

Organisation of LTL networks – consequences for intermodal transport

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Abstract

In the transportation sector the issue of intermodal transport has grown significantly more important over the years and is a potential means toward sustainable transportation systems. One important type of user of intermodal transport is less-than-truck load (LTL) service providers. LTL networks often consist of a forwarder and a number of hauliers in a more or less formal organisation. They often work together for many years with the shared strategic purpose to produce transport services, an organisation form that in the construction industry is called a quasifirm.

In the relationship between haulier and forwarder the direct mode choice is often made by one of them while they represent different levels of decision-making and hold different responsibilities. Consequently, the forwarder-haulier organisation--the quasifirm--can be expected to influence the use of intermodal road-rail transport.

The purpose of this paper is to describe the business setup between haulier and forwarder as a quasifirm and by means of this concept to outline possible influences on issues important for intermodal road-rail transport.

The theory of the quasifirm is presented. To empirically show the existence of the quasifirm in LTL networks, a case study of the forwarder Schenker with their associated hauliers is matched to the theory. The paper establishes the studied forwarder with its associated hauliers as a quasifirm, an organisation form that is proved to have some beneficial characteristics. However, this organisation form also has some less beneficial consequences for the use of intermodal transport.

Keywords: Forwarder, Haulier, Organisation, Intermodal transport, LTL network

Introduction

Actors in the transportation industry often collaborate to offer and produce transport services with the result that they possess different roles, e.g. forwarder and haulier in less-than-truck load (LTL) networks. While the forwarder and haulier are separate entities they often work together for many years with the shared strategic purpose of offering and producing transport services, an organisation form resembling what has been termed a quasifirm (Eccles, 1981; Luke et al., 1989).

The issue of intermodal transport has grown significantly important over the years because it is regarded as a potential means towards sustainable transportation systems (European Commission, 2001). Compared to road transport over long distances, intermodal road-rail transport has lower external costs (Kreutzberger et al., 2003) as well as lower private costs (Jensen, 1990; Cardebring et al., 1996). Intermodal transport can consequently be a vehicle for forwarders with subcontracted hauliers to offer more environmentally-friendly transport services and at the same time possibly lower their costs. Competition pressures forwarders and hauliers to be cost-competitive and produce the transport services in the most environmentally sound way possible. Because of the cost and environmental benefits intermodal transport can bring to both forwarders and hauliers intermodal transport is of strategic interest in the forwarder-haulier relationship. However, intermodal transport has some problematic characteristics.

Factors important in the choice between transport modes have been extensively investigated and these factors are cost and service related (Murphy and Hall, 1995; Cullinane and Toy, 2000). Road transport is generally perceived to have better service quality than rail transport (see e.g. Ludvigsen, 1999). Therefore, not surprisingly, Bithas and Nijkamp (1997) highlighted that barriers prevent a well-functioning intermodal road-rail transport network. The financial and hardware barriers were considered crucial and thus explain where the major differences exist between uni-modal and intermodal transport. Organisational issues, both at the mode decision-making firm and at the provider of intermodal transport, have been identified to influence the mode decision (Jeffs and Hills, 1990) and act as a barrier to intermodal transport (Bithas and Nijkamp, 1997). However, how the organisational issues impact and possibly constrain intermodal transport is seldom investigated in detail.

Quasifirms have the separateness and responsiveness of loosely coupled systems (Luke et al., 1989; Orton and Weick, 1990). Loosely coupled systems possess some characteristic direct effects and organisational outcomes, but require compensations for the loose coupling (Orton and Weick, 1990). By classifying a forwarder-haulier organisation as a quasifirm, the concept can be used to analyse and explain how the direct effects and organisational outcomes of the quasifirm affect the usage of intermodal road-rail transport. Thereby, intermodal transport will be investigated from an organisational perspective.

The purpose of this paper is to describe the forwarder-haulier organisation as a quasifirm and by means of this concept, outline possible influences on issues important for intermodal road-rail transport. The case described and analysed in this paper is the domestic Swedish long-distance transports of the forwarder Schenker. Interviews have been conducted with personnel both from the forwarder and its associated hauliers over a two year period.

Theory on the quasifirm concept will be examined in the next section to facilitate an application to the forwarder-haulier organisation with special emphasis on the intermodal transport perspective. Important characteristics of intermodal road-rail transport are briefly outlined in the third section. The fourth section establishes the forwarder-haulier organisation as a quasifirm as well as describes intermodal transport in the quasifirm. Section five analyses

some issues relevant for intermodal transport that can be explained and are therefore fruitful to study with the quasifirm perspective on the forwarder-haulier organisation.

