Supply Chain Management in a New Institutional Framework

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List of Abbreviations

IC	Incomplete Contracts
NIE	New Institutional Economics
PAT	Principal-Agent Theory
PRT	Property Rights Theory
SCM	Supply Chain Management
TCE	Transaction Cost Theory

1. Introduction

One can observe a certain relevance of the theoretical framework subsumed under New Institutional Economics (NIE) for the newer management discipline Supply Chain Management (SCM).

Institutions, it is argued, govern the purpose of an organization. On an industry level these rules affect the way firms organize to produce and provide goods and services and interact with others. Just like firms can change institutional arrangements (e.g. by changing ownership or governance structures, channels or markets) inter-company relations similarly exist within certain institutional arrangements which are subject to alterations and adjustment processes. Supply Chain Management can be seen as one means of optimizing the coordination of different economic entities which transact with each other. One may argue that SCM and NIE are similar to the extent that both consider institutional arrangements, yet they differ in their focus. The Supply Chain literature concerns itself with managing the different flows between the suppliers' suppliers and the ultimate customers, i.e. consumers. Such flows are often thought of mainly in terms of product flows with the effect that logistical and (physical) distribution aspects are of central interest to many researchers. However, such a view is much too one-dimensional. A supply chain encompasses all flows among the different chain members, also including for example services, information, financial resources, demand and forecast flows (see Mentzer et al. 2001). Hence, optimization ideally needs to target all flows as well.

While there is overall progress observable with respect to structuring and defining SCM in general and discussing specific aspects in detail, there has been little focus on a broader economic interpretation and discussion. According to Cox (1996, p. 58), "much of the current discussion about concepts in purchasing and supply is based on an atheoretical and unscientific approach". That is not to say that there is no academic treatment of the supply chain available in the literature. To date, research has, to a large extent, focused on the managerial, and often more specifically, the logistic aspect of the supply chain. A recent review of up-to-date SCM literature comes to the conclusion that this management theme will only be established as a long-term field of research through theoretical consolidation and substantiation (see Müller/Seuring/Goldbach 2003).

NIE seems more than fit to close the gap between recent management-oriented SCM research and its theoretical validation. It stands out as highly interdisciplinary and is able to provide more rigorous analyses based on economic principles. NIE can provide an economic founda-

tion for a more structured analysis of SCM and a helpful starting point for advice to practitioners. Applying NIE theory to SCM as well as empirically testing and validating the resulting hypotheses will also further strengthen the new institutional theories. Also, gaps within the theoretical framework may be allocated and eventually filled by advancing existing models.

2. Problem Delimitation and Course of Work

Before using the theoretical framework provided by NIE to discuss specific problems investigated within the context of SCM, a thorough review of the existing research streams in the literature and their structure is needed. NIE not only provides a framework for analysis but has been applied to a number of related problems in the past. One needs to examine which theoretical models or model classes already exist that may fit SCM problems. Can they be structured and classified according to a SC framework? Can their usefulness be evaluated? Are adaptations or modifications possible and expedient? Where do gaps exist; i.e. are there problems inherent to SCM which existing NIE constructs seem unable to depict? Is further scientific research needed?

The above questions will be discussed and answered in this paper, which is organized as follows: Section 3 provides definitions of central concepts and describes the general scope of the paper; in section 4, new institutional models are structured both within the context of NIE as well as sorted by their usefulness for analyzing components of Supply Chain Management. A tentative evaluation is provided and suggestions will be given on how to close existing gaps. Two other theories are additionally suggested for further inputs towards an integrated theory of SCM. The applicability of Game Theory for model refinements is suggested and the advances of marketing research related to distribution channels are mentioned as well. Finally, an economic outlook and suggestions for future research are presented in section 5.

3. Definitions and Framework Delineation

This section will provide an overview of the different theories comprised in the NIE framework in the following. Then, Supply Chain Management is defined and the relation between NIE and SCM is elucidated.

