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& Logistics
Management**

**Competition, collaboration and co-operation in logistics –
papers from the 3rd international event on Co-operation &
Competition (C&C), 2002**

Guest Editor: Mosad Zineldin

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Competition, collaboration and co-operation in logistics – papers
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Guest Editor
Mosad Zineldin

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Globalisation strategies and business organisation of a network of logistics service providers

W. Lemoine and Lars Dagnæs

Keywords Globalization, Internationalization, Networks, Transport, Logistics

This paper deals with the dynamics of internationalisation and globalisation of the freight-forwarding and logistics service providers. A case study, based on E.ON, Stinnes, Schenker, BTL and other European and non-European firms, is presented in order to illustrate the process. The organisation and strategies developed by the firms under study with the aim to expand their activities on European, transnational and global levels are presented. The information was gathered using the Internet as a research tool. Focus is placed on the organisational routes used by the firms in order to expand their activities outside of their home base, and on their business strategies.

Collaborative networking in a multi-stage industrial channel

Hisao Fujimoto

Keywords Moulding, Networking, Globalization, Vertical marketing systems, Electronics industry

The argument of the paper is that the global competitive strength of leading Japanese products lies not only in their efficient supply systems but also in systems of multi-stage vertical networks. The study explores an example of such a network throughout a multi-stage industrial complex in the home electronics industry in Japan. Members of this network are an assembly firm, a plastic parts supplier, and a mold processor. The paper concludes that for such collaborations to succeed in creating products of global excellence, the networks should be structured for vertical co-operation.

The relationship between technology and logistics third-party providers

Thierry Sawage

Keywords Innovation, Logistics, Technological change, Time management

Our work discusses the results of a survey among French logistics service providers. In a highly competitive context characterized by "time compression", technological effort becomes a key variable and a means of differentiation between third-party logistics providers. The success of logistics outsourcing relationships is entrenched in the third-party's technological ability to improve the supply chain reactivity.

Partnership alliances in virtual markets

Maro Vlachopoulou and Vassiliki Manthou

Keywords Partnerships, Alliances, Virtual organizations, Integration

Successful virtual working requires organizations to adopt new approaches towards managing and leading in the following key areas: managing infrastructure, people, information and joint activities/processes. Marketing transformation and integration between the partners' internal and external activities and relationships are the prerequisites in order to combine their core competencies creating dynamic virtual collaboration networks. In this paper several e-partner relationship management paradigms are illustrated and categorized according to the degree of integration and e-marketing/business transformation. The proposed integrated e-partner relationship management solution offers a systematic process for ensuring that specific partnerships criteria are developed and managed in the most beneficial way for the involved parties in virtual environment.

Value-adding partnerships and co-opetition models in the grocery industry

Herbert Kotzab and Christoph Teller

Keywords Supply-chain management, Efficiency, Consumer behaviour

Leading representatives of the European grocery industry formed the European

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keywords

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efficient consumer response initiative in 1995. The goal of this strategic alliance is set to reengineer the way in which business is done in the industry by implementing cooperative strategies between retailer and manufacturer in order to fulfill consumer wishes better, faster and at less cost. Efficient consumer response appears thereby in many facets, from a “simple” dyadic value-adding partnership to a sophisticated form of co-opetition, where

supply chain members have both relationship types – competition and cooperation – at the same time. Our paper discusses these issues first on theoretical bases and then presents empirical results of a comprehensive analysis within a selected European efficient consumer response initiative showing the success factors of managing efficient consumer response-partnership relations.

Stratégies de globalisation et organisation commerciale d'un réseau de prestataires de services logistiques*W. Lemoine et Lars Dagnæs***Mots-clés** Globalisation, Internationalisation, Réseaux, Transport, Logistique

L'article que voici traite de la dynamique de l'internationalisation et de la globalisation des prestataires de services d'expédition et de logistique. Pour illustrer ce processus, il présente l'étude d'un cas pratique, fondée sur E.ON, Stinnes, Schenker, BTL et d'autres firmes européennes et non européennes. Il décrit l'organisation et les stratégies mises au point par les entreprises analysées, pour étendre leurs activités au niveau européen, transnational et global. Les informations furent recueillies au moyen de l'Internet qui servit d'outil de recherche. L'accent est placé sur les voies organisationnelles utilisées par les entreprises pour étendre leurs activités en dehors de leur base nationale, et sur leurs stratégies commerciales.

199**Création de réseaux de collaboration dans le canal industriel à phases multiples***Hisao Fujimoto***Mots-clés** Moulage, Création de réseaux, Globalisation, Systèmes de mercatique verticaux, Industrie électronique

Selon l'article que voici, la force compétitive globale des produits japonais principaux provient non seulement de leurs systèmes d'approvisionnement efficaces, mais aussi des systèmes de réseaux verticaux à phases multiples. L'étude explore l'un de ces réseaux, comme exemple, à travers un complexe industriel à phases multiples dans l'industrie électronique nationale au Japon. Parmi les membres de ce réseau figurent une entreprise d'assemblage, un fournisseur de pièces en matière plastique, et un spécialiste pour le traitement des moules. Pour conclure, l'article affirme que, pour que des collaborations de ce genre puissent réussir à créer des produits d'excellence globale, les réseaux doivent se structurer vers une coopération verticale.

Le rapport entre la technologie et les fournisseurs de logistique tiers*Thierry Sauvage***Mots-clés** Innovation, Logistique, Changement technologique, Gestion du temps

Notre article traite des résultats d'une enquête entreprise auprès de prestataires français de services logistiques. Dans un contexte extrêmement compétitif, caractérisé par "la compression du temps", l'effort technologique devient une variable-clé et un moyen de différenciation entre les tiers prestataires de services logistiques. Le succès des rapports dans l'obtention de services logistique est enraciné dans la capacité technologique des tiers d'améliorer la réactivité de la chaîne d'approvisionnement.

Alliances de partenariat dans les marchés virtuels*Maro Vlachopoulou et Vassiliki Manthou***Mots-clés** Partenariats, Alliances, Entreprises virtuelles, Intégration

Pour obtenir un travail virtuel réussi, les organisations doivent adopter de nouvelles approches envers la gestion et la direction, dans les domaines-clés suivants: gestion de l'infrastructure, personnes, informations et activités/processus communs. La transformation et l'intégration de la mercatique entre les activités et rapports internes et externes des partenaires sont des conditions préalables, pour pouvoir combiner leurs compétences essentielles afin de créer des réseaux dynamiques de collaboration virtuelle. Dans l'article que voici, nous illustrons plusieurs paradigmes de gestion des rapports avec les partenaires électroniques et nous les classons selon le degré d'intégration et de transformation de la mercatique électronique/des affaires. La

solution proposée de gestion intégrée des rapports avec les partenaires électroniques offre un processus systématique qui permet de garantir la mise au point de critères de partenariat spécifiques et leur gestion, de la manière la plus bénéfique possible, pour les parties impliquées dans l'environnement virtuel.

Partenariats à valeur ajoutée et modèles de “co-opétition” dans l’industrie des aliments

Herbert Kotzab et Christoph Teller

Mots-clés Gestion de la chaîne d’approvisionnement, Efficacité, Comportement du consommateur

En 1995, les principaux représentants de l'industrie alimentaire européenne formèrent l'initiative européenne de réponse efficace aux consommateurs. Le but de cette alliance stratégique est de reconcevoir la manière dont il est possible de réaliser les affaires dans l'industrie en mettant en pratique des stratégies coopératives entre le détaillant et le fabricant, afin de satisfaire les désirs des consommateurs d'une manière améliorée, plus rapide et moins coûteuse. La réponse efficace aux consommateurs revêt par là plusieurs aspects, allant d'un partenariat dyadique “simple”, à valeur ajoutée, à une forme élaborée de “co-opétition”, dans laquelle les membres de la chaîne d'approvisionnement jouissent en même temps des deux types de rapports compétition et collaboration. Notre article discute ces questions tout d'abord d'un point de vue théorique, puis il présente les résultats empiriques d'une vaste analyse entreprise dans le cadre d'une initiative européenne efficace de réponse aux consommateurs, qui présente les facteurs de succès qui caractérisent la gestion de rapports efficaces entre la réponse aux consommateurs et le partenariat.

Estrategias de globalización y organización empresarial de una red de proveedores de servicios logísticos*W. Lemoine y Lars Dagnæs***Palabras clave** Globalización, Internacionalización, Redes, Transporte, Logística

Este trabajo trata la dinámica de internacionalización y globalización de los proveedores de servicios de logística y avance de fletes. Se presenta un estudio de caso basado en E.ON, Stinnes, Schenker, BTL y otras empresas europeas y no europeas, para ilustrar el proceso. Se exponen la organización y estrategias desarrolladas por las empresas estudiadas con motivo de expandir sus actividades a nivel europeo, transnacional y global. La información se recopiló utilizando Internet como herramienta de investigación. Se produce un enfoque en las rutas organizacionales utilizadas por las empresas para expandir sus actividades fuera de su base nacional, y en sus estrategias de empresa.

201**Creación de redes de colaboración en el canal industrial de fases múltiples***Hisao Fujimoto***Palabras clave** Moldeo, Creación de redes, Globalización, Sistemas de marketing vertical, Industria de la electrónica.

El argumento del trabajo se basa en que la fortaleza competitiva global de los principales productos japoneses descansa, no sólo en sus eficientes sistemas de suministro, sino también en sistemas de redes verticales de fases múltiples. El estudio explora el ejemplo de una red de este tipo a través de un complejo industrial de fases múltiples dentro de la industria electrónica nacional de Japón. Los miembros de esta red son una empresa de montaje, un proveedor de piezas de plástico y un procesador de moldes. El trabajo concluye que para que dichas colaboraciones tengan éxito en la creación de productos de excelencia global, las redes deben estructurarse para la cooperación vertical.

La relación entre la tecnología y los proveedores terceros de logística*Thierry Sauvage***Palabras clave** Innovación, Logística, Cambio tecnológico, Gestión del tiempo

Nuestro trabajo discute los resultados de una encuesta entre proveedores de servicios logísticos franceses. En un contexto altamente competitivo caracterizado por la "compresión de tiempo", el esfuerzo tecnológico se convierte en una variable clave y en un medio de diferenciación entre proveedores terceros de logística. El éxito de las relaciones en la obtención externa de logística se atrinchera en la habilidad tecnológica de los terceros para mejorar la reactividad de la cadena de suministro.

Alianzas de asociación en mercados virtuales*Maro Vlachopoulou y Vassiliki Manthou***Palabras clave** Asociaciones, Alianzas, Empresas virtuales, Integración

El trabajo virtual con éxito requiere que las organizaciones adopten nuevos planteamientos sobre la gestión y el liderazgo en las siguientes áreas clave: gestión de infraestructura, gente, información y actividades/procesos conjuntos. La transformación e integración del marketing entre las actividades internas y externas, y las relaciones de los socios, son prerequisites para combinar sus competencias básicas y crear redes virtuales dinámicas de colaboración. En este trabajo se ilustran y categorizan varios paradigmas en la gestión de relaciones de socios electrónicos, según el grado de integración y transformación del marketing/negocio electrónico. La solución propuesta integrada de gestión de las relaciones de socios electrónicos ofrece un

proceso sistemático para asegurar que los criterios específicos de asociación se desarrollen y gestionen de la forma más beneficiosa para las partes involucradas en el entorno virtual.

Asociaciones que añaden valor y modelos de cooportunidad (co-opetition) en la industria de los alimentos

Herbert Kotzab y Christoph Teller

Palabras clave Gestión de la cadena de suministro, Eficiencia, Comportamiento del consumidor

Representantes punteros de la industria europea de alimentos formaron la iniciativa europea de respuesta eficiente del consumidor en 1995. El objetivo de esta alianza estratégica es replantear el modo en que se llevan a cabo los negocios en la industria, mediante la implementación de estrategias cooperativas entre el minorista y el fabricante, con el fin de satisfacer los deseos del consumidor mejor, más rápidamente y por un coste más bajo. Por lo tanto, la respuesta eficiente del consumidor aparece en muchas facetas, desde una “simple” asociación diádica de adición de valor hasta una forma sofisticada de cooportunidad, donde los miembros de la cadena de suministro tienen ambos tipos de relación cooportunidad y cooperación al mismo tiempo. Nuestro trabajo discute estas cuestiones, primero sobre bases teóricas y, después, presenta resultados empíricos de un análisis exhaustivo dentro de una iniciativa europea eficiente de respuesta del consumidor que muestra los factores para el éxito en la gestión de relaciones eficientes de asociación y respuesta del consumidor.

**ロジスティクス・サービスプロバイダー・ネットワークの
グローバル化戦略とビジネス組織**

W・レモイン、L・ダグネス

キーワード：グローバル化、国際化、ネットワーク、
運送、ロジスティクス

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本論は、運輸・ロジスティクス・サービスプロバイダーの国際化およびグローバル化戦略について考察する。同プロセスを概説するために、EON、Stinnes、Schenker、BTL および他のヨーロッパまたは非ヨーロッパ企業を対象とする事例研究を行った。対象企業によって策定された、事業活動をヨーロッパ内、複数国、グローバル・レベルへ拡大するための戦略およびその組織を提示する。調査手段としてインターネットを用いて情報収集を行った。各企業が本拠地以外に事業を拡大するために用いた組織ルートおよびビジネス戦略に重点を置いた。

マルチステージ産業チャネルにおける協同ネットワーキング

フジモト・ヒサオ

キーワード：成形、ネットワーキング、グローバル化、
縦型マーケティング・システム、電子機器産業

先端をゆく日本製品のグローバル市場競争力が、その効率的サプライ・システムばかりでなく、マルチステージ縦型ネットワーク・システムに起因すると論じる。日本の家電産業内のマルチステージ産業コンプレックスにおけるこのようなネットワークを例に取り上げて調査を進めた。同ネットワークは、組立工場、プラスチック部品サプライヤー、成形加工業者から構成されている。結論として、このような協同によってグローバル市場で優秀さを競う製品を製造するには、ネットワークが縦型協力体制で構築されている必要があると指摘する。

技術およびロジスティクス第三者プロバイダー間の関係

ソーバージュ・ティエリー

キーワード：イノベーション、ロジスティクス、技術変革、時間管理

フランスのロジスティクス・サービスプロバイダーを対象に行ったアンケート調査の結果を報告する。「時間圧縮」によって特徴付けられる厳しい競争環境において、技術的努力は第三者ロジスティクス・プロバイダー間を差別化する主要変数および手段となってきた。ロジスティクス・アウトソーシング関係の成功は、サプライチェーン反応を向上させることができる第三者の技術的能力によって左右されるといえる。

バーチャル市場におけるパートナーシップ・アライアンス

マール・ヴラチョボロ、ヴァシリキ・マンソウ

キーワード: パートナーシップ、アライアンス、バーチャル企業、統合

バーチャル事業を成功させるにあたって、組織は以下の主要分野を管理・主導する新たなアプローチを適用する必要がある。つまり、インフラストラクチャー、人、情報、共同活動／プロセスの管理である。マーケティング変革、パートナーの内外活動の統合および関係性は、中核能力を結合して強力なバーチャル協同ネットワークを創るための必要条件である。本論では、いくつかの電子パートナー関係管理パラダイムを概説し、統合および電子マーケティング／ビジネス変革の度合いによって分類した。また、バーチャル環境関係者にとって最適の特定パートナーシップ基準を確実に開発・管理できる系統的プロセスを提供する統合的な電子パートナー関係管理ソリューションを提案する。

食品産業における付加価値パートナーシップおよび協力モデル

ハーバート・コツアブ、クリストフ・テラー

キーワード: サプライチェーン管理、効率性、消費者態度

1995年、ヨーロッパ食品産業界の第一線企業を代表として、「欧州効率的消費者対応イニシアチブ」が形成された。この戦略的アライアンスの目的は、消費者の希望をより良く、より迅速に、より安く提供するために、小売店と製造企業間の協力的戦略を実施し、同産業界におけるビジネス慣行を改革することであった。効率的消費者対応はその結果、単純な付加価値パートナーシップから、サプライチェーン管理の関係者が競争と協力の両関係タイプを同時に持つより複雑な形態の協力まで、さまざまな側面を持つことが認められる。本論では、まず最初にこれらの課題に関して論理的基盤の上で論議し、次に特定の欧州効率的消費者対応イニシアチブに対する総合的分析の実証的結果を提示し、効率的消費者対応パートナーシップ関係を成功裏に管理する上での要点を紹介した。

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It is my pleasure to be the guest editor of this special issue of *International Journal of Physical Distribution & Logistics Management*. This issue highlights co-opetition which is “a revolutionary mindset that combines competition and cooperation (C&C)”, information technology (IT), physical distribution and logistic management (PD&LM).