Quasifirm theory

This section starts with reviewing definitions of the quasifirm concept to provide criteria for identifying a quasifirm. As the quasifirm concept was developed based on the construction industry, and due to the resemblance between the organisation in construction and the forwarder-haulier organisation, special attention is given to details of the quasifirm in construction. Finally, the section concludes with propositions based on quasifirm theory that forms a basis for a further application in the forwarder-haulier context.

Luke et al. (1989) characterizes inter-organisational relationships by the tightness of coupling and the degree of a shared inter-organisational purpose. They define the quasifirm as “a loosely coupled, enduring set of inter-organizational relationships that are designed to achieve purposes of substantial importance to the viability of participating members.” Thus, the main characteristics of the quasifirm are the loose coupling between separate organisations and the high degree of shared purposes between these member organisations. Eccles (1981) provides a more applied and detailed description of the quasifirm based on the construction industry. He defines the quasifirm as an organisation form “based on a set of stable relationships between a general contractor and special trade subcontractors” (Eccles, 1981).

In Eccles’ argument for the existence of the quasifirm in the construction industry, four different dimensions were used. The first dimension was the number of subcontractors used in each trade. Numerous alternative subcontractors existed in Eccles’ study but only a few were involved in the quasifirm. The second dimension was the length of the general contractor-subcontractor relationship. These relationships were on average between 6.4 and 11.3 years for different trades in Eccles’ study. As a third dimension, Eccles utilized the degree of labour-only subcontractors used. This measure ranged from 0 to 94.4% for different trades with an average of 41.1%. Dimension number four is the procedures used for selecting subcontractors for a project. Competitive bidding was used in 19.6% of cases studied by Eccles while the rest used some form of negotiation when selecting subcontractors (Eccles, 1981).

Orton and Weick (1990) define loose coupling as a situation in which elements are responsive but retain evidence of separateness and identity. Loose coupled systems have both distinctiveness and responsiveness. Distinctiveness is stressed by Eccles (1981) through the two distinct actors of general contractor and subcontractor. Luke et al. (1989) emphasises distinctiveness by stating that the quasifirm is a set of inter-organisational relationships. Further, stable and enduring relationships based on shared strategic purposes, a significant feature of the quasifirm, are signs of responsiveness. Thus, loose coupling is a central concept of the quasifirm.

The quasifirm in construction

As mentioned, Eccles (1981) outlines a general contractor and special trade contractors as part of a quasifirm. The tasks these two actors perform in the relationship--their roles--is one important characteristic of the quasifirm. Further, Eccles’ concept of the quasifirm is based on the construction industry which has some distinctive features of importance. The business context is therefore another important characteristic. A description of these characteristics of the quasifirm follows below.

A general contract for a project is agreed upon by a customer (e.g. land owner) and a general contractor. In the construction industry customers establish terms and conditions in the

general contract. These terms and conditions determine the unique combination of input factors required (Eccles, 1981). Therefore, there is uncertainty about which resources are required in future projects, but at the same time the general contractor decides what contracts to bid for.

The general contractor in the construction industry coordinates all tasks that have to be performed in order to accomplish the general contract. That the tasks to some extent are separable shows that a construction project is modular. For each of the tasks required, the general contractor has the choice between performing them in-house or subcontracting them to a special trade subcontractor. A major part of the tasks are subcontracted. Further, the semi-sequential dependence between trades requires coordination of the different trades. Thus, in the completion of the project, the general contractor holds a coordinator role between the customer and the different special trade subcontractors.

Special trade subcontractors in the construction industry are hired to perform a specified task, e.g. carpentry, plumbing, or tiling. In the study by Eccles (1981), the subcontractors were, to a large extent, firms separate from the general contractor; they were autonomous and contracted on the basis of a particular project. But often the same subcontractors were contracted from project to project. This continuing association results in economy of communication as both the general contractor and the subcontractor know each other's routines and culture.

In the relationship between the coordinator and the subcontractor cost control can be accomplished by fixed price contracts, i.e. piecework contracts. The use of fixed price contracts also reduces supervision responsibilities of the coordinator (Eccles, 1981). In the case of a fixed price contract between the general contractor and the subcontractor, incentives arise for the subcontractor to perform efficiently as the price is the same regardless of the time the task consumes. As the members of a quasifirm have shared purposes (Luke et al., 1989) and the subcontractors are hired to perform a specific task, the accomplishment of this task implies a free choice of work methods, e.g. what tools to use.