3.1. New Institutional Economics

Coase (1937) is the first to reason why firms exist at all, arguing that the use of the market for economic transactions entails costs (p. 390) that are present in addition to regular production costs, later termed transaction costs. “Transaction costs arise through the creation, assignment, transfer and implementation of property rights” (Wigand/Picot/Reichwald 1997, p. 35)

and include (e.g.) information and communication costs, as well as time and effort employed on managing exchanges. Due to these costs, Coase (1937, pp. 392-393) reasons, it is more efficient in some instances to form an organization instead of using open market transactions. Resulting out of diseconomies of scale, a firm reaches its optimal size when "it is equally costly to expand production by using the market as it is to carry it out internally" (Domberger 1998, p. 15). Coase (1937, p. 395) furthermore argues that a firm will expand up to the point where the costs equal "the costs of organizing it in another firm".

Williamson subsequently develops and operationalizes what has become known as Transaction Cost Economics (TCE). TCE's basic idea is to "align transactions (which differ in their attributes) with governance structures (which differ in their cost and competencies) in a [production cost and] transaction cost economizing way" (Williamson 1990, p. 67) while mitigating hold-up problems associated with contractual hazards such as asset specificity. Central to this argument is the idea that firms and arms-length contracts through markets are two opposite poles connected by a continuum of hybrid governance structures, such as joint ventures, strategic alliances or other forms of cooperation.

A closely connected but more formal theory of integration is based on the seminal paper by Grossman and Hart (1986). The central argument of this approach lies in the residual control or property rights the owner of an asset holds over that asset (see Hart 1995, p. 30, Foss 1997, p. 15, and Currie/Messori 1998, p. 179). Assets can be physical, such as buildings, as well as human or intellectual assets, such as working time or management knowledge. By defining a firm as being made up of the assets which it owns, integration can correspondingly be defined in terms of asset ownership (see Holmström/Roberts 1998, p. 77). These ownership rights are important for the theory of the firm, because "their allocation and specification influences individual behavior" (Mahnke 2000, p. 12). Furthermore, one needs to distinguish between specific and residual property rights. Specific rights are spelled out initially in contracts and apportioned between the parties relevant to the transaction. Residual control rights are rights not specified by contracts and laws or rights that are not ex post enforceable (see Hart 1995, p. 30, Foss, K. 1998, p. 11). Ownership of a firm can thus be defined as possessing the residual control rights over that firm's assets, i.e. "the rights to deploy those assets in any ways which do not violate any initial contracts" (Currie/Messori 1998, p. 181). Hart and Moore (1990, p. 1121) argue that controlling non-human assets can indirectly lead to control over human assets, since the asset's owner can exclude others from its use. For example, if workers require using an asset to be productive, then the owner who controls access to that asset can conceivably force workers to act in his interest.

Why, though, does possession of residual property rights of assets matter for the theory of the firm? If contracts were complete in the sense that they covered all eventualities, i.e. all (relevant) states of the world in sufficient detail, if they were costless to plan, negotiate, write and enforce, then residual rights would be inconsequential as all rights were specifically spelled out in contracts. Agents, though, cannot account for all possible future contingencies (see Hart/Moore 1988, p. 756, Hart 1995, p. 30, Mahnke 2000, p. 20, and Brickley/Smith/Zimmerman 2001, p. 474). Costs to obtain information, the limitations of natural language, the possible appearance of innovations, as well as the costs of legal enforcement, are but a few ways in which contractual completeness is naturally limited (see Hart/Holmström 1987, p. 132, Hart/Moore 1988, p. 755, and Foss, N.J. 1998, p. 15).[1] These costs make it rational for the contracting parties to leave out many contingencies with the intention to reevaluate later and, if necessary, renegotiate the terms of the contract (see Hart/Holmström 1987, p. 132). Furthermore, as TCE already predicted, contracting is not costless. As a result, not all property rights can be specifically assigned (see Mahnke 2000, p. 12). It follows that "ex post residual rights of control will be important because, through their influence on asset usage, they will affect ex post bargaining power and the division of ex post surplus in a relationship" (Hart 1995, p. 12). When issues are not specified through contracts, residual control rights must be assigned, otherwise losses in efficiency can occur[2] (see Mahnke 2000, p. 12). Any incomplete contract (IC) "opens the door for a larger scope of undefined behavior, and this can be opportunistically exploited" (Wigand/Picot/Reichwald 1997, p. 48).

