confer Appendix 1 and 2).

6.2.1 Operationalization of dependent variables

The vertical form represented by vertical interaction, formalization and centralization by the buyer is the dependent variable in this study, and was outlined in chapter 3.2.

1. Vertical interaction

The vertical flows of activities, resources and information between supplier and producer represent issues describing the integration and coordination of the production functions in the transacting firms. These issues represent the scope dimension of vertical interaction. Empirical studies from settings of manufacturing firms by Heide (1987), Heide and John (1990), Noordewier (1986) and Noordewier et al. (1990) and results from a pilot study of Norwegian manufacturers gave a constructive guideline to determine the scope of vertical interaction for this study.

The scope of this concept is reflected in 11 items and 4 of them are presented below.

VERTINT1:
"Both we and our supplier have carried out complete standardization of our production planning."

VERTINT2:
"We regularly contact our supplier prior to purchase of raw materials and materials for our products."

VERTINT3:
"Our purchase planning and our supplier's capacity planning have been completely coordinated."

VERTINT4:
"We regularly exchange information about production costs with our supplier."

2. Formalization

The degree of formalization refers to the extent that fixed rules and standard operation procedures formalize the interaction between supplier and buyer; Reve (1980), Hall (1987), Heide (1987), Haugland (1988), and Nygaard (1992). The same 11 issues which represent the scope of the vertical interaction between the actors are measured with respect to the degree of formalization. 4 of them follow below.

FORM1:
"We have signed mutually binding agreements with our supplier which regulate all activities connected with the standardization of our production plans."

FORM2:
"We have set agreements for the implementation of standardization of our supplier's capacity planning and our purchasing plans."

FORM3:
"We have written contracts to confirm our company's influence as regards determining raw materials and materials for the products we purchase."

FORM4:
"We have a written contract which manages all conditions regarding rights to insight and documentation of production expenses."

3. Centralization by the buyer

The degree of centralization describes authority patterns in the dyad, and reflects the extent to which decision making concerning the interest of both actors are concentrated at one of the transacting partners; Reve (1980), and Hage (1980).11 items constitute the centralization dimension, and 4 of them are listed below.

CENTRAL1:
"We determine all aspects of the implementation of quality assurance at our supplier."

CENTRAL2:
"We determine in detail the methods and standards to be used for control of the products we purchase from our supplier."

CENTRAL3:
"Our supplier determines himself which raw materials and materials to use for production of the products sold to us." (Reversed scaling)

CENTRAL4:
"Our supplier determines himself which sub-contractors to employ for the production of products sold to us." (Reversed scaling)

A supplementary global measure was developed for validation purposes to capture the buyer's overall perception of the actor's influence in the dyad. The end points of a 7-point Likert type scale prescribing the value of this measure is:

1: "The supplier has definitely greater influence than our firm."
7: "Our firm has definitely greater influence than the supplier."

6.2.2 Operationalization of independent variables

The independent variables in the research model are allocation of specific assets, uncertainty and buyer's production technology.

1. Specific assets

Specific assets refer to physical and immaterial assets tailored to a specific relationship. For the purpose of making a construct which captures the allocation or composition of specific assets in supplier - producer relations, specific assets constructs have to be developed both for the supplier and buyer side of the dyad. Based on current empirical research by Haugland (1988, 1991), Heide (1987), Walker & Poppo (1991) , Masten (1984), Masten et al. (1991) and results from a pilot study of 14 Norwegian manufacturers, 10 items were developed to describe the asset specificity on each side of the channel dyad. Samples of 4 items from both side of the supplier-buyer-dyad are presented below.

1. A. Buyer specific assets (BUYSPEC):

BUYSPEC1:
"We have to a great extent invested in production equipment that have been adjusted to the products we purchase from our supplier."

BUYSPEC2:
"We have to a great extent adjusted our specifications for the products we purchase from our supplier to his production technology and range of products."

BUYSPEC3:
"We have committed a lot of time and resources to the training and development of personnel for our supplier."

BUYSPEC4:
"We have committed a lot of time and resources to achieving insight and technical standards and areas of utilization for the products we purchase from our supplier."

1. B. Supplier specific assets (SUPPLSPEC):

SUPPLSPEC1:
"Our supplier has to a great extent invested in production equipment in order to adjust to our purchasing requirement."

SUPPLSPEC2:
"Our supplier has carried out considerable product adjustments in order to meet the requirements from our company."

SUPPLSPEC3:
"Our supplier has committed a lot of time and resources to the training and development of personnel in our company."

SUPPLSPEC4:
"Our supplier has committed a lot of time and resources on achieving knowledge about the buyers of our products."

The construct representing the allocation of specific assets is composed by the two constructs representing specific assets on the buyer and supplier side of the channel dyad. The empirical classification of *allocation of specific assets* will be further outlined in the next chapter.

1. C. Replaceability cost

A supplementary measure of switching costs was developed for the purpose of validity tests, and represent a direct measure of the importance and options for replacement of the respective exchange partners; Heide (1987), Heide and John (1988, 1992), Buchanan (1986), Etgar (1976), and Anderson & Weitz (1992). 3 items were developed to capture this dimension on each side of the dyad, and 2 items for each side of the channel dyad are listed below.

1. C. 1. Replaceability cost on the supplier side (SUPPLREPL):

SUPPLREPL1:
"Should the sales to our company cease, our supplier would not easily find alternative purchasers."

SUPPLREPL2:
"Should the sales to our company cease, our supplier would be facing severe economic difficulties."

1. C. 2. Replaceability cost on the buyer side (BUYREPL):

BYYREPL1:
"Should our supplier terminate his activities, it would be very difficult for us to find substitute suppliers."

BUYREPL2:
"We have relatively good access to other suppliers which can replace our supplier." (Reversed scaling)

2. Uncertainty

In accordance with Achrol et al. (1983), and Achrol and Stern (1988), the uncertainty concept will be restricted to dynamism and scarcity (unfavourableness) in the input and output-sector of the transacting parties. With reference to the technology and market conditions surrounding the focal dyad; its upstream (sub-suppliers) and downstream (distributors and end users) sectors, the dynamism and capacity of these sectors will be measured. 8 items were used for this purpose, and four of them are presented below.

UNCERT1:
"The demand for our end products varies continually."

UNCERT2:
"Our most important competitors are regularly carrying out product adjustments and development of new products."

SCARC1:
"The market situation for our end products is usually very favourable." (Reversed scaling)

SCARC2:
"Our end products have competitive advantages among our distributors and end users." (Reversed scaling)

3. Buyer's production technology

Buyer's production technology reflects work-flow rigidity in the buyer firm, and is based on four different technological dimensions developed by Hickson et al. (1969). 3 of them follow below.

TECHNO1:
"The production technology in our company consists of sequences of automatic processes."

TECHNO2:
"The work-flow in our production department is very preprogrammed."

TECHNO3:
"Information technology is extensively used for control- and scheduling purposes."

6.3 Operationalization of performance variables

6.3.1 Instrumentality of various dimensions of bilateral governance

Instrumentality refers to what extent the issues reflected in the various dimensions of vertical interaction and formalization are important for achieving efficient coordination and utilization of the productive resources of the transacting firms. The informants were asked to rate the importance of 11 coordination dimensions. The importancy weights ; Rosenberg (1956), and Fishbein & Ajzen (1975) of the various dimensions of coordination between the transacting parties were measured on a seven point Likert type scale with end-points; not important (1) and very important (7). 4 of these dimensions follow below.

INSTRUM1: Information exchange on production expenses
INSTRUM2: Standardization of production plans
INSTRUM3: Cooperation in the following up of orders and deliveries to our company
INSTRUM4: Cooperation on quality assurance at our supplier's

6.3.2 Transaction costs

It is difficult to operationalize this concept without constructing measures that favour certain modes of governance. Timely negotiations about terms of trade for complex products, for instance, might be beneficial under conditions of great bilateral dependency, and inefficient when standard commodities are being exchanged. Operationalization of this concept will therefore try to capture possible misfits between the established arrangements and processes of bargaining and control, and the perceived need for the current arrangements and interactions taking place between the transacting parties. Maladaption costs will refer to what degree the potential benefits and efficient utilization of the actors skills and production resources have been exhausted. 6 items represent the various dimensions of transaction costs, and three of them follow below.

TRANSCOST1:
"Our firm uses too much time and resources in order to control products and production processes and products of this supplier".

TRANSCOST2:
"It is very timely and difficult to get necessary verification of production performance and cost from this supplier.

TRANSCOST3:
"The coordination of the relationship with this supplier is too costly compared to the resulting outcome of these interactions."

In the next chapter validity assessment of the items presented above will be accomplished to purify our measures.

Chapter 7:

VALIDATION AND RELIABILITY ASSESSMENTS

7.1 Introduction

In chapter 6, we described the first stages in the process of developing measures reflecting the theoretical concepts in the research model based on a procedure suggested by Churchill (1979). This chapter describes the validation procedure and reliability assessments applied to evaluate the constructs intended to represent the variables in the research model.

7. 2 Construct validation

7.2.1 Validity measures and methods for scale purification

As a starting point, a preliminary examination of possible skewness and kurtosis of the items was accomplished because the statistical tools conducting validity assessments can be heavily influenced by departure from normality assumptions (Stewart, 1981). Measure for skewness and kurtosis indicated no serious violations against these assumptions. These measures are reported for each item

representing the various concepts in the research model in Appendix 3. To assess the validity of the scales representing the variables in the research model, empirical analysis of reliability and validity was conducted.

Convergent validity refers to the extent a measure of one construct correlates with other measures of the same construct conducted through other methods; (Churchill, 1979), and Zaltman & al. (1973). A stringent test of construct validity will then imply that we measure various constructs through maximally different research methods. The research design of this study is based on one single method; a survey among informants representing the buyer side of the channel dyad. Proper tests of convergent validity are therefore impossible to accomplish.

Discriminant validity describes the degree to which a measure is novel and not a reflection of some other construct (Churchill, 1979). Predictive validity assesses whether measures predict the expected characteristics or behaviour of an individual or organization (Churchill, 1988). Nomological validity assess whether measures show the expected relationships to other constructs within the theoretical framework where the constructs are embedded. Reliability is an indication of the stability of measures; Nunnally (1978), and Cronbach & Meehl (1955), and refers to the extent of agreement between measurement of a construct through similar procedures. In this study reliability assessment refers to the uni-dimensionality, and convergence between items representing a specific concept. The theoretical foundation for such reliability assessment is the domain sampling model (Nunnally, 1978), which attempts to identify an internally homogenous set of items for each construct. The arguments for an empirical representation of various theoretical concepts through reflective scales must therefore be based on theoretical considerations, justifying the relevance of a homogeneous representation of the concepts by various items. This will be outlined further for constructs represented by reflective scales in this study. Reliability measured as item-total correlation and Cronbach's alpha (Nunnally, 1978) in this study assesses the convergence across different items reflecting various concepts. The

problem with these reliability measures, however, is that they may fail to discriminate between sets of indicators (factors) that represent different, though correlated, factors (Gerbing and Anderson, 1988). A significant problem is possible partial correlation between items assumed to represent one concept. If variables share common factors, the partial correlation between pairs of items should be low when the effects of the other items assumed to compose the construct are eliminated; Kaiser (1974), and Norusis (1985). Measures for sampling adequacy (MSA) reflect to what degree the correlation between various pairs of variables is explained by a common factor, and not by partial correlation between the same variables. Measurement of item-total correlations do not consider this problem. Reliability measures will therefore be supplemented by:

-An inspection of the measures of sampling adequacy (MSA) . For screening purposes, single items with MSA-values below 0.60; *mediocre level* (Kaiser, 1974) will be excluded from the scale to improve its adequacy.
-Items assumed to be reflected by a common construct must be assigned to one single factor through principal components analysis.

Discriminant validity will be assessed by confronting items assumed to correspond to different constructs through a principal components analysis in order to control whether different groups of "family items" are assigned consistently to their construct factors.

7.2.2 Purification of scales for constructs in the research model

1. Vertical form

Theoretical and empirical studies by Reve (1980), John and Reve (1982), John (1984), John and Martin (1984), Reve and Stern (1986), Spekman and Stern (1979), Phillips (1982), Haugland and Reve (1988) and Nygaard (1992) give some support for an appropriate representation of centralization, formalization and

vertical interaction through reflective scales. The construction of measures and successive validation of these variables will follow the guidelines from these studies.

1.Vertical interaction

The vertical interaction dimensions were measured by 11 items, and the unrevised scale showed high internal consistency with a Cronbach's alpha of 0.84. An inspection of the anti-image correlation matrix showed overall low partial correlations between the variables, with lowest MSA = 0.72. The 11 items were then factor analyzed, and the principal component varimax solution assigned 4 items to the first (construct) factor. The common factor explained 58.5.% of the total variance of the 4 items, and the reliability for the four-item scale shows a Cronbach's alpha of 0.76. Table 7.3 below presents the statistics for the scale.

Table 7.1:
Extraction of construct factor representing vertical interaction

ITEMS:	Issues representing the content of the items:	Factor loadings:	Communality:
VERTINT5	Execution of orders	0.67	0.44
VERTINT7	Improvements of products	0.76	0.58
VERTINT8	Quality assurance of production	0.79	0.62
VERTINT9	Quality control of products	0.83	0.69

VARIANCE EXPLAINED: 58.8%
EIGEN VALUE: 2.34
CRONBACH'S ALFA FOR THE REVISED SCALE: 0.76

2. Formalization

The formalization dimension of vertical form was measured by 11 items, and the original scale showed high reliability with a Cronbach's alpha of 0.88. The lowest MSA value for a single item on the scale was 0.73. A principal components factor solution with varimax rotation of the 11 items assigned 6 of them to the first factor. Statistics for the scale are presented in table 7.2 below.

Table 7.2:
Extraction of construct factor representing formalization

ITEMS:	Issues representing the content of the items:	Factor loadings:	Communality:
FORM3	Selection of raw materials and components	0.73	0.53
FORM4	Documentation of production costs	0.71	0.51
FORM7	Handling of complaints and disputes	0.77	0.59
FORM8	Quality assurance of production	0.83	0.70
FORM9	Quality control of products	0.82	0.68
FORM11	Selection of sub-suppliers	0.71	0.51

VARIANCE EXPLAINED: 58.4%
EIGEN VALUE: 3.50
CRONBACH'S ALFA FOR THE REVISED SCALE: 0.86

3. Centralization by the buyer

The buyer's relative influence over the supplier was measured by 11 items. The scale showed relatively weak reliability, with a Cronbach's alpha of 0.59. MSA

values were below 0.60 for 4 items; CENTRAL5, CENTRAL6, CENTRAL7 and CENTRAL10. These items were deleted, and the remaining 7 items were reassessed to control for their adequacy. The lowest MSA value for a single item was 0.62. A principal components factor solution with varimax rotation assigned 4 of the remaining items to the first factor. Statistics for the revised scale are presented in table 7.3 below.

Table 7.3:
Extraction of construct factor representing centralization

ITEMS:	Issues representing the content of the items:	Factor loadings:	Communality:
CENTRAL1	Quality assurance of production	0.84	0.70
CENTRAL2	Quality control of products	0.79	0.62
CENTRAL4	Selection of sub-contractors	0.64	0.42
CENTRAL8	Selection of tools and production equipment	0.53	0.28

VARIANCE EXPLAINED: 50.4%
EIGEN VALUE: 2.01
CRONBACH'S ALFA FOR THE REVISED SCALE: 0.64

A global measure capturing the buyer's grand influence over the supplier was developed to assess the reliability of the centralization concept further. The 11 items representing buyer's centralization showed relatively weak correlation with the global influence measure. Only 5 items of the original centralization scale showed to be significantly correlated to the global influence measure ($p < 0.05$). All the 4 items extracted through the factor solution above correlated significantly with the global influence measure. The correlation matrix is presented in table 7.4 below. Even if the correlations are low, they give some further support for reliability of the items in the revised centralization scale.

Table 7.4:
Correlations between global measure and single items in the centralization scale

ITEMS:	Correlation with global measure of centralization	Level of significance:
CENTRAL1:	0.24	p<0.01
CENTRAL2:	0.17	p<0.05
CENTRAL4:	0.17	p<0.05
CENTRAL8:	0.22	p<0.01

The revised scales for vertical interaction, formalization and centralization by the buyer were factor analyzed together to assess discriminant validity. Discriminant validity was assessed by confronting items belonging to the three different constructs elaborated above to control whether they are assigned consistently to their construct factors. The results from this analysis are presented in table 7.5 below. In accordance with the political economy framework (Reve, 1980), we argued in chapter 3 for a positive correlation between the three dimensions composing vertical form. This implies that we expect the various common factors representing these dimensions to be correlated. Oblique rotation is an adequate extraction method if the various common factors are correlated (Hair, 1984). We therefore based the extraction of factors on oblique rotation in our principal component solution. The factor analysis shown below, assigned the items representing the three dimensions of vertical form to three distinctive construct factors with one exception. The item CENTRAL4 was assigned to a non-construct factor, and had high loadings close to 0.50 for two different factors. This item was therefore withdrawn from the CENTRAL scale, and the matrix in table 7.5 below shows the final results from the analysis of discriminant validity.The items representing the three dimensions of vertical form are consistently assigned to their construct factors which together explain 60% of the variance among the items representing them.

Table 7.5:

Assessment of discriminant validity for vertical form

OBLIQUE ROTATED FACTOR MATRIX - VERTICAL FORM:

ITEMS:	FACTOR1	FACTOR2	FACTOR3
VERTINT5	0.06	**0.76**	-0.10
VERTINT7	0.05	**0.80**	-0.03
VERTINT8	0.19	**0.65**	0.35
VERTINT9	0.25	**0.69**	0.31
FORM3	**0.69**	0.12	0.19
FORM4	**0.72**	0.04	0.11
FORM7	**0.77**	0.21	0.00
FORM8	**0.75**	0.15	0.34
FORM9	**0.74**	0.21	0.29
FORM11	**0.73**	0.01	0.10
CENTRAL1	0.33	0.28	**0.71**
CENTRAL2	0.13	0.22	**0.78**
CENTRAL8	0.12	-0.13	**0.56**
VARIANCE EXPLAINED:	37.4%	13.8%	8.8%
EIGEN VALUE:	4.86	1.78	1.14

The scales representing the three different dimensions of vertical form show an overall satisfactory reliability and discriminant validity[15], and will for the purpose

[15]The use of unidimensional measures capturing various dimensions of vertical form is based on the methodological tradition of interorganizational research. Reliability assessments in current research , however, show that scales have to be extensively revised to show satisfactory unidimensionality. The original sacales for the various dimensions of vertical form in this research had to be extensively revised to get unidimensional constructs. Such revisions might of cource be necessary due to poorly developed items at the outset. It is possible, however, that the items assumed to be reflections of a unidimensional factor represent several concepts. A further theoretical elaboration of this issue is beyond the scope of this dissertation.

of analysis be transformed into the following average measures[16]:

Vertical interaction: VERTINT = (1/4) Σ (vertint5, vertint7, vertint8, vertint9)

Focalization: FORM = (1/6) Σ (form3, form4, form7, form8, form9, form11)

Centralization by the buyer: CENTRAL = (1/3) Σ (central1, central2, central8)

The expected positive relationships between the various dimensions representing vertical form (confer chapter 3.2) were examined. Table 7.6 below shows the correlation between the scales reflecting vertical interaction, formalization and centralization by the buyer.