The articles from this issue have been presented at the 3rd C&C International Conference, “Approaches to the Organization of the Future”. The conference was held on 19-21 September at Växjö University, Sweden. A further issue, to appear later in the 2003 volume of *IJPDLM*, will also be devoted to papers from this event. C&C aims at becoming a major point of contact between research scientists, doctoral students and practitioners in the area of C&C. C&C focuses on real-world application and highlights related topics such as IT, knowledge management, physical distribution and logistics management, supply chain management, virtual organizations, strategic alliances and networks. The emphasis is on a new holistic and interactive view, as well as a new focal point that integrates the internal and the external activities, strategic alliances and networks in a much broader context and scope, as a multi-dimensional perspective and discipline.

During the 1990s into the new millennium there has been an increasing interest in the development of strategic alliances, dynamic networks, and other “loose” co-operative variants between organizations of all sizes, industries, and nationalities. This C&C conference attempts to address how organizations are responding to the growing complexities of global business, technology, and virtual organizations. The main key to the success of such co-operation is to take full advantage of the IT, skills and resources each partner brings to the alliance, overcome cultural differences between organizations (small and large),

and protect joint investments and trade secrets, using IT to create more added value and to facilitate the co-ordinating of networks. Creating and enhancing co-opetition relationships is a philosophy or strategy, which is vital to competitive progress and, indeed, to economic development. In short, the organization of the future can play a non-zero-sum game, where there will be multiple winners.

The conference has given us the opportunity to benefit from the expertise and experience of eminent speakers and distinguished academics contributing to the research development of C&C as well as PD&LM. I would like to thank the invited Keynote Speakers: Professor David Walters, Macquarie University, Sydney, Australia; Professor Douglas Hensler, University of Colorado at Boulder, USA; Professor Talaat Rihan, October 6 University, Cairo, Egypt; Dr John Peters, EMERALD/MCB, UK; and Professor Anders Pehrsson, School of Management and Economics, Växjö University, Sweden.

The fact that firms can co-operate in organized forms with other organizations in aspects of bringing forth innovations, honing quality of business offers, and enhancing overall competitiveness at the same time as they compete in the same market, can be a somewhat complex dilemma. Both payoffs and pitfalls can be a result of these kinds of relations.

The technological effort of logistics service providers provides competitiveness for the relationships and moreover for the whole supply chain. To be innovative can be viewed as a yardstick of the provider's autonomy and capacity to collaborate to flows management. Technological effort thus emerges as a strategic trajectory of relevant differentiation for the logistics service providers. Effective leadership of logistics service providers lies in their capacity to innovate in the area of joint flows management. More specifically, providers must maintain very close ties to technologies, particularly IT. This relationship is invariably reinforced as the trend towards reduction of cycle times along the supply chain becomes more pronounced.

During the past 20 years, a remarkable power shift was observed within the channels of distribution in the worldwide retail industry. This power shift has been attributed to factors such as concentration and consolidation of the market players, access to valuable information by using POS-data, the replacement of manufacturer brands by store brands and sophisticated retail logistics systems. Beyond these developments, all players within the grocery industry were confronted with intense rivalry, primarily resulting from aggressive price competition. This led to a loss of productivity and market share. In this atmosphere, the Coca-Cola Retailing Research Group proposed a new business model for managing the grocery supply chains in the European market that was based on a USA industry initiative: supplier-retailer collaboration. The model suggested collaboration among competitors on a manufacturer as well as on a retail level. Such arrangements are called co-opetitive relationships.

Co-opetition is “a revolutionary mindset that combines competition and cooperation (C&C)” and is based on the belief that “You can’t do it alone” and on the principles of game theory. Contrary to value-adding partnerships, co-opetition includes horizontal collaborative relations as well as competitive relations in vertical and horizontal directions, at the same time. This is a multi-directional learning where partnerships benefit from each other while competing with each other for internal resources and external market shares. As a result, the market players are co-operating on the “invisible” logistics side (=, e.g. common packaging standards or return channels) and competing at the “visible” marketing arena (=, e.g. heavy promotion spending). Overall, the paradox notion of collaborating with competitors is seen as a different form of competition and a “win-proposal”.

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Globalisation strategies and business organisation of a network of logistics service providers

Logistics service providers

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Keywords *Globalization, Internationalization, Networks, Transport, Logistics*

Abstract *This paper deals with the dynamics of internationalisation and globalisation of the freight-forwarding and logistics service providers. A case study, based on E.ON, Stinnes, Schenker, BTL and other European and non-European firms, is presented in order to illustrate the process. The organisation and strategies developed by the firms under study with the aim to expand their activities on European, transnational and global levels are presented. The information was gathered using the Internet as a research tool. Focus is placed on the organisational routes used by the firms in order to expand their activities outside of their home base, and on their business strategies.*

Introduction

A great deal of the research on internationalisation and globalisation strategies, and the organisational forms used to expand business activities around the world has been done on manufacturing firms, and relatively little attention has been paid to service firms, especially in the field of transport and logistics. Within this context we can mention Hertz's (1993) contribution. The author analysed the internationalisation process of three Nordic freight transport companies. Hertz (1993) found that between 1960 and 1970 the international strategies of the companies were characterised by specialisation and diversification of services, and by expanding business activities in an increasing number of countries. During those decades the establishment of greenfields investments were the favoured organisational route to internationalise. Following Hertz, during the 1980s the internationalisation strategy used by transport firms was directed to attend large regions rather than individual countries; mergers and acquisitions, not of single firms but of transport firms' nets were the main organisational vehicle used to internationalise.

Stone (2001) examined the expansion of UK-based logistics service providers (LSPs) in the European market. The author found that at the beginning of the 1990s most of the UK LSPs remained national operators; those who expanded their activities in the European market used a multi-domestic approach, providing single-country logistics. In the middle of the 1990s the UK LSPs began to link their national operations in the European countries, and they



became Eurolinkers. Stone revealed that until 1995, the most favoured organisational structures used to reach the European expansion were acquisitions, organic growth and piggybacking. Furthermore, the author found that such methods would continue to be important in the future. Joint ventures have been less prevalent to European expansion among UK-based LSPs; however, and according to Stone, the importance of joint ventures as a way for European expansion will increase considerably in the near future. Organisational forms like networks of logistics alliances ranked low as past, present and future internationalisation routes.

Ludvigsen (2000) reached a different conclusion. The author explored the temporal development of a non-equity and voluntary network formed by seven European LSPs, known as the *E1-Alliance*. Ludvigsen covered a period between 1980 and 1997; according to Ludvigsen multi-domestic and transnational strategies were used during this time. In the case under analysis the internationalisation process of the firms did not happen via mergers and acquisitions but by national operators forging voluntary alliances. Ludvigsen stressed that such networks, in which transport firms are linked to each other through alliances, and no control over the members' assets is exerted, are better vehicles to reach the target of internationalisation than traditional corporate systems based on mergers and acquisitions.

This paper sheds light on the dynamics of internationalisation and globalisation of the European freight, forwarding, and LSPs. The network created between E.ON, Stinnes, Schenker, BTL and other European and non-European firms was chosen as a case study. The strategies and organisational structures used by the firms within the net in order to achieve the target of being international and global are shown. The example illustrates the complexity and enlargement of the links created between the firms under analysis, how they conduct their business and organise in order to be more international and global, and how the firms can control the transport market and even the infrastructure. The case was chosen because the firms within the net under study have combined different strategies and organisational forms to reach the goal of being international and global. The case provides an illustration of how internationalisation and globalisation can be attained using diverse organisational models and resource combinations.

The information was gathered using the Internet as a research tool. The revision of the homepages of the firms here involved began at the beginning of 2000, and continued through 2001. Consulting the firms' archives using the Internet enabled us to trace the history of the corporations and business here analysed. A snapshot into the organisational routes to international expansion and the activities and business strategies of the net was taken. The snapshot covers the second half of the last decade of the twentieth century up to the first year of the new millennium.

Strategies and the organisation of the firms

The world moves from the industrial economy to the networked and digital economy. In this new century, with the advance of information technology and the further expansion of internationalisation and globalisation, it is possible to see the coming out of a new economic environment. The economic world has shifted from being a cluster of national economies to a global and more interdependent marketplace, based on line import, export and distribution of products, services and information around the world. This century witnesses the emergence of new global business models based on electronic commerce; this is the era of full and entire globalisation and networking of economic activities. Business and markets are no longer confined to geographical borders, but they are linked in a complex worldwide network. All of these changes have influenced the way in which firms organise and operate; new organisational models have emerged to cope with the new business environment. The restructuring of companies is part of a worldwide process of change involving new patterns of production, distribution, communications, technologies, competition and co-operation.

Following the economic environment, internationalisation strategies have been changing. Traditionally firms have mainly used two different types of strategies for being international or global: the multi-domestic or multinational and the global (Harzing, 2002). In the multi-domestic strategy firms compete on a domestic level adapting products and policies to different local markets. Within this strategy companies invest abroad from their national platform (Castells, 2000), but conduct their affairs within the “walls” of different countries and produce for local markets. The firms can be characterised as a decentralised network with relatively autonomous subsidiaries attending local markets (Harzing, 2002) i.e. the companies operate autonomously in the market and in the country in which they are situated (Globalisation Studies Home Page, n.d.; Svensson, 2001).

Within the global strategy firms source, produce, sell and access knowledge around the world. Products are “tailored” for the world market. The companies seek for economies of scope and scale, and operate “as if the entire world, or major regions of it, were a single entity”, they “sell the same things in the same way everywhere” (Svensson, 2001, p. 7); this means that such firms emphasise the standardisation and homogenisation of their activities across the markets all over the world (Svensson, 2001; Lloyd, 1996).

According to Harzing (2002), the organisational modes chosen by manufacturing firms to enter international markets depend on the international strategy of the firm. The author stressed that acquisition is more likely for multi-domestic companies, while greenfields are more likely for global firms.

A third strategy is gaining force. This is the glolocal or glocal (Svensson, 2001) strategy. It is based on a balance between standardisation and

adaptation, and between homogenisation and tailoring of business activities in the local markets. In this way the glolocal strategy combines local, multinational and global approaches. Glolocalisation seems to be a good fertilizer to the new organisational routes to reach world markets, which are based on cross-border networks of companies attending multiple domestic, regional, and global markets.

The complexity of business international environment has forced companies to form collaborative agreements with their suppliers, buyers, competitors and allies. With such arrangements the firms create a network of complex business relationships, and these organisational relationships have become an integral part of globalisation. Mergers of companies, joint ventures, collaborative loose agreements and short-term or long-term alliances between firms (Arvidsson, 1997; Castells, 2000; Dennis, 2000; Jarrat, 1998; Ghauri, 1993; Strandskov, 1993; Zeffane, 1995) characterise the business world of today.

The traditional organisational model of the large and vertically integrated corporation is no longer valid to conquer the world markets. Companies have to forge more complex and networking structures (Gomes-Casseres, 1996), i.e. an intricate web of interlinked firms, in which collaboration and competition co-exist. The highly competitive corporations are now organised in networks. According to Castells (2000, p. 180) networks “are the fundamental stuff of which new organizations are and will be made”.

The new organisational network patterns include alliances between large firms, forming a horizontal corporation network characterised by decentralisation, autonomy, participation and coordination of its business components (Castells, 2000, p. 178). Large firms can also enter into subcontracting arrangements with small and medium-sized business. In this network model SMEs “are under the control ... or financial/technological domination from large corporations” (Castells, 2000, p. 172). In this case the network organisation consists of a firm acting as a strategic centre and a couple of surrounding partners. The small and medium-sized businesses can shape their own horizontal networks with other enterprises without entering subcontracting arrangements with large corporations. This model is known as multi-directional network, created with the aim to help firms to find market niches and co-operative ventures, and facilitate the competitiveness of the SMEs in the international arena.

Globalisation has meant that the use of the network has increased over and above the expected levels, and the network appears to be the most suitable organisational arrangement to cope with the current global economy (Zeffane, 1995). The networking organisation has become an integral part of globalisation. Corporations and firms taking a network approach have the advantage and the opportunities for growth; the network organisation encourages them to find new markets, new segments and niches across national and regional boundaries, and let the firms react quickly to business

changes at a low cost. The network constitutes a different mode of organising economic activities. As Yip has pointed out in an interview (Lloyd, 1996), one of the critical success factors for firms' survival in the new economy is the capacity to create a global network.

Logistics service
providers

The network organisation of transport firms

The internationalisation and globalisation of service firms has been encouraged by the economies of scale and scope, by the internationalisation and globalisation of the competitors and by "customer following" i.e. the internationalisation of manufacturing firms, which "may demand that the service supplier provides a global network and/or global experience" (Arvidsson, 1997, p. 74; Björkman and Kock, 1997; Grönroos, 1999). In the case of transport and LSPs, other factors have also played an important role in the internationalisation and globalisation process of the firms. The deregulation of the European transport market, the privatisation of transport chains, and the technological improvements in the transport and communication systems have encouraged such development.

The use among manufacturing firms of concepts such as outsourcing, just-in-time, the reducing cycle/lead-time, and new global view on storage and distribution within manufacturing firms have also been responsible for the increasing internationalisation, globalisation and networking organisation of transport and logistics firms. Manufacturers have realised that the delivery system is an integral part of the product strategy. Within this context logistics "is being increasingly viewed as a driver of differentiation" (Schmitz Whipple and Gentry, 2000, p. 316). At the same time, manufacturers want to enhance their core competencies. Co-operative network arrangements of a vertical type between manufacturers and suppliers of transport and logistics services give the opportunity to achieve this goal. In the new global economy, manufacturing firms consider the LSPs as partners, the industry wants to work with a few "global" freight and forwarding firms, and delegate responsibility of transport management to a third party.