Principal-Agent-Theory (PAT) centers on such opportunism. Agency relationships are all interactions between two or more parties where one acts for the other in a particular decision making area (see Ross 1973, p. 134). As most relations within and sometimes across organizations can be described as principal-agent (see Holmström 1979, p. 89), many organizational problems which are caused by asymmetric information, hidden actions, and the like have been modeled and discussed within this framework (see e.g. Ross 1973, Stiglitz 1975, Fama 1980). Holmström (1979), as another example, discusses the value of information and contractual design for optimal risk sharing; and Jensen and Meckling (1976) analyze the nature of agency costs in relation to ownership and control issues.

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[1] The causes of contractual incompleteness are not necessarily due to information asymmetries; while an overlap is certainly possible, contracts may be incomplete even if the parties have access to the same information (see Hart/Moore 1988, p. 756).

[2] Further, not only specifying and assigning residual rights matter, but the capability of the law to enforce these rights is important as well.

In conclusion, one can argue that the collection of theories which constitute New Institutional Economics adequately covers the matters of institutions in general, and, more specifically, the firm and its relations of depth and width.

3.2. Supply Chain Management

As stated in the introduction, the central problems addressed in the Supply Chain Management literature concern the coordination and/or the motivation of (managing) different flows between all economic entities, from the suppliers of suppliers to the ultimate customers. A supply chain encompasses all flows between the different chain members, including not only products and related information flows but also e.g. services, financial resources, demand and forecast flows (see Mentzer et al. 2001, p. 19).

Efficiently designed supply chain flows are identified by two aspects: In today's fast-paced business environment a competitive edge is only reachable through simultaneous optimization of all coordinative efforts. Such efforts to coordinate however must be motivated in order to be undertaken and function flawlessly, for example through efficient contract design or closer cooperation.

The core concept of Supply Chain Management that will be analyzed in a neo-institutional framework is, as a matter of course, the supply chain.

Mentzer et al. define a supply chain as "a set of three or more entities (organizations or individuals) involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer" (Mentzer et al. 2001, p. 4). From this definition it follows that a supply chain can be diverse in its structure as well as varying in degree of complexity (see Mentzer et al. 2001, p. 4).[3]

While defining supply chains poses relatively few difficulties and will generally evoke little disagreement among researchers, the definition of Supply Chain Management has not been as simple.

In early publications (see e.g. Ellram/Cooper 1990, Steven 1989, La Londe 1984) on SCM, the focus clearly was to extend the traditional logistics function across firm boundaries while at the same time reducing inventory by enhancing information (quality, usage and sharing). In time, this focus has broadened the understanding of SCM to include business operations or processes beyond logistics (Cooper/Lambert/Pagh 1997).

Following Mentzer et al. (2001, p. 5-11), the different attempts to define Supply Chain Management can be sorted into the three categories: management philosophy, implementation of a

[3] Supply chains or distribution channels exist independent from whether or not they are (properly) managed.

management philosophy, and a set of management processes. To obtain a more precise definition, the authors argue that such a systemic and strategic view which a management philosophy would constitute should more properly be termed supply chain orientation.[4] Supply Chain Management is then able to define more precisely what the term already implies, "the sum total of all the overt management actions undertaken to realize that philosophy" of the supply chain orientation (Mentzer et al. 2001, p. 11). Thus, Supply Chain Management is the tool needed to put a supply chain orientation into action.

For the purpose of this paper, Supply Chain Management describes the "systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole" (Mentzer et al. 2001 p. 18).

3.3. Supply Chain Management within New Institutional Economics

Hodgson (2002) defines economic organizations as entities in which regular exchanges of property rights take place within a legal framework. Thus, both markets and firms are considered economic organizations. In recent decades, firms have been observed to change in structure towards new forms of organization. The main challenges that have caused these changes are seen in increased information intensity (due to rapid advancements in information and communication technologies) and globalization (see e.g. Knudsen/Eriksen 2002, p. 3). In their article on the architecture of new organizational forms, Knudsen and Eriksen (2002, p. 3) group the resulting challenges for the firm into four categories: (1) greater interdependence between organizations, (2) the option to perform without owning the relevant assets, (3) increased pace of organizational performance, and (4) shifts in relevance from tangible assets to knowledge and information. New governance structures are assumed to have emerged as a reaction to these challenges. More recent papers in organizational economics often define these new forms as *hybrids*. "The term hybrid does not refer to a distinct category of organizational forms but to a diverse collection of relationships that either combine contracting and vertical integration or lie somewhere between markets and hierarchies in terms of incentive intensity, adaptability, and bureaucratic costs" (Masten 1996, p. 12, see also Williamson 1991, pp. 280-281). More specifically, hybrid forms of hierarchy or internal hybrids are hierarchical structures which delegate decision rights to lower levels and thus use elements of market control. Hybrid forms of markets or external hybrids are market exchanges using ele-