Quasifirm theoretical propositions

Orton and Weick (1990) have reviewed literature on loose coupling. They conceptualized the concept in causes, types, direct effects, compensations, and organisational outcomes of loose coupling. The most frequent direct effects of loose coupling are modularity, requisite variety, and behavioural discretion. Modularity implies a low degree of interdependence between two entities; requisite variety is when a system's entities serve as a medium that can register inputs with accuracy; and behavioural discretion is the capacity for autonomous action. Typical outcomes adherent to loose coupling are persistence, buffering, adaptability, satisfaction, and effectiveness. These direct effects and outcomes illustrate benefits of loose coupling and thus give reasons why a loosely coupled system is preferred and maintained.

However, the quasifirm can experience possible difficulties and defective incentives derived from the inside contracting system (Williamson, 1975), a common contracting mode of the quasifirm in the construction industry (Eccles, 1981). The inside contracting system is defined as when one firm contracts other individuals or firms on a fixed-price or piece-rate basis to perform a certain task using plants, equipment, materials, and semi-finished goods supplied by the major contractor (Eccles, 1981). In construction the difficulties and defective incentives of the inside contracting system did not exist or were outside the quasifirm (Eccles, 1981). Williamson (1975) attributes these difficulties and defective incentives mainly to the fact that the inside contracting system is an intermediate contracting system between markets and hierarchies. In markets no coupling exists between participating entities, while in

hierarchies the coupling is tight. Therefore, the loose coupling is a possible source of difficulties and defective incentives.

Consequently, there is a need for management strategies to compensate for the possible drawbacks of loose coupling, while at the same time keep a balanced degree of coupling between quasifirm member organisations. For example, Luke et al. (1989) suggest that quasifirms will need to develop mechanisms for making strategic decisions, ensuring a unity of effort among collaborating organisations, and determining and modifying memberships in, and establishing the boundaries of the quasifirm as it evolves over time.

Intermodal transport characteristics

The intermodal transport chain can be divided into the three distinct operations of road haulage, transshipment, and rail haulage (Bontekoning et al., 2004). Road haulage is the transport of a load unit to/from an intermodal transshipment terminal from/to a consignor/consignee. Despite the relatively short distance of the road haulage operations compared to the rail haulage, they constitute a high share of the total cost in intermodal road-rail transport and centrally planned operations pose an opportunity for relatively large cost savings (Morlok et al., 1995). Transshipment is the operation that moves the load unit to/from the train from/to the truck and thus connects the road and rail systems. For the transshipment there are specialised intermodal transshipment terminals. This connecting function can imply contradictory demands from shippers, hauliers, rail operators, and terminal operators (Bontekoning et al., 2004). The unit loads used in intermodal transport must be adapted to the transshipment technique used at the intermodal terminals in order to enable the transshipment. The rail haulage operation is performed between two transshipment terminals. Rail haulage operations determine which intermodal terminals are served and connected to each other as well as intermodal transport service scheduling and frequency (Bontekoning et al., 2004). Economy of scale is prevalent in the rail haulage, i.e. a full-length train that contains up to 40 unit loads has marginally higher variable costs than a half-length train. Full-length trains are preferred as shunting along the rail haulage is avoided, and thereby costs and the transport times are reduced. This practice reduces the number of routes and terminals that are served as well as the service frequency. In all three intermodal road-rail transport operations, cost savings could be achieved by standardised load units (Bontekoning et al., 2004).

Schenker with associated hauliers – a quasifirm

The studied forwarder, Schenker, is one of the largest forwarders in Sweden transporting 18 million consignments yearly with a turnover of 10 billion SEK. Their main transport services within the land transport division are consolidated cargo, less-than-truck load, and truck load of both tempered and non-tempered unitised goods. These services are offered to/from domestic as well as international destinations. To accomplish this they have 24 consolidation terminals in Sweden and each terminal has an adherent surrounding district. These terminals are mainly operated by Schenker while transport services are either performed by a hauling division or bought from external hauliers.