In response to the new strategies and demands from the industrial world, the organisation of firms in the transport sector has been changing, and they are becoming more networked (Ludvigsen, 2000). Today it is possible to see the concentration of transport firms through mergers, strategic alliances, joint ventures, acquisitions and partnerships. The new structure in the transport sector involves three types of firms: total suppliers or mega carriers, niche firms and sub-suppliers. The total suppliers cope with many different customers by operating European and global chains, and are able to handle many different types of goods. The niche firms are narrower, as they focus on special markets and/or certain types of goods. Besides the niche firms have a more limited customer segment. The sub-suppliers are firms with particular logistics competencies. They are, for example, hauliers, who have specialised in

handling special goods in specially selected markets. These firms can have a position as sub-contractors to total suppliers and niche firms (Dagnæs and Meyer, 1998).

The total suppliers operating in the global transport market, in co-operation with other mega carriers in other geographical markets, develop large integrated networks and establish complex supply chains with large and integrated hub-and-spoke systems. The objective is partly to secure competitive advantages compared to other global firms and partly to secure a very efficient global transport chain, where the goods flow is currently optimised (Dagnæs *et al.*, 1999).

Niche firms establish network relationships with total suppliers and/or other small or medium-sized transport firms to secure a very efficient transport chain within a market niche. Sub-contractors can enter alliances with total suppliers, niche firms and other sub-suppliers. Global and niche firms gain access to regional and local markets and, at the same time, the sub-contractors can develop core competencies in a number of logistics areas which they would hardly have resources to develop themselves. In the next section an example of globalisation, internationalisation, and network organisation within freight transport and logistics providers is given.

It is within this framework of network organisation, that the strategies and the organisational models –, e.g. acquisitions, mergers and alliances – used by freight-forwarding and LSPs in order to reach the goal of being international or global, is analysed. The networks created between E.ON, Stinnes, Schenker, BTL and other European and non-European firms are presented in order to describe the strategies and organisation of companies, and their extension in the world market.

The case example

The core of the network

The firms under study have created a network, whose core has been formed by mergers and acquisitions of large firms' groups, i.e. by the development of horizontal corporative networks (Castells, 2000). The net is, and has been, in an incessant change. Many individual firms or groups of firms join or leave the net; the legal arrangements evolve ceaseless, and changes in the net are the norm, rather than the exception.

By the time the information presented here was gathered, the head of the network of transport and logistics services providers under study was the corporation E.ON, which can be considered as "the mother" of the web. E.ON is the third-largest industrial group in Germany, the world's largest private energy service provider, and one of the world's leaders in chemical business. E.ON initiated its activities in June 2000 by the merger of two large corporations: Veba AG and Viag; the motto was to create "a company that will seize the opportunities for growth offered by globalisation and pan-European

markets” (Veba, 2000a, 2000b, <http://www.veba-archives.com/>; Viag, 2000, <http://www.viag-archives.com/>). E.ON has more than 200,000 employees, and the corporation is organised in five divisions: energy, specialty chemicals, telecommunications, real estate and other activities. The last one comprises distributions and logistics functions. E.ON is determined to focus on its core competencies (energy and chemicals) and the divestment of distribution and logistics activities was among the corporative plans (http://www.eon.com/online/Push/en/corporate/2321982671/-fs_corp; http://www.eon.com/online/Push/en/corporate/1437612378/fs_corp). Such separation took place in June 2002, when Stinnes was sold to Deutsche Bahn (E.ON, 2002).

The function of distribution and logistics is carried out by Stinnes AG (one of the former Veba’s subsidiaries). Stinnes is a bi-centennial firm. By the time of the Veba-Viag merger Stinnes was organised in four business divisions. Today the corporation has only three divisions: transportation logistics, chemicals logistics, and materials logistics. Stinnes defines itself as “one of the leading logistics groups worldwide”, and has about 40,000 employees in 1,200 locations in the world (<http://www.stinnes.de/english/konzern/index.html>).

For transportation logistics Stinnes AG purchased, in 1991, the Schenker group, a former subsidiary of Deutsche Bahn. Schenker was established in Vienna in 1872 in order to offer “house to house transport with one single forwarder”. By the end of the nineteenth century it was a very international firm with branch offices in different European countries, and warehouses that operated as trade hubs. At the beginning of the twentieth century, Schenker had opened a branch office in the USA, was using modern telecommunication technology and had acquired interests in telegraph and shipping firms (<http://www.schenker.com/english/theCompany/history.htm>; <http://www.schenker.com/english/theCompany/history.htm>).

Today Schenker’s activities comprise global integrated logistics systems and freight-forwarding. The group has around 28,000 employees at 1,000 locations all over the world. Under the roof of the Schenker group three specialised business segments or divisions are active in their respective markets: air and sea freight, logistics systems, and European land transport (<http://www.stinnes.de>; <http://www.schenker.com>). The air and sea freight division specialises in global freight-forwarding solutions by air and sea, as well as related services such as worldwide door-to-door delivery and integrated logistics services; Schenker International conducts the business in this segment. The logistics systems division is run by Schenker Logistics. This business segment is responsible for warehousing systems and associated supplementary services such as supply chain and warehouse management, complex warehouse systems and value-added services.

The third specialised business segment, European Land Transport, was created in 1997 by the merger, and later by the acquisition of the Swedish transportation and logistics group BTL AB, forming the firm Schenker-BTL

(BTL, 1998). BTL began its activities in 1891. The BTL group was, before the tie-up with the Stinnes network, one of the largest transport and logistics groups in Scandinavia and in Europe. The BTL network had, by the time of the merger, significant operations in Asia, Australia, New Zealand and the USA. By 1997 BTL's network included 500 offices in 32 countries, the number of employees was about 11,000 (BTL, 1999; Larsson, 1998). Stinnes' division manages a logistics and transportation network in Europe that covers 30 European countries, and interconnects all major economic regions. Schenker-BTL offers a wide range of services such as Europe-wide distribution, express delivery and worldwide trade fair service and forwarding (BTL, 1999; http://www.btl.se/schenker_btl/english/schenker_btl_sweden.html; <http://www.schenker.com>). Figure 1 summarises the core group of firms forming the network.

The glolocal strategy

During the 1990s the market expansion of the network under analysis was reached mainly via mergers and acquisitions of groups of firms. The acquisition of Schenker and later the merger and purchase of the BTL group are examples of this strategy. For instance the purpose of the last mentioned acquisition was to create one company operating "within a common, Pan-European network under the Schenker-BTL name" (BTL, 1998). Within the European market other equity-based entry modes have been used. In order to grasp and consolidate new business segments in Italy, the division Schenker European Land Transport and Castelletti – a former company of the BTL network – were integrated into Schenker Italiana S.p.A: "We will especially benefit from Castelletti's excellent position in the field of services for furniture, foodstuff, and flowers. It is our intention to expand our activities in this interesting market segment" (Schenker, 2000a).

Another entry model has been used. This can be illustrated with the partnership between Schenker and the freight-forwarding group Mased Rt to cope with the Hungarian and former Soviet Union transport markets. The collaboration with this net was established in the field of European consolidated transport through the joint venture company Mased-Trias forming part of Schenker's European network (Schenker, 2000b).

In the expansion of their activities, especially during the second half of the 1990s, the network has used a glolocal or glocal (Svensson, 2001) approach. The firms' activities have been based on the ability to satisfy a wide range of customers' requirements on a national plane, by offering specific customised solutions and, at the same time, by providing standardised logistics and distribution services in large geographical regions.

For customised solutions within the European market the net had used its own subsidiaries. For example the Danish market is attended by the subsidiary Schenker-BTL (<http://www.schenker-btl.dk>). This subsidiary is the owner of

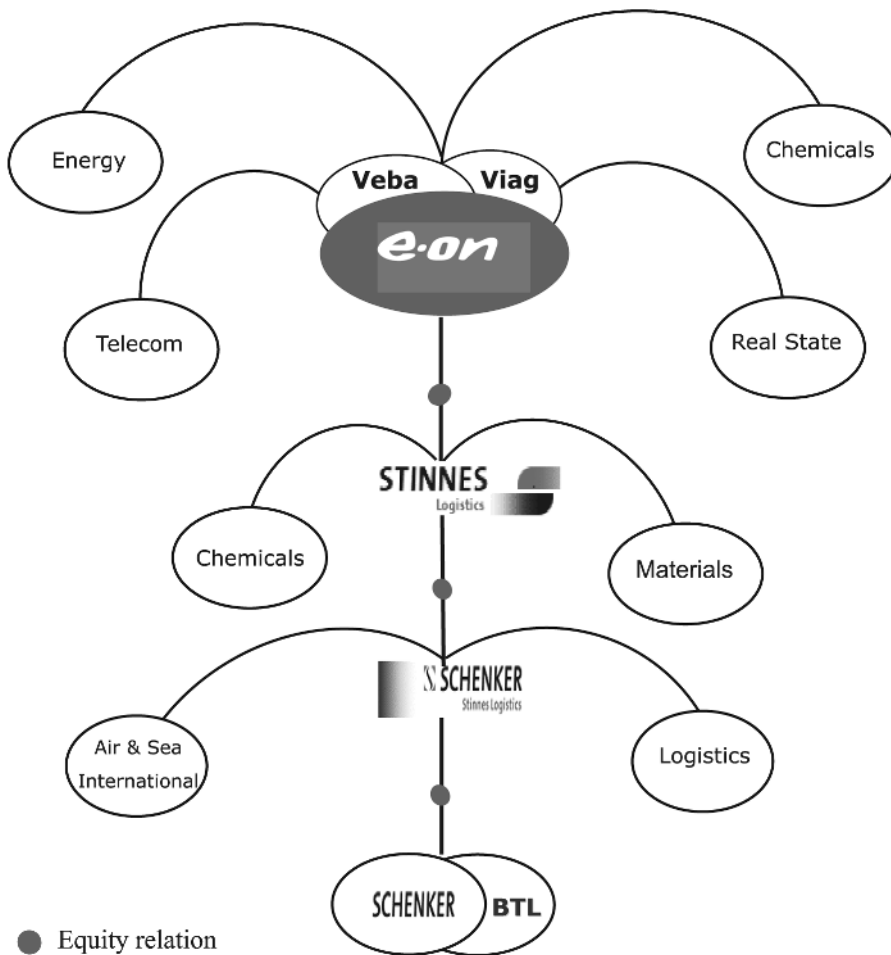


Figure 1.
The core firms of the network

the transport firm Thermo Scandia International Transport and Spedition operating in the county of North Jutland, and which is at the same time the owner of Freeze on Wheels ApS, a specialised niche firm. Such firms operate as sub-suppliers offering tailored services to small and medium-sized Danish transport and LSPs. Schenker also uses the services of relatively large, independent Danish firms to carry out special tasks without entering a formal partnership. This is the case of Arling Transport Af 1988 A/S, which almost once a year transports furniture for Schenker-BTL from Denmark to Germany. In this situation operations are tailored to fit specific customers' specifications.

Subsidiaries have also been used to customise the supply of logistics services and know-how on a national level. Schenker-BTL AB Sweden has been using its own subordinate companies such as Schenker Computer Logistics

Competence AB and Schenker Logistics Village, to satisfy the Swedish market's needs in the areas of IT service logistics and third party logistics services (http://www.btl.se/schenker_btl/schenker_btl_sweden/services/logistik/english/tvaa_dotterbolag.html).

One further step within customised logistics in national markets was taken at the end of 2000. The network proposed to integrate activities performed separately in the fields of transportation, air and sea freight and all associated logistics services. The organisational route used to reach this purpose was an internal merger of Schenker-BTL (Deutschland) AG and Schenker International Deutschland GmbH to form a single company: Schenker Deutschland AG. The idea behind the unification was to become "the largest provider of integrated logistics services on the German market... especially when it comes to complex supply chain management projects" (Schenker, 2000d, 2002).

The strategy of the network aiming to offer standard and homogeneous distribution services in large markets such as the European market has encompassed the control of transport modes and infrastructure. The network recognised that goods have to reach the recipient within 24 hours, European roads are more congested and firms must transport more goods but travel less. In order to cope with these constraints, Schenker has established its own European rail network. With this purpose two organisational models have been used. The first comprises the establishment of wholly owned firms. This is the case of the Scandinavian Rail Cargo (SRC), known today as Schenker Rail Cargo. SRC has maintained close co-operation with the other firms and subsidiaries within the net (BTL, n.d.). The other organisational vehicle used to grasp the standardisation within the glolocal strategy comprises a 50-50 joint venture with Deutsche Bahn AG to create a new firm: Railog. This company has initially as its focal point Germany, the Scandinavian countries, Austria and Italy. It offers multi-modal transportation and supplementary logistics services for key accounts all over Europe. Railog collaborates, among others, with SRC and Castelletti, formerly a part of the BTL network. The company expects to enlarge its geographical range in the future by integrating other European railroad corporations (Stinnes, 2000).

Outside of the European market the glolocal or glocal scheme has involved the establishment of own subsidiaries. This organisational model has been applied among other countries, in China, where the net has created a subsidiary to attend customers from the technology sector and automotive supplier industry. The network has also taken advantage of multiple independent transport and forwarding firms acting as agents in many countries. Last but not least joint ventures and business partnership have also been used. As an example of this model outside of Europe we mention the collaborative arrangement between Schenker and PT Petrolog. Both groups of firms had been working in Indonesia for more than 20 years. In June 2000 Schenker

acquired the majority of Petrolog's shareholdings and created PT Schenker Petrolog Utama; in this way the arrangement between the two groups supports the glocal strategy; they have "managed to find the ideal combination of the local know-how of the Petrolog Group and all the advantages of the global Schenker network ... we have built up a team that knows exactly what customers in Indonesia and in the rest of the world want" (Schenker, 2000c). An example of the net of firms working within the glocal strategy is depicted in Figure 2.