[4] Mentzer et al. (2001 p. 11) define supply chain orientation as the "recognition by an organization of the systemic, strategic implications of the tactical activities involved in managing the various flows in a supply chain".

ments of hierarchical control (see Foss/Foss 2002, p. 19 and Knudsen/Eriksen 2002, p. 2.). Besanko, Dranove and Shanley (2000, p. 185) argue that collaborative activities belong somewhere between full vertical integration and arm's-length market transactions. As in arm's-length transactions, the cooperating parties remain independent. However, long-term cooperation typically involves more coordination and information sharing than would occur in an arm's-length transaction.

The following factors are commonly cited for the establishment of collaborative ventures: time; advantages gained from information sharing; risks and costs; economies of scale; gain in competencies, know-how advantages and the use of complementarities; decreasing information asymmetries; ease of market entry e.g. through the bypassing of entry barriers to protected or new markets; and the creation of new forms of entry barriers (see e.g. Büchs 1991, pp. 15-16, Wigand/Picot/Reichwald 1997, p. 223, Dulbecco 1998, pp. 580-582, and Cullen 2000, p. 364). Additionally, Besanko, Dranove and Shanley (2000, pp. 185-187) name a number of features of transactions that would make them candidates for collaborative ventures, for example impediments to comprehensive contracting, complex and non-routine transactions, high costs for a single firm, a transitory or uncertain market opportunity, or unique regulatory features that require a local partner.

When using the SCM definition provided by Mentzer et al. (2001, p. 18), firms which cooperate through Supply Chain Management clearly fall into the hybrid category of organizational structures described above. A "systemic, strategic coordination […] across businesses" (Mentzer et al. 2001, p. 18) is much more long-term and hierarchical in structure than an arm's-length market transaction. The fact that the businesses remain independent economic entities however indicates market aspects. With this awareness, SCM cooperation of firms can be classified as hybrids in a new institutional sense and NIE seem more than able to provide a framework of analysis to SCM.

4. A New Institutional Economics Framework for Analyses of Supply Chain Management

In order to systematically analyze the concept of Supply Chain Management in a NIE framework, a classification scheme is needed. The following will provide a systematic overview of the models in NIE. Then these models will be sorted into a SCM model to show where each model type is usable and may be used to formalize SCM. Next, a first evaluation of the models' fit will be attempted and existing gaps and possible remedies will be discussed.

4.1. Relevant Models in New Institutional Economics

In order to provide an analytical framework to SCM, a systematic overview of the existing theoretical models or model classes within New Institutional Economics which may fit SCM problems is necessary.

Before considering specific models within the new institutional framework, it is useful to sort the existing research directions in NIE by the subset or class of institutions targeted. On a general level, New Institutional Economics has been structured according to the institutional level under investigation. This framework proposed by Williamson (2000) and elaborated by Joskow (2004, pp. 10-11) identifies four tiers of analysis:

Level 1: Embeddedness or Social/Cultural Foundation

The fundamentals for a society's institutions are provided through e.g. informal institutions, traditions, customs, social norms and ethics.

Level 2: Basic Institutional Environment

This level encompasses the formally defined political, legal and economic means which govern institutions such as political systems, human and property rights or laws.

Level 3: Institutions of Governance

These include governance arrangements which shape institutions such as competitive markets, contract and firm structures and the like.

Level 4: Short-term Resource Allocation

Neoclassical economic parameters such as prices, wages, costs and quantities are determined taking the other levels as given in the short run.

As Joskow (2004, p. 14) notes, most NIE research so far has focused on Level 2 and Level 3. These levels are also the ones that have been enriched by quite sophisticated analytical models. As SCM is considered a specific form of governance arrangement, emphasis is laid on Level 3 models in the following. The works mentioned below are not exhaustive, but illustrate the wide range of existing research. Each work addresses concerns of supply chains and their management, and may be very useful as starting points for further research.