Table 7.6:
Relationships between vertical interaction, formalization and centralization - correlation analysis

CONSTRUCTS:	FORM	CENTRAL
VERTINT	0.405 ($p<0.01$)	0.354 ($p<0.01$)
FORM	-	0.474 ($p<0.01$)

All pairs of correlation are significant with the expected signs, and indicate that the properties of the scales representing the various dimensions of vertical form do not deviate from current empirical research within the political economy framework.

[16]No items used for scale constructions have missing values.

2. Buyer's production technology

The selection of items representing buyer's production technology in this study is based on theoretical and empirical studies by Woodward (1965), Hayes and Wheelwright (1984) and Hickson et al. (1969) which show significant correlations between variables representing the rigidity of work flow in industrial firms. Validation of the selected items is therefore based on the assumption that they represent a common technology factor. 4 items were selected to represent the technology dimension. A principal component solution with varimax rotation extracted only one factor. One of the items, TECHNO4, showed low item-total correlation (r=0.27) and was deleted from the scale to improve its internal consistency. The remaining three items composing our final scale showed a Cronbach's Alfa value of 0.83. These represent a common factor which explain 75 % of the total variance among the items.

The 3 items representing the technology scale were transformed to one construct:

BUYTECH = 1/3 Σ (techno1, techno2, techno3)

Hayes and Wheelwright (1984) assert that the degree of work-flow rigidity is higher in process production and assembly-line production than is the case for unit production. Reliability of our technology measure was further assessed by relating our technology construct to cases classified within different groups of production technology. Table 7.7 below presents mean values for the technology construct (BUYTECH) for the various groups.

A one-way analysis of the difference in means between the 3 different sub-groups shows significant differences between:
-group 1 and 2 : Mean difference: 1.08 ($t=3.02$, $p < 0.01$)
-group 1 and 3 : Mean difference: 1.15 ($t=4.88$, $p < 0.01$)

Table 7.7:
Reliability assessment of buyer's production technology:

Industrial sub-groups:	Mean values for production technology	
1. Functional factory design/unit production	3.72	(1.46)*
2. Assembly line/mass production	4.80	(1.29)*
3. Process production	4.87	(1.36)*

* Measure of standard deviation

The results indicate that among firms with assembly line or process production, the work-flow rigidity is significantly greater than for firms with unit production, and indicates satisfactory reliability for our technology construct.

3. Uncertainty

Based on Achrol and Stern (1988), the uncertainty concept in this dissertation is measured by using a formative scale. A formative scale for a construct is appropriate when the construct is explained by its indicators (Fornell and Bookstein, 1982). The construct will then be defined as a total score across a number of items representing specific dimensions on its own. Based on empirical findings by Achrol and Stern (1988), dynamism and unfavourableness of economic and demand conditions are important determinants for decision-making uncertainty in channel dyads. *Dynamism* and *economic scarcity* represent quite different concepts, and consequently they do not represent any uniform common factor. The main point, however, is that both factors represent external forces which influence the decision-making uncertainty on the micro level (the channel

dyad). 8 items were developed to capture the dimensions of dynamism (technology and demand) and the extent of *economic scarcity* in the primary task environment of the transacting actors. The formative scale representing the uncertainty dimension was transformed into this uncertainty construct:

UNCERT = 1/8 Σ (uncert1, uncert2, uncert3, uncert4, scarc1, scarc2, scarc3, scarc4)

4. Asset specificity

Specific assets represent resources tied up to a specific transaction or relationship. Asset specificity will vary with respect to what functions they serve (Williamson, 1991[a]), and consequently with respect to what kind of resources they occupy. We therefore consider the bilateral dependency and exposure to opportunism to be strongly related to the actors' accumulated deployments of different kinds of specific assets. Consequently, we will represent asset specificity by a formative scale representing a broad scope of items which reflect the magnitude of buyer's and supplier's investments in material and immaterial resources tailored to the relationship. 10 items were selected to represent the scale of buyer's and supplier's specific assets. Mean values and standard deviations for the items representing suppliers and buyers asset specificity are presented in Appendix 3. The formative scales representing asset specificity on the buyer and supplier side were constructed in this way:

Buyer's specific assets:

BUYSPEC = (1/10) Σ (buyspec1, buyspec2, buyspec3, buyspec4, buyspec5, buyspec6, buyspec7, buyspec8, buyspec9, buyspec10)

Supplier's specific assets:

SUPPLSPEC = (1/10) Σ (supplspec1, supplspec2, supplspec3, supplspec4, supplspec5, supplspec6, supplspec7, supplspec8, supplspec9, supplspec10)

According to transaction cost economy (Williamson, 1975, 1985), deployment of specific assets creates a small-number bargaining situation which generates costs for the investing party if the relevant exchange partner is to be replaced. Replaceability is therefore an appropriate concept for assessing the nomological validity of the specific assets scales elaborated above. Replaceability has been measured by Buchanan (1986), Etgar (1976), Heide and John (1990) and Heide (1987) and give the guidelines for the measurement of replaceability costs in this dissertation.

Three items represented the scale which reflects the costs for the buyer to replace his supplier. The reliability of the scale shows a Cronbach's alpha of 0.67 and a principal components' solution with varimax rotation for the scale extracted only one common factor which explained 61.3% of the total variance among the items. An inspection of the correlation matrix showed significant correlations between all pairs of items, and indicates that the scale reflects a common factor representing a unidimensional replaceability cost construct. The items representing this construct were transformed to the following replaceability scale:

Buyer's replaceability costs:
BUYREPL = 1/3 Σ (buyrepl1, buyrepl2, buyrepl3)

The scale representing the supplier's costs connected to the replacement of his buyer was represented by three items. A principal component solution with varimax rotation extracted only one common factor for the scale and explained 54.3% of the variance among the items. The scale showed relatively low reliability with a Cronbach's alpha of 0.56. One single item; SUPPLREPL3 showed special low item-total correlation, and was withdrawn from the scale. The revised two-item scale has a Cronbach's alpha of 0.67. The scale reflecting suppliers replaceability costs was composed as:
SUPPLREPL = 1/2 Σ (Supplrepl1, Supplrepl2)

The correlation between the buyer's replaceability costs and his deployment of specific assets is positive and significant ($r=0.17$, $p<0.05$), and the asset specificity on the supplier side is correlated positively with supplier's replaceability costs ($r= 0.42$, $p< 0.01$). These results are in accordance with Heide (1987) who found stronger correlation between asset specificity and replaceability cost on the supplier side than on the buyer side in vertical relationships between industrial firms. This indicates that switching costs are more sensitive to asset specificity on the supplier side than is the case on the buyer side. The results above give some evidence to nomological validity for the constructs of asset specificity on both the buyer and the supplier side.

7.2.3 Allocation of specific assets

1. Empirical classification of the construct

The allocation of specific assets between supplier and producer (buyer) refers to the composition of specific assets (BUYSPEC and SUPPLSPEC) in each single supplier - producer relationship. We must therefore specify *contextual criteria* for the purpose of assigning each buyer - seller relation to different *allocation modes.* Based on Heide (1987); appropriate criteria for symmetry - asymmetry classification of supplier - producer relationships with respect to asset specificity is the sample median for respectively the buyers and sellers specific assets; $BUYSPEC_{Median}$ and $SUPPLSPEC_{Median}$. By labelling values below the median as *low*, and values above the median as *high* for respectively BUYSPEC and SUPPLSPEC, the symmetry-asymmetry classification of each supplier - buyer relationship will follow this guideline:

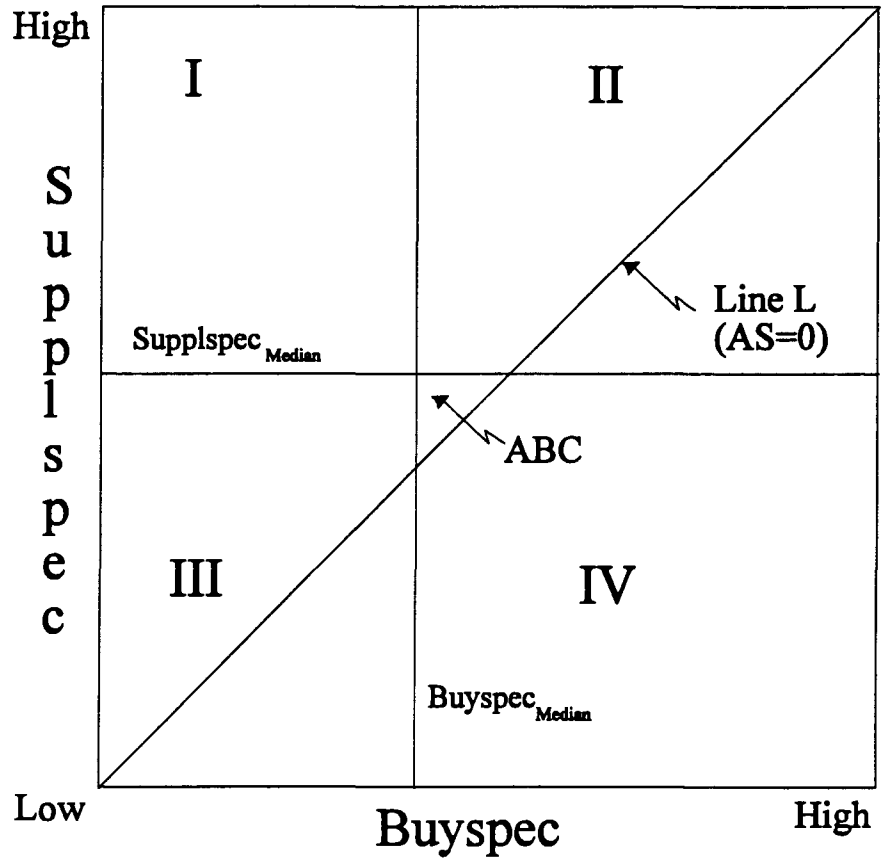
1. If $BUSPEC < BUYSPEC_{Median}$ and $SUPPLSPEC < SUPPLSPEC_{Median}$:
Supplier-buyer relations are assigned to the cell III (low/low) in figure 7.1 below; *balanced and mutual low asset specificity.*

2. If BUYSPEC > $BUYSPEC_{Median}$ and SUPPLSPEC < $SUPPLSPEC_{Median}$: Supplier-buyer relations are assigned to cell IV (low/high) in figure 7.1; *inbalanced and buyer dominated specific assets*

3. If BUYSPEC < $BUYSPEC_{Median}$ and SUPPLSPEC > $SUPPLSPEC_{Median}$: Supplier-buyer relations are assigned to cell I (high/low) in figure 7.1; *inbalanced and supplier dominated specific assets*

4. If BUYSPEC > $BUYSPEC_{Median}$ and SUPPLSPEC > $SUPPLSPEC_{Median}$: Supplier-buyer relations are assigned to cell II (high/high) in figure 7.1; *balanced and mutual high asset specificity*

Figure 7.1:
Empirical allocation of specific asset



It was, however, necessary to modify the classification above, because $BUYSPEC_{Median}$ is lower than $SUPPLSPEC_{Median}$, respectively 2.90 and 3.42. Cases in the ABC-triangle assigned to cell IV (buyer-dominance) in figure 7.1 represent a misclassification because BUYSPEC < SUPPLSPEC in this group (cell).The symmetry line L in the figure is a representation of the symmetry function; AS = SUPPLSPEC - BUYSPEC when AS = 0 (balanced asset specificity). There are 5 cases (2.7% of the sample) in the ABC-triangle in cell IV which represent an ambiguous position in our classification mode. These cases were therefore deleted from the analysis. The assignment of cases to cell IV (inbalanced and buyer dominated asset specificity) was therefore revised to include cases where:

$BUYSPEC > BUYSPEC_{Median}$, $SUPPLSPEC < SUPPLSPEC_{Median}$, **and**
$BUYSPEC > SUPPLSPEC$

2. Correspondence between treatment factors and empirical classification of cases

The informants in our sample were instructed to select supplier - buyer relations (units of analysis) with different allocations of specific assets (confer chapter 5).

Empirical studies of supplier - buyer relations in industrial settings by Heide (1987), Anderson and Weitz (1992) and a pilot study preceding this research show positive and relatively high correlations between the asset specificity on respectively the supplier and buyer side. This implies that we at the outset expected to find most of the cases to be assigned to cell II and III (symmetrical allocation of specific assets), and relatively few cases in cell I and IV (asymmetrical allocation of specific assets) in figure 7.1 above.

The main purpose with our experimental design was to administer the sample of informants to get the cases more equally distributed between the various cells. Stated differently, our intention was to have the empirical allocation of specific assets assigned to the different treatment groups (X1, X2, X3 and X4) in the

following way:

CORRESPONDENCE:	TREATMENTS:
(X1, Cell III)	: X1: Exchange of standardized products
(X2, Cell I)	: X2: Exchange of customized products
(X3, Cell IV)	: X3: Mainly buyer adaption to focal supplier
(X4, Cell II)	: X4: Mutual adaption of production resources

The sample was administered such that each treatment group had equal size (a share of 25%), and the final sample was well fitted to this distribution with relatively small deviations with respect to number of cases across the four treatment groups (X1, X2, X3 and X4). Table 7.8 below shows the correspondence between the different treatment groups (X1, X2, X3, X4) and the empirical allocation of specific assets.

Table 7.8:

Comparison between treatment factors and empirical classification of specific assets

Number of cases corresponding to different groups of treatments: (1)	Number of cases assigned to different modes of allocation of specific assets (2)	Difference: Misfit between intended and empirical allocation of specific assets (2) - (1)
X1 50 (27.9%)	Cell III: 63 (35.2%)	+13 (+ 7.3%)
X2 47 (26.3%)	Cell I: 27 (15.1%)	-20 (- 11.2%)
X3 40 (22.3%)	Cell IV: 25 (14.0%)	-15 (- 8.3%)
X4 42 (23.5%)	Cell II: 64 (35.7%)	+22 (+12.2%)
(N=179)[17]	(N=179)	

The assignment of cases to the various allocation modes based on the empirical classification of specific assets outlined above (confer figure 7.1), deviates from the

[17] 4 cases had missing values on one or several items making the composite measure of allocation of specific assets, and were deleted from this analysis.The comparison in the table is therefore based on 179 cases.

intended distribution of our cases. Our design has not succeeded in balancing the allocation of cases between the four cells in the desired way. The symmetry cells (cell II and III) are still much over- represented. Further empirical analysis of the differences between the various treatment groups with respect to :

(1) Asymmetry (measured as the difference between supplier's and buyer's specific assets)
(2) Total level of specific assets (measured as the sum of buyer's and supplier's specific assets)

showed the expected difference between the cells. The mean differences however, were not significant.These findings reflect the lack of correspondence between our treatment factors and the empirical classification of cases. The lack of mutual exclusive instructions presented to the informants in the introduction of the questionnaire might be an explanation (confer chapter 5). *The mutual adaption instruction* for selecting focal supplier, for instance, is compatible with some degree of asymmetry (focal supplier with customized products or mainly buyer adaption to focal supplier). The empirical classification of cases to various modes of *allocation of specific assets* is based on contextual criteria for assignment (median values).The informants have to base their evaluation of own firms and focal suppliers asset specificity on their own perception and frame of reference. These two principles for classification of supplier-buyer relationships might be incompatible, and explain the moderate correspondence between the intended and empirical classification of channel dyads with respect to the composition of asset specificity.

3. Allocation of specific assets - properties of the empirical classification

For the purpose of conducting appropriate tests of hypothesis H_2 concerning differences in vertical form between cells I and IV in figure 7.1, it is important that the total level of specific assets in cell I does not differ significantly from cell

IV. The reason for this concerns the way hypothesis H_2 (confer chapter 4) challenges the statement that the level of specific assets *connected to the transaction* determines the governance structures in supplier - buyer relationships. With approximately equal levels of total specific assets assigned to cells I and IV, we get more valid tests of whether the *identity of the actors* keeping most of the specific assets predicts possible differences across cell I and IV with respect to vertical form.

For the purpose of testing hypothesis H_1 and H_3 it is important to obtain an empirical allocation of specific assets where the total level of specific assets is:

a)significantly greater in cell IV than in cell III
b)significantly greater in cell II than in cell I

Table 7.9 below shows the results of a ONEWAY-analysis comparing the total level of specific assets across different allocation modes.

Table 7.9 :
Total level of specific assets for various allocation modes:

Allocation of specific assets	Level of specific assets (mean):	Difference in means
Cell III: Mutual low	4.25 (1.06)* (N=63)	
		1.81 (p<0.01) (Cell III and IV)
Cell IV: Buyer held	6.06 (1.10)* (N=25)	
		0.06 (p=0.82) (Cell I and IV)
Cell I: Supplier held	6.12 (0.62)* (N=27)	
		2.47 (p<0.01) (Cell I and II)
Cell II: Mutual high	8.59 (1.36)* (N=64)	

* Measure of standard deviation

The ONEWAY-analysis above shows that there is no significant difference between

the two asymmetry cells (I and IV) with respect to the level of specific assets tailored to the relationship (Mean difference 0.06, p=0.82).

We find the expected difference with respect to the sum of specific assets between cases with mutual high asset specificity (cell II) and supplier dominated specific investments (I). Mean difference is 2.47 and $p < 0.01$.

The mean difference in total level of specific assets between cases with mutual low specific investment (Cell III) and unilateral buyer dominated investments (Cell IV) is as intended, with significant higher level of specific assets (Mean difference=1.81 and $p < 0.01$) for cases with buyer held specific assets than for cases with mutual low asset specificity.

The way we have classified the allocation of specific assets seems to be appropriate for accomplishing adequate empirical tests of our hypotheses.

4. Allocation of specific assets - assessments of predictive validity

The variable representing allocation of specific assets is nominal scaled with values corresponding to the classification represented as cells I, II, III and IV in figure 7.1 above. For the purpose of assessing predictive validity of this variable, the predictions deducted from the theoretical reasoning preceding the development of the research hypotheses in chapter 4 will be tested empirically.