To establish the validity of the quasifirm concept in the forwarder-haulier organisation the aspects of separateness and shared strategic purposes as well as Eccles' four dimensions will be used. The degree of shared inter-organisational purpose can be illustrated by examining the stated business focus of the forwarder along with the stated business focuses of the contracted long-distance hauliers. Schenker Sweden states that they "develop and produce transport, logistics and information services that meet the markets demands on quality, efficiency, simplicity and environmental responsibility." Important dimensions of the business focuses in relation to the quasifirm and intermodal transport are the stressed importance of producing

transport services and the stated environmental concern. The loose coupling between Schenker and their contracted hauliers in terms of ownership is given by whether they are owned by Schenker or owned privately. Table 1 presents strategic purposes and ownership relations for 14 hauliers who represent approximately 30% of the long-distance transport relations within Sweden and 25% of the transported goods. Notably, the hauliers in Table 1 (all but one) state that they are solely or mainly performing transport services for Schenker and Coldsped (a Schenker subsidiary).

Table 1 Owner situation and strategic purpose for a selection of Schenker’s associated hauliers.

Issue	Number of hauliers who include the issue in their strategic purpose
Hauling specifically for Schenker	13 of 14
Producing transport services	14 of 14
Environmental concern	10 of 14
Ownership situation for these 14 hauliers	
Privately	8
Private organisation	1
Unknown	5

Corresponding to the fact that a general contractor only uses a limited number of subcontractors in each trade, Schenker primarily only uses one haulier on each long-distance transport relation. However, a secondary haulier is contracted by Schenker in the case that the primary haulier is not able to take on additional transport consignments on “their” long-distance transport relation. The length of the relationship between the forwarder and many of the long-distance hauliers is a number of decades. The use of labour-only subcontractors in the construction industry would in the long-distance transports at Schenker imply the use of contracted drivers using trucks owned by Schenker. This is, however, not a common practice of Schenker who either use their own hauling division with employed drivers or external hauliers. Procedures used for selecting subcontractors for a project are often based on negotiations between the general contractor and the subcontractor instead of competitive bidding. At Schenker the situation is similar. Contracts on general prices are agreed on every year and specific deals are negotiated as quotes are requested by customers. For the forwarder there is seldom a choice between hauliers because they primarily contract one haulier on each long-distance transport relation.

Consequently, the data that Eccles used in arguing for the existence of the quasifirm in the construction industry to a large extent supports the fact that the case of Schenker with the associated long-distance hauliers is a quasifirm. The forwarder and the hauliers have enduring relationships and shared strategic purposes but are separate entities. In summary, the case of Schenker with associated hauliers can be viewed as a quasifirm.

Intermodal transport in the Schenker-haulier context

Using intermodal transport affects the forwarder-haulier quasifirm in several aspects. First, intermodal road-rail transport is a technology that requires specialised equipment that has somewhat different characteristics than traditional equipment used only for road transport. It also requires a work method that is different from road transport. Interestingly, from the quasifirm perspective, intermodal transport is contracted from a provider outside the quasifirm. The forwarder holds general agreement with the intermodal transport service

provider while hauliers contract the services individually and without involvement from the forwarder.

In Sweden, the geographic context under study, there is one major intermodal transport service provider. They have a network of transshipment terminals spread over Sweden and Norway. In Sweden their strategic purpose is to offer intermodal transport services with related administrative services. Some hauliers in the quasifirm have used the intermodal transport services by this provider for decades, thereby having a long-term relationship of similar length as that between the hauliers and the forwarder.

Together with the associated hauliers the forwarder is the largest customer of the intermodal transport service provider. The forwarder has concluded a general agreement with the intermodal transport service provider on discounted rates for all hauliers within the quasifirm. However, some hauliers negotiate about further discounts. Each haulier proposes and negotiates about adjustment of service departure and arrival times individually. This is not coordinated within the quasifirm. Interestingly, in case of changes in the provided intermodal transport services, the provider realizes the changes without involving members of the quasifirm. Considering these facts the intermodal transport service provider is not part of the quasifirm.

Analysis of Schenker quasifirm effects and outcomes

This section starts with an analysis of the Schenker-haulier quasifirm based on the similarities with the quasifirms in the construction industry described by Eccles (1981). Secondly, the intermodal transport operations are analysed from the quasifirm perspective.

Parallels to construction

In transportation, the forwarder corresponds with the general contractor in construction and the haulier with the special trade subcontractor. This will be explicated in this section. Customer contracts for transport services that the haulier performs are held by the forwarder and thereby they negotiate with the customers over prices and other terms. In larger contracts the hauliers approve a contract before it is signed. As terms and conditions vary between customers there is an uncertainty about future required resources. Thus, the forwarder holds the marketing function with the result that the hauliers have little influence over which future contracts are pursued by the forwarder.