The global strategy

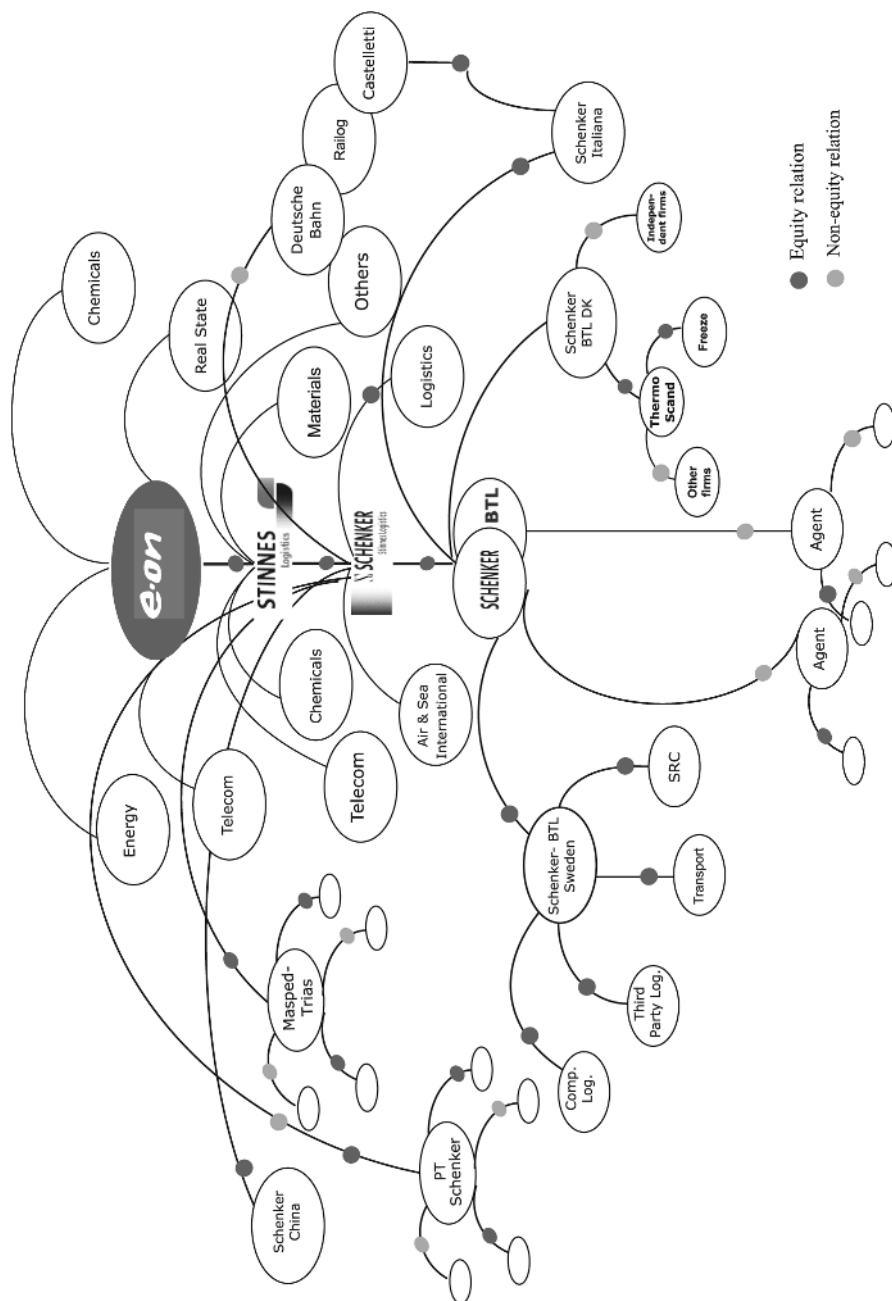
In the new millennium, the network has decided to move forwards. Without abandoning the glocal approach, the group of firms is moving fast towards globalisation. Though Svensson (2001, p. 15) has recognised that "the global strategy approach to manage worldwide business activities appears to be a managerial utopia", the network of firms has decided to build a global strategy. Such global strategy is based on:

- the development of global logistics expertise and services;
- the development of a global network distribution, in which a hub-and-spoke infrastructure plays a central role of interconnecting markets; and
- the use of information and communication technologies (ICT) in order to interconnect all the firms within the net.

The emphasis on logistics is based on the evaluation of the future markets. According to Stinnes the greatest market potential lies in logistic services. The motto of the core firms of the network is to be global logistics service providers (GLSPs). The development of customised solutions to global industrial operators, the development of complex logistics services for world markets, and of operating distribution facilities are among the strategies used by the network of firms to attend and compete successfully worldwide.

In order to develop complex custom-made solutions for different industrial firms the network has decided to reorganise their core firms. Stinnes is fully focused on its logistics competencies. In addition the headquarters concentrate on global aspects. Schenker has also been reorganised, and is in charge of the development of new logistics products and services in order to meet customers' needs. Within this framework, the organisational arrangements used to reach this objective have been contracts with the industry – such as Hewlett Packard – and co-operative arrangements with traditional competitors. The agreement between Panalpina and Schenker to ensure the supply of products from Hewlett-Packard's facilities in Asia to European wholesalers and retailers is an illustration of the occurrence of co-opetitive – i.e. collaborative and competitive – events within the global environment of the network.

The globalisation strategies of the network in the area of logistics have included joint ventures and alliances for the development of global logistics



services both regional and worldwide. With a joint venture between Masped Rt and Schenker the two networks created a new firm, Masped-Schenker Air and Sea Forwarding Co. Ltd. The idea behind this company was to offer global logistics solutions in Eastern Europe (Schenker, 2000b). This is also the case of the strategic alliance established in 1999 for integrated logistics and freight-forwarding with the Japanese transportation group, Seino Transportation Co. Ltd, which owns 70 group companies: "This alliance enables both companies to provide integrated logistics services on a global basis . . . we will be able to offer more and even better service . . . especially in the field of global supply chain solutions within all important industrial centres in Asia, the Americas and Europe" (Stinnes, Schenker and Seino, 1999). More recently Schenker and Seino established a joint venture, Schenker-Seino Logistics Co. Ltd, which offers services in global supply management (for example, worldwide warehousing), Internet-driven IT solutions and worldwide track and trace (Schenker, 2000e).

The globalisation strategy is also based on the creation of a distribution network based on a wholly owned hub-and-spoke infrastructure system for freight consolidation and transfer of the consolidated goods. Such infrastructure is called logistic centres. This strategy contributes to enlarging the ability of the network of firms under analysis to generate economies of scale and scope. The logistics centres and their logistics services have the function of interconnecting the markets of the net; therefore they can be considered as one of the backbones of the firms within the network. Most of Stinnes' investments designed to improve the network have been done in the area of transport, specifically with the goal to build and expand the logistic centres within the net (Stinnes, 2001b).

Such hub-and-spoke systems are not new in the network. In fact, in 1994, and in order to cover Germany, Stinnes built its own central facility in Friedewald. In 1998 the firm extended the hubs system with the creation of two regional hubs, one in Hannover and one in Nuremberg: "Consignments which cannot be delivered directly from an economical point of view are collected at one of the three hubs, put together for each target region and then distributed to the systems branches throughout Germany... Trips with half-empty trucks are now a thing of the past" (<http://www.stinnes.de/english/specials/index.html>). Such hubs and services were tailored within a glolocal perspective.

In order to achieve the goal of globalisation, the network changed the concept of hubs. They are now called integrated logistics centres (ILCs) and entail the development of logistics services, which allow better customers' access to world markets, outsourcing of their non-core competencies and a worldwide distribution. All the logistics centres perform freight transport by land, air and sea, logistics functions and value-added services, such as warehousing, quality control, order picking, labelling and packing.

The strategy goes to attend and connect large regions around the world, instead of specific countries. The regions serve as hubs facilitating the

worldwide distribution and global logistics services. One of Schenker's subsidiaries in Austria, Schenker-BTL AG, has invested in a ILC in Vienna, which is seen as a freight distribution hub for Eastern Europe (Schenker, 2000f). In Prague, the Czech subsidiary Schenker-BTL spol sro., has a terminal to strengthen the Eastern European network (Schenker, 2000g). In the same way, and in order to create its own logistics network in the Baltic region, Schenker's national subsidiaries have built three logistics centres (Estonia, Latvia and Lithuania) (Schenker, 2000h).

To cope with the Asia-Pacific region Schenker has a logistic centre in Singapore. Nokia, Polaroid, Lufthansa and Volkswagen/Audi have established alliances with companies of the network and use the value-added services of this hub to serve different markets "from Tahiti in the East to Pakistan in the West, from Korea in the North to New Zealand in the South" (Schenker, n.d.).

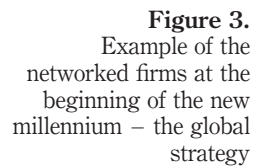
In Rotterdam, one of the largest hubs in Europe and the most important European container-handling centre, Schenker has built an ILC for distribution and logistics services such as warehousing, cross-docking multi-modal freight terminal with connections to road and rail networks and airport terminals. In addition the ILC offers customs clearance, picking and packing, offices for the customers' employees and so on (Schenker, 1999; Schenker, 2000i). The centre is defined as "one of the most important gateways in our global logistics network. For our overseas clients it is a gateway to Europe and for the global flow of goods it offers a flexible infrastructure for a multitude of logistics services" (Schenker, 2000i).

The globalisation strategy includes the development of new information and communication technology solutions (ICT) in order to create a common platform able to interconnect all the firms within the network, and to facilitate the managing of all logistics services and information flows. In other words the main task is the web enabling of the activities and companies across the network. Therefore, this is the other backbone of the companies in the net. This interconnection of the net of firms demands new business models. An alliance between Stinnes and IBM was established to build the communication's web. In addition, the core firms have established co-operative agreements with more than a dozen e-marketplaces – such as Intrtra and Benelog, all linked to Schenker in order to offer logistics services to the entire network. An example of the networked firms within the global strategy is shown in Figure 3.

Last but not least the globalisation business model includes acquisitions. The core firms of the net expect to grow and strengthen their position as GLSPs in the world market by acquisitions in the higher margin logistics business sector, especially in the USA and Europe.

Conclusions

The aim of this paper was to provide an insight into the dynamics of internationalisation and globalisation of freight-forwarding and logistics firms.



A case study was presented in order to illustrate the strategies and organisational models used to reach the goal of internationalisation and globalisation. The internationalisation of the firms under study must be seen in connection with large corporations spanning different countries, industries and services, among them distribution and logistics. The strategy of internationalisation and globalisation has been based on mergers and acquisitions of companies' groups, and on the development of internal networks of owned subsidiaries and firms. In addition, external sets of connections – via joint ventures and alliances – with firms in different parts of the world, has been forged.

The case shows that during the 1990s one of the biggest steps taken by the LSPs under study to seize new markets took place with Stinnes' acquisition of the Schenker network and, some years later, with the purchase of the BTL network. The internationalisation strategies, especially during the second half of the decade, were based on a glocal model, in which the firms within the net offered tailored services in national markets and standard services in large geographical regions. The development of this strategy was not only supported by mergers and acquisitions, but by whollyowned subsidiaries. The subsidiaries (e.g. Schenker-BTL in Denmark, Sweden and China) were, and are, functioning as centres or nodes for other internal and external networks created with diverse local firms, forming new horizontal webs of small and medium-sized companies. In addition, business organisational models such as joint ventures and co-operation agreements – e.g. Deutsche Bahn and Petrolog – were also present.

With the new millennium a turning point can be observed. Although the glocal strategy is still functioning, the network moves towards a global strategy, and the objective of the core firms within the net is to become GLSPs. The strategy points to offer complex global logistics services, to interconnect the world markets via a hub-and-spoke infrastructure and, finally, the scheme aims to integrate the firms within the net and to facilitate their access to the logistics services by a common ICT platform.

In the global environment new business models characterised by co-operation and competition are emerging. Within this framework we can mention alliances with competitors – e.g. Panalpina's network – to carry out distribution between regions; joint ventures with other LSPs (Seino and Mased) in order to develop new logistics services or markets; and co-operative agreements with high-tech firms – such as IBM, and with Internet portals or e-marketplaces – e.g. Intrat and Benelog. Although the new organisational models are gaining terrain, the "old" models based on wholly or partially owned assets continue to be of great importance, especially in the area of infrastructure (the ILCs) to support complex global logistics services and the global flow of goods. Further future acquisitions in the logistic business sector are contemplated in the core firms' plans.

The case here analysed shows that there is not a unique organisational recipe to achieve the goal of being global. Different forms of business relationships had co-existed within the glolocal and global strategy. According to this result, it is possible to think that the selection between equity and non-equity business models does not depend exclusively on the strategy of the firms, as Harzing (2002) has postulated. The choice of business model seems to be more associated with core issues such as markets and competencies, at least within the networked organisation here analysed.

In fact our case study suggests that the reinforcement of core markets (e.g. the European market) and core competencies (e.g. distribution and logistics) has been achieved via equity assets. However, in the process of gathering new competencies, or in the process of looking forward to develop future potential core business issues, other organisational models such as alliances or joint ventures seem to have been preferred. Further research aiming to test the connection between organisational business models and core business issues for the firms is necessary.

The case study has also shown that networks of LSPs based on “traditional” models of equity owned assets are excellent vehicles to reach the goal of being global; this result differs from Ludvigsen’s (2000) suggestion. Therefore, one of the problems is to analyse the organisational factors that play a role in the success of the internationalisation and globalisation of a network. A possible explanation can rest on how the firms within a network are managed.

In the network under analysis the governance structure is based on the central role performed by core firms positioned in the apex of the organisation. Such core firms – e.g. Stinnes and Schenker – are total suppliers able to cope with new customer demands, new products and logistics services. The network structure can be characterised as polycentric, in which the divisions, subsidiaries and the independent firms are part of the parent concern’s network and, at the same time, they have their own net with other business in local and regional markets. In general the activities of the firms within the network are decentrally managed; the companies within the net have some freedom, and they can develop their own businesses. However, and according to Stinnes (<http://www.stinnes.de/english/konzern/index.html>) the firms within the network have a common code of performance; in addition a financial and logistics activities coordination, and a corporate strategy act like a framework within the subsidiaries. In our opinion this management form fosters a successful transit from being glolocal to being global.

Many lessons can be learned from Stinnes’ network. First, in the new millennium, and when deciding which kind of organisational routes can be used to globalise, the international logistics managers must consider the firm’s core business issues like core competencies. Such core issues appear to be essential in dictating the organisational paths or models to be implemented in

the worldwide arena. Second, in a global and co-operative environment, and especially within the freight-forwarding and LSPs, the creation of a network of firms seems to be one of the best ways to reach the world markets and to offer global services. Third, the process of managing the network is crucial to the global enterprise. Decentralisation and coordination of the financial and core business activities are, in our opinion, key issues.

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Collaborative networking in a multi-stage industrial channel

Collaborative
networking

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Keywords Moulding, Networking, Globalization, Vertical marketing systems,
Electronics industry

Abstract *The argument of the paper is that the global competitive strength of leading Japanese products lies not only in their efficient supply systems but also in systems of multi-stage vertical networks. The study explores an example of such a network throughout a multi-stage industrial complex in the home electronics industry in Japan. Members of this network are an assembly firm, a plastic parts supplier, and a mold processor. The paper concludes that for such collaborations to succeed in creating products of global excellence, the networks should be structured for vertical co-operation.*

Introduction

The concept of “network” or “networking” is receiving increasing attention in recent marketing literature. In many marketing articles, however, the concept of network is treated from its technical viewpoint and context, (e.g. electrical data processing and ordering system, home shopping by the Internet). In spite of this, there are only a few articles which refer to the transactional aspect of the network system. The purpose of this paper is to analyze a multi-stage industrial channel in the Japanese home electronics industry from a perspective of collaborative networking. To explore networks, a network has to be reconsidered as a holistic one, which cannot be reduced to each dyad relationship. As a vertical connective network with multi-stage transactions, we explore the collaborative networking from a holistic and macroscopic approach.