In chapter 4, we argued that in situations with allocation of specific assets deployed by the buyer, the small-number condition and exposure to opportunism was less evident than was the case when supplier unilaterally carried out specific assets. The underlying assumption is that in the former situation, the market structure is more similar to conventional markets with:

-less customized products

-lower proportion of purchases from a specific supplier; defined as yearly (last year) purchasing volume (NOK) from the supplier related to his yearly gross value of production (NOK).

-less buyer influence concerning terms of trade than under conditions with allocation of specific assets deployed by the supplier.

Table 7.10:

Assessment of predictive validity - allocation of specific assets:

Allocation of specific assets	Product customization	Proportion of purchases	Buyer's influence in price negotiations
Cell III : (N=63)			
Mutual low asset specificity	4.49	5.89%	4.92
Cell IV:(N=25)			
Buyer held specific assets	4.41	6.30%	4.36
Mean differences: III-IV	-0.08	0.41	-0.56
	(p=0.89)	(p=0.93)	(p=0.12)
Cell I:(N=27)			
Supplier held specific assets	5.22	17.60%	5.33
Mean difference: I-IV	0.81	11.30	0.97
	(p=0.16)	(p<0.01)	(p=0.02)
Cell II:(N=64)			
Mutual high asset specificity	5.82	15.0%	4.81
Mean difference: II-I	0.60	-2.60	-0.52
	(p=0.20)	(p=0.50)	(p=0.14)

Table 7.10 above shows the relationship between the allocation of specific assets

and the various market structure dimensions.The analysis gives support to the assumptions underlying the development of hypothesis H_1 and H_2. The proportion of purchases (mean difference 11.30, $p<0.01$), and buyer's influence concerning price negotiations (mean difference 0.97, $p<0.02$) are significantly less under conditions with specific assets held by the buyer (cell IV) than in the situation where the specific assets are dominated by the supplier (cell I). Product customization shows as expected highest level in the latter situation, even if the mean difference (0.80) is not significant ($p=0.16$). This is in accordance with the assumptions underlying the development of H_2. The analysis shows further that there is no significant difference with respect to any of the market structure dimensions between the situations with respectively buyer dominated specific assets (cell IV) and mutual low asset specificity; (cell III). This indicates that under conditions with specific assets held by the buyer, the market structure dimensions show some similarities to conventional markets, and gives support to the assumptions underlying H_1 . We found no significant differences for any of the market structure dimensions between cases with mutual high asset specificity (cell II) and cases with unilateral supplier held specific assets (cell 1). Our assumptions indicating stronger bilateral dependency and more evident small-number conditions in situations with mutual high asset specificity than is the case with unilateral supplier held specific assets, are not supported.

7.2.4 Transaction costs - reliability assessment

Transaction costs was measured by 6 items. The various items represent the three groups of transaction costs developed by Williamson (1985); control and monitoring costs, bargaining costs and maladaption costs. We consider the dimensions representing these cost components to be reflected by a common factor which represents this concept. The lack of adequate control procedures , for instance, is assumed to be positively related to transaction costs because of insufficient guidelines for evaluation of terms of trade. At the next stage, conflicts and

deterred cooperation climate might prevent efficient utilization of productive resources. The six items representing transaction costs showed satisfactory internal consistency with a Cronbach's alpha of 0.77. A principal component factor solution with varimax rotation assigned all items to one common factor. This analysis is presented in table 7.11 below.

Table 7.11:
Extraction of construct factor representing transaction cost.

ITEMS:	Factor loadings:	Communality:
TRANSCOST1	0.79	0.62
TRANSCOST2	0.74	0.54
TRANSCOST3	0.80	0.65
TRANSCOST4	0.61	0.37
TRANSCOST5	0.56	0.32
TRANSCOST6	0.56	0.32

VARIANCE EXPLAINED: 46.9%
CRONBACH'S ALFA FOR THE SCALE: 0.77

The scale representing transaction costs will be transformed into the following construct:

TRANSCOST=(1/6)Σ(transcost1, transcost2, transcost3, transcost4, transcost5, transcost6)

The relationship between bilateral governance and transaction costs will be analyses in chapter 9 to examine possible performance implications of the observed governance pattern. In the next chapter, empirical tests of the research hypotheses will be carried out.

Chapter 8:

TESTS OF HYPOTHESES

8.1 Introduction and selection of statistical method

In this section the research hypotheses outlined in chapter 4 will be tested. Theoretical considerations (confer chapter 3) and a correlation analysis of the three constructs representing the dependent variables; vertical interaction (VERTINT), formalization (FORM) and centralization by the buyer (CENTRAL) showed a significant and positive relationship between these variables (confer table 7.6). The main independent variable; allocation of specific assets is a nominal scaled predictor variable. Multivariate analysis of variance (MANOVA) is an appropriate statistical technique for handling analysis of this kind (Hair et al., 1984). Analysis of interrelated dependent variables as a set of unidimensional variables e.g. by techniques as ONEWAY or ANOVA might produce both Type I and Type II errors; Wind and Denny (1974). MANOVA and its extension to MANCOVA with metric independent variables (covariates) is considered to be more appropriate for treating analysis with interrelated dependent variables, and the hypothesis testing below is based on this statistical technique. In addition to intercorrelation between the dependent variables, the following assumptions are important for appropriate use of MANOVA :

1. Normal distribution of the dependent variables:

The dependent variables must have a multivariate normal distribution. A necessary condition to meet this assumption is that each of the dependent variables must be normally distributed. In appendix 3, mean values, standard deviation, skewness, and kurtosis for the dependent variables are reported. The measures indicate that the dependent variables are well fitted to the normal distribution. Normal plots showed no violence against the normality assumptions, and met the basic and necessary condition for multivariate normal distribution of the dependent variables.

2. Homogeneity of variance:

An other assumption underlying a proper MANOVA DESIGN is that the variance-covariance structures must not be significantly different in the various categories (groups) of the predictor variable. Cochran's C and Box M tests will be accomplished for each of the hypothesis tests to examine whether there is homogeneity of variance between the different groups. The results from these tests are reported in section 8.4 and Appendix 4.

In accordance with our research model, uncertainty and buyer's production technology are introduced as covariates in our MANOVA-models (confer chapter 4).

8.2: Main effects of allocation of specific assets on vertical form

3 sets of hypotheses were formulated in chapter 4 stating the relationship between allocation of specific assets and various dimensions of vertical form.

8.2.1 Tests of hypothesis 1

Table 8.1 below compares mean values for vertical interaction, formalization and centralization by the buyer between cells III and IV in our research model (figure 4.1) to test the following hypothesis:

Hypothesis 1; H_1:

There is no significant difference between supplier - buyer relations with mutual low levels of specific assets and relationships with specific assets held by the buyer with respect to:

1 a: vertical interaction

1 b: formalization

1 c: centralization by the buyer

Table 8.1 :

Empirical test of hypothesis 1:

Vertical form (vertical interaction, formalization and centralization by the buyer):

Wilks: 0.982, F=0.467, p=0.70

Univariate F tests with (1,79) degrees of freedom:

Allocation of specific assets	Vertical interaction	Formalization	Centralization by the buyer
Mutual low level Cell III (N=59)	Mean: 4.87 SD: 1.24	Mean: 2.87 SD: 1.33	Mean: 2.62 SD: 1.22
Buyer dominance Cell IV (N=24)	Mean: 4.70 SD: 1.23	Mean: 2.99 SD: 1.58	Mean: 2.37 SD: 1.14
Difference in mean (d_1 , d_2 ,d_3)	d_1 = -0.17 F= 0.40 (p=0.52)	d_2 = 0.12 F= 0.001 (p=0.97)	d_3 = -0.25 F= 1.00 (p=0.32)

N=83

SD symbols standard deviation

Hypothesis 1 corresponds to the null hypothesis that there is no significant difference between cases in cell III and cell IV (figure 4.1) with respect to vertical form.The multivariate measure reflecting vertical form does not show any significant difference between the two groups (Wilks=0.98, p=0.70). The univariate F tests in table 8.1 show that the mean differences for the various dimensions of vertical form between cell III and IV are low, and the alternative hypothesis stating that the level of vertical interaction, formalization and

centralization is different across these groups gets no support with p values between 0.32 and 0.97. Our empirical findings suggest that we cannot reject the null hypothesis stating no difference with respect to vertical form between the two modes of allocation of specific assets, and give empirical support for hypotheses H1a, H1b and H1c. This indicates that bilateral dependency and need for coordinated adaption in situations with unilateral buyer held specific assets show some similarities with conventional market conditions.

8.2.2 Test of hypothesis 2

Table 8.2 below compares mean values for various dimensions of vertical form between cell I and IV in our research model to test the following hypotheses:

Hypothesis 2; H_2:

In buyer - supplier relations where the supplier dominates the deployment of specific assets:

2 a : the level of vertical interaction is greater

2 b : the level of formalization is greater

2 c : the level of centralization by the buyer is greater

than in relationships where the buyer carries out the main part of the specific assets.

The difference in the multivariate measure of vertical form between cases with respectively buyer held and supplier held specific assets is significant (Wilks= 0.80, p=0.01). The univariate F tests in table 8.2 show that the mean differences between cells I and IV for all the dependent variables are significant with $p \leq 0.03$. The null hypothesis indicating no difference between the two groups with respect to the various dimensions of vertical form is therefore rejected, and gives support to hypotheses H1a, H1b and H1c.When the supplier shows higher asset specificity than the buyer, all dimensions of vertical form is greater than is the case when the buyer carries out the main part of specific assets. The results indicate that bilateral dependency and the need for coordinated adaption and safeguarding against prospective opportunism are greater in the former situation, and necessitate more extensive bilateral governance.

Table 8.2:
Empirical test of hypothesis 2:

Vertical form (vertical interaction, formalization and centralization by the buyer):
Wilks: 0.80, F=3.72, p=0.01
Univariate F tests with (1,47) degrees of freedom:

Allocation of specific assets	Vertical interaction	Formalization	Centralization by the buyer
Buyer dominance Cell IV (N=24)	Mean: 4.70 SD: 1.23	Mean: 2.99 SD: 1.58	Mean: 2.37 SD: 1.14
Supplier dominance Cell I (N=27)	Mean: 5.60 SD: 0.88	Mean: 4.04 SD: 1.42	Mean: 3.49 SD: 1.44
Difference in mean (d_1 , d_2 , d_3)	d_1 = 0.90 F= 7.37 (p=0.01)	d_2 = 1.05 F= 4.72 (p=0.03)	d_3 = 1.12 F= 7.27 (p=0.01)

N=51
SD symbols standard deviation

8.2.3 Test of hypothesis 3

Table 8.3 below compares mean values for the dependent variables between cell I and cell II in our research model (figure 4.1) to test the following hypothesis:

Hypothesis 3; H_3:
In supplier - buyer relations with mutual high levels of specific assets:
3 a: the level of vertical interaction is greater
3 b: the level of formalization is greater
3 c: the level of centralization by the buyer is less
than in supplier-buyer relations with specific assets carried out by the supplier.

Table 8.3:
Empirical test of hypothesis 3:

Vertical form (vertical interaction, formalization and centralization by the buyer):
Wilks: 0.98, F=0.47, p=0.70
Univariate F tests with (1,84) degrees of freedom:

Allocation of specific assets	Vertical interaction	Formalization	Centralization by the buyer
Supplier dominance Cell I (N=27)	Mean: 5.60 SD: 0.88	Mean: 4.04 SD: 1.42	Mean: 3.49 SD: 1.44
Mutual high level Cell II (N=61)	Mean: 5.61 SD: 0.74	Mean: 4.32 SD: 1.54	Mean: 3.83 SD: 1.35
Difference in mean (d_1 , d_2 , d_3)	d_1 = 0.01 F=0.002 (p=0.96)	d_2 = 0.28 F= 0.69 (p=0.40)	d_3 = 0.34 F= 1.03 (p=0.31)

N=88
SD symbols standard deviation

The multivariate measure of vertical form is not significantly different between cases in cells I and II (Wilks=0.98, p=0.70). The univariate F tests show that the mean differences in vertical interaction, formalization and centralization across the two modes of allocation of specific assets are low, and no F values are significant (p varies between 0.31 and 0.96). The null hypothesis stating no differences between the two groups with respect to vertical interaction, formalization and centralization cannot be rejected. Our findings indicate that bilateral dependency and need for vertical coordination and contractual arrangement do not change as we move from a situation with unilateral supplier held specific assets to a situation where both parties mutually deploy assets at risk. This indicates that asset specificity on the supplier side is the most

fundamental and decisive factor for creating small-number conditions and need for vertical coordination. We find no significant higher level of vertical form when the total level of specific assets increases through the combined presence of high asset specificity on both sides of the channel dyad.

8.3 Interaction effects of allocation of specific assets and uncertainty on bilateral governance

2 different hypotheses (H_4 and H_5) state the relationship between uncertainty and bilateral governance under condition of bilateral dependency (unilateral supplier held specific assets and mutual high asset specificity). The analysis below is based on a partial correlation analysis[18] to assess this relationship.

8.3.1 Test of hypothesis 4

The partial correlation analysis presented in table 8.4 below assesses the relationship between vertical interaction, formalization and uncertainty under the condition of supplier dominated allocation of specific assets (cell I in the research model) as stated in hypothesis 4:

Hypothesis 4; H_4:
In supplier-buyer relations where the supplier dominates the deployment of specific assets (cell I), there is a negatively shaped relationship between uncertainty and:
4 a: vertical interaction
4 b: formalization

[18]In the research model in chapter 4, buyer's production technology was introduced to control for possible effects of this variable on bilateral governance. The tests of hypothesis 4 and 5 will be based on partial correlation analysis where we examine the relationship between uncertainty and bilateral governance controlling for possible effects of buyer's production technology.

Table 8.4:
Relationships between vertical interaction, formalization and uncertainty under condition of supplier-dominated allocation of specific assets.

Variables:	Correlation coefficients:
Vertical interaction	r= -0.03 (p=0.44)
Formalization	r= -0.36 (p=0.03)

N=27

The relationship between formalization and uncertainty is significant and negatively shaped as predicted (r=-0.36, p=0.03)[19]. The null hypothesis stating positive or no relationship between uncertainty and formalization under the condition of unilateral supplier held specific assets is therefore rejected, and we get support for hypothesis 4 b. We find no significant correlation between vertical interaction and uncertainty under this condition. The null hypothesis stating no correlation between these variables cannot be rejected, and we get no support for hypothesis 4 a. Vertical interaction reflects more informal cooperation and joint action between the transacting parties than formalization, and our findings indicate that its efficacy is less influenced by increased uncertainty than contractual arrangements. The correlation analysis above indicates that when uncertainty increases, contractual arrangements become less able to cope with coordinated adjustments between the transacting parties. Secondly, our findings suggest that formalization gives a better reflection of the TCE-predicted properties of the hybrid form than vertical interaction.

[19]The level of significance refers to a one-tailed test examining the probability p ($r \geq 0$)

8.3.2 Test of hypothesis 5

The partial correlation analysis presented in table 8.5 below assesses the relationship between vertical interaction, formalization and uncertainty under the condition of mutual high asset specificity in supplier - buyer relationships (cell II in the research model.) as stated in hypothesis 5:

Hypothesis 5:
In supplier-buyer relations where supplier and buyer mutually deploy specific assets (cell II), there is a negatively shaped relationship between uncertainty and:
4 a: vertical interaction
4 b: formalization

Table 8.5:
Relationships between vertical interaction, formalization and uncertainty under the condition of mutual deployment of specific assets.

Variables:	Correlation coefficients:
Vertical interaction	r= -0.05 (p=0.35)
Formalization	r= 0.13 (p=0.16)

N=61

The partial correlation analysis above shows no significant correlation between vertical interaction, formalization and uncertainty. The null hypothesis indicating no relationships between bilateral governance and uncertainty under condition of mutual high asset specificity cannot be rejected, and we get no support for hypothesis 5 a and 5b. Our findings indicate that when both supplier and buyer show high asset specificity, uncertainty is of minor concern for bilateral governance. These findings indicate that the governance properties of formalization in relationships with mutual high asset specificity are more

resistant against unfolding events compared to the condition with unilateral supplier held specific assets. Our findings suggest that mutual deployment of assets at risk extends the level of credible commitments and forbearance; Williamson, (1991[a]), and Anderson & Weitz (1992), and makes bilateral governance more appropriate for coping with renegotiations and interfirm adjustments under conditions of high uncertainty.

8.4 Supplementary analysis

Homogeneity of variance for the dependent variables across different values of the group variable; allocation of specific assets was assessed for the tests of hypothesis 1-3. Appendix 4 summarizes the results and presents measures for two different homogeneity tests; Cochran's C and Bartlett Box F. Winer et al. (1991) assert that the two tests may lead to different conclusions under certain circumstances. Both tests are therefore utilized to get more reliable assessments of the statistical conclusions arrived at. The analysis showed that the null hypothesis stating that there is no difference in variance of the dependent variables across the various modes of allocation of specific assets was overall supported, and met the assumption of homogeneity of variance which is warranted for appropriate use of MANOVA-models.

As argued in chapter 4 and in the introduction to this chapter, uncertainty and buyer's production technology were brought into our analysis for two purposes:

(1) To test possible interaction effects between allocation of specific assets and uncertainty on vertical interaction and formalization.
(2) To control for possible impacts of buyer's production technology on the specified relationships in the research model.

An explorative examination of whether uncertainty and buyer's production

technology had any main effect on the variables representing vertical form was conducted. A MANOVA model was designed which accomplished a regression analysis for the entire sample with uncertainty and buyer's production technology as covariates, and the various dimensions of vertical form as dependent variables. The results are shown in table 8.6 below. Neither buyer's production technology nor uncertainty showed to be significantly correlated ($p<0.05$) with any of the variables representing vertical form.

Table 8.6:
MANOVA-analysis - relationships between uncertainty, production technology and vertical form:

Variables:	Vertical interaction	Formalization	Centralization by the buyer
Buyers production technology	β=0.08 t=1.13 p=0.25	β=0.08 t=1.10 p=0.27	β=0.03 t=0.41 p=0.67
Uncertainty	β=0.008 t=0.10 p=0.91	β=0.09 t=1.14 p=0.25	β=0.14 t=1.84 p=0.07

N=171

Further interpretation and implications of the empirical results of the hypothesis tests above are presented in chapter 10. In the next chapter we will examine some performance implications of the observed governance pattern.