An extensive variety of publications falling into the level of governance arrangements specifically considers formal payoff models analyzing the effects of incomplete contracts, property rights distribution and principal-agent problems. This class of models is quite advanced in its analytical form. For the property rights theory (PRT) and incomplete contracts literature, as Joskow (2004, p. 24) observes, the focus is on ex ante investment incentives assuming ex post bargaining to be efficient.

Grossman and Hart (1986) as well as Hart (1988) discuss and model the problematic consequences of incomplete contracts for investment incentives. Not only do they show that vertical integration is able to overcome contractual difficulties when investments are relationship-specific but also who should integrate whom depending on the net productivity gains from undiluted management control.

Hart and Moore (1990) provide a framework for analyzing employee incentives affected by changes in ownership which is broad enough to encompass various forms of control structures (e.g. partnerships or cooperatives). In relation to this, Moore (1992) presents an extended example and discusses implications of viewing the firm as a 'collection of assets'.

Baker, Gibbons and Murphy (1997) elaborate on the property rights model by Grossman/Hart (1986) to discuss various ownership patterns discovering that vertical integration is an efficient response to widely varying supply prices. This result may have immediate consequences for SCM.

The specific case of subcontracting is observed by Casson and Wadeson (1998) when they take explicit consideration of a firm's boundaries. They present a model of conversations as rational responses to communication costs to examine information technology impacts. The model may also be used to analyze all forms of dialogue with the goal to coordinate both within and across firms.

Wiggins (1990) also concentrates on a hybrid firm structure when analyzing the ex-ante choice between long-term contracting and vertically integrating in a two-stage model before any specific investments occur.

Papers concerning more the internal structures of organizations and hence focusing on principal-agent relationships include several other topics.

For one example, an early article by Jensen and Meckling (1976) examines agency costs and coins the 'nexus of contracts' view of the firm. Other costs, namely those of communication, are analyzed by Bolton and Dewatripont (1994) who conclude that agents can reduce costs by specialization. Hence, specialized supply chain managers may be able to cooperate more efficiently than other departments.

Holmström and Milgrom (1994), as another example, discuss the influence of workers' incentives on their motivation and its positive influence on performance, an aspect highly relevant when developing models of supply chain cooperation where worker support is needed. Fumas (1993) provides a simple model for incentive design under imperfect (hierarchical) supervision.

Somewhat related, Aghion and Tirole (1997) analyze how an agent's authority is positively related to that agent's initiative but negatively related to the controlling ability of the principal. Additionally, the amount of communication depends on the allocation of authority as well. Calvo and Wellisz (1978) also concern themselves with control issues in hierarchical structures arguing that the loss of control naturally limits firm size. Such an argument may be applied to SCM, proposing that the loss of control also limits the size of the cooperation and hence the number of partners cooperating via SCM. In contrast, Fama (1980) argues that the separation of ownership and control can be efficient if individuals specialize enough in either risk-bearing or management activities and agency problems are mitigated through functioning labor markets.

Holmström (1982) as well as Holmström and Milgrom (1991) also consider problems of PAT analyzing firm organization with respect to team production under moral hazard aspects and present a model which is able to account for different incentives, asset ownership patterns, and job design.

Contrarily, Transaction cost models focus on problems of ex post adaptation (see Joskow 2004, p. 24). This class of models however is hardly sophisticated in a formal (mathematical/analytical modeling) sense but existing analytical discussions are more a mathematical interpretation of verbal arguments. There is, however, extensive empirical research available on TCE generally supporting its significance.

There are a number of works dealing specifically with marketing or distribution channels and are thus highly relevant to the study of supply chains.

Anderson and Schmittlein (1984) develop and test a model of vertically integrating the marketing function of personal selling based on transaction cost theory. A similar line of argument is also found in Anderson (1985, 1988). The general choice (i.e. not limited to sales force decisions) between independent and integrated channels of distribution is discussed by Anderson and Coughlan (1987).

John and Weitz (1988) use a similar model to empirically test the degree of forward integration into distribution of industrial goods. They find that "integration is a matter of degree" (p. 351). Maltz (1993) also uses such an approach based on transaction cost minimization to survey companies on private fleet use.

4.2. A Supply Chain Management Classification

The models used in NIE may quite well be transferable onto SCM problems and contribute towards a better understanding of the nature of supply chain relations. For an easier application, it makes sense to attempt sorting the different NIE models by their applicability for certain aspects of SCM. Therefore, a framework or structure of Supply Chain Management is needed.