Vertical networking in business to business marketing

Commitment and trust in networking

The characteristic of a network that creates new relationships and resources draws our attention to the research area in relationship marketing, because the network approach places its emphasis on dynamic and interconnected relationships (Johanson and Mattsson, 1993). In the marketing mix approach, the buyer’s response is conditioned by given preference, technologies, and organization structures. Contrastingly, in the network approach, as Low (1996, p. 24) noted, “exchange in the network approach takes place through interaction between individual actors and where the interdependence between the parties and the prior experience of interaction are important



considerations". In other words, existing interaction relationships are affected by past relationships and they will affect future relationships.

In the network marketing context, every company is embedded in network relationships with certain companies, and this embeddedness affects and is affected by the single firm. As a result, the relationship between buyer and seller is considered as being more tight and long-term and having more commitment to their relationship than discrete transactions. In addition, this characteristic of network marketing where firms enter into a long-term and tight relationship that requires them to make considerable commitments and investments of resources, makes their entrance into and exit from an existing relationship, difficult. On this commitment and trust, members of a network pursue the best way to link their activities and resource ties to gain competitive advantages under the recent competitive pressures.

There have been a lot of studies that have tried to develop a theoretical framework concerning the determinants of successful long-term transactional relationships. Dwyer *et al.*, (1987) developed a theoretical framework for the formation/dissolution of long-term buyer-seller relationships. Heide and George (1990) find that close relationships emerge in response to the need for protecting relationship-specific assets and suggests that closeness in a relationship can be affected by the degree of joint action, expected continuity, and verification efforts. Speckman and Salmond (1992) found that the degree of interdependency, as measured by the level of investments made by each side and the barriers to exit, affects the working consensus of collaboration in a relationship. Ganesan (1994) notes that in a relationship trust and interdependence play key roles in determining the long-term orientation of the firms. In a long-term relationship, he stresses, transaction-specific investments and dependency play an important role, but trust is also a necessary ingredient. The former, investment and dependency, is on present or existing conditions, and the latter, trust, is on future conditions. Anderson and Weitz (1989) developed a conceptual model of trust and interdependence in industrial channel dyads. They pointed out a concept of "stakes" which is different from dependency. It refers to the importance of the activities involved in the relationship to at least one of the parties.

Their concept of stakes is important for this study because of the following reasons. First, it raises a possibility that the commitment by transaction-specific investments may not be symmetrical for the parties involved. Second, it allows the parties the freedom and discretion of decisions and activities which can be quite independent from the dependency on the other party.

Characteristics of networking in an industrial channel

There are several reasons that long-term relationships are often observed in the industrial marketing area. First, there is little information disparity between buyer and seller. Buyers in industrial markets have to judge correctly whether

the offerings of sellers or suppliers are best fit for their companies. Therefore, they have the professional ability for the judgment of product quality, price, and other important transaction terms. In addition, buyers also have to consider their buyers and, if necessary, the next buyers of their buyers in their transaction chains (Holmlund and Kock, 1995).

Second, in industrial goods marketing, products or services are customized for the individual customer. As a result, because of limited alternative sources for buyers, switching and searching for new suppliers may bring prohibitory high risk and cost to them. Occasionally, the competitive pressure in the market forces firms to adopt the strategy of domesticating their transaction markets. To explore this, a brief review on the long-term transaction relationship is followed.

Transactions in industrial markets are often accomplished in small numbers. In this situation, the emphasis in a transaction is not on the frequent switching of transaction parties with adversarial relationships, but on the transactional terms in the longer-term relationships with a few selected partners. Accompanied with a scarcity of transaction parties, this prerequisite adherence of transaction relationship induces the opportunistic behavior in respective parties. In this situation, they know other participants in advance and seek a quasi rent by their opportunistic behavior.

Collaborative networking in home electronics industry

Importance of die and mold

Whereas many parts are internal and not visible from the outside, many other parts, (i.e. the body of automobiles, exterior panels and switch knobs of TVs) are visible. The latter parts have substantial effects on the design of products. In other words, these parts are the integral parts of products or designs in themselves. The former internal parts are also important for the function and quality of products. In interview research on the plastic mold industry, it is said that 70-80 percent of the quality and performance of the new product is determined by the quality of the plastic mold. Further, the high quality mold may increase the efficiency of the molding and assembly processes, reducing the rate of rejected parts, because more than 300,000 plastic parts which have exactly the same figure have to be produced constantly from one mold. This means that the assembly firm as a final user of plastic molds has to secure the superior mold manufacturer to attain the high quality of products.

For high quality products, the mere existence and use of superior and high technology mold manufacture is not enough. In recent competitive circumstances where the speed and timing of new product development is becoming a critical factor in determining the success of a new product, the co-operation and arrangement between mold manufacturers and final users is needed. For total product quality management, it is a key factor for assembly firms to know how to manage the relationship with their suppliers.

In the plastic mold industry in Japan, the internally manufactured mold, which the mold user manufactures himself, occupied only 14 percent in the production of plastic molds. The rate of internal manufacturing has been decreased from 65.3 percent in 1957, and has kept the level of 10-15 percent for the last ten years. This means that most mold users have to obtain their necessary molds from independent mold manufacturers. In these circumstances, the typical mode of transactional relationship in plastic molds is as follows.

First, a mold is produced as a sole ordered product. Although it is a unique product in itself, it is needed as the “master” for the mass production of various parts and final products. It is also important because its degree of precision affects the quality of parts and therefore final products from it. As mentioned above, how precisely a mold is produced dominates more than three-quarters of the quality of final products such as automobiles, home electronics and so on.

Second, a mold itself is neither a part nor a final product. A customer, the so-called “end user” in Japan, ordinarily orders it. While the mold user is a customer and a proprietor of it, he is not a direct user of it. It is lent to the plastic injection molder who uses it to produce parts such as external panels, switch knobs, small plastic gears, and so on. Therefore, there are three types of firms that are concerned with a plastic mold. In the plastic injection molds for electronic and electric appliances, they are mold user (end user), plastic injection molder, and plastic mold processor.

Phases of transactional network

Generally, a transaction between mold processor and mold user is usually long-term and has three phases.

Phase 1 is a period of contacting and arrangement of procedures. When a transaction is new and the first one, each party has to undertake a searching process for a suitable transaction party. It is crucial for the mold user to find a mold processor who can produce a mold of high quality. If the experience and ability of the mold processor is not known, a mold user will try to gather information on the ability of that mold processor or give a trial order. It is better that the mold user knows the mold processor’s ability beforehand so that he is not faced with the situation of having to select another mold processor.

Phase 2 is the period of processing an ordered mold. This takes place inside the mold processor which, to the mold user, looks like a black box.

Phase 3 is the period of trial molding and touching up. A mold is a key product for the mold user and can be used thousands of times. The quality of the mold has to be good enough to produce exactly the same product each time it is used, in vast quantities. To meet this requirement once a mold is processed it is put through a trial molding procedure and touched up, if needed, to become

a perfect mold. This period is called an “inspection period” in the die and mold industry. Once the inspection is complete the mold is paid for. What proportion of the price is paid at what point of contract differs in different countries. In Japan, for example, all payment is usually made after the inspection, phase 3. This payment practice is also one of the important factors to determine the power relationship in transaction.

Collaboration in vertical network

In addition to the long period in each transaction, the continuous transaction between the mold processor and mold user is born and maintained. It is better for the mold user to continue to use the mold processor once he has found his work to be of good quality. Furthermore, it may induce the commitment of the mold processor and molder for this specified transaction. One effect of these commitments is the economizing of cost and time for communications and adjustments within transaction members. A more positive effect can be expected.

In the transaction of plastic molds, the leadership of technology for molds is still in the hands of the mold processors. It is because fundamental manufacturing processes, which cannot be substituted by machines, still remain. These fundamental technologies can also be adapted to new product development. Mold processors who have high skills and know-how participate in new product development processes and provide support and feasibility information to mold users. The deeper the commitment of the mold processor to the specific mold user, the more difficult it becomes for the mold user to change to another mold processor.

The frequency of new products also has a substantial effect on the orders of molds. Recently, the cycle of model change has tended to be longer and the mold itself has become more complex. This has led to reduced orders for molds.

These transactional networks are called “design-in” in Japan. The first merit of Japanese design-in system is in the fact that the mold itself is a crucial part of a new product. In other words, the feasibility of the design of a new product is dependent on the mold. Whatever the designer draws to meet new specifications, they cannot be feasible without the molds, which can produce many parts for each specification. Second, the design-in may contribute to the reduction of lead-time for new product development. It may reduce the possibility of alteration in specifications and the resulting delay in the new product development process. Third, the order for the new mold may be executed long before the launch of the new products into the marketplace. It means that the order for the new mold simultaneously discloses the information of the new product specifications to the mold processor. The new product specifications are kept a secret at this stage. In this aspect, the design-in is a system of sharing information and knowledge within participants.

Conclusion and implications

From the research on vertical networking in the home electronics industry, several factors, which affect the transactional network, can be pointed out. First, the technology of mold manufacturing and injection molding affects the transaction mode between mold users, mold processors, and plastic injection molders. The more precise the technology of mold manufacturing and injection molding are, the more intimate their transactional networks become.

Second, the competitive edge for mold users in their final products markets has shifted to time and speed dimensions. Mold users have to secure superior mold processors and injection molders at much earlier stages in their product design processes and they also have to share more long-term and substantial information with them. For this purpose, mold users have to develop and maintain successful relationships with their suppliers. There are several reasons why firms are more likely to remain with sellers who have supplied them with related products in the past. They include:

- current sellers are perceived as less risky than new sellers;
- prior interaction may lead to high switching costs because of buyer commitment to idiosyncratic investments;
- prior experiences provide sellers with an opportunity to build credibility and trust (Badaracco 1991; Webster 1992).

This means that mold users may select mold processors and injections molders and reduce the number of suppliers. With these selected mold processors and injections molders, mold users may adopt a strategy of maintaining long-term relationships from the total efficiency aspect.

Finally, mold processors in Japan prefer long-term relationships, but the number of long-term customers is relatively small. As a result, their transactions are dependent on the limited number of customers and cannot disperse their risk by increasing customers. These factors may bring the transactional network in home electronics to become a tighter and closer network for global competition.

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The relationship between technology and logistics third-party providers

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Keywords *Innovation, Logistics, Technological change, Time management*

Abstract *Our work discusses the results of a survey among French logistics service providers. In a highly competitive context characterized by "time compression", technological effort becomes a key variable and a means of differentiation between third-party logistics providers. The success of logistics outsourcing relationships is entrenched in the third-party's technological ability to improve the supply chain reactivity.*

Introduction

According to Utterback (1994), the technological improvements developed by firms (and their partners) produce two effects: a growth of intangible value (through creativity) and an increase in competitors' vulnerability because of the threat of the spread of technological standards. In this way and applied to the third-party logistics sector, technological effort contributes to the diffusion of both organisational and operational capacities which remain essential to carry out more and more specific logistics demands. This paper wants to bring some clarification to that contribution to the performance of the logistics outsourcing relationship.

In a highly competitive context, characterized by "time compression", effective leadership of logistics service providers lies in their capacity to innovate in the area of joint flows management. More specifically, providers must maintain very close ties to technologies, particularly information technology. This relationship is invariably reinforced as the trend towards the reduction of cycle times along the supply chain becomes more pronounced. The paper first examines theoretical foundations of the concept of technological effort in logistics. The second section analyses the acceleration of cycles and the growing role of technological effort. The third and fourth sections focus on the methodology and the results.

Technological effort in logistics: theoretical discussion

How can one define the concept of technological effort? Technological effort deals with the idea of incrementation of the know-how in processes. Morin



(1985) has defined technology as the art of carrying out, in local context and for a given purpose, all sciences, techniques and fundamental rules used, on the one hand for the conception of products, on the other hand for the industrial processes, the management's methods and the information systems. According to Giard (2000), that definition implies a dynamic view of technology which affects continuously the organization of the firm. Moreover technological choices depend on both the state of the techniques and the local constraints. Technological effort must be associated with technological trajectories adopted by firms according to the constraints imposed by the activity's characteristics, the culture and the history, and the sector's standards (Tidd *et al.*, 1997). According to this point of view, it is quite different from the concept of innovation effort, which is broader and defined as the set of technical studies, managerial, industrial and marketing activities tied to the introduction of new products or new processes (Freeman, 1982).

The current section will examine first the behaviourist side of technology, second the place of technology for logistics third parties and then the role of logistics activities in the diffusion of information technologies.

The behaviourist side of technology

The analysis of interorganizational relationships in terms of the technological potential and thus innovation has enriched classical models of power that essentially examined firms' strategies along the conflict-partnership continuum. Behavioural and socio-political models developed most often within the theoretical marketing channels literature have focused on control of power relationships. That control constitutes a source of considerable strategic and economic challenges (Rosenbloom, 1999). The objective is to build on the idea of Alter (1999), who has concluded that technological potential, an indicator of an organization's innovation capacity, is a superior structuring source of power for the strategies of logistics service providers. This approach can be viewed as part of the analysis of the role of innovation in the outsourcing relationships dynamics. Although the theoretical foundations remain the behaviourist marketing channels literature, the technological potential has also to be tied to the core competencies of the contemporary firm. In this way, the resources theory initiated by Prahalad and Hamel (1990) and strengthened by Hoskisson *et al.* (1999) gives a complementary view to explain the link between technological potential and human resources strategy.

From 1970 to the present time, companies have passed from the era of domination strategies by cost to differentiation strategies by customer service. There are many consequences from a logistics point of view. To be able to offer growing levels of personalization, production and distribution companies have accepted fragmentation of order size and a greater diversity of flows. The number of references, specifications and delivery dates has tended to inflate. The preponderance of just-in-time organizations is a managerial response to the

principle of “customer-king”. Simultaneously, some have begun to question the relevance of the notion of customer service as a guiding principle of logistics organization. Effort should be exerted only for services “perceivable” by the customer; all other expenses are shown as erosion of competitiveness, seen by effects contrary to the perception of quality by the customer. Aurifeille (1997) gives the example of the French semi-fresh produce sector, where attempts at logistics innovation consisting in lengthening the duration of product validity have been interpreted by the consumer as a sign of the declining intrinsic quality of the merchandise. Insufficiency in the perception of motivations and expectations of final demand have resulted in losses of market share. Yet customer sensitivity to logistics is poorly understood. Christopher (1997) has observed that the consumer has become time-sensitive. Many practitioners now refer to the concept of a “gap in procurement time”, defined as the difference between the time it takes to deliver the product and the time the customer is prepared to wait. When a customer places an order, the commitment to delivery time becomes important. Delivery time has become a discriminating product attribute, one that influences the consumer’s mood and loyalty in particular. Customers must contend with fast-paced product innovation that reinforces the risks of obsolescence of the merchandise purchased. Companies involved in supply chains react by implementing flow management through time frames. One example of such control is the ability to quantify the impact of each option, or variant, of a product on delivery time. Customers can thus adapt their demand if they want a product delivered more quickly. Pre-eminence placed on mastery of time frames is also stimulated by the trend toward unification of national markets and the creation of diffuse trade zones that have to be served with homogeneous quality. These zones include Euroland, Africa, South and North American markets and South-east Asian markets.