Chapter 9:

GOVERNANCE PERFORMANCE

9.1 Instrumentality of various dimensions of bilateral governance

Usually, empirical tests of the relationship between asset specificity and governance forms are based on a reduced form analysis; Masten (1984) and Masten et al. (1991). The fundamental assumption underlying this approach is that the predicted governance forms based on asset specificity as the important predictor, really serve efficiency purposes and economize on transaction costs. The assumed instrumentality might, however be restricted due to conditions in the institutional environment and/or because of individual, behavioral predisposition e.g. atmosphere and social embeddedness (confer chapter 2 and 3).

The assumption that the assignments of governance forms is based on economizing on transaction costs will be examined further in this part. Our first approach to this problem is to assign an instrumentality vector (weight of importance) to each of the dimensions of vertical coordination (confer chapter 3.3). We assume at the outset that if the weight of importance of a certain governance dimension is high,

it reflects bilateral dependency and need for coordinated adaption. Figure 9.1 below illustrates the relationship between a certain governance dimension and its instrumentality.

Figure 9.1:
Relationship between instrumentality (weights of importance) and level of bilateral governance

Weights of importance

Level of bilateral governance	LOW	HIGH
HIGH	I: Governance inefficiency	II: Governance efficiency
LOW	III: Governance efficiency	IV: Governance inefficiency

In cells I and IV, there is a mismatch between the level of bilateral governance and the perceived importance of the governance dimension. In cell I, for instance, the level of bilateral governance is redundant compared to the low-moderate need for coordinated adaption which low instrumentality is assumed to reflect. The low level of bilateral governance in cell IV is expected to be insufficient to cope with the need for coordinated adaption under this condition. Both situations create organizational inefficiency, and the costs of governance will increase (Williamson, 1991[a], 1991[b]). The pattern of governance in cell II and III in figure 9.1 represents efficient adaptions as there exists a correspondence between the level and instrumentality (weight of importance) of bilateral governance.The correspondence between bilateral governance and its instrumentality will be expressed as the correlation between the level of various governance dimensions and their adjacent

weights of importance (adaptions along the diagonal from cell III to cell II)[20]. Based on this approach, a correlation analysis was conducted to examine governance efficiency. Table 9.1 below presents the results from this analysis.

Table 9.1:
Correlation between various dimensions of vertical interaction and formalization and their instrumentality (weights of importance):

DIMENSIONS OF VERTICAL INTERACTION:		DIMENSIONS OF FORMALIZATION:	
Execution of orders:	0.37**	Selection of materials:	0.37**
Complaints and improvements:	0.20**	Documentation of cost:	0.30**
Quality assurance:	0.42**	Complaints and improvements:	0.23**
Product control:	0.46**	Quality assurance:	0.35**
		Product control:	0.33**
		Selection of sub-suppliers:	0.46**

** indicates level of significance: $p<0.01$

All pairs of correlations are significant with $p< 0.01$, and indicate governance efficiency among the dimensions representing vertical interaction and formalization (bilateral governance).

[20]This approach shows some similarity to an *ideal point model* ; Coombs (1950), and Green et al. (1969) where performance (satisfaction, utility) is obtained by minimizing the distance between the ideal preference and the perceived perofmance (score) of the attributes composing a certain product.For our purpose, the perceived weights of importance for various governance dimensions (attributes) are assumed to reflect ideal preferences (efficiency properties). Corresponding values for various dimensions of bilateral governance and their companion weights of importance will concequently contribute to enhance performance (efficiency).

9.2 Relationship between bilateral governance and transaction costs

In the first part of this section, we will examine whether there is correspondence between the observed pattern of governance and transaction costs under conditions of asymmetrical allocation of specific assets. In the next part, we will examine the TCE-predicted negatively shaped relationship between uncertainty and governance efficiency under conditions of bilateral dependency.

The hypothesis tests in the preceding chapter showed that the level of vertical interaction and formalization were significantly greater when the supplier carried out the specific assets than was the case when specific assets were unilaterally deployed by the buyer (confer table 8.2).Our empirical findings in chapter 7.2.3 indicated that when the buyer held the specific assets, conditions of trade showed some similarities with conventional market transactions, and that unilateral supplier held specific assets corresponded well to small-number conditions with subsequent high bilateral dependency. We therefore expect the efficiency of vertical interaction and formalization to be more evident when supplier unilaterally holds the specific assets (high bilateral dependency) than is the case when the buyer carries out the specific investments. Consequently, we expect a more evident and negatively shaped relationship between vertical interaction, formalization and transaction costs when the supplier holds the specific assets than is the case with unilateral buyer held specific assets.[21] The analysis of the performance implications outlined above is presented in table 9.2 below. The results support our performance predictions, and show significant negatively

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[21]Let TC symbol transaction costs and VI and F denote respectively vertical interaction and formalization. For the purpose of exploring the transaction cost efficiency of VI and F, we apply r (VI, TC) as a proxy for $\delta TC/\delta VI$ and r (F, TC) as a proxy for $\delta TC/\delta F$.
This approach is based on the assumption of linear relationship between transaction costs (TC) and bilateral governance, and deviates from the TCE-prediction which assume this relationship to deviate from linearity (Williamson, 1991[a], 1991[b]). For the purpose of an explorative examination of governance efficiency, we find our approach to be adequate.

shaped relationships between both vertical interaction, formalization and transaction costs when the supplier carries out the specific assets (r= -0.55 and -0.49). When the buyer holds the specific assets, formalization and vertical interaction show weaker efficiency properties and correlate modestly and insignificantly with transaction costs (r= -0.32 and -0.12).The analysis gives an overall support for performance properties corresponding to the observed pattern of bilateral governance (confer table 8.2; test of hypothesis 2).Our findings suggest that the transaction cost efficiency of bilateral governance is conditional, and indicate that the comparative advantage of the hybrid form (bilateral governance) becomes more evident as we move from a situation showing similarity with conventional market conditions to small-number conditions.

Table 9.2:
Relationships between vertical interaction, formalization and transaction costs - correlation analysis

Allocation of specific assets	Vertical interaction	Formalization
Held by the buyer (N=24)	r = -0.32	r = -0.12
Held by the supplier (N=27)	r= -0.55**	r = -0.49*

N=51

* indicate level of significance: p<0.05

** indicates level of significance: p<0.01

In accordance with TCE-predictions (Williamson, 1991[a]), the analysis in chapter 8 showed a significant negatively shaped relationship between uncertainty and formalization when supplier unilaterally carried out specific assets in the channel dyads (confer table 8.4). We found no significant relationship between vertical interaction and uncertainty under this condition. In this section we will examine

whether the observed pattern of governance shows the expected performance properties. Following Williamson (1981, 1985), the assignment of transactions to governance structures will be based on their ability to economize on transaction costs. In accordance with the TCE-prediction (Williamson, 1991[a]), we expect to find governance efficiency to be most evident under the condition of combined presence of bilateral dependency and low uncertainty[22]. When small-number conditions exist, we consequently expect a more evident and negatively shaped relationship between bilateral governance and transaction costs under the condition of low uncertainty than is the case when high uncertainty occurs.

Table 9.3:
Relationships between vertical interaction, formalization and transaction costs for different levels of uncertainty - cases with supplier held specific assets

Variables	Level of uncertainty		Difference between correlation coefficients[23]:
	Low	High	
Vertical interaction	r= -0.83** (N=15)	r= 0.06 (N=12)	Z=2.71 p<0.01 (one tailed)
Formalization	r= -0.64** (N=15)	r= 0.03 (N=12)	Z=1.79 p=0.04 (one tailed)

N=27

** indicates level of significance: p<0.01

[22]Williamson (1991[a]) does not suggest at what threshold of disturbances or uncertainty the hybrid form starts loosing its governance efficiency. "The range of frequency from "low" (a positive lower bound in a nearly unchanging environment) to "very high"...." (Williamson, 1991[a] : 291). In our analysis, the uncertainty variable is dichotomized into low and high values, with the median as split value.

[23]Investigation of the significance of the difference between correlation coefficients for pairs of variables from two different groups (samples) is based on Kanji (1993). Computation of the Z scores is based on the level of and difference between the correlation coefficients appearing in each group, and the sample size corresponding to each correlation coefficient.

Table 9.3 above shows the correlation between vertical interaction, formalization and transaction costs for different levels of uncertainty when the supplier unilaterally carries out specific assets.Under condition of low uncertainty, we found a strong and negatively shaped relationship between vertical interaction, formalization and transaction costs (r= -0.83/-0.64). The transaction cost efficiency of these governance dimensions seems to be non-viable in the high uncertainty interval (r=0.06/0.03) These findings correspond completely to the analysis of the comparative advantages of the hybrid form advocated by Williamson (1991[a]).

When we confront these findings with the observed governance pattern for cases with unilaterally supplier held specific assets (confer table 8.4), we find:

(1) A good fit between the way formalization is conducted and the observed governance efficiency of this dimension.[24] With increased levels of uncertainty, we observed the level of formalization to be significantly reduced. The analysis of the performance property of formalization above shows that the efficiency of this governance dimension coheres to the observed governance pattern in the sense that its governance efficiency is significantly reduced as uncertainty increases (Z=1.79, p=0.04).

(2) A misfit between the way vertical interaction is conducted, and the observed performance of this governance dimension.The efficiency of vertical interaction is significantly weakened as uncertainty increases (Z=2.71, p<0.01). We found, however, no significant reduction in the level of vertical interaction as the level of uncertainty increased (confer chapter 8.4). This indicates that there is an abundance of vertical interaction in situations with combined presence of high uncertainty and small-number conditions.

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[24]Our research design, however, does not capture the intention and processes underlying the way the transacting parties arrange their relationship.The observed fit between the level of formalization and governance efficiency is therefore no comprehensive evidence for intentional adaptions based on conscious evaluations of governance efficiency.

Table 9.4 below examines the relationship between bilateral governance and transaction costs for different levels of uncertainty under the condition of mutual high asset specificity.

Table 9.4:
Relationships between vertical interaction, formalization and transaction costs for different levels of uncertainty - cases with mutual high asset specificity

Variables	Level of uncertainty		Difference between correlation coefficients
	Low	High	
Vertical interaction	r= -0.40* (N=32)	r= -0.58** (N=29)	Z=0.88 p=0.19 (one tailed)
Formalization	r= -0.17 (N=32)	r= -0.12 (N=29)	Z=0.19 p=0.43 (one tailed)

N=61

* indicates level of significance: $p<0.05$

** indicates level of significance: $p<0.01$

The observed governance pattern under conditions of symmetrical deployment of specific assets showed that both the level of vertical interaction and formalization was independent of the level of uncertainty (confer table 8.5.) The analysis of the performance implications in table 9.4 above shows the same pattern. We found no significant differences with respect to governance efficiency neither for vertical interaction (Z=0.88, p=0.19) nor for formalization (Z=0.19, p=0.43) when we compare situations with respectively low and high uncertainty. We expect mutual high asset specificity to correspond to a small-number condition where mainly strictly coordinated adaption is warranted. Our findings, however, do not support the TCE-predicted efficiency decrease of the hybrid form as uncertainty increases under this condition.The governance efficiency of both formalized contractual arrangements and vertical interaction seems to be independent of the level of

disturbances and unfolding events. An interesting finding, however, is the observed differences with respect to governance efficiency across the two dimensions of bilateral governance. Independent of the level of uncertainty, vertical interaction (r= -0.40*/-0.58**) shows much higher governance performance than formalization (r= -0.17/-0.12). We argued in the introduction to chapter 4 that under conditions of mutual high asset specificity, we would expect resources tailored to the relationship to be more co-specialized and complementary than is the case with unilateral deployment of specific assets. This might indicate a stronger *mutual dependency*; March & Simon (1958), and Thompson (1967) between the transacting parties. *Mutual adaption* through more frequent and interactive exchange of resources and information between the parties is assumed to be most appropriate when mutual dependency occurs; March & Simon (1958). Several dimensions of joint action and cooperation represent vertical interaction in this study. The observed efficiency advantage of this governance dimension compared to formalization under condition of mutual high asset specificity, indicates that mutual high asset specificity reflects a *mutual dependency condition*, and that the governance properties of vertical interaction are compatible with the coordination attributes of mutual adaption.

Even if the governance efficiency of formalization showed to be modest under this condition, *the level of formalization* showed to maintain high under the condition of mutual high asset specificity (confer table 8.3). This might indicate a redundant and inefficient use of formalized contractual arrangement under conditions with balanced allocation of specific assets. Extensive contractual arrangements might however be necessary under this condition to standardize some of the basic exchange activities taking place between the transacting parties, and contribute to increase the efficiency of more informal and interactive governance arrangement; Thompson (1967) and Van de Ven et al. (1976).

Further interpretation and implications of the analysis in chapter 8 and 9 follow in the next chapter.

Chapter 10:

INTERPRETATION, IMPLICATIONS AND LIMITATIONS

10.1 Introduction

In this chapter we provide an overview of our empirical findings and discuss theoretical, managerial and methodological implications of this study. Finally, some directions for future research will be suggested.

Based on the framework of TCE (Williamson, 1975, 1985), empirical tests of the hypotheses were based on a reduced form analysis; Williamson (1991[a]), Masten (1984), and Masten et al. (1991). Our empirical findings gave support for hypothesis 1 and 2, and showed that:

(1) There are no significant differencec between buyer-seller-dyads with respectively mutual low asset specificity and unilateral buyer held specific assets with respect to vertical interaction, formalization and centralization.
(2) The level of all dimensions of vertical form is significantly greater for cases with unilateral supplier held specific assets than for cases with unilateral buyer held specific assets.

Hypothesis 3 got no empirical support, and our findings showed no difference with respect to vertical form between channel dyads with respectively mutual high asset specificity and unilateral supplier held specific assets.

Hypothesis 4 and 5 stated the TCE-predicted negative relationship between uncertainty and bilateral governance under conditions of bilateral dependency. Under condition of unilateral supplier held specific assets, formalization showed the expected negatively shaped relationship with uncertainty. We found no relationship between vertical interaction and uncertainty under this condition. Under condition of mutual high asset specificity, neither formalization nor vertical interaction showed to be significantly correlated with uncertainty.

10.2 Interpretation and theoretical implications

Validity assessment of the construct representing *allocation of specific assets* showed that the market structure and conditions of trade when specific assets were unilaterally held by the buyer were quite similar to what we found for conventional market transactions with mutual low asset specificity. At the outset, these findings seem to contradict the TCE-framework. Specific assets deployed by the buyer are obviously *connected to the transaction,* and TCE-predictions should consequently be that more extensive bilateral governance is to be expected under this condition than for conventional market transactions. Unilateral deployment of specific assets on the buyer side, however, does not seem to expose assets to opportunism to the same extent as under condition of supplier held specific asset. In the former situation, the transactions between buyer and seller were found to consist of less customized (more homogeneous) products divided among several buyers than was the case when the supplier showed highest asset specificity. Based on consideration of reputation; Rubin (1990), Williamson (1975) and Milgrom & Roberts (1992), several buyers of a given product from a specific supplier will give some collective insurance against moral hazard. A fundamental

transformation (Williamson, 1975, 1985) into small-number bargaining conditions when buyer holds specific assets should therefore be less relevant. Consequently, safeguarding against opportunism and coordinated interfirm adaption through bilateral governance should be of modest concern. The observed similarity with respect to vertical form when comparing channel dyads with respectively mutual low deployment of specific assets and dyads with unilateral buyer held specific assets gives further support for this reasoning.

In marketing relationships with specific assets unilaterally held by the supplier, the small-number bargaining conditions showed to be significantly different from both conventional markets (mutual low level of specific assets) and cases with specific assets unilaterally carried out by the buyer. The focal buyer was found to absorb a significantly greater part of the supplier's production volume, and the customization of products was more evident in this situation. In accordance with the TCE-perspective (Williamson, 1975, 1985, 1991[a]), the use of coordinated adaption and safeguarding against opportunism was expected to be high under this condition. Our empirical findings were in accordance with these predictions.

When *the supplier* unilaterally carries out specific assets, the interfirm dependency is based on mutual advantages created through *both parties involvement* in coordination efforts *to design specific assets* on the supplier side.The TCE-framework assumes that both actors will get advantages and exploit the outcome of such investments; Rubin (1990), and Williamson (1975), and coordinated adaption is warranted to obtain an efficient utilization of the resources deployed. When *the buyer* unilaterally adapts to a certain supplier who sells his products to several other customers, he is expected to be more independent of the supplier when *designing his own specific assets*. In the next stage, the value adding created through unilateral buyer held specific assets, might tie the suppliers product stronger to the end users of the *buyers final product*, and contribute to better and more stable sale prospects for the supplier.This reasoning suggests that the *specific utilization* of the suppliers product through unilateral deployment of

specific assets by the buyer, will create offsetting effects; Heide & John (1988), and contribute to balance a potential asymmetrical power-dependency structure which initially should make the buyer dependent upon the supplier[25]. The buyers need for safeguarding and interfirm coordination might therefore be of modest concern under this condition.

In channel dyads where both actors showed high asset specificity, we expected the level of bilateral governance to be higher than in relationships with unilateral supplier held specific assets because the need for strictly coordinated adaptions is assumed to be greater in the former case. A competing hypothesis considers mutual high asset specificity as an exchange of hostages (Williamson, 1983, 1985), and predicts the level of bilateral governance to be lower under this condition than is the case when the supplier unilaterally carries out the specific assets. Our empirical findings did not support any of these predictions, and showed a modest, but not significantly higher level of vertical interaction and formalization in channel dyads with mutual high asset specificity than was the case with unilateral supplier held specific assets. Our validation assessments in chapter 7.2.3, showed no significant differences between these two allocation modes neither with respect to product customization nor market structure dimensions. Our empirical findings showed quite evidently that high asset specificity on the supplier side is the critical factor creating small-number conditions, and need for coordinated adaption, independent of the level of specific assets on the buyer side.