Mentzer et al. present a Supply Chain Management model (depicted in figure 1) which illustrates the central components of SCM and their connection with each other.

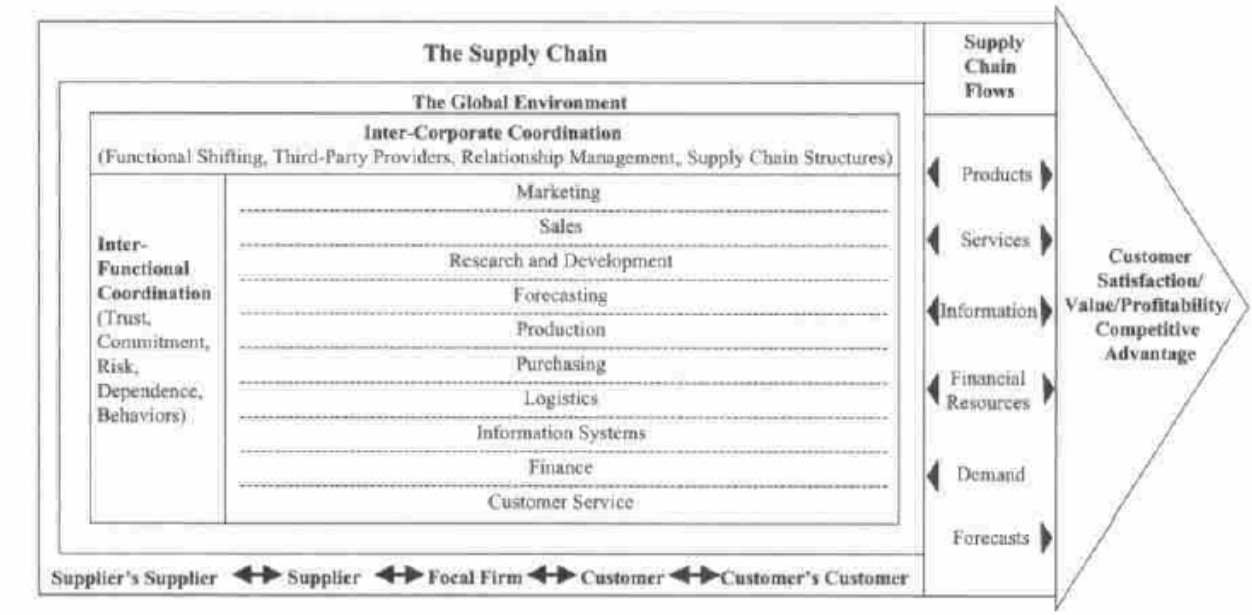

Figure 1: A Supply Chain Management Model
Source: Mentzer et al. 2001, p. 19.

The theoretical models used in NIE and the different theoretical approaches illustrated above can now be allocated to the most relevant/fitting SCM components derived from the SCM model developed by Mentzer et al. (2001) as illustrated in figure 2 below.