Logistics third parties and technology

In the logistics field, technological trajectories remain clearly identified. Since the early 1990s, a large body of literature has shown the focus of technological progress on the problems of control and rationalization of materials and information flows. Concomitantly, logistics service providers have taken on increasingly precise responsibilities. An earlier paper examined the perspectives and growth opportunities of logistics service providers that were caught in an upheaval of market expectations (Sauvage, 1999). One of the hypotheses formulated was that operators are confronted with inertia resulting from an insufficient size effect that limits their access to the market of global logistics activities, thus necessitating the emergence of logistics mega-providers. This paper builds on previous findings by investigating whether the dynamics of the growth of logistics service providers is contingent on the strategic trajectory adopted. A particularly promising trajectory consists in putting in place an organization that strives for permanent innovation.

In this context, subcontracting, with providers able to consolidate diffused tight flows and thus to cushion the effects of volatility of demand, spontaneously becomes for distribution a worthwhile organization solution and an opportunity for “capable” logistics service providers. Given the skills that they must control, these providers become the prescribers of logistics solutions that enable customers to access control throughout the logistics organization. Logistics outsourcing consequently becomes an instrument of conquest and control in management of global logistics of the firm.

Christopher (1997) notes that the challenge of the contemporary firm lies in enhancing technological potential, a lever that reduces time frames and enhances the reliability of logistics. The objective of this paper is to show that in a highly competitive context characterized by time compression, technological effort becomes a key variable and a significant means of differentiation for logistics service providers. Technological effort consists of efforts in developing the capacity to implement new organizational and technical solutions in order to improve flows management. Two hypotheses on the relationship-related consequences will be tested in this way.

The role of logistics activities in the diffusion of information technologies

This sub-section examines how and why logistics third-parties in industry contribute deeply to the generalization of logistical and technological innovations among shippers.

What is the theoretical value of the technological potential and technological advantage in logistics management models? Is the growth of logistics a catalyst for the development of information technologies or vice versa? Zaheer and Dirks (1999) posit that information technologies are most often considered as a resource of the firm, i.e. a source of competitive advantage. They are a tool for control and management of internal and external resources. These technologies are sometimes called economizing with regard to management and human resources costs, particularly given that they automate and lower the costs of supervision and information processing. Alchian and Demsetz (1972) contend that information technologies can reinforce the capacity to co-ordinate human and material resources, to determine organizational choices and to orient the company’s outsourcing decisions. For this reason, together with the contract technologies, they constitute an essential aspect of the relationship with external partners. Their development affects the nature of interorganizational relations. They foster the development of cooperative forms of relationships, in particular partnerships and alliances, because information management in real time and efficiency of co-ordination of various production assets rely to a decreasing extent on geographical proximity and centralized structures. The legal and organizational limits of the firm are tending to dematerialize and disaggregate. Baudry’s (1995) concept of quasi-integration captures the idea of the enlargement of the organization’s boundaries,

engendered by improved levels and control of co-ordination mechanisms. In the third-party logistics sector, thanks to technological developments and standardization efforts, real-time information exchange has become omnipresent in routine management and follow-up of operations.

The technological advantage is often discussed and questioned given the effect of the rapid diffusion of innovations, especially in the services sector, where protection and patents are difficult to implement. Commonplace innovation effectively dilutes the role of technology as a competitive advantage. The speed with which innovations spread is a threat to the most innovative logistics service providers, who have developed a number of applications and processes internally. For example, the high speed of diffusion and multiplication of applications produced and sold by computer suppliers, which improve and nurture the permanent renewal of information systems, confers a potentially short lifespan on computer-based innovations. Thus, the development of innovations can quickly negate some of the benefits achieved, by making obsolete equipment that ultimately becomes a disadvantage. Technological evolution can play a critical role in the emergence of new activities and the elimination of obsolete activities. Owing to the speed of obsolescence of advantages derived from innovation and technological developments, companies may prefer subcontracting solutions rather than internalizing operations that necessitate technological investments.

Without constituting an end in itself, technology offers competitive advantages and serves as a catalyst of change in an organization. Because of its short lifespan, the technological advantage cannot, however, serve as a substitute for quality of service, which is an essential factor of success (Lele, 1986). In the logistics sphere, information technologies are a lever for improving reactivity. They are tools that allow companies to differentiate while converging toward customer satisfaction.

The evolution of technologies used by logistics service providers is essentially driven by the development of warehouse management systems, product follow-up techniques and automatic identification (notably using barcodes). Today, logistics service providers make widespread use of cellular phones, laser technologies, electronic chips, Internet and satellite positioning to trace their loads. For logistics service providers whose origins lie in the transport sector, the technological efforts also entail the development of computer applications for fleet management, optimization of delivery tours, loading plans and implementation of vehicle tracking systems. Emphasizing the extent to which innovation is crucial, Colin (1989) describes French logistics service providers, generally originating from the transport area, as critical vectors of generalization of logistical innovation among shippers. Paradoxically, the level of computer use remains low in the transportation sector, suggesting that penetration of information systems follows the hierarchy of the physical distribution sector: large companies are the primary

beneficiaries. Simple owner-operators are poorly equipped whereas large logistics service providers use powerful information systems acquired through significant investment. Mastery of these means, at a cost inaccessible for small financially fragile competitors, lends additional credibility to large operators. This mastery enables the main providers to position themselves in traditionally internalized activities such as global management of supply chains and warehouse networks. As Paché (1996) noted, technological innovation is also a vector of emancipation for French truckers who aspire to rise from their status of simple subcontractors.

Acceleration of cycles and the growing role of technological effort

To justify the focus on technological effort, one must first describe the new context of time compression and its influence on technological progress.

The new context of time compression

The end of the twentieth century has been characterized by the onset of the phenomenal development and innovation in the electronic processors and microcircuits industry. On stock markets, projections for development and earnings of companies in the electronic component sector have fuelled wild speculations. In the space of a few years, calculation speeds and data storage capacity have increased exponentially. On a wider scale, in many industries engineering and testing is fully digitized and data have become immediately transmissible in large quantities along the chains of partners, suppliers and subcontractors. A major consequence of this is that technology, by accelerating the data preparation and transmission times, has increased the reaction speed to market needs. The duration of cycles has decreased significantly along two axes: new product development and distribution. Christopher (1997) shows that products' life cycles have contracted, particularly in sectors that rely on high technology. In the French automobile sector, the duration of vehicle development was approximately 18 months in the mid-1990s. Manufacturers now aim to reduce this period to less than 12 months by 2001 or 2002. Concerning distribution, delivery times between the date of the order and the date the product is made available have also been substantially reduced. This contraction is a strategic success factor of products. Beginning in the early 1990s, La Londe and Masters (1994) predicted the compression of cycle times through generalization of cross-docking, just-in-time and high reactivity. Today these approaches are grounded in the use of scanning, standard barcodes and standardized EDI techniques between the main partners. Incompressible limits seem to have been reached, such as maximum speed for trucks, thus precluding the possibility of reducing delivery time frames. Strategies based on just-in-time may have attained maturity. The foundations of progress now consist primarily of reactivity and supplier involvement in automatic inventory replenishment. The capacity to produce real-time logistics

information, such as liquidation of merchandise at the stores, constitutes a new technological objective for partners of the supply chain.

In the new context of globalization and wholesale reduction of time frames, efficiency in logistics necessitates advanced information management and communication systems. As part of a quest for productivity, these systems eliminate sources of inefficiency, and ensure reliability by enabling organizations to manage contingencies. They allow monitoring of all operations to detect malfunctions and to activate back-up networks if necessary. The intensive use of increasingly efficient electronic transfer technologies has become a *sine qua non* condition for remaining competitive, while reducing uncertainty and the cost of adjustment to contingencies.

The acceleration of cycles engendered by the permanent renewal of information technologies has helped liberate the company and its customers from spatial and temporal constraints. To reduce all time frames, individuals (internal and external) associated with the organization are increasingly communicating through computerized connections, electronic mail and cellular telephones. They are concomitantly reducing human or face-to-face contact. The development of the instantaneous becomes the sublime objective: immediate reception of orders, real-time information, immediate meeting of supply-and-demand, etc. Home purchases, reduction of shopping and warehouse areas and reduction of sales forces are probable medium-term outcomes (Aijo, 1996). These trends reinforce the idea of the capital role of virtuality in interorganizational relationships of the provider-customer type. The capacity to develop efficient means of communication with customers, suppliers and even consumers is a discriminating factor.

Stimulation to technological progress

The contraction of cycle times is thus associated with stimulation of innovation. The cost of putting in place new techniques and processes nonetheless remains high: designing specific software, implementing adapted maintenance mechanisms, developing systems to convert incompatible languages, etc. The need to significantly increase the capacity for innovation is a problem that companies can resolve by soliciting input from suppliers and customers. Innovation networks are built to enhance the potential and speed of development of technological projects. New trajectories arising from subcontracting policies in the automobile production sector meet this need (Garel, 1999; Sauvage and Nahon, 2000). Policies of competitiveness and systematic reassessment of suppliers, whose responsibilities are voluntarily limited, seem to run counter to the search for innovative partners (Langlet, 1999). In the first model, the purchasing function controls the selection of suppliers of goods and services based on order books established by the functions that use them (logistics, production, maintenance, etc.). Inversely, the partnership model operates with a limited number of suppliers involved in co-

development projects and the most upstream activities (design, engineering, packaging, product development). This model is also not the best adapted to developing reactivity and the innovation capacity of understimulated partners, which are firmly rooted in the organization. Attempts to reconcile these two extremes in the automobile industry have been quite intriguing. This sector apparently favours healthy emulation while encouraging innovation and permanent progress. This “soft” stimulation by the market purportedly allows some manufacturers to benefit from improved reactivity in terms of technological progress.

The reduction of cycle times and the growing sensitivity of supply chains to time frames call for a two-pronged modification of the outsourcing approach. First, these phenomena render conflict-based subcontracting relationships founded on exploitation of advantageous power relations poorly adapted or at least paradoxical. Moreover, reduction of cycle times assumes close collaboration with suppliers that can ease the cost of the innovation process. Dornier *et al.* (1998) explored the diffusion of technological knowledge with dominant suppliers. They concluded that the suppliers selected must be managerial, innovative and reactive. They bear a substantially closer resemblance to partners than to subcontractors. However, they must also be autonomous, to be able to keep abreast of best practices and international expertise. The quasi-integration model (total partnership), owing to its static nature, is not necessarily suitable, particularly because it can hamper permanent progress. The new scales of cycle times call for a dynamic management model, in which the supplier pool evolves according to the principles of healthy emulation.

How does one explain the correlation between the relationship model selected and technological potential? Logics of power and the quest for a competitive advantage through costs generate simultaneously counter-powers and defensive behaviours, whether it be the fight against entrenchment of the “other” in the relationship or the manipulation of dependency factors (Sauvage and Nahon, 2000). Among subcontractors in the automobile industry, this reaction to power and the pressures of the dominant player are manifested by segmentation of the customers. The best customers benefit from preferred treatment and the assignment of qualified, involved and creative teams. In contrast, teams of lesser value are assigned to less important customers.

Furthermore, the nature of the relationship model adopted appears to be correlated with the technological approach adopted by suppliers and providers. Specifically, we have formulated two hypotheses related to the third-party logistics sphere. We will test them in the following parts.

- H1. The technological effort of the logistics service provider is correlated with the duration of the relationship with the customers.
- H2. The technological effort of the logistics service provider is correlated with the degree of involvement in a relation of joint flow management.

Methodology

Data collection and sample

The consequences of the technological effort on the nature of the relationship with the customer has been evaluated by the means of a questionnaire mailed to a population of logistics service providers. The reference population comprises external provider sites that are in permanent contact with the customer, and contribute to co-ordination of physical circulation of products by proposing services related to transport and/or warehousing. Each logistics provider was asked to report on its main customer.

A preliminary exploratory study was carried out to identify the elements characterizing the concept of technological effort survey. Three managers and five experts (a specialist journalist, a consultant and three academics) were selected for that stage based on their deep experience in the area of logistics outsourcing. Extensive notes were taken. Then, many pretest participants were solicited to comment on the wording, presentation and validity of items. Since measures for the collaboration and effective relationships constructs had been validated in previous research, many changes were implemented in order to adapt wording to outsourcing logistics context.

The 1,081 survey recipients were managers of service providers business units which were presumed to be key informants for the current research. We elected to seek data from the provider who is able to evaluate technological effort. These managers oversee the daily functioning of the relationship with service providers. The listing of the sites constitutes the synthesis of two rankings from the French magazines *Libre Services Actualités* and *Liaisons Transports*. The mail questionnaire was sent to the managers of these 1,081 sites located in France. The usable response rate was 9.15 percent (99 responses by the specified deadline). Among the non-responses, we have noted 124 questionnaires which have been returned from an incorrect address. This reveals the relative low quality and actualization of the data existing about logistics third parties.

A total of 58 questionnaires were filled in and returned spontaneously. Extensive effort was then expended to improve the response rate. Many non-respondents were contacted by phone to stimulate the filling in of the questionnaire. If the non-respondent indicated that permission to fill out the questionnaire should be sought from a higher authority, then the supervisor was contacted by mail.

Measure development procedures

Although the focal constructs for our research essentially are stimulated by previous theories and research, the scales were developed specifically for this research (Table I).

			Third-party providers
Groups of items	Items	Type of measure	
Main characteristics	Social capital	Metric	245
	Human sizes	Metric	
	Annual corporate turnover	Metric	
	Annual unit turnover	Metric	
	Number of business units	Metric	
Technological effort	Integration of services provided	7-point scale obtained through a scoring procedure	
	ISO 9000 certification effort	7-point scale	
	Information exchange technology	7-point scale	
Nature of the logistics outsourcing relationship	Involvement in co-control of logistics	7-point scale	
	Control and planning of time	7-point scale	
	Management of supply flows	7-point scale	
	Formalization of dysfunction	7-point scale	
	Management procedures	7-point scale	
	Duration of relationship	Metric	

Table I.
Scales and items

In our perspective, we decided to include three components to represent the technological effort of logistics third parties.

First, there is the capacity of adaptation and insertion in the information system of the partner. Reix (1999) insists on the potential effect of information technologies on flexibility, thanks to the resources' fluidity, competitive customization and collective learning. Concerning logistics, Dornier *et al.* (1998) emphasize the advantages of EDI, particularly with regard to reducing delivery times. The capacity to connect to customers' systems allows synchronization of operations and real-time management of contingencies. Implementation of these systems is generally costly in terms of competencies, logistics expertise, information systems and marketing.

The effort to produce certification procedures, sometimes referred to as quality assurance, also appears essential. It contributes to the creation or maintenance of a feeling of confidence between the customer and the provider (Lamprecht, 1995). The use of ISO 9000 assurance certificates allows logistics service providers to reinforce their credibility, particularly in response to calls for tender. The ISO 9000 certification has a reassuring effect on customers who strive to control the quality of their purchases and to limit uncertainties in capacities and real competencies of the provider selected.

Betbèze (1999) observed that the nature of the array of services offered is another indicator of the technological advancement of the provider. The combination of a high number of new logistics activities is a source of complexity to which the operator responds through advanced processes of coordination, planning and information (Van de Ven, 1976). The number of

activities to co-ordinate was operationalized by the creation of a score ranging from 0 to 7, obtained from the aggregation of Boolean responses related to seven activities considered as innovative.