Our findings showed that the buyer exercised moderately more influence on terms of trade for cases with mutual high asset specificity than was the case when the

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[25]The buyers replaceability costs are modestly related to the buyers asset specificity (confer chapter 7.2.2, section 4).A ONEWAY-analysis was conducted to compare the buyers replaceability costs across cases with respectively mutual low asset specificity (conventional market transactions) and unilateral buyer held specific assets.The analysis showed no significant mean difference in buyers replaceability costs between these two groups (Mean difference=0.11, T=0.31, p=0.75), and we found no significant difference between these two groups with respect to the buyer's use of second sourcing.These findings might indicate that unilateral deployment of specific assets on the buyer side has modest impact on the dependency-structure in supplier-buyer relationships.

supplier unilaterally carried out the specific assets.These findings contradict resource-dependency theory; Emerson (1962), and Pfeffer & Salancic (1978) in the sense that the influence pattern seems to be independent on dependency-structures corresponding to the way the actors have deployed their resources at risk. This might indicate that the analysis of influence patterns or dependency structures has to be extended to a broader scope of influence sources or power bases to capture the real ties between the transacting parties:

"Channel members have several power bases available to them to change others behavior or to gain continued cooperation. These include rewards, punishments, expertise, identification, legitimacy, and information." Stern, 1989: 352

The main intention for exercising power or influence in marketing channels is to obtain an appropriate specification of relevant tasks, and vertical coordination of the activities between the actors, which best serve the purpose of accommodating the desires of the target market (Stern, 1989). Under conditions of bilateral dependency and information impactedness, most influence should be assigned to the most informed party for efficiency reasons; Tirole (1988), and Grossmann & Hart (1986). The buyer's unique possession of market information and closer ties to the end users might give him a key role as mediator of information and resources, and explain why he maintains his influence on the supplier under conditions with balanced allocation of specific assets.

Empirical tests were conducted to examine whether the pattern of organizing the relationship between supplier and buyer had performance implications. Our findings showed an overall high positive relationship between the level of bilateral governance and the perceived instrumentality (weights of importance) of the various dimensions reflecting the vertical coordination between supplier and buyer. The transaction cost efficiency of both vertical interaction and formalization was significant and greater when the supplier carried out assets at risk (bilateral dependency) than was the case when the buyer unilaterally carried out such

assets. These findings give some evidence to performance implications in the sense that transactions seem to be assigned to various governance attributes in accordance with the benefits they are expected to create under small-number conditions:

-safeguarding against opportunism
-coordinated adaption and efficient utilization of productive resources

Our empirical findings showed the TCE-predicted negative relationship between uncertainty and formalization when the supplier unilaterally carried out specific assets. We did not observe the same pattern for vertical interaction. The analysis of performance implications, however, showed evidently that both vertical interaction and formalization were less cost efficient under condition of high uncertainty. The indicated misfit between the pattern of vertical interaction and its governance efficiency under conditions of high uncertainty gives some evidence for a redundancy of cooperation and joint action under conditions of high uncertainty.

When supplier and buyer mutually deployed specific assets to their relationship, we found the level of vertical interaction and formalization to be independent of the uncertainty level. Analysis of governance performance under this condition showed the same pattern. In situations with mutual deployment of assets at risk, the vertical governance arrangements between the transacting parties seem to be more resistant against disturbances and unfolding events in the task environment. This might indicate that symmetrical deployment of specific assets creates credible commitments or an atmosphere of forbearance; Anderson & Weitz (1992), Williamson, (1991[a]) which is beneficial for:

-settlement of conflicts and
-handling the need for adjustments and coordinated adaptions even under conditions of high uncertainty

The TCE-framework (Williamson, 1975, 1979, 1985) asserts that the level of specific assets connected to the transaction under specified conditions of uncertainty and frequency of exchange is positively related to the level of bilateral or hierarchical governance. This dissertation attempts to explore this prediction, and argues that an identification of how specific assets are allocated between the transacting parties gives a more precise prediction of how supplier-buyer relations are organized. Our main guideline in the elaboration of this topic is the behavioral assumption of opportunism underlying the organization failure framework (Williamson, 1975). Following the TCE-approach, we will argue that in a situation where specific assets are carried out by the buyer, the benefit of opportunistic actions by the supplier is of minor concern because his average sales volume to each single buyer is modest under this condition. Secondly, reputation consideration; Rubin (1990), and Milgrom & Roberts (1992) will restrict the supplier's possibility to exert opportunistic behavior. Finally, it is easier for the buyer than for the supplier to safeguard himself against performance deterioration through verification efforts (Heide & John, 1990).

10.3 Managerial implications

Practice oriented reporting (e.g. management magazines and business consultants) often views closer relationships between seller and buyer as desirable (Heide & John, 1990). Based on the performance implications in our study, we found the benefits of bilateral governance to be conditional in several ways.

Firstly, the bilateral dependency between the transacting firms has to be carefully examined to detect whether the need for safeguarding against opportunism and coordinated adaption is of any concern. Our empirical findings indicate that extensive bilateral governance is misplaced in situations with unilateral deployment of specific assets on the buyer side. The various dimensions of bilateral governance (vertical interaction and formalization) showed to be significantly less

efficient under this condition than was the case when the supplier's asset specificity was substantial. Secondly, the interaction between uncertainty and bilateral dependency is important. Under conditions of low uncertainty and unilateral supplier held specific assets, both vertical interaction and formalized governance arrangements seem to be instrumental and enhance governance performance. When unfolding events and disturbances occur under this condition, bilateral governance showed no governance efficiency. For the purpose of selecting appropriate governance arrangements, an important managerial challenge is to identify and analyze economic and technological ties between the transacting firms. The nature of the bilateral dependency between the parties is the most critical guideline for estimating the costs and benefits attached to various governance arrangements. Marketing research conducted to examine variation across different industries with respect to uncertainty in the task environment might be useful for this purpose. Marketing intelligence carried out to examine the nature of production technology and life cycles of products in the supplier sector might give useful knowledge about the stability of prospective trade conditions and appropriation of bilateral governance. The observed misfit between the level of vertical interaction and its governance efficiency under conditions of high uncertainty might indicate that some introduction of bilateral governance is based on imitations or legitimized responses to external demands. Such motives might induce governance inefficiency and competitive disadvantages.

Comprehensive contracting and cooperative arrangements induce transaction costs and ought to be restricted to situations where it is advantageous and possible for the transacting partners to exercise moral hazard and/or when the need for coordinated interfirm adaptions is substantial. For the purchasing firm, for instance, a closer investigation of the market conditions and competitive strategies of suppliers might be appropriate for this purpose. A further examination of supplier`s customer portfolio , and own access to close substitutes might be useful to explore current and prospective dependency-structures and exposure to opportunism.In the next stage, this might be useful knowledge for the purpose of

designing efficient governance of interfirm relationships.

Under conditions of mutual high asset specificity, vertical interaction and formalization showed different governance properties. Vertical interaction through cooperation and joint action showed significant higher governance efficiency than formalized governance arrangements independent of the level of uncertainty in the task environment.The division of work between the transacting parties based on more extensive exchange of complementary resources seem to create a better climate for mutual cooperation and sustainment of credible commitment than is the case with unilateral supplier held specific assets (Anderson & Weitz, 1992).Under this condition, contractual arrangement should be restricted to handle predictable and stable issues concerning terms of trade.More informal and interactive coordination modes seem to be most efficient for handling more complex aspects of interfirm business, for instance value analysis and development of new products.

One apparent managerial interpretation of our findings, is that interfirm relationships ought to be organized in accordance with the level of bilateral dependency and uncertainty surrounding the transactions. For the buying firm with a heterogeneous portfolio of suppliers, this implies an alignment of differentiated governance structures across its supplier portfolio to obtain the intended transaction cost efficiency. The administrative and economic activities taking place to interact with the various suppliers might however be interrelated, and give standardized purchasing arrangements economy of scale benefits. A joint assessment of set-up costs and ongoing governance costs is therefore warranted. A redesign of contractual arrangements induces transaction costs in itself. Economic considerations including the benefits and costs for the whole portfolio of channel dyads might therefore be warranted to get a more efficient composite of governance structures.

10.4 Methodological implications

This study contains some methodological issues which need further discussions. The degree of vertical coordination between supplier and buyer in this study was conceptualized as vertical interaction, formalization and centralization by the buyer which represent vertical form in the political economy framework (Stern & Reve, 1980). The items representing the various concepts indicated satisfactory construct validity, and reliability and validity assessments were consistent with current empirical work within the political economy framework; Reve (1980), John & Reve (1982), Reve & Stern (1986), Nygaard (1992). The level of vertical interaction and formalization was used to represent a market hybrid continuum, reflecting the extent of cooperation, joint action and contractual arrangements between independent firms. We found channel dyads to be appropriate units of analysis for the theory testing purpose of our research.

Our sample consists of a census of purchasing professionals in industrial firms associated to the Norwegian Association of Purchasing and Logistics (NIMA). This might weaken the external validity of the study in the sense that our key informants represent firms which deviate significantly from the average of the Norwegian industry firm population. The main purpose of this research, however, is theory testing. For that purpose, external validity might be sacrificed for obtaining satisfactory statistical conclusion validity (Cook & Campbell, 1979). The pattern of governance might, however, interact with environmental factors (Williamson, 1993[a]), e.g; specific industry cultures[26], and restrict the validity of our research.

This study is based on a cross-sectional design, where the firms representing our sample belong to various industries. Studying channel dyads across different

[26]NIMA has educational progams and conferences for their associates with several purchasing topics which might have inpacts on norms and the professional standards among the associates.

industries represented a threat to the construct validity of this study. The same measures had to be used in a variety of firms and purchasing situations and consequently, the operationalization of the variables could not be tailored specifically to different contexts. Based on a pilot study and pretests of the first editions of the questionnaire, measures were revised and improved. A pretest of the final version showed no particular problems with respect to the relevancy and wording of the selected items. A second problem connected to the use of cross-sectional design is that it restricts the possibility to examine alternative causal inferences. We return to this topic in section 10.5.

Heide (1987), and Anderson & Weitz (1992) find a positive and significant correlation between the level of specific assets deployed by respectively suppliers and buyers in industrial channel dyads. These findings indicate that samples of industrial channel dyads tend to be dominated by cases with balanced allocation of specific assets. To highlight possible governance effects of how specific assets are allocated, an experimental design was conducted to get a more balanced sample structure representing channel dyads with different composition of specific assets. Four different prescriptions were given in the introduction to the questionnaires to guide the informants to select a focal supplier corresponding to our prescribed allocation of specific assets. Our classification modes were based on theoretical inventions, and it showed to be difficult to obtain the desired fit between our intended composite of the sample and the empirical allocation of specific assets.

Several empirical studies; Reve & John (1982), Heide (1987), and Anderson & Weitz (1992) find satisfactory relationships between measures of channel-structure constructs across different channel levels. However, data from one channel level will be more questionable under conditions of discrepant perceptions, conflicts of interest or information impactedness. Collecting data from one side of the dyad has shown to be less critical for measuring various structural dimensions of channel dyads; e.g. vertical form; Reve & John (1982). Anderson & Weits (1992)

argue theoretically and show empirically that seller and buyer perceive the level of each others' asset specificity quite similarly. For the purpose of predicting responses to perceived dependency, data from one side of the channel dyad is for all practical purposes appropriate (Heide & John, 1991). This was relevant for our research problem. For instance, the way the informants perceive the allocation of specific assets in the channel dyads, is expected to reflect their perceived dependency, and the way they evaluate the instrumentality (weights of importance) of the various dimensions of vertical coordination is expected to reflect the way they perceive the advantages of bilateral governance.For the purpose of *testing relationships* between variables representing the dyadic level, we then found it tenable to use data from one side of the relationship. Knowledge about the end users of the products is important for a proper evaluation of the flow of resources and information between supplier and buyer. In this respect, we found key informants from the buyer side to be most appropriate for our research.

10.5 Limitations

Some methodological limitations in this study were discussed in the preceding section. In this part we will elaborate the problem of causal inferences further, and discuss some theoretical limitations of this research.

The cross-sectional design applied in this research puts some limitation on the empirical findings and implications. The empirical analysis confirmed our main research hypotheses and gave some performance implication corresponding to our theoretical predictions. These findings, however, give no unambiguous evidence for an intentional explanation of how governance structures are established. Could bilateral governance, for instance, be a response to better relational norms (Van de Ven & Smith Ring, 1992), or better transaction performance (Noordewier et al. 1990)? The selected research design, however, is unable to give a further examination of the causal inferences of our model. Exclusion of alternative interpretations of our empirical findings is therefore impossible without using

longitudinal data. This implies some restriction of the internal validity of this research.

Using a cross-sectional design, however, is not mismatched to current research based on the framework of TCE, which assumes the assignment of governance structures to be based on governance efficiency as the end result of an evolutionary process. The nature of this process, however, is not specified as behavioral assumptions or processes within the framework of TCE (Knudsen, 1992, 1995). The lack of explicitly formulated adaption mechanisms in the TCE-framework, limits our understanding of the real intentions and processes underlying the establishment of governance structures. The tensions or trade-offs between static and dynamic efficiency; Simon (1991), and Ghemawat & Ricart I Costa (1993) make it even more difficult to capture the real motives and considerations underlying the way interfirm relationships are organized. Firms might design specific governance structures for strategic reasons (Heide & John, 1990), and several research contributions within strategic purchasing; Welch & Nayak (1992), Cammish & Keough (1991), and resource-dependency theory; Thompson (1967), Aiken & Hage (1971), and Pfeffer & Nowak (1976) find support for such motives. Our research model based on a reduced form analysis; Williamson (1991[a]), and Masten & al. (1991), implicitly assumes that governance arrangements are selected for the purpose of economizing on transaction costs. Our findings and implications must therefore be interpreted on the condition that this assumption holds.

Our research model predicts that allocation of specific assets is decisive for the way channel dyads are organized, and exposure to opportunism is important in analysing this issue. We have used the organizational failure framework (Williamson, 1975) as a guideline to elaborate this problem and our reasoning is supported by data which highlight the conditions of small-number bargaining. This approach implies some research limitations in the sense that we do not capture the way the actors perceive risks and the options for moral hazard. Explicit

measures for perceived opportunism; John (1984), Haugland (1988), and Nygaard (1992) would probably have improved the validity of our research.

10.6 Future research

The limitations of the present research discussed in the previous section gave some guidelines for improvements and extensions to the present study. Improvements to overcome some of the limitations mentioned above, however, require a lot of time and resources (e.g. use of longitudinal data), and are difficult to realize within the recommended framework of time and budgets of doctoral programs.

The use of unidimensional measures capturing various issues and aspects of the dimensions of vertical coordination is based on the methodological tradition of inter-organizational research (confer chapter 7). Validation assessments in current research, however, show that scales have to be extensively revised to show satisfactory unidimensionality. This dissertation is no exception from this pattern. Such revisions might of course be necessary due to poorly developed items. It is however possible, that the lack of unidimensionality shows that several concepts have to be further developed and examined to detect whether they reflect several different concepts.

Of primary managerial interest is a further examination of possible economic and technological *intraorganizational ties* between activities and processes carried out to administer portfolios with several transacting parties. This might give a more precise estimate of the overall costs and benefits attached to different ways of organizing interfirm business.

Our research has primarily focused on the organization of business to business relations. Such relations, however, are embedded in a context representing individual and institutional factors which might explain governance performance

or the way interfirm relations are organized (Williamson, 1993[a], 1993[b]). A further examination of the interaction between contextual factors and patterns of governance might improve the validity of research within the field of economics of organization. Comparative studies focusing on variation across different inter-organizational settings with respect to atmosphere (Williamson, 1975), and institutional frameworks (Williamson, 1993[a]) might give a better judgment of the validity of the TCE-framework.

10.7 Conclusions

Transaction cost economy (TCE) states that the level of specific assets connected to a transaction is an important predictor for the way interfirm relationships are organized. This dissertation attempts to explore whether the way specific assets are allocated between the transacting parties gives more precise predictions of how supplier-buyer relationships are organized.

Great attention was paid to channel dyads with inbalanced allocated specific assets. Several theoretical and empirical works; Heide (1987), Heide & John (1988), Heide (1994), and Buchanan (1992) have highlighted the problem of asymmetrical dependency structures in vertical marketing relationships. This dissertation presents a new approach to this problem by analysing and comparing two different kinds of asymmetrical dependency:

1) situations where the supplier unilaterally carries out assets at risk
2) situations with unilateral deployment of specific assets on the buyer side

By analysing the division of work and activities in supplier-buyer relationships, and the behavioral assumption underlying the organizational failure framework (Williamson, 1975), we predicted:
-the need for coordinated adaption and
-exposure to opportunistic behaviour

to be of less concern under conventional market conditions, and when the buyer unilaterally carried out specific assets than was the case when the supplier did it.Our empirical findings gave support for these predictions, and showed that the market structure in the situation with mainly buyer held specific assets showed great similarities to conventional markets. The level of bilateral governance showed as expected to be significantly greater in channel dyads where the supplier held the specific assets than was the case with mainly buyer held assets at risk.

Finally, we found that the buyer exercised most influence and kept his position as channel captain both under conditions with unilateral supplier held specific assets, and in channel dyads with mutual high asset specificity.This finding might indicate that the exercise of influence in industrial marketing channels relies more on the division of work and possession of information than on the way risky assets are allocated among the transacting parties.

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Appendix 1:

Questionnaire to Purchasing Firms

English Wording

QUESTIONNAIRE TO BE ANSWERED BY THE PURCHASING MANAGER

PURCHASING SURVEY:

"Coordination of Industrial Purchasing Relationships"

A survey by Arnt Buvik

Department of Organization subjects
The Norwegian School of Economics
and Business Administration
N-5035 BERGEN-SANDVIKEN
NORWAY

Name of the person answering the questionnaire:_____

Position:_____

Company:_____

Company address:_____

Please tick if you wish to receive a summary of the results from this survey:☐

If you should have any questions or comments regarding this survey please contact:

Arnt Buvik
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Fax: + 47 + 71 21 41 00

INFORMATION AND INSTRUCTIONS ON HOW TO COMPLETE THIS QUESTIONNAIRE:

This survey refers to the purchase of intermediate goods and maintenance products (goods and support services); raw materials, semi-manufactures, relief substances and packaging materials that are included in the production and processing in your company.

When answering this questionnaire, please base your answers on experiences from and knowledge about one specific supplier which produces and sells products; goods and support services that are important to the further processing/production in your company.

In this context, it is essential that there has been a mutual adaption between your company and the selected supplier. This includes for instance the following:

- the supplier has adjusted products and/or invested in production equipment in order to accommodate special purchase requirements in your company
- you company has carried out adaptions in the production process and/or in the designing of the end products in order to achieve a better exploitation of the products (goods and support services) that are being purchased from this supplier.

Name of the selected supplier (see the introduction):_____

Nationality of the supplier:_____

PART 1 : DESCRIPTION OF YOUR SUPPLIER:

Question 1:

Describe in brief the products/groups of products (goods and support services) that represent the most important deliveries from your supplier:

_____

Question 2:

Products purchased for production and further processing have to a varying extent been adjusted to the individual customer. To what extent have the most important products/groups of products from this supplier been tailored to the purchase requirements of your company? Indicate your answer by circling the appropriate number.

Not customized					Completely customized	
1	2	3	4	5	6	7

Question 3:

What was your company's purchase volume from this supplier in 1993 exc. VAT and customs?