Consolidated cargo consignments are generally picked up and transported to a consolidation terminal by a haulier and sorted to the right long-distance transport relation. A haulier transports the consolidated cargo between the departing and receiving consolidation terminals. At the receiving terminal the consignments are sorted for distribution which a third haulier performs. Holding this transport chain together requires coordination by the forwarder. Less-than-truck loads and truck loads between the districts adherent to the consolidation terminals are mainly performed solely by the long-distance haulier. Thereby there is a varying degree of involvement by the forwarder in the different transport services ranging from purely administrative involvement to sorting consolidated cargo. This corresponds to the general contractor in construction who performs some trades in-house but contracts subcontractors for the major part of the work. The main reason for this practice is the uncertain conditions facing the general contractor.

Many customers of less-than-truck loads as well as truck loads have requests for fixed loading and/or unloading times. Their goods can pose special demands on the vehicles used, e.g. they have tempered goods or chemicals. Further, customer contracts often range from one year up to several years depending on the size of the contract. The number of contracts and the types

of resources required are then partly uncertain from year to year. There is also uncertainty in a share of the day-to-day operations as customers can contract the whole capacity of a vehicle which reduces the uncertainty or only reserves the capacity that their goods require a specific day. Both these practices are common. The number and type of resources required from day to day is consequently also partly uncertain.

The practice of primarily using one haulier per long-distance relation means that the transport network is modular as each haulier relationship can be managed rather independently by the forwarder. That the hauliers are transporting goods for the same forwarder over a number of decades reflects that the relationship is a stable, continuing association. This means that there is an economy of communication between the forwarder and respective haulier when it comes to what haulier to contract and negotiation routines.

The forwarder mainly pays the hauliers per transported consignment at a preset price, which is primarily based on distance and consignment size. This practice results in an incentive to the hauliers to perform efficiently and results in cost control for the forwarder. Further, the supervision responsibility of the transport service is left to the haulier.

Table 1 exemplifies that the forwarder's subcontractors--the hauliers--are separate firms. Hauliers are contracted to perform a transport service, either door-to-door or terminal-to-terminal. In performing this service they have a free choice how to accomplish this, e.g. a choice between using road or intermodal transport, unless the customer has requested a specific transport mode. Hauliers consequently both have incentives for efficient performance and possess behavioural discretion, two characteristics of the quasifirm.

Quasifirm and the intermodal road-rail transport operations

Environmental responsibility is stated in the strategic purpose of the forwarder as well as in the purpose of some hauliers. One important means towards lower environmental impact is intermodal transport. Consequently, intermodal transport can be considered as part of the shared strategic purposes in the quasifirm but has in the past not been given any systematic attention in the forwarder-haulier relationship. In the quasifirm it is up to each individual haulier to use intermodal transport and they perform the road haulage operation. All three intermodal transport operations will be analysed from the quasifirm perspective.

Road haulage

Using intermodal transport implies special resources and changed behaviour, e.g. transport resources must be able to be lifted by reach stackers and gantry cranes and when using intermodal transport no night drivers are required but sometimes pilot driver schedules have to be adjusted. The resources adapted to intermodal road-rail transport have minor disadvantages but also additional possibilities compared to resources only for road transport. Persistence, one important outcome of the loose coupling, can be anticipated if an increased use of intermodal transport implies changes to routines, operations, and/or relationships.

Focusing on the haulier's part in the intermodal transport chain can reveal one crucial aspect of the quasifirm from the intermodal transport perspective. Economy of scale in road haulage operations have been showed to be relevant in intermodal transport (Morlok et al., 1995) but are not always reached by single hauliers. Cooperation affects (and possibly conflicts with) transport relation modularity and the behavioural discretion of hauliers. The number of road haulage operations per haulier can be low, which some hauliers have recognized as a barrier to start using intermodal transport. Realising benefits in road haulage operations of intermodal transport but maintaining the quasifirm requires development of collaborating mechanisms between subcontractors.

Transshipment

The demands from different stakeholders towards the transshipment operation could be contradictory imply that smaller stakeholders may have difficulty in carrying out their demands. The modularity of transport relations and the individual hauliers' behavioural discretion over the intermodal transport choice results in the quasifirm having no unified declaration of demands when the different stakeholders' demands are conjoined. Instead of acting as a unified stakeholder, the quasifirm's hauliers act separately.

Standardising the adapted unit loads required in intermodal transport is a means towards more efficient intermodal transport (Bontekoning et al., 2004) but there is no common policy or standard on preferred types of unit loads in the quasifirm. As different types of unit loads have typical advantages the lack of standard could be a result of the behavioural discretion of the hauliers. A further implication of the behavioural discretion is that although several hauliers state that they receive quantity discounts when purchasing several vehicles at the same time, no unified effort has been made within the quasifirm to coordinate purchases of vehicles and unit loads to get better quantity discounts.