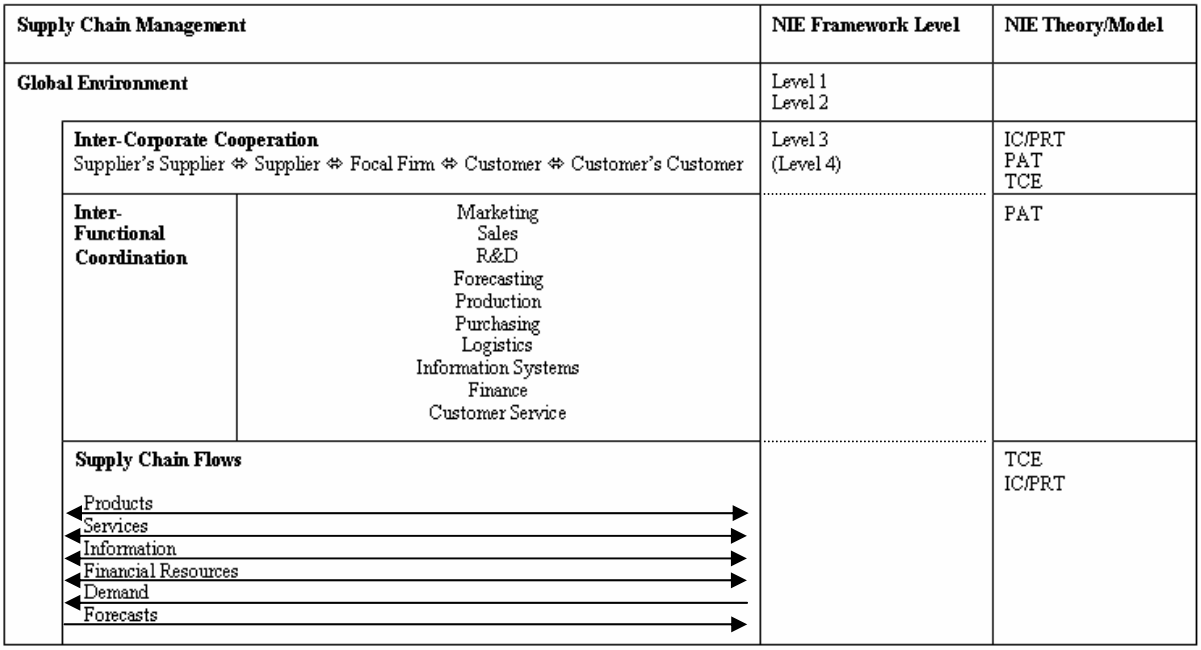

Figure 2: Classification by Supply Chain Management Components
Source: own design

To illustrate the above classification and the research opportunities resulting out of it, a few exemplary problems or specific areas of application are needed.

The Global Environment describes the environment of the supply chain. This can be both global in an international sense and global in the sense of completely surrounding and influencing the supply chain structure and its management. Depending on the Levels 1 and 2, i.e. the both the informal and the formal institutional environment, the Global Environment provides the foundation as well as the governance for any basic economic activity. The form SCM takes on hence depends on the inputs from the environment.

The level of inter-corporate coordination primarily concerns firms or, more broadly, supply chain *members*. How do suppliers, focal firms, customers and third parties such as logistics or financial providers cooperate? To answer this question, a number of theoretical approaches are viable. Costs of coordination may be modeled based on TCE. Investment and other (e.g. motivational) incentives as analyzed in PRT and PAT are central for coordination purposes.

Inter-functional coordination takes place between *processes* both within the firm and across firms. To align incentives and safeguard against opportunism between the functions of different partners (e.g. concerning cooperative marketing activities), insights from PAT may prove helpful.

Last but not least, supply chain *flows* such as products, information, financial resources as well as e.g. forecasts or evaluations need coordination. To optimize these flows, transaction

costs also need to be considered. Additionally, one can imagine how IC and PRT are involved as the rights on the different flow objects may not always be clearly and unambiguously assigned, resulting in possible disputes.

These examples show that NIE has great potential in application for analyzing components of the supply chain and its management.

4.3. Evaluation of Classification and Model Fit

When designing such a mapping of models to analyze central concepts of another research field, the important questions to ask are, is this classification meaningful and expedient? And are there benefits resulting from the application of the models for SCM analyses? More specifically, do the applications resulting from this structure yield meaningful insights or are adaptations or modifications needed? Can their usefulness be evaluated and how?

Without further research and a systematic evaluation scheme no full or exact evaluation seems possible. This, however, would go beyond the limits of this paper, but general tendencies can be estimated or generated both intuitively and by applying existing evaluations available in the NIE literature.

From the examples given in the previous section one can judge the application as generally useful, as additional insights for SCM can be generated by applying modes and their results from NIE. More specifically, the payoff models developed in PAT and PRT seem able to formalize many of the hypotheses in the current SCM literature. Especially when these models are related to long-term contracting and cooperation modeling there is a direct connection to SCM. However, as is generally the case with formal models, they are highly stylized (see Holmström/Roberts 1998, p. 79) and the results need not match the complex reality of supply chains.

Another point to be criticized is the fact that many SC problems seem TC related.[5] While TCE has been well developed in the literature both theoretically and empirically, more sophisticated analytical models are missing. As those models are often better able to predict and substantiate outcomes or consequences than verbal argumentation, there might be future research necessary.

The next subsection will discuss other possible gaps in NIE when attempting an analysis of SCM problems and provide some suggestions on how to overcome them.

[5] For example, TC-Analysis is suggested to be a feasible theory for analyzing three of the four SCM components (see figure 2).