Purchase volume: Approx. NOK:_____

Question 4:

How many times did your company purchase products from this supplier in 1993?

Total purchase in 1993: Approx._____

Question 5:

What was the size of your supplier's annual turnover (exc. VAT and customs) in 1993? Supplier's estimated annual turnover: Approx. NOK:_____

Question 6:

Does you supplier have any shares in your company?

☐ Yes; indicate approx. percentage: _____% ☐ No

Question 7:

Does your company have any shares in your supplier's company?

☐ Yes; indicate approx. percentage: _____% ☐ No

PART 2 : COOPERATION WITH SUPPLIER:

Question 1:

The following is a list of statements describing various forms of cooperation and standardization between supplier and producer (purchaser).

To what extent do you feel that the statements give an adequate description of the relations between your company and the supplier?

Indicate your answer by circling the appropriate number.

Example:

If the production planning in your company is carried out completely independently from the production planning at your supplier's, circle the number 1 (disagree) in question 1.1 below. If your company and the supplier have carried out a complete standardization of the production planning in the two companies, circle the number 7 (agree).

Consequently, the ranking 1-7 is used to indicate your evaluation of the extent to which the production planning has been standardized in the companies.

This ranking will be used for most of the questions/statements in this questionnaire

	Agree						Disagree
1.1: Both we and our supplier have carried out complete standardization of our production planning	1	2	3	4	5	6	7
1.2: We regularly contact our supplier prior to purchase of raw materials and materials for our products	1	2	3	4	5	6	7

1.3: Our purchase planning and our supplier's capacity planning have been completely standardized	1	2	3	4	5	6	7
1.4: We regularly exchange information about production costs with our supplier	1	2	3	4	5	6	7
1.5: We co-operate closely with our supplier in the following up of orders from our company	1	2	3	4	5	6	7
1.6: We regularly exchange information about price development and market relations with our supplier	1	2	3	4	5	6	7
1.7: We co-operate very closely with our supplier in order to improve his products and services if there has been complaints or dissatisfaction	1	2	3	4	5	6	7
1.8: We co-operate closely with our supplier in the quality assurance in his company	1	2	3	4	5	6	7
1.9: We co-operate closely with our supplier in the quality control of products purchased by our company	1	2	3	4	5	6	7

1.10: We are in close contact with our supplier as regards the development and testing of new materials and products	1	2	3	4	5	6	7
1.11: We regularly contact our supplier prior to selecting sub-suppliers for the products we purchase from our supplier	1	2	3	4	5	6	7

Question 2:

This question refers to certain areas of cooperation and standardization between purchaser and supplier. Base your answers on the relations between your company and the supplier.

To what extent do you feel that the areas listed below are important for the purpose of achieving an efficient coordination and a better exploitation of the production resources within your company?

Areas of cooperation/ standardization between our company and our supplier	Estimated importance						
	Not very important						Very important
2.1: Information exchange on production expenses	1	2	3	4	5	6	7
2.2: Standardization of production plans	1	2	3	4	5	6	7

2.3: Cooperation in the following up of orders and deliveries to our company	1	2	3	4	5	6	7
2.4: Cooperation on quality assurance at our supplier's	1	2	3	4	5	6	7
2.5: Cooperation in developing and testing ideas for production	1	2	3	4	5	6	7
2.6: Cooperation on quality control of our supplier's products	1	2	3	4	5	6	7
2.7: Information exchange about prices and market conditions	1	2	3	4	5	6	7
2.8: Cooperation on improvement measures and solutions after any complaints or dissatisfaction	1	2	3	4	5	6	6
2.9: Standardization in our company's purchase plans and our supplier's capacity planning	1	2	3	4	5	6	7
2.10: Cooperation in the selection of raw materials and materials for deliveries to our company	1	2	3	4	5	6	7

2.11: Cooperation in the selection of sub-suppliers for the products we purchase from our supplier	1	2	3	4	5	6	7

Question 3 :

Cooperation and coordination between suppliers and purchasing companies; for instance exchange of information, resources and support activities, have to a varying extent been formalized through written contracts, set routines and procedures etc. Base your answers on the statements below, and comment on whether they form an acceptable description of the implementation of cooperation between your company and your supplier.

	Inaccurate description					Accurate description	
3.1: We have signed mutually binding agreements with our supplier which regulate all activities connected with the standardization of our production plans	1	2	3	4	5	6	7
3.2: We have set agreements for the implementation of standardization of our supplier's capacity planning and our purchasing plans	1	2	3	4	5	6	7
3.3: We have written contracts to confirm our company's influence as regards determining raw materials and materials for the products we purchase	1	2	3	4	5	6	7

3.4: We have a written contract which manages all conditions regarding rights to insight and documentation of production expenses	1	2	3	4	5	6	7
3.5: We have outlined set procedures and regulations for the following up of orders and deliveries from our supplier	1	2	3	4	5	6	7
3.6: Exchange of information on price development and market relations between the two companies are being planned and carried out regularly	1	2	3	4	5	6	7
3.7: We have written contracts which manage the handling of discontent, complaints and disputes between the two companies	1	2	3	4	5	6	7
3.8: We have written contracts which stipulate all aspects regarding the tasks and influence of our company in the quality assurance at our supplier's	1	2	3	4	5	6	7
3.9: We have a contract which stipulates all aspects regarding the tasks and influence of the two parties in the quality control of the products we purchase from our supplier	1	2	3	4	5	6	7

3.10: We co-operate in the planning of development and testing of new products, and have regular meetings about the issue	1	2	3	4	5	6	7
3.11: We have written contracts which stipulate all aspects regarding our influence in the selection of sub-suppliers for the products we purchase	1	2	3	4	5	6	7

Question 4 :

To a varying extent purchasers carry out specific investments and adjustments for their suppliers; for instance production equipment, supplier development,administrative routines and training of personnel.To what extent do you feel that the statements below give an adequate description of the adjustments and investments carried out by your company in connection with the cooperation with your supplier.

	Inaccurate description						Accurate description
4.1: We have to a great extent invested in production equipment that have been adjusted to the products we purchase from our supplier	1	2	3	4	5	6	7
4.2: We have to a great extent adjusted our specifications for the products we purchase from our supplier to his production technology and range of products	1	2	3	4	5	6	7

4.3: We have committed a lot of time and resources to the training and development of personnel for our supplier	1	2	3	4	5	6	7
4.4: We have committed a lot of time and resources to achieving insight and technical standards and areas of utilization for the products we purchase from our supplier	1	2	3	4	5	6	7
4.5: We have made significant investments in storage and transportation equipment dedicated to deal effectively with the deliveries from our supplier	1	2	3	4	5	6	7
4.6: We have committed a lot of time and resources to developing an acceptable quality assurance at our supplier's	1	2	3	4	5	6	7
4.7: We have committed a lot of time and resources to developing special equipment and routines for product control of the deliveries from our supplier	1	2	3	4	5	6	7
4.8: We have committed a lot of time and resources to restructuring our production in order to achieve higher efficiency in the further processing of products we purchase from our supplier	1	2	3	4	5	6	7

4.9: We have made significant investments in information technology dedicated to rationalize the cooperation with our supplier	1	2	3	4	5	6	7
4.10: We have to a great extent adjusted our ordering routines to our supplier's routines in order to execute orders and follow up deliveries	1	2	3	4	5	6	7

Question 5 :

To a varying extent suppliers carry out significant investments and adjustments for their customers (purchasing companies), for instance through development of production equipment, choice of transportation solutions and training of personnel. To what extent do you feel that the statements below give an adequate description of the adjustments and investments carried out by your supplier (see the introduction) in connection with the cooperation with your company.

	Inaccurate description						Accurate description
5.1 Our supplier has to a great extent invested in production equipment in order to adjust to our purchasing requirements	1	2	3	4	5	6	7
5.2: Our supplier has carried out considerable product adjustments in order to meet the requirements from our company	1	2	3	4	5	6	7

5.3: Our supplier has committed a lot of time and resources to the training and development of personnel in our company	1	2	3	4	5	6	7
5.4: Our supplier has committed a lot of time and resources on achieving knowledge about the buyers of our products	1	2	3	4	5	6	7
5.5: Our supplier has carried out extensive investments in storage and transportation equipment in order to deal with deliveries to our company	1	2	3	4	5	6	7
5.6: Our supplier has committed a lot of time and resources to meeting our quality assurance requirements	1	2	3	4	5	6	7
5.7: Our supplier has committed a lot of time and resources to meeting our requirements as regards routines and equipment for product control	1	2	3	4	5	6	7
5.8: Our supplier has committed a lot of time and resources to the restructuring of production in order to achieve higher efficiency and quality for the products delivered to us	1	2	3	4	5	6	7

5.9: Our supplier has carried out extensive investments on information technology in order to make the cooperation with our company more efficient	1	2	3	4	5	6	7
5.10: Our supplier has to a great extent adjusted his execution and follow-up of orders to the ordering routines and purchasing requirements of our company	1	2	3	4	5	6	7

Question 6:

Alterations in for instance raw material prices, market prices and technology often involve risks and even more uncertain decisions.

To what extent do you feel that the statements below give an adequate description of the market relations for your company and your supplier (see the introduction)?

	Inaccurate description						Accurate description
6.1: The demand for our end products varies continually	1	2	3	4	5	6	7
6.2: The market situation for our end products is usually very favorable	1	2	3	4	5	6	7
6.3: Our end products have competitive advantages among our distributors and end users	1	2	3	4	5	6	7

6.4: Our most important competitors are regularily carrying out product adjustments and developmant of new products	1	2	3	4	5	6	7
6.5: The products we purchase from our supplier have a relatively high innovation speed and a short working life	1	2	3	4	5	6	7
6.6: The demand for the products we purchase from our supplier varies continually	1	2	3	4	5	6	7
6.7: Our supplier's products are usually in a very favorable situation in the market	1	2	3	4	5	6	7
6.8: Our supplier has very good access to raw materials and sub-suppliers	1	2	3	4	5	6	7

Question 7:

The influence of the individual party in the purchaser - vendor relation may vary according to field, competence, market power etc.Base your answers on the statements below, and comment on whether they form an acceptable description of the influence of the two parties in the purchase relations between your company and your supplier (see the introduction).

	Inaccurate description						Accurate description
7.1: We determine all aspects of the implementation of quality assurance at our supplier's	1	2	3	4	5	6	7

7.2: We determine in detail the methods and standards to be used for control of the products we purchase from our supplier	1	2	3	4	5	6	7
7.3: Our supplier determines himself which raw materials and components to use for production of products sold to us	1	2	3	4	5	6	7
7.4: Our supplier determines himself which sub-contractors to employ for the production of products sold to us	1	2	3	4	5	6	7
7.5: Our supplier has the greatest influence in negotiations about price and payment terms	1	2	3	4	5	6	7
7.6: We have the greatest influence in the way in which our supplier executes and follows up orders from our company	1	2	3	4	5	6	7
7.7: Our supplier has the greatest influence in the choice of transportation solutions, dispatch mode and packaging of deliveries to our company	1	2	3	4	5	6	7
7.8: Our supplier determines himself the tools and production equipment that are being used for production of the products delivered to us	1	2	3	4	5	6	7

7.9: We have the greatest influence as regards determining the duration and termination conditions in our contract with this supplier	1	2	3	4	5	6	7
7.10: Our supplier determines himself the size of stock and delivery time for the products sold to us	1	2	3	4	5	6	7
7.11: We have the greatest influence in negotiations about cases that have not been managed through written contracts between our companies	1	2	3	4	5	6	7

Question 8:

Base your answers on the statements below, and comment on whether they form an acceptable description of the two parties' possibilities of getting access to new customers and suppliers.

	Inaccurate description						Accurate description
8.1: Should the sales to our company cease, our supplier would not easily find alternative purchasers	1	2	3	4	5	6	7
8.2: Should the sales to our company cease, our supplier would be facing severe economic difficulties	1	2	3	4	5	6	7

8.3: Our supplier has a production technology which can easily be adjusted to new product specifications	1	2	3	4	5	6	7
8.4: Should our supplier terminate his activities, it would be very difficult for us to find substitute suppliers	1	2	3	4	5	6	7
8.5: We have relatively good access to other suppliers which can replace our supplier	1	2	3	4	5	6	7
8.6 We have a production technology that can easily be adjusted to processing products with other specifications than what our supplier delivers	1	2	3	4	5	6	7

Question 9 :

Purchaser and supplier may carry out significant investments and adjustments dedicated to achieving a better exploitation of own and/or the parties' total production resources.

These investments may be balanced or dominated by one of the parties.

To what extent do you feel that the adjustments and investments carried out by your company and your supplier are balanced or dominated by one of the parties?

Investments and adjustments are:

Dominated by our supplier			Balanced			Dominated by our company
1	2	3	4	5	6	7

Question 10:

Governing and co-ordinationg purchasing relationships might create both advantages and costs of cooperation. Base your answers on the statements below, and indicate wether they are in accordance with your perception of the way the relationship between your company and the supplier is administered.

	Inaccurate description						Accurate description
10.1: Our firm uses too much time and resources in order to control products and production processes and products of this supplier	1	2	3	4	5	6	7
10.2: It is very timely and difficult to get necessary verification of production performance and cost from this supplier	1	2	3	4	5	6	7
10.3: The co-ordination of the relationship with this supplier is too costly compared to the resulting outcomes of these interactions	1	2	3	4	5	6	7
10.4: It is easy to settle agreement with this supplier about specification of products and services delivered to our firm	1	2	3	4	5	6	7
10.5: Our firm has managed to utilize the skills and production resources of this supplier completely	1	2	3	4	5	6	7

10.6:

It is timely and difficult to accomplish negotiations between our firms about price and payment terms	1	2	3	4	5	6	7

PART 3: DESCRIPTION OF YOUR COMPANY:

Question 1:

Indicate which part of the production/further processing in your company that receives the principal part of deliveries from your supplier (see part 1).

Please tick only one:

☐ Unit production to customer orders

☐ Small batch production

☐ Large batch production

☐ Assembly line production

☐ Flexible, product oriented production units (FSM)

☐ Process production

☐ Other; please specify:_____

Question 2:

Which industrial group does your company belong to?

Please tick only one.

☐ Oil extraction/Mining

☐ Food Articles

☐ Fabric/Clothing

☐ Woodworks/Furniture

☐ Chemical Production

☐ Mineral Production

☐ Engineering Production

☐ Other; Please specify: _____

Characterize briefly the industry/branch your company belongs to:

_____

Question 3:

How many employees does your company have? Number of employees: _____

Question 4:

Base your answers on the statements below, and comment wether they form an acceptable description of the production technology in your firm.

	Inaccurate description						Accurate description
4.1: The production technology in our company consists of sequences of automatic processes	1	2	3	4	5	6	7
4.2: The work-flow in our production department is very preprogrammed	1	2	3	4	5	6	7
4.3: Information technology is extensively used for control- and scheduling purposes	1	2	3	4	5	6	7

4.4:

It is very costly and resource demanding to redesign our production for new lots of products 1 2 3 4 5 6 7

Question 5:

What was your company's turnover in 1993 (exc. VAT and customs)?

Annual turnover: Approx. NOK: _____

Question 6:

What share of the turnover in 1993 was represented by purchased goods and services? Approx. percentage: _____%

Question 7:

Base your answers on the product/group of products which represents the most important part of purchases from your supplier (see part 1).

Has your company acquired this product/group of products from any other suppliers in 1993?

☐ No

☐ Yes, from other external suppliers Approx. percentage: _____%

☐ Yes, from own company/subsidiaries Approx. percentage: _____%

Question 8.1:

Base your answers on the production in your company that receives the principal part of deliveries from this supplier.

Give a brief description of the finished products from this production:

_____

Question 8.2:

To what extent have the end products from this production been customized?

Not customized Completely customized

1 2 3 4 5 6 7

Question 8.3:

What is the distribution of sale for these products among the following end users?

Consumer goods market: Approx. percentage: ____ %
Industrial goods market: Approx. percentage: ____ %
Institution goods market: Approx. percentage: ____ %
Other, please specify: _____ Approx. percentage: ____ %

Question 8.4:

What percentage of these sales are exports? Approx. exports percentage: _____ %

Question 9:

How long have the customer relations between your company and this supplier been existing? Indicate number of years/months: Approx. _____

Question 10:

Is there a written purchase contract between your company and the supplier?

☐ No ☐ Yes

If yes, how would you characterize the type of contract that manages the relations between your company and this supplier?

- ☐ Framework agreement
- ☐ Supplier agreement with up to one year duration
- ☐ Long-term supplier agreement with more than one year duration

  Indicate duration: _____
- ☐ Exclusive supplier agreement (sole supplier agreement)
- ☐ Other; Please specify: _____

Please, state the length of the agreement period for this purchasing contract:
Agreements period:_____(years/months)

Question 11:

In what way are price agreements between your firm and this supplier usually settled?

- ☐ Fixed prices are contracted
- ☐ Price contract with specified incentives, e.g., bonus for fast deliveries
- ☐ Price contract with ecscalation terms
- ☐ Cost contract with extra payments for performance beyond standards and/or change orders
- ☐ Fixed cost contracts

Question 12:

Base your answer on the last time your company renewed/renegotiated the contract with this supplier.Did your company in that connection invite bids/offers from other suppliers?

☐ No

☐ Yes, from one other supplier

☐ Yes, from several suppliers

Question 13:

To what extent are you personally participating in negotiations, meetings and cooperation projects between your company and this supplier?

Not appreciably To a great extent

1 2 3 4 5 6 7

THANK YOU FOR YOUR COOPERATION!

Appendix 2:

Questionnaire and cover letters to purchasing firms

Norwegian Wording

SPØRRESKJEMA TIL INNKJØPSANSVARLIGE
INNKJØPSUNDERSØKELSEN:

"Koordinering av innkjøpsrelasjoner i industrien"

En undersøkelse av Arnt Buvik

Institutt for organisasjonsfag
Norges Handelshøyskole
5035 BERGEN-SANDVIKEN

Navn på den som besvarer spørreskjemaet: _____
Stilling: _____
Firmanavn: _____
Firmaadresse: _____

Dersom du ønsker å få tilsendt et sammendrag av resultatene fra denne undersøkelsen, vennligst sett et kryss i ruten: ☐

Spørsmål og henvendelser i forbindelse med innkjøpsundersøkelsen rettes til:

Arnt Buvik
Høgskolen i Molde
6401 MOLDE

Tlf: 71 21 40 00 / 71 21 42 35
Telefax: 71 21 41 00

Vennligst returner det besvarte spørreskjema i vedlagte, frankerte svarkonvolutt.