Rail haulage

Also in the rail haulage operation, the behavioural discretion and its resulting uncoordinated efforts affects the quasifirm's position towards intermodal transport. An extensive intermodal transport network as well as high service frequency is stated to be desirable by several individuals in the quasifirm. At the same time no joint effort is pursued within the quasifirm to increase the number of unit loads in intermodal transport, a prerequisite for many intermodal transport relations and high service frequency. But an increased use of intermodal transport and its need to be scheduled results in lower adaptability. A substantive increased usage of intermodal transport would thereby counteract one of the beneficial outcomes of the loose coupling in the quasifirm.

Uncertainty about future required resources and the lack of joint effort to increase the potential for and use of intermodal transport makes the hauliers more inclined to choose the most flexible alternative, the all-road alternative. The exertion of their behavioural discretion consequently guides them away from intermodal transport.

Discussion

Following the Luke et al. (1989) and Orton and Weick (1990) propositions that the loose coupling of the quasifirm requires compensating management strategies and structural features, this section will start by discussing the demands intermodal transport poses on these strategies and features. management strategies suggested in theory to be effective in influencing dispersed organisations--e.g. a quasifirm--are enhanced leadership, focused attention, and emphasis of related shared values (Orton and Weick, 1990). Due to the anticipated persistence to change, management strategies that facilitate change and deal with persistence are preferable to promote intermodal transport in the quasifirm.

Currently, the intermodal transport service provider is not part of the quasifirm; the provider is a subcontractor to the hauliers. The quasifirm consequently depends on an independent external organisation for the provision of a strategic service. The intermodal transport service provider acts in a non-responsive manner. Changes in the intermodal transport service are not coordinated with the quasifirm; rather, concerned parties are informed of changes. The characteristics of the quasifirm lead to uncoordinated efforts in intermodal transport. Taking a unified approach to intermodal transport in order to develop the use of intermodal transport as well as develop the intermodal transport service is therefore a challenge for the Schenker

quasifirm. Some alternatives seem possible. If an intermodal transport service provider should be included in the quasifirm, membership and boundaries are affected while the management strategies of the quasifirm can be applied. Otherwise, if the current structure is maintained, strategic mechanisms are required within the quasifirm to facilitate a more unified approach towards intermodal transport and the supplier of this service. With such strategic mechanisms that compensate for the loose coupling, the quasifirm would be able to have a stronger position towards the intermodal transport service provider.

In regard to consolidated cargo, the forwarder represents a collaborating mechanism through the use of consolidation terminals; the district of each consolidation terminal is divided into sub-areas that different hauliers can be responsible for. In the case of intermodal transport a corresponding solution would be that the organisation of road haulage operations of intermodal transport would be based on local sub-areas instead of the long-distance relation. Such a change implies a fundamental change of the long-distance hauliers' responsibilities and intermodal transport would become a responsibility of the forwarder. Thereby the quasifirm would essentially change character which makes such a solution difficult to obtain in practice.

Conclusions

This paper has showed that the forwarder-haulier organisation of Schenker can be viewed as a quasifirm because the forwarder and hauliers are separate entities but have shared strategic purposes and long, enduring relationships based on specific transport relations for which a certain haulier is the primary subcontractor. The quasifirm organisation has several beneficial characteristics for the forwarder in terms of cost control, incentives for efficient performance, and stable subcontractor relationships. Beneficial characteristics for the hauliers are that they maintain their autonomy and marketing is mainly performed by the forwarder.

Consequences for intermodal transport of the quasifirm organisation were also identified and analysed. The transport relations modularity and the hauliers' behavioural discretion--which are important effects of the loose coupling in the quasifirm--have consequences for all three operations of intermodal transport in that the use of intermodal transport is uncoordinated. Thus, the quasifirm is a relatively weak customer of intermodal transport. Further, persistence to the road transport mode due to the greater adaptability it provides is anticipated to impede an increased use of intermodal transport if left unattended. Considering these outcomes of the loose coupling result in lack of a unified effort towards intermodal transport, emphasises the need of management strategies directed both at the provision of the external service (rail haulage and transshipment) and the road haulage operations performed within the quasifirm. Thus the organisation of the LTL network, in this case a forwarder with contracted hauliers, has important consequences for intermodal transport.

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