Concerning the nature of the relationship, two aspects were studied: the duration of the relationship and involvement in joint flow management. Christopher (1997) postulated that above all, joint management, in a perspective of downstream customer satisfaction, must encompass the critical elements of delivery: punctuality, reliability and quality (absence of errors and shortfalls). Sauvage (1997) found that the critical operational objective assigned to the logistics service provider by the majority of shippers is to improve the punctuality of delivery. Consequently, to study the effort required to guarantee the punctuality of delivery, two types of effort have been retained: monitoring of procurement (if the input merchandise is not received in time, stock out and delivery delays may occur) and planning of time frames (if the customer does not communicate the planning of deliveries sufficiently in advance, the provider cannot organize its routes, or cannot deliver at the specified time). We have also measured the effort of formalization of operational procedures. Daugherty *et al.* (1992) demonstrated the influence of the formalization of third-party logistics on performance and monitoring capacities. Responses were measured based on a seven-point scale.

We also want to examine the level of social capital and its link to technological effort, relationships performance and customer's satisfaction. Gentry's (1996) survey of North American truckers indicates that providers' level of social capital represents a financial stability factor for the customer. These findings are consistent with those of Lieb and Randall (1996) in their investigation of 92 American industrial corporations. For global logistics activities, the growing weight of investment required to take back the customer's specific logistics assets and the use of new technology presumes the accumulation of sufficient financial power. Repeated innovation constrains the provider to attain sufficient size to benefit from the changes. Van Laarhoven *et al.* (2000) concluded the evolution of logistics service providers between 1993 and 1998 corroborate this viewpoint: despite efforts to enhance sophistication and consequent diversification, providers have not always succeeded in becoming autonomous and co-responsible partners, which could attest to their insufficient capitalistic credibility.

Thus, scale purification has been conducted through exploratory factor analysis in order to eliminate items based on the examination of modification indices, standardized results, chi-square statistics in light of the number of degrees of freedom, and improvements in fit statistics.

Results

Table II summarizes means and standard deviations associated with social capital and turnover. The twin variables give an estimation of financial

Table II.
Characteristics of
the survey
participants

Sub-groups		<i>N</i>	Means	Standard deviation	<i>F</i> -value
Social capital (€ millions)	Total	81	6.9	7.1	10.87
	Units with strong technological effort	19	11.3	8.51	Significance ($p < 0.05$)
	Units with weak technological effort	62	5.53	6.03	
Corporate turnover (€ millions)	Total	95	225.9	291.1	0.00
	Units with strong technological effort	23	226.6	254.7	Not significant
	Units with weak technological effort	72	225.7	303.5	
Unit turnover (€ millions)	Total	79	4.9	5.3	4.21
	Units with strong technological effort	18	7.1	7.9	Significance ($p < 0.05$)
	Units with weak technological effort	61	4.3	4.2	
Number of units	Total	99	33.09	41.17	0.51
	Units with strong technological effort	24	38.33	44.75	Not significant
	Units with weak technological effort	75	31.41	40.12	

strength. Two sub-groups have been identified: the group of the units carrying out a relatively strong technological effort and the group of units with weak technological effort.

The *F*-value represents the ratio between the intergroup average mean and intragroup and the average intergroup mean. We have proceeded to the test with the support of the single ANOVA procedure of SPSS.

The average corporate social capital is €6.85 million. This figure hides a significant difference with a ratio of one to two depending on the technological effort carried out. Such a difference confirms the existence of an entry barrier for under-capitalized firms which would like to develop technological effort. Huge investments in both information systems and human competencies (autonomy, creativity, reactivity, responsiveness) are required to run logistics activities efficiently.

Physical organization of the logistics third party is based on networks of 30 to 40 local operational units or agencies. The density of the network is a selection criterion for shippers (Lieb and Randall, 1996). According to Van de Ven (1976), from the point of view of third parties, the management of this type of network generates core problems of management and co-ordination of their agencies. These troubles explain the focus put on technological effort to facilitate the management and the synchronization of physical and information flows.

The turnover repartition suggests the co-existence of big firms (22.1 percent of the sample), making more than €609 million turnover, and medium-sized firms (74.7 percent of the sample), generating turnovers under €227 million. These figures reflect a characteristic of the truck industry wherein a small number of big firms generate the main part of the global sector turnover. The results confirm that diversification towards logistics and the leadership of a few large groups generally stemmed from the truck sector.

Concerning the operational units studied, the average turnover is €4.8 million. A significant difference appears between the two sub-groups regarding technological effort. The units associated with a high level of technological effort make double or more turnover than the other units.

There are formidable doubts as to the relevance and operationalization of constructs inspired by the theory, at least with regard to the domain of applied research. To structure the information collected, we performed a principal component analysis (PCA) to elucidate the principal dimensions of the constructs. The information contained in the various items is summarized. PCA was then performed on standardized variables (centred and reduced) given the existence of different measurement scales. Because the research was conducted in a new area of experimentation, we observed the rule proposed by Ford *et al.*(1986): the loading, which underpins the correlation to the factor axis, or the percentage of variance explained by the most strongly correlated factor axis, must be greater than 0.4. We were thus able to conserve all the items. For explanatory variables presumed to measure the same construct, we also performed an analysis of their internal coherency by Cronbach's alpha (α). For constructs that rely on exploratory measures, Cronbach's α can only be greater than 0.5 (Perrien *et al.*, 1984).

Statistical analysis of the technological effort reveals that only one dimension encompasses 53.5 percent of the information (Table III). This factor axis is interpreted as the technological effort of the provider, intended to satisfy the customer. Analysis of the nature of the relationship reveals that two principal components cover 76.4 percent of the information. These two dimensions are interpreted as duration of the relationship and involvement in joint management of logistics activities.

Percentage of variance explained	Explanatory variables used	Cronbach's α (loadings)
<i>Technological effort</i>		$\alpha = 0.57$
53.5 percent of variance is explained by a single factor	Integration of services provided	(0.74)
	ISO 9000 certification effort	(0.75)
	Information exchange technology	(0.69)
<i>Nature of relationship</i>		$\alpha = 0.73$
76.42 percent of variance is explained by two dimensions interpreted as:	Involvement in co-control of logistics	
Involvement in joint management of logistics	Control and planning of time	(0.94)
Duration of relationship with shipper	Management of supply flows	(0.93)
	Formalization of dysfunction management procedures	(0.51)
	Duration of relationship	(0.94)

Table III.
Structure of
constructs

The hypothesis that the nature of the relationship model adopted is correlated with the technology relation maintained by the logistics service providers can be partially accepted (Table IV). The technological effort of the provider influences its degree of involvement in a relationship of joint flow management.

The correlation with the duration of the relationship cannot be retained. Technological effort is a necessary but insufficient condition for the continuity of the relationship. The main obstacle remains behavioural. The ideal of perfect reactivity to the customers' requirements clashes with power cultures and supplier-customer logics with varying degrees of conflict, which are much stronger than the attraction of a rewarding technological collaboration. This would explain the absence of a correlation.

Another possibility is that an endless quest for very intense technological collaboration contributes to the instability of relationships. Many works on modular production advocate this point of view (Swaminathan, 2001; Schilling and Steensma, 2001). According to Baldwin and Clark (1997), modularity consists of creating a process or complex product based on subsystems designed independently but functioning together. Modularity enables a company to subcontract strategic and complex activities with a high technological content and, like logistics activities, after decomposition into basic modules. The above authors demonstrate that this modularity allows management of growing complexity because it imposes a stimulating relationship model that is conducive to a spectacular increase in the rate of innovation. Each subsystem is assigned a module with strong freedom and autonomy; their only obligation is results and compatibility with the other modules. The specialization of efforts in relation to a module allows concentration of the technological effort on precise problems, which fosters competitiveness and productivity by niche. The main hurdles lie in the need to precisely formalize rules for production of the module and control over production. Modularity signifies that the shipper, i.e. the architect of modules, conserves sufficient resources to be able to ensure joint management and control of activities assigned to providers. Once this is achieved, the shippers will seek the most competitive suppliers for modules without giving priority either to suppliers on site or to the duration of the relationship. The reason for this is simple: recourse to modular production is intended to avert the risks of

Dimensions of nature of relationship	β coefficient	t -test	R, R^2
			F -value observed
Duration of relationship with shipper	n.a.	n.a.	n.a.
Involvement in joint management of logistics	0.45	4.04 Significant at 0.0001	0.21; 0.19 $F = 9.0$ Significant at 0.0001

Table IV.
Results of
hypothesis test

obsolescence of technologies and procedures, in order to benefit from best practices even if substantial margins must be granted.

The statistical results indicate a trend toward modular production in the French third-party logistics sector. The providers that make considerable technological effort appear more involved in managing logistics, but without being assured of the continuity of their relationship. The items used support this interpretation. Certification thus represents a methodological guide, a collection of standardized procedures according to a rigorous order book, that allow reproduction and co-ordination of logistics with a “routine” level of performance, regardless of the customer. Modularity requires powerful information systems between partners to be able to connect all the teams that work in the network with management of “modern” logistics. Our results suggest that the information technologies used are highly personalized: 56 out of 99 sites have introduced a dedicated line, i.e. a non-standardized communication support that is not usable with another customer. The scope of the phenomenon suggests strong specificity in information systems between logistics service providers and their customers. Indeed, EDI technology is often coupled with a dedicated line, which implies that the standards and formats of standardized communication seem insufficient for some aspects of the logistics service provider-customer relationship.

Conclusions and implications

The development of technological effort constitutes a crucial strategic orientation for logistics service providers. The functional status of the provider is evolving from that of an executing subcontractor to that of a joint managing partner in the organization and management of flows. The logistics service provider is gradually taking on the role of key interface in the functioning of information systems, for one central reason: it is best positioned to manage contingencies in the industrial and distributor markets. It “profits” from the uncertainties of its customers. Its development logic is thus opportunistic, necessarily founded on logistical information and mastery of new technologies. These attributes are indispensable to guarantee reactivity to unforeseen events and continuous adaptation to changing constraints. The performance of a supply chain now depends on the capacity of its members to move the decoupling point of information – the point where forecasts and real-time data are compiled according to Mason-Jones and Towill (1999) – as far upstream as possible. The authors use a series of simulations to illustrate that this capacity can optimize the advantages obtained both from standardized production and from reactivity and production on demand. The technological effort and the management capacities it promises represent a yardstick of the provider’s capacity to adapt to market requirements. This capacity thus emerges as a strategic trajectory of pertinent differentiation for the providers.

In contrast, the entrenchment in the behaviours of simple executors engenders static organizational forms founded on leadership and power. Subcontractors remain guardians of solutions imposed by their shippers. This subordination exerts an inhibiting effect on development of technological potential and can maintain a scarcity of prescribing and expert subcontractors. Relationships and services provided are overly dedicated and specific. Economy of scope, competencies and expertise remain difficult.

The multi-specialization of logistics operators offers another interesting way of development. For the SME/SMI fabric, multi-specialization of providers seems indispensable to enhance the efficiency of outsourcing of heterogeneous and diffuse volumes. For the large business market, multi-specialization offers another advantage: companies can let the customer profit from updating of processes and technologies, along with capitalization of experiences with different shippers. It also favours the improvement of processes and reduction of cycle times.

Our findings have a main implication for academics. The innovation approach of logistics outsourcing gives rise to strategic perspectives that run counter to traditional viewpoints of a behaviourist literature, which considers the relative small size of the logistics providers as a success factor. "Small is beautiful", dictated by the analysis of the exercise of power in the provider-customer relationship, is increasingly deviating from the new logistic challenges founded on innovation and joint flow management.

It is important to note the limitations of our research. First, we have only begun to examine the influence of technological effort on objective relational considerations. Further research should examine aspects such as relational perceptual considerations like shippers' satisfaction or expectations. Second, further research should analyse how the technological effort is (or has to be...) taken into account in the outsourcing decision process. Third, we have neglected non-response bias possibility which is considered as a potential source of non-generalizability of the results. Many procedures exist, like those of Armstrong and Overton (1977), that compare for instance early versus late responses. Taking into account the exploratory side of the research, we have chosen to put this step into the future.

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Partnership alliances in virtual markets

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Keywords *Partnerships, Alliances, Virtual organizations, Integration*

Abstract *Successful virtual working requires organizations to adopt new approaches towards managing and leading in the following key areas: managing infrastructure, people, information and joint activities/processes. Marketing transformation and integration between the partners' internal and external activities and relationships are the prerequisites in order to combine their core competencies creating dynamic virtual collaboration networks. In this paper several e-partner relationship management paradigms are illustrated and categorized according to the degree of integration and e-marketing/business transformation. The proposed integrated e-partner relationship management solution offers a systematic process for ensuring that specific partnerships criteria are developed and managed in the most beneficial way for the involved parties in virtual environment.*

Introduction

Information and communication technology and business partnerships in virtual dynamic concepts, as virtual communities, virtual corporations and virtual markets are considered principal elements for the global business competitiveness. As markets globalize, competition intensifies and information technologies facilitate the interactions between organizations, entirely new e-partnership models are evolving. Partners could take the form of indirect sales channels, value-added resellers, distributors, or business alliances. The most effective forms of interaction between them tend to be collaborative in nature through the formation of partnership models. Companies need to maximize the return on their partner investments by simplifying communication, streamlining time-consuming administrative processes and eliminating extraneous expenses. The essence of partnering suggests that competencies are created when collaborative activity actually takes place, leveraging the unique skills and expertise of each partner. Working closely with other organizations is a concept that is rapidly gaining acceptance among market leaders who understand that collaboration is imperative to their continued success (Contractor and Lorange, 1988; Kogut, 1988).

A partnership is a tailored business relationship based on mutual trust, openness, shared risk and shared rewards that yields a competitive advantage, resulting in business performance greater than would be achieved by the firms individually (Lambert *et al.*, 1996; Cooper, 1993; Oliver, 1990). The degree to which partners share infrastructure, facilities and technology, human resources, information, assets and risks depends on their needs and the rules



established jointly by partnership members. Thus, they can cooperate and compete at the same time in order to be more effective in the marketplace, utilizing a relationship perspective, based on new rules of marketing/business strategy and integration for the digital era. Each member of a partnership must be able to share gains and losses equitably and the outcome of the collaboration must be quantifiably beneficial to everyone. The objective is to maximize benefits while minimizing costs. Market diversity, transparent prices, shorter products' life-cycle and competitors' intensity enhance the need for partnership alliances in virtual markets. The multi-channel landscape demands greater channel agility from quality partners in order to increase customers'/partners' loyalty (Thompson, 2000).

The scope of this paper is to present key factors such as infrastructure, people, information and processes, affecting the partnership management in virtual markets. Specifically, integration and e-marketing/business transformation interdependency is examined through a four-stage approach. A partnership alliance taxonomy grid is proposed by providing a useful roadmap for identifying specific key elements and dimensions for future development or current evaluation of e-partnership alliances practice. The partnership alliance paradigms were developed based on an extensive literature review. The categorization of partnership alliance paradigms is still an open issue, but it is clear that such effort will provide alternative ways to the companies which wish to establish a virtual alliance. An integration platform is developed to share data, applications and business processes between partners. Partners relationship management (PRM) and knowledge management (KM) incorporated systems support distributed decision making and synchronization of the specific business activities and responsibilities of the partners. The success of a virtual alliance depends on the choice of the specific partners and on the way in which they cooperate efficiently and effectively with one another.