INSTRUKSJONER OM UTFYLLING AV SPØRRESKJEMAET:

Denne undersøkelsen omhandler innkjøp av innsatsvarer og vedlikeholdsprodukter (varer og støttetjenester); råvarer, halvfabrikata, hjelpestoffer og emballasje som inngår i produksjon og bearbeidelse i din bedrift.

Når du besvarer dette spørreskjemaet, vennligst baser dine svar på dine erfaringer og kjennskap til en bestemt leverandørbedrift som produserer og selger produkter; varer og støttetjenester som er viktige for den videre bearbeidelse/produksjon i din bedrift.

I denne sammenheng er det viktig at du velger ut en leverandør som selger relativt **standardiserte produkter** til din bedrift, f.eks råvarer eller vedlikeholdsprodukter som skiller seg **lite** ut fra produktene til andre konkurrerende leverandører.

Navn på den utvalgte leverandørbedrift (jfr. innledningen):

_____

Leverandørens nasjonalitet: _____

DEL 1 : BESKRIVELSE AV DIN LEVERANDØRBEDRIFT:

Spørsmål 1:

Gi en kort beskrivelse av det produkt/produktgruppe (varer og støttetjenester) som utgjør den viktigste del av leveransene fra din leverandør:

_____

_____

Spørsmål 2:

Produkter som kjøpes inn til produksjon og videre bearbeidelse er i varierende grad tilpasset den eneklte kunde.I hvilken grad er de viktigste produktene/ produktgruppen fra denne leverandøren tilpasset spesielt til innkjøpsbehovene i din bedrift? Sett ring rundt et av tallene.

Ingen kunde-tilpasning						Fullt kunde-tilpasset
1	2	3	4	5	6	7

Spørsmål 3:

Hvor mye kjøpte din bedrift inn fra denne leverandørbedriften i 1993 ekskl. mva og toll?

Innkjøpsstørrelse: Ca. NKR:_____

Spørsmål 4:

Hvor mange ganger kjøpte din bedrift inn produkter fra din leverandør i 1993?

Antall innkjøp i 1993: Ca._____

Spørsmål 5:

Hvor stor årsomsetning (ekskl. mva og toll) hadde din leverandør i 1993?

Din leverandørs årsomsetning (anslag): Ca. NKR:_____

Spørsmål 6:

Har din leverandør eierandeler i din bedrift?

☐ Ja; angi ca. andel:_____% ☐ Nei

Spørsmål 7:

Har din bedrift eierandeler i din leverandørbedrift?

☐ Ja; angi ca. andel:_____% ☐ Nei

DEL 2 : RELASJONEN MELLOM DIN BEDRIFT OG DIN LEVERANDØR:

Spørsmål 1:

Nedenfor er det listet opp noen utsagn som beskriver ulike former for samarbeid og samordning mellom leverandørbedrift og produsent (innkjøpsbedrift).
I hvilken grad mener du utsagnene gir en dekkende beskrivelse av relasjonen mellom din bedrift og din leverandør?

Angi ditt svar ved å sette en ring rundt det tallet som gir best uttrykk for din vurdering.
Benytt denne framgangsmåte for markering av dine svar for samtlige utsagn/spørsmål med skalaintervall 1-7 ved utfylling av dette spørreskjemaet.

Eksempel:
Dersom f.eks produksjonsplanleggingen i din bedrift gjennomføres helt uavhengig av produksjonsplanleggingen hos din leverandør, settes en ring rundt tallet 1 (dårlig beskrivelse) i spørsmål 1.1 nedenfor.
Dersom din bedrift og din leverandør har gjennomført full samordning av produksjonsplanleggingen i de to bedriftene, ringes tallet 7 (god beskrivelse) inn.
Intervallet 1-7 skal altså benyttes til å angi en vurdering av i hvilken grad produksjonsplanleggingen i bedriftene er samordnet.

	Dårlig beskrivelse						God beskrivelse
1.1: Vår bedrift og vår leverandør har gjennomført full samordning av våre produksjonsplaner	1	2	3	4	5	6	7
1.2: Vår bedrift har jevnlig kontakt med vår leverandør ved valg av råstoffer og materialer for de produkter vi kjøper inn	1	2	3	4	5	6	7
1.3: Kapasitetsplanleggingen hos vår leverandør er fullstendig samordnet med våre innkjøpsplaner	1	2	3	4	5	6	7
1.4: Vår bedrift og vår leverandør utveksler regelmessig data om produksjonskostnader	1	2	3	4	5	6	7

1.5: Det er et meget godt samarbeid mellom vår bedrift og vår leverandør ved oppfølging av ordrer til vår bedrift	1	2	3	4	5	6	7
1.6: Det utveksles jevnlig informasjon om prisutvikling og markedsforhold mellom våre bedrifter	1	2	3	4	5	6	7
1.7: Vår leverandør samarbeider meget godt med vår bedrift for å forbedre sine produkter og tjenester ved misnøye eller klage fra vår bedrift	1	2	3	4	5	6	7
1.8: Det er et godt samarbeid mellom vår leverandør og vår bedrift om kvalitets-sikringen i hans bedrift	1	2	3	4	5	6	7
1.9: Det er et godt samarbeid mellom vår leverandør og vår bedrift om kvalitets-kontrollen av de produkter vi kjøper inn	1	2	3	4	5	6	7
1.10: Det er jevnlig kontakt mellom vår bedrift og vår leverandør for å utvikle og teste nye materialer og/ eller produkter	1	2	3	4	5	6	7
1.11: Vår bedrift har jevnlig kontakt med vår leverandør ved valg av underleverandør-er for de produkter vi kjøper fra han	1	2	3	4	5	6	7

Spørsmål 2:

Ta utgangspunkt i relasjonen mellom din bedrift og din leverandør.I hvilken grad mener du de ulike områder for samarbeid/samordning som er listet opp nedenfor er viktige for å oppnå en effektiv koordinering og utnyttelse av produksjons-ressursene i bedriftene.

Ulike områder for samarbeid/samordning mellom våre bedrifter:	Svært lite viktig						Svært viktig
2.1: Utveksling av data om produksjonskostnader	1	2	3	4	5	6	7
2.2: Samordning av produksjonsplaner	1	2	3	4	5	6	7
2.3: Samarbeid om oppfølging av ordrer og forsendelser til vår bedrift	1	2	3	4	5	6	7
2.4: Samarbeid om kvalitetssikring hos vår leverandør	1	2	3	4	5	6	7
2.5: Samarbeid om utvikling og testing av produkter og/ eller materialer	1	2	3	4	5	6	7
2.6: Samarbeid om kvalitetskontroll av de produktene vi kjøper fra vår leverandør	1	2	3	4	5	6	7
2.7: Informasjonsutveksling om pris- og markedsforhold	1	2	3	4	5	6	7
2.8: Samarbeid om forbedringstiltak og løsninger ved misnøye og klager	1	2	3	4	5	6	7

2.9: Samordning mellom våre innkjøpsplaner og kapasitetsplanleggingen hos vår leverandør	1	2	3	4	5	6	7
2.10: Samarbeid om valg av råstoffer og/eller materialer for leveransene til vår bedrift	1	2	3	4	5	6	7
2.11: Samarbeid om valg av underleverandører for de produkter vi kjøper inn	1	2	3	4	5	6	7

Spørsmål 3:

Samarbeid og koordinering mellom leverandører og innkjøpsbedrifter f.eks. i form av utveksling av informasjon, ressurser og støtteaktiviteter er i varierende grad formalisert, f.eks gjennom skriftlige kontrakter, fastlagte rutiner, prosedyrer etc.
Ta utgangspunkt i utsagnene nedenfor og vurder hvorvidt de gir en dekkende beskrivelse av den måten samhandlingen mellom din bedrift og denne leverandøren gjennomføres på.

	Dårlig beskrivelse					God beskrivelse	
3.1: Det er utarbeidet forpliktende avtaler mellom vår bedrift og vår leverandør som regulerer alle forhold ved samordning av våre produksjonsplaner	1	2	3	4	5	6	7
3.2: Alle forhold som knytter seg til samordning av kapasitetsplanleggingen hos vår leverandør og våre innkjøpsplaner gjennomføres etter faste avtaler	1	2	3	4	5	6	7

3.3: Skriftlige kontrakter bestemmer alle sider ved vår bedrifts innflytelse ved valg av råstoffer og/eller materialer for de produkter vi kjøper inn	1	2	3	4	5	6	7
3.4: Alle forhold som omhandler vår rett til innsyn og dokumentasjon av produksjonskostnader er regulert gjennom skriftlig kontrakt	1	2	3	4	5	6	7
3.5: Det er utarbeidet faste prosedyrer og regler for hvordan vår leverandør skal følge opp ordrer og forsendelser til vår bedrift	1	2	3	4	5	6	7
3.6: Utveksling av informasjon mellom våre bedrifter om prisutvikling og markedsforhold planlegges, og gjennomføres til faste tider og møter	1	2	3	4	5	6	7
3.7: Skriftlige kontrakter regulerer alle forhold ved håndtering av misnøye, klager og konflikter mellom våre bedrifter	1	2	3	4	5	6	7
3.8: Alle sider som berører vår bedrifts oppgaver og innflytelse i kvalitetssikringen hos vår leverandør er regulert gjennom skriftlige kontrakter	1	2	3	4	5	6	7
3.9: Alle forhold knyttet til partenes oppgaver og innflytelse i kvalitetskontroll av de produkter vi kjøper inn fra vår leverandør er kontraktfestet	1	2	3	4	5	6	7

3.10: Samarbeid om utvikling og testing av nye produkter planlegges, og gjennomføres til faste tider og møter	1	2	3	4	5	6	7
3.11: Skriftlige kontrakter bestemmer alle sider som angår vår innflytelse ved valg av underleverandører for de produkter vi kjøper inn	1	2	3	4	5	6	7

Spørsmål 4 :

Innkjøpsbedrifter gjennomfører i varierende grad spesielle investeringer og tilpasninger til sine leverandører f.eks. i produksjonsutstyr, leverandørutvikling, administrative rutiner og opplæring av personell.

I hvilken grad mener du at utsagnene nedenfor gir en dekkende beskrivelse for de tilpasninger og investeringer som <u>din bedrift</u> har gjennomført i <u>denne innkjøpsrelasjonen</u> (jfr. innledning og del 1)?

	Dårlig beskrivelse					God beskrivelse	
4.1: Vår bedrift har i stor grad gjennomført spesielle investeringer i produksjonsutstyr som er tilpasset de produkter vi kjøper inn fra vår leverandør	1	2	3	4	5	6	7
4.2: Våre spesifikasjoner for de produkter som kjøpes inn fra vår leverandør er i stor grad tilpasset til hans produksjonsteknologi og produktspekter	1	2	3	4	5	6	7
4.3: Vår bedrift har brukt mye tid og ressurser til opplæring og utvikling av personell hos vår leverandør	1	2	3	4	5	6	7

4.4: Vi har brukt mye tid og ressurser for å få innsikt og kunnskap om tekniske standarder og anvendelsesområder for produkter vi kjøper inn fra leverandøren	1	2	3	4	5	6	7
4.5: Vår bedrift har gjennomført spesielle investeringer i lager- og transportutstyr for å kunne håndtere leveransene fra vår leverandør	1	2	3	4	5	6	7
4.6: Vår bedrift har brukt mye tid og penger for å utvikle et godt opplegg for kvalitetssikring hos vår leverandør	1	2	3	4	5	6	7
4.7: Vår bedrift har nedlagt mye tid og ressurser for å utvikle spesielt utstyr og rutiner for produktkontroll av leveransene fra vår leverandør	1	2	3	4	5	6	7
4.8: Vår bedrift har brukt mye tid og ressurser i omorganisering av produksjonen for å oppnå bedre effektivitet i den videre bearbeidele av produkter vi kjøper inn fra vår leverandør	1	2	3	4	5	6	7
4.9: Vår bedrift har gjennomført spesielle investeringer i informasjonsteknologi for å effektivisere samhandlingen med vår leverandør	1	2	3	4	5	6	7
4.10: Vår bedrift har i stor grad tilpasset sine bestillingsrutiner til leverandørens rutiner for ordreeffektuering	1	2	3	4	5	6	7

Spørsmål 5 :

Leverandørbedrifter gjennomfører i varierende omfang spesielle investeringer og til-pasninger til sine kunder (innkjøpsbedrifter) f.eks ved utvikling av produksjonsutstyr, valg av transportløsninger og opplæring av personell.I hvilken grad mener du utsagnene nedenfor gir en dekkende beskrivelse for de til-pasninger og investeringer som din leverandørbedrift (jfr. del 1) har gjennomført i denne innkjøpsrelasjonen.

	Dårlig beskrivelse						God beskrivelse
5.1: Vår leverandør har i stor grad gjennomført spesielle investeringer i produksjonsutstyr for å tilpasse seg til innkjøpsbehovene i vår bedrift	1	2	3	4	5	6	7
5.2: Vår leverandør har gjennomført store produkttilpasninger for å imøte-komme kravene fra vår bedrift	1	2	3	4	5	6	7
5.3: Vår leverandør har brukt mye tid og ressurser til opplæring og utvikling av personell i vår bedrift	1	2	3	4	5	6	7
5.4: Vår leverandør har brukt mye tid og ressurser for å få kunnskap om kjøperne av våre produkter	1	2	3	4	5	6	7
5.5: Vår leverandør har gjort om-fattende investeringer i lager- og transportutstyr for å kunne håndtere leveransene til oss	1	2	3	4	5	6	7
5.6: Vår leverandør har brukt mye tid og penger for å imøtekomme våre krav til kvalitetssikring	1	2	3	4	5	6	7

5.7: Vår leverandør har nedlagt mye tid og ressurser for å imøtekomme våre krav til rutiner og utstyr for produktkontroll	1	2	3	4	5	6	7
5.8: Vår leverandør har brukt mye tid og ressurser i omorganisering av produksjonen for å oppnå bedre effektivitet og/eller kvalitet for de produkter som leveres til oss	1	2	3	4	5	6	7
5.9: Vår leverandør har gjennomført omfattende investeringer i informasjonsteknologi for å effektivisere samhandlingen med vår bedrift	1	2	3	4	5	6	7
5.10: Vår leverandør har i stor grad tilpasset effektuering og oppfølging av ordrer til bestillingsrutinene og innkjøpsbehovene i vår bedrift	1	2	3	4	5	6	7

Spørsmål 6:

Endringer i f.eks. råvarepriser, markedspriser og teknologi innebærer ofte risiko og mer usikre beslutninger.I hvilken grad mener du utsagnene nedenfor er en dekkende beskrivelse av markedsforholdene for din bedrift og din leverandør (jfr. innledningen)?

	Dårlig beskrivelse						God beskrivelse
6.1: Ettespørslen etter våre sluttprodukter er svært skiftende	1	2	3	4	5	6	7
6.2: Markedssituasjon for våre sluttprodukter er vanligvis svært gunstig	1	2	3	4	5	6	7

6.3: Våre sluttprodukter har store konkurransefortrinn blandt våre disributører og sluttbrukere	1	2	3	4	5	6	7
6.4: Våre viktigste konkurrenter gjennomfører jevnlig produktjusteringer og utvikler nye produkter	1	2	3	4	5	6	7
6.5: Det er relativt høy inovasjontakt og kort levetid for de produkter som vi kjøper inn fra vår leverandør	1	2	3	4	5	6	7
6.6: Etterspørselen for de produker vi kjøper inn fra vår leverandør er svært skiftende	1	2	3	4	5	6	7
6.7: Vår leverandør har vanligvis en svært gunstig markedssituasjon for sine produkter	1	2	3	4	5	6	7
6.8: Vår leverandør har svært god tilgang til råstoffer og underleveranser	1	2	3	4	5	6	7

Spørsmål 7:

Ta utgangspunkt i påstandene nedenfor og vurder hvorvidt de gir en dekkende beskrivelse av partenes innflytelse i relasjonen mellom din din bedrift og din leverandør.

	Dårlig beskrivelse						God beskrivelse
7.1: Vår bedrift bestemmer fullt og helt hvordan kvalitetssikringen hos vår leverandøren skal gjennomføres	1	2	3	4	5	6	7

7.2: Vi bestemmer i detalj hvilke metoder og standarder som skal benyttes ved kontroll av de produkter vi kjøper inn fra vår leverandør	1	2	3	4	5	6	7
7.3: Vi har ingen innflytelse over hvilke råstoffer/materialer vår leverandør skal benytte til produksjon av de produkter som selges til oss	1	2	3	4	5	6	7
7.4: Vi har stor innflytelse over hvilke underleverandører vår leverandør skal benytte ved produksjon av de produkter han selger til oss	1	2	3	4	5	6	7
7.5: Vår leverandør har størst innflytelse i forhandlinger om pris- og betalingsbetingelser	1	2	3	4	5	6	7
7.6: Vår bedrift har stor innflytelse over leveringstider og den måten ordrene til oss skal følges opp på	1	2	3	4	5	6	7
7.7: Vår leverandør har størst innflytelse når det gjelder valg av transportløsninger og emballasje for leveransene til vår bedrift	1	2	3	4	5	6	7
7.8: Vår leverandør bestemmer selv, uavhengig av oss hvilket verktøy og/eller produksjonsutstyr som som skal anvendes for produksjon av de produkter som leveres til oss	1	2	3	4	5	6	7

7.9: Vår bedrift har størst innflytelse når det gjelder å bestemme varigheten og oppsigelsesklausulene i kontrakten med denne leverandøren	1	2	3	4	5	6	7
7.10: Vår leverandør bestemmer selv, uavhengig av oss lagerstørrelsen for de produkter som han selger til oss	1	2	3	4	5	6	7
7.11: Vår bedrift har størst innflytelse i saker som ikke er klart regulert gjennom skriftlige kontrakter	1	2	3	4	5	6	7

Spørsmål 8:

Ta stilling til utsagnene nedenfor, og gi en vurdering av hvorvidt de gir en dekkende beskrivelse av partenes muligheter for tilgang til nye kunder og leverandører.