4.4. Existing Gaps and Suggestions on Closing Them

To date, NIE has shown impressive properties which make it apt for application in the management discipline of SCM. However, there are certain problems or questions within SCM which existing NIE constructs seem unable to depict, analyze or answer.

Especially when it comes to modeling long-term relationships and cooperation, NIE may have difficulties to model certain aspects. For example, the evolving nature of cooperation is not easy to capture formally. Here, the use of other theories may be beneficial. Two theories are suggested here exemplarily: Game Theory and the marketing research dealing with distribution channels.

The application of game theoretic approaches in NIE is nothing new (see e.g. Parkhe 1993). When supply chain cooperation is considered, this may be formalized in repeated games. Lal (1990) for example proposes and empirically tests (see Agrawal/Lal 1995) a multistage game theoretic analysis of contractual arrangements in franchising, another hybrid organizational form similar to SCM.

The latter research field suggested above centers on distribution channels in a marketing sense. Following the broad definition given by Mentzer et al. (2001), Supply Chain Management encompasses the distribution channel and also its management. Basically, the differences are merely a matter of direction (supply of inputs versus distribution of outputs) and focus (marketing channel versus supply chain). Coughlan et al. (2001) e.g. define them as the "downstream part of a value chain" (p. xv). Hence, the research in distribution channel analysis is also relevant for SCM. The connection and the resulting benefits can be exemplified by considering the article by Stern and Reve (1980). They suggest analyzing channels of distribution as political economies, thus viewing them as social systems "comprising interacting sets of major economic and sociopolitical forces which affect collective behavior and performance" (p. 53). Using this analogy, Stern and Reve (p. 62) suggest a structured analysis of transactional form, decision mechanisms, power relations and behavior, much in the fashion of analyses completed within the NIE framework.

Therefore, it is proposed, that the different research areas which cover aspects related to both SCM and NIE should be seen as separate fields but should be combined where practical to obtain better models and hence better results.

5. Summary, Economic Outlook and Research Suggestions

"Regardless of a firm's position along the vertical chain, it needs to define its boundaries. To resolve the associated make-or-buy decisions, the firm must compare the benefits and costs of

using the market as opposed to performing the activity in-house." (Besanko/Dranove/Shanley 2000, p. 112) For modern firms, the choice of governance structure is no longer that simple. The picture has been extended to include intermediate or hybrid forms of organization, forms that combine features from the two extremes of market and hierarchy. After having clarified the concept of Supply Chain Management and the underlying philosophy, it is clear that SCM is one option of the many organizational hybrids. However, the discussion of Supply Chain Management in the literature has not been fully consistent in definition, scale and scope. Furthermore, the entire research field has lacked a specific economic orientation.

This paper has highlighted that SCM is an interesting field for future research where the application of existing theories may yield new insights both to scientific researchers and to managerial decision makers. What do the results of this work imply for the future of SCM research? It is possible to structure NIE research both according to the institutional level concerned and the theoretical basis used. Applying existing NIE theories to analyze problems of SCM is feasible as close relations in the literature exist as pointed out in section 4.1. Possible starting points for specific analyses were suggested in 4.2.

What does that mean for managers and owners facing strategic decisions? Forms of coordination that lie between firms and markets seem to have become rather popular. Whether they are used as a reaction to the changing environmental conditions to remain competitive (Wigand/Picot/Reichwald 1997, p. 55), or because it is simply fashionable to do so, is not a question easily answered, nor is it attempted in this paper. However, by providing SCM with an economic framework, research findings resulting from this application will be able to stand their ground in rigorous scientific discussions. Thus, future work pursuing a symbiosis of SCM and NIE may be able to clarify existing ambiguities of general advantages and disadvantages of using such a hybrid form. Thus, theoretical work as well as case studies and empirical research specifically discussing 'Supply Chain Economics', i.e. the economics of Supply Chain Management, are necessary for further research progress. Future theoretical research should attempt to provide better understanding of the pros and cons of using Supply Chain Management. Coordinating transactions along the chain of supply would include a more complex model of SCM in the NIE framework.

Nevertheless, as Masten (1996, p. 24) suggests "no single theory is likely ever to explain fully all of the reasons why people organize as they do". This, as well as the suggestions made in Section 4.4, should be taken into account for research to remain open-minded and to accept insights from other fields of science where feasible. Then, findings can be consolidated.

6. Literature

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