New management approaches in virtual environment

Electronic marketplaces allow suppliers and buyers to meet at a certain place in order to communicate and transact. However, owing to the evolution of information systems (IS), information technology (IT), telecommunication networks and especially the Internet, the meeting point is now virtual and the main object of exchange is information.

A review of relevant literature revealed that definitions of electronic marketplaces vary according to each author's point of view. More specifically, according to the IS point of view (Ariba Inc., 2000; Bradley and Peters, 1997) e-marketplaces are Internet-based interorganizational IS, which allow partners to exchange information through commercial Web sites that list their products or services. Under a business view (Dai and Kauffman, 2001), an e-marketplace is a mechanism that automates and tightens relationships between trading partners in all transaction phases, achieves market efficiency and creates

economic value to its participants. Finally, by adopting a social point of view (Kaplan and Sawhney, 2000) e-marketplaces are virtual communities consisting of participants (buyers, sellers, intermediaries), which have specific roles with rights and duties. These communities will create and establish new forms of collaboration, and will have a serious impact on economy and society.

The transition of some traditional marketplaces is now being realized with the growth of Internet-based environments. Virtual markets are characterized by information management, and by the creation of virtual chain through partnership alliances. Virtual value creation has a direct influence on marketing/business activities through the offering of an information/supporting role (Rayport and Sviokla, 1994; Weiber and Kollman, 1998). Marketing business activities in virtual markets require an integration mechanism between the different partners and the different e-business exchanges allowing the participants to jointly plan, synchronize and deliver their products/services in order to anticipate dynamic customer requirements. Partnerships in virtual markets are temporary alliances of enterprises that come together to share skills and resources in order to attend a business opportunity and whose cooperation is supported by computer networks and adequate IT tools and protocols.

By participating in a virtual market, partners can gain significant benefits, which can be broadly categorized as strategic and operational (Raisch, 2001; Ariba Inc., 2000; Baumgartner *et al.*, 2001; Gerstner, 2000). Strategic benefits include entrance to new markets and gain of new customers, formulation of new partnerships or strengthening of existing ones, faster response to market changes, better understanding of buying patterns and increased collaboration and information sharing across the supply chain. Operational benefits refer to improved market transparency (according to price and availability), economies of scale, wider range of available products and services, reduced transaction costs (e.g. order-processing costs), transaction automation and better inventory management.

There is a need to transform from dysfunctional and unsynchronized decision making, which results in disintegrated and very costly business activities, to a partnership alliance that performs in such a way that it is one of the company's competitive advantages. Successful virtual exchanges require participants to adopt new approaches towards managing in the following key areas: infrastructure, people, information and joint processes. According to their availability the readiness for partnership development is determined.

Infrastructure

The emergence of virtual business organizations has been driven by the speed of Internet developments. The Internet environment blurs geographical boundaries, promotes dynamic networks, and favors customer-centric offerings. The members of a partnership alliance in a virtual market are confronted with a problem on how to strike a balance between internal needs

for different organizational and technological systems and external needs for connectivity and share-ability of messages, data, applications and processes. Infrastructure factors such as technological sophistication, organizational structure, corporate culture compatibility, provide a supportive environment that enhances partnership growth that serves as a foundation for a good relationship. Infrastructure environment factors determine the appropriate solution for connectivity and commonality of systems requiring negotiation, coordination and commitment between the partners.

People

The partners of alliances in virtual markets jointly develop performance objectives and measures to guide their relationship. The key actors that form a virtual alliance are: suppliers, who actually perform, provide/sell and deliver the product/service in demand, intermediaries who own the supplier/customer relationship and knowledge, and customers who directly purchase and acquire the product/service. Their roles tend to change as a supplier or an intermediary in a given business relationship may play the role of a customer in another one. Not all suppliers and business partners are alike. Some suppliers provide materials that are used in production, while others provide indirect goods. One business partner may perform an outsourcing function, while another may provide a complementary product or service. Also, more than one company (cluster/e-market models) can provide a complementary product or service as a joint offering in the partnership (Bremer *et al.*, 1999; Carrie, 1999).

The role of the master of a virtual alliance, which includes the integration, relationship, and KM, can be undertaken by a specific partner-member (Folinas *et al.*, 2001; Ouzounis and Tschammer, 1999). Three main management concepts for the role of the master can be distinguished:

- (1) the core firm concept, where the biggest partner in the alliance acts as the leading company and is responsible for the operation of partnership activities;
- (2) the steering committee concept, where the partnership features multiple leadership, and it is managed by a steering committee consisting of the members' managing directors; and
- (3) the net-broker concept, where a neutral individual prepares a platform of competitive and complementary web members, and creates a co-operative environment based on mutual trust (Franke and Hickmann, 1999).

Information

In virtual markets, information is functioning as a unique source of competitive advantage. Organizations must be able to extend their internal IS beyond their boundaries and include their partners. As a result, they come to possess

abundant data and information, jointly developed products or services, concluded contracts, queried potential partners, shared promotional plans and negotiated prices, terms and demand expectations. The rise of the Internet and World Wide Web as business-to-business communication vehicles, have created a new set of integration challenges for companies that want to automate the flow of information and integrate their business processes across their extended enterprise of customers, suppliers and partners (Suter, 1999; Papazoglou *et al.*, 2000). Companies in all industries are seeking to implement customer self-service applications and trying to provide their partners and suppliers with controlled access to their internal IS and business processes. Their incentive is to reduce cycle times and inventory levels and to better coordinate production and fulfilment operations. The successful operation of today's networked partnerships mandates that every member must be able to share information with trading partners and customers in real-time, preferably without manual intervention, whenever possible. Such real-time, system-to-system communication is realized by enabling disparate IS to share data in the context of specific business processes. Information exchange must take place across an infrastructure. This may require investments in new electronic communications technology.

Joint processes

The prerequisite for participating in a virtual network alliance is to solve internal process problems before going external. Intra- and inter-enterprises processes used for handling marketing activities are often unique to the organizations that employ them, and the nature and order of these interactions are an essential element of the contract established among the participants. Reaching agreements on processes that involve multiple organizations among business partners is a critical path of the virtual market and is always a challenge. Approaches to cross-enterprise processes must respect organizational autonomy and minimize the scope and complexity of the mutual commitment among different partners of the virtual market. Joint planning can range from the sharing of existing plans to the joint development of strategic objectives. Partnership alliances may lead to cost reductions, service improvements for customers, and marketing advantages. By working together to establish rules of engagement, each collaborating member gains an understanding of the other members' business objectives.

Integration

Management has to redefine issues related to infrastructure, people, information and joint activities processes, and adopt an integrated e-PRM solution, which offers a systematic roadmap for improving the performance. Providing the right amount of relevant information to virtual partners at the right time, represents the effective management from an e-business point of view. Partnerships in a

virtual environment are enabled by sophisticated IT that makes business information transparent, seamless and within reach (Folinas *et al.*, 2001). Structured data exchange, such as business, statistical, historical data and metadata, is a business system-centric activity where applications, databases, Web servers and other system components share content (data, information and knowledge). Integration here means the sharing and optimization of content and involves transporting, routing and transforming hundreds or even thousands of messages per second. The development of such a system requires a collaborative platform among partners in order to achieve the management, analysis and finally the conversion of the information available to knowledge.

Integration is a problem challenging e-businesses activities. Significant complexity exists because no system was originally designed to share information with other systems. Historically there has been no ubiquitous, common network platform over which to share information until the emergence of the Internet.

The degree of synchronization, independence and autonomy of each organization-member in a partnership alliance in virtual markets, influences the selection of methodologies for data, application and process integration (Folinas *et al.*, 2001). The integration platform delineates four levels of integration tools and services: information/communication technology level, applications data level, applications interface level and business level. The ICT level determines the standards for itself, the routing, queuing, and security mechanisms to facilitate transaction synchronization among the participant members and to prevent unauthorized data access and use of systems features. The application level specifies and implements integration methodologies both for data and interfaces. The business level defines organizational and collaboration rules for the partners involved in the form of modeling shared processes between the partners. The ideal integration platform should include the following core capabilities:

- Specific supplier processes and corresponding information.
- Customer-tailored systems integration software layer.
- Enterprise application integration (EAI) software for enterprise application integration.
- A framework that enables interoperability across multiple platforms with seamless interaction across a variety of vendors' products.
- XML for data formatting and structuring for inter-enterprise contractual information (messages and documents) exchange.
- Integration of internal business processes with rules-based routing and transformation.
- Internet-enabled, either virtual private networks (VPN) or the Internet, capable of supporting the basic communications channels.

- Security for the providence of reliable and auditable interactions.
- Firewall, encryption-based security protocols and authentication/communication technologies such as public key infrastructure (PKI) and certificate-based systems.

Figure 1 depicts the basic components and architecture of an integrated e-PRM solution. An integrated e-PRM requires the capture and storage of partners' transactions and business/marketing events across disparate touch points, and additionally partners' data from back-end transactional systems and external sources (Manthou *et al.*, 2001). A centralized partner data warehouse with a reliable, scalable and highly available storage infrastructure gives the solution to the problem of data consolidation and integration of diverse partners' data assets. It invests in the knowledge discovered through the use of the KM module. The output of the KM module should be delivered as an extensible application that uses a set of partners' profile and profitability models and reports. Partners' analysis results should integrate with supply chain management decisions in order to transform partners' information into building better relationships. A data mart, in the context of a PRM system, is a decision support system incorporating a subset of the partners' data focused on specific business/marketing applications or activities. Data marts allow for greater flexibility or increased performance. However, the data mart must be incorporated into the overall partners' data warehouse and managed and populated from this central data warehouse.

E-partners in a dynamic environment need a comprehensive view of their business, and greater insights into communication channels and marketing processes to improve decision making and business operations, as well as to adapt systematically and rapidly to market fluctuations. The KM module tracks collaborative channel events and processes, and extracts and presents decision-oriented information. KM capabilities such as analysis software, data mining software, Web-enabled technology, optimization, automation, and campaign management software can be used in order to transform the data from the partners' data warehouse and the marketing/business applications into useful partners' knowledge (Warkentin *et al.*, 2001).

E-market/business transformation

In order to further support the realization of e-marketing/business objectives through partnership alliances, relevant innovative practices must be established. Traditional marketing and business practices around infrastructure, people, information and processes need to be re-engineered to support the new customer facing technology-enabled competencies. These can be identified as: partner interface management, which requires the technical and organizational infrastructure and systems integration to enable that knowledge to be provided consistently to every channel and partner interface; partner communication management, which involves the application of the knowledge gained to the dialogue with the partner, in whatever form it takes

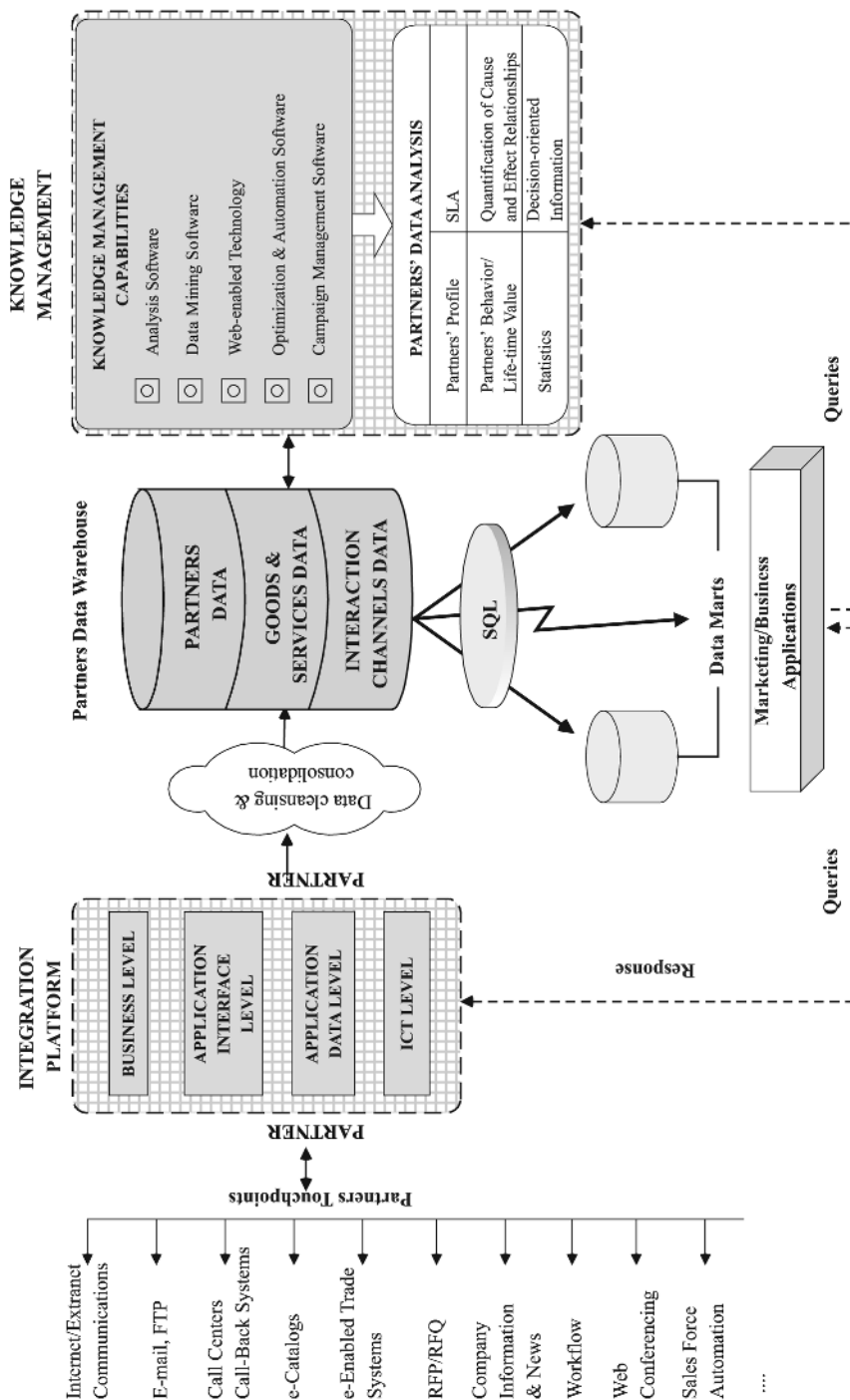


Figure 1.
Architecture of an
integrated e-PRM
solution

place in every channel, in order to build an increasingly valuable relationship; partner information management, which means the knowledge and planning processes to support intelligent decisions about specific marketing/business applications.

The role of marketing in a virtual environment is moving towards much more interaction, in which customer behavior and choice are interrelated with marketing processes and competitive activity. The main objectives of marketing transformation, enabled by e-commerce/e-business applications and models, are to achieve personalization and customization, to optimize performance and service efficiency, and to support sales in a