	Dårlig beskrivelse					God beskrivelse	
8.1: Det blir svært vanskelig for vår leverandør å finne alternative kjøpere dersom salget til vår bedrift opphører	1	2	3	4	5	6	7
8.2: Dersom salget til vår bedrift opphører, vil vår leverandør få store økonomiske problemer	1	2	3	4	5	6	7
8.3: Vår leverandør har en produksjonsteknologi som lett kan omstilles til nye produktspesifikasjoner	1	2	3	4	5	6	7

8.4: Det blir svært vanskelig for vår bedrift å finne alternative leverandører dersom vår leverandør legger ned sin virksomhet	1	2	3	4	5	6	7
8.5: Vår bedrift har relativt god tilgang til andre leverandører som kan erstatte vår leverandør	1	2	3	4	5	6	7
8.6: Vår produksjonsteknologi kan lett omstilles for bearbeidelse av produkter med andre spesifikasjoner enn leveransene fra vår leverandør	1	2	3	4	5	6	7

Spørsmål 9 :

Kjøper og leverandør kan gjennomføre spesielle investeringer og tilpasninger for å oppnå en bedre utnyttelse av egne og/eller den andre parts produksjonsressurser.
Slike investeringer kan være balanserte eller dominert av en av partene.
I hvilken grad mener du at de tilpasninger og investeringer som din bedrift og din leverandør har gjennomført er balanserte eller dominert av en av partene?

Investeringer og tilpasninger er:

Dominert av din leverandør			Balanserte			Dominert av din bedrift
1	2	3	4	5	6	7

Spørsmål 10:

Koordinering og styring av leverandørrelasjoner kan innebære både samarbeidsgevinster og kostnader.
Ta utgangspunkt i utsagnene nedenfor, og vurder hvorvidt de gir en dekkende beskrivelse av den måten du vurderer samarbeidet mellom din bedrift og din leverandør (jfr. del 1).

	Dårlig beskrivelse						God beskrivelse
10.1: Vi bruker unødvendig mye tid og ressurser til å kontrollere produksjon og/eller leveransene fra denne leverandøren	1	2	3	4	5	6	7
10.2: Det er relativt vanskelig og tidkrevende å få tak i de produksjons- og/eller kostnadsdata som vi ønsker fra denne leverandøren	1	2	3	4	5	6	7
10.3: Koordinering og styring av relasjonen med denne leverandøren er svært kostnadskrevende i forhold til de resultater vi oppnår	1	2	3	4	5	6	7
10.4: Det er relativt enkelt å bli enig med denne leverandøren om spesifikasjoner og støttetjenester for leveransene til oss	1	2	3	4	5	6	7
10.5: Vår bedrift har klart å utnytte denne leverandørens kompetanse og produksjonsressurser svært godt	1	2	3	4	5	6	7
10.6: Forhandlinger om priser og bonusordninger med denne leverandøren er svært vanskelige og tidkrevende	1	2	3	4	5	6	7

DEL 3: BESKRIVELSE AV DIN EGEN BEDRIFT:

Spørsmål 1:

Hvordan vil du beskrive den del av produksjonen/videreforedlingen i din bedrift som mottar den største delen av leveransene fra din leverandør (jfr. del 1)?

Sett 1 ved den produksjonsform som har størst utbredelse, og 2 ved den som har nest størst utbredelse dersom din bedrift anvender flere produksjonsformer.

☐ Funksjonell fabrikkutforming (avdelinger med adskilte oppgaver/funksjoner)

☐ Samlebåndsproduksjon

☐ Automatisert produksjon av produkter og/eller halvfabrikata i produksjonsceller/ "småfabrikker")

☐ Kontinuerlig prosessproduksjon

☐ Annet; spesifiser: _____

Spørsmål 2:

Hvor mange årsverk ble utført i produksjonen i din bedrift i 1993?

Ca. antall årsverk: _____

Spørsmål 3:

Hvilken næringsgruppe/bransje tilhører din bedrift? Set kun et kryss.

☐ Oljeutvinning/bergvekrsdrift

☐ Næringsmidler

☐ Tekstil/konfeksjon

☐ Trevarer/møbler

☐ Kjemisk produksjon

☐ Mineralsk produksjon

☐ Verkstedproduksjon

☐ Annen; spesifiser: _____

Gi en nærmere karakteristikk av den næringsgruppe/bransje din bedrift tilhører:_____

Spørsmål 4:
Hvor stor omsetning hadde din bedrift i 1993 (ekskl. mva og toll)?

Årsomsetning: Ca. NKR:_____

Spørsmål 5:
Hvor stor andel av omsetningen i 1993 representerte innkjøpte varer og tjenester?

Ca. andel: _____%

Spørsmål 6:
Ta utgangspunkt i det produkt/produktgruppe som representerer den viktigste del av innkjøpene fra din leverandørbedrift (jfr. del 1).
Har din bedrift anskaffet dette produkt/produktgruppe fra andre enn denne leverandøren i 1993?

☐ Nei

☐ Ja, fra andre eksterne leverandører Ca. andel:_____%

☐ Ja, fra egen bedrift/datterselskaper Ca. andel:_____%

Spørsmål 7.1:
Ta utgangspunkt i den produksjonen i din bedrift som mottar den største del av leveransene fra denne leverandøren.
I hvilken grad er sluttproduktene fra denne produksjonen i din bedrift kunde-tilpasset?

Ingen kundetilpasning					Fullt kundetilpasset	
1	2	3	4	5	6	7

Spørsmål 7.2:
Gi en kort beskrivelse av sluttprodukt(er) fra denne produksjonen:

Spørsmål 7.3:

Hvordan fordelte disse produktene seg mellom følgende brukere i 1993?

Forbrukervaremarkedet:	Ca. andel:____ %
Bedrifter/produksjonsformål	Ca. andel:____ %
Storkunder/institusjoner	Ca. andel:____ %
Annet;spesifiser:	Ca. andel:____ %

Spørsmål 7.4:

Hvor mange salgsordrer effektuerte din bedrift i 1993:

Ca. antall salgsordrer: _____

Spørsmål 7.5:

Hvor stor andel av salget er eksport? Ca. eksportandel: _____ %

Spørsmål 8:

Hvor lenge har kundeforholdet mellom din bedrift og denne leverandøren vart?

Angi antall år/måneder: Ca._____

Spørsmål 9:

Foreligger det en skriftlig innkjøpskontrakt (i tillegg til ordinære innkjøpsordrer) mellom din bedrift og din leverandør?

☐ Ja ☐ Nei

Hvis ja, hvordan vil du karakterisere den kontraktstypen som regulerer relasjonen mellom din bedrift og denne leverandøren?

☐ Rammeavtale

☐ Leverandør avtale med inntil 1 års varighet

☐ Langsiktig leverandøravtale med over 1 års varighet

☐ Ekslussiv leverandøravtale (eneleverandøravtale)

☐ Annet; spesifiser:_____

Angi varigheten for innkjøpskontrakten med denne leverandøren.

Innkjøpskontraktens varighet (År/måneder):_____

Spørsmål 10:

Hvordan fastsettes vanligvis prisen for leveransene fra denne leverandøren til din bedrift? Sett kun ett kryss..

☐ Fastpriskontrakt

☐ Priskontrakt med spesifiserte incentiver, f.eks premiering for rask levering

☐ Priskontrakt med spesifiserte prisglidningsvilkår (eskaleringsklausuler)

☐ Kostnadskontrakt med variabel godtgjørelse for tilleggsytelser og/eller endringsordrer

☐ Kostnadskontrakt med spesifisert fast godtgjørelse

Spørsmål 11:

Ta utgangspunkt i siste gang din bedrift skrev eller reforhandlet innkjøpskontrakt med denne leverandøren.

Innhentet dere i den anledning anbud fra andre leverandører?

☐ Nei

☐ Ja, fra 1 annen leverandør

☐ Ja, fra flere andre leverandører

Spørsmål 12:

Hvordan vil du generelt beskrive partenes innflytelse når det gjelder styring og faslegging av kontraktbetingelser for denne leverandør-kjøper-relasjonen (jfr. del 1)?

Vår leverandør har størst innflytelse			Lik innflytelse		Vår bedrift har størst innflytelse	
1	2	3	4	5	6	7

Spørsmål 12:

I hvilken grad deltar du personlig ved forhandlinger, møter og samarbeidsprosjekter mellom din bedrift og denne leverandøren?

I svært liten grad I svært stor grad

1 2 3 4 5 6 7

TUSEN TAKK FOR HJELPEN!

Kommentarer:

NIMA

Norsk Forbund for Innkjøp og Logistikk

Upolitisk Landsforbund
NIMA - Norsk Senter for Innkjøp og Logistikk
NIMA Rådgivning AS
«NIMA-Nytt»

Medlem av/Member of:
International Federation of Purchasing and Materials Management - IFPMM

European Logistics Association - ELA

Til

Innkjøpsansvarlige

Deres ref.:/Your ref.: | Vår ref.:/Our ref.: KEB4B/11 | OSLO, mai 1994

SPØRRESKJEMA I FORBINDELSE MED ET DOKTORGRADSARBEID VED NORGES HANDELSHØYSKOLE

NIMA støtter arbeidet som førsteamanuensis Arnt Buvik ved Høgskolen i Molde gjør ved Norges Handelshøyskole under veiledning av professor Torger Reve. Dette er det første doktorgradsarbeidet i innkjøp i Norge, og vi mener det er særdeles viktig at du kan hjelpe ham med å besvare det tilsendte spørreskjemaet, slik at avhandlingen kan bli så relevant at vi kan få glede av den alle innkjøpere i Norge.

Den måten vi håndterer relasjonene til våre leverandører på blir stadig diskutert i ulike fora for innkjøp og materialadministrasjon. Er anbud og markedskontrakter den mest effektive samarbeidsform, eller skal innkjøpsbedriftene basere sitt forhold til leverandørbedriftene på leverandørutvikling eller partnerskap?

Arnt Buvik vil gjennom sin doktorgradsavhandling "Koordinering av innkjøpsrelasjoner i norsk industri" bl.a. klargjøre under hvilke betingelser de ulike former for leverandørsamarbeid er mest kostnadseffektive. I denne sammenhengen har han hatt et nært samarbeid med NIMA for å få en mer praktisk klargjøring av avhandlingstemaet ved å komme i kontakt med innkjøpsbedrifter som NIMA kjenner til gjennom sin virksomhet.

NIMA ser det som svært viktig at innkjøp og materialadministrasjon settes på dagsorden i norsk forskningssammenheng, og vi tror at dette kan bidra til en positiv kunnskapsutvikling innenfor disse fagfeltene.

Vårt ønske er derfor at du tar deg tid med å fylle ut skjemaet, slik at ditt bidrag er med på å lage historie innen vårt område.

Med vennlig hilsen
NIMA - NORSK FORBUND FOR INNKJØP OG LOGISTIKK

Karl-Erik Bastiansen
direktør

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Norwegian School of Economics and Business Administration

NHH

Institutt for
organisasjonsfag

Institute of
Organization Sciences

TIL INNKJØPSANSVARLIGE

Bergen, mai 1994

Innkjøp av varer er viktig for verdiskapningen i norsk industri. Interessen for innkjøpsøkonomi og organisering av innkjøpsarbeidet er økende i norsk næringsliv.

Innenfor undervisning og forskning satses det på oppbygging av kunnskap og kompetanse innenfor dette fagfeltet, og Norges Handelshøyskole vil bl.a opprette et eget professorat for å styrke innkjøps- og logistikkfeltet.

Det er gjennomført relativt lite forskning i Norge som retter oppmerksomheten mot kjøper-selger-relasjoner oppstrøms. Arnt Buviks doktorgradsarbeid om "koordinering av innkjøpsrelasjoner i norsk industri" er det første større forskningsarbeid innenfor dette problemfeltet.

En omfattende kartlegging av utvalgte innkjøpsrelasjoner i norsk industri er helt avgjørende for å kunne gi forskningsbasert undervisning på høyt nivå og av praktisk innsikt i leverandør-produsentrelasjoner i norsk industri. ***Innkjøpsundersøkelsen*** (jfr. vedlagte spørreskjema) har bl.a til formål å kartlegge under hvilke betingelser ulike former for leverandørsamarbeid er mest effektive. For å nå disse mål er vi helt avhengige av din velvilje til samarbeid.

Vennligst besvar og returner spørreskjemaet i vedlagte, frankerte svarkonvolutt i god tid før Drillos har avspark mot Mexico 19. juni.

De som besvarer spørreskjemaet "belønnes" ved:
-at de deltar i trekningen om fri deltagelse på NIMA-dagene i november 1994

-at de etter eget ønske får tilsendt et sammendrag av hovedresultatene fra innkjøpsundersøkelsen

Det er svært viktig at alle spørsmål blir besvart. De fleste spørsmålene har strukturerte svaralternativer, og er relativt greie å bevare.
De data som samles inn vil bli behandlet strengt konfidensielt.
Resultatene fra undersøkelsen vil bli presentert i en aggregert form som gjør det umulig å identifisere hva den enkelte har svart.

På forhånd takk.

Hilsen

Torger Reve
professor

Arnt Buvik
forsker

SVARSKJEMA FOR DE SOM IKKE BESVARER SPØRRESKJEMAET:

1.Navn på den som besvarer dette skjemaet:

_____

2.Firmanavn:_____

3.Hvor mange ansatte har den bedrift/divisjon hvor du jobber?
Ca. antall ansatte:_____

4.Hva er årsaken til at spørreskjemaet ikke er besvart? Sett ett eller to kryss

- ☐ Jeg jobber ikke med innkjøp
- ☐ Jeg har ikke tid og anledning til å besvare spørreskjemaet
- ☐ Jeg ønsker ikke å besvare slike spørreskjemaer av prinsipp
- ☐ Spørsmålene i spørreskjemaet er for sensitive til at vi vil besvare dem
- ☐ Vår bedrift driver ikke produksjonsvirksomhet
- ☐ Annet; spesifiser:_____

_____

Vennligst returner dette svarark i vedlagte svar-konvolutt.

Høgskolen i Molde, august 1994

Arnt Buvik

Appendix 3:

Descriptive statistics of variables in the research model:

DESCRIPTIVE STATISTICS OF THEVARIABLESINTHE RESEARCH MODEL:

1. VERTICAL FORM:

ITEMS:	MEAN	STANDARD DEVIATION	SKEW-NESS	KURTO-SIS
VERTINT5	5.65	1.18	-0.95	1.07
VERTINT7	5.53	1.34	-1.19	1.23
VERTINT8	4.71	1.64	-0.61	-0.37
VERTINT9	5.11	1.51	-0.82	0.05
THE SCALE : VERTICAL INTERACTION	5.25	1.09	-0.87	0.39
FORM3	3.93	2.20	-0.13	-1.50
FORM4	3.23	2.27	0.54	-1.30
FORM7	4.37	2.15	-0.30	-1.31
FORM8	3.78	2.08	0.13	-1.27
FORM9	3.84	2.07	0.12	-1.33
FORM11	2.63	1.91	1.11	0.04
THE SCALE: FORMALIZATION	3.61	1.61	0.09	-0.88
CENTRAL1	3.12	1.90	0.52	-0.95
CENTRAL2	3.85	2.01	0.02	-1.36
CENTRAL8	2.56	1.88	1.09	-0.01
THE SCALE: CENTRALIZATION	3.18	1.46	0.27	-0.81

2. ASSET SPECIFICITY:

ITEMS:	MEAN	STANDARD DEVIATION	SKEW-NESS	KURTO-SIS
BUYER SIDE:				
BUYSPEC1	3.05	2.12	0.59	-1.14
BUYSPEC2	4.06	2.22	-0.16	-1.51
BUYSPEC3	2.48	1.71	1.12	0.23
BUYSPEC4	3.65	1.88	0.12	-1.12
BUYSPEC5	2.43	1.86	1.12	0.05
BUYSPEC6	2.60	1.65	0.71	-0.60
BUYSPEC7	2.76	1.59	0.63	-0.48
BUYSPEC8	2.91	1.89	0.73	-0.67
BUYSPEC9	2.16	1.65	1.58	1.65
BUYSPEC10	2.95	1.87	0.60	-0.84
THE SCALE: BUYSPEC	2.91	1.17	0.58	-0.19

SUPPLIER SIDE:				
SUPPLSPEC1	3.61	2.01	0.03	-1.32
SUPPLSPEC2	3.69	2.04	0.10	-1.32
SUPPLSPEC3	2.56	1.61	0.71	-0.58
SUPPLSPEC4	2.83	1.72	0.65	-0.65
SUPPLSPEC5	2.92	1.71	0.64	-0.48
SUPPLSPEC6	3.88	1.70	-0.08	-0.96
SUPPLSPEC7	3.67	1.71	0.10	-0.98
SUPPLSPEC8	3.91	1.86	-0.06	-1.18
SUPPLSPEC9	2.62	1.55	0.81	-0.05
SUPPLSPEC10	4.61	1.80	-0.54	-0.72
THE SCALE: SUPPLSPEC	3.43	1.22	-0.02	-0.68

3. UNCERTAINTY:

ITEMS:	MEAN	STANDARD DEVIATION	SKEW-NESS	KURTO-SIS
UNCERT1	4.15	1.81	-0.02	-1.00
UNCERT2	4.49	1.75	-0.34	-0.87
UNCERT3	2.64	1.75	1.02	-0.01
UNCERT4	3.31	1.83	0.36	-0.92
SCARC1	3.94	1.46	0.16	-0.39
SCARC2	3.50	1.66	0.48	-0.54
SCARC3	3.57	1.50	0.12	-0.50
SCARC4	2.90	1.49	0.81	0.31
THE SCALE: UNCERT	3.57	0.75	0.07	0.38

4. BUYERS PRODUCTION TECHNOLOGY:

ITEMS:	MEAN	STANDARD DEVIATION	SKEW-NESS	KURTO-SIS
TECHNO1	4.39	1.96	-0.44	-1.09
TECHNO2	4.06	1.80	-0.16	-1.01
TECHNO3	4.43	1.66	-0.34	-0.78
THE SCALE: BUYTECH	4.29	1.57	-0.36	-0.62

Appendix 4:

Assessments of homogenity of variance for the hypothesis tests

Results of homogeneity of variance test for H1 - H3

Variable	Vertical interaction		Formalization		Centralization	
Hypothe-sis	Cochrans C	Bartlett-Box F	Cochrans C	Bartlett-Box F	Cochrans C	Bartlett-Box F
H_1	C(41,2)= 0.50 p=0.95	F(1,11)= 0.002 p=0.96	C(41,2)= 0.58 p=0.28	F(1.11)= 0.95 p=0.32	C(41,2)= 0.53 p=0.65	F(1,11)= 0.16 p=0.68
H_2	C(25,2)= 0.66 p=0.10	F(1,71)= 2.76 p=0.10	C(25,2)= 0.55 p=0.60	F(1.71)= 0.26 p=0.60	C(25,2)= 0.61 p=0.25	F(1,71)= 1.26 p=0.26
H_3	C(43,2)= 0.58 p=0.25	F(1,14)= 1.13 p=0.28	C(43,2)= 0.54 p=0.60	F(1.14)= 0.22 p=0.63	C(43,2)= 0.53 p=0.69	F(1,14)= 0.13 p=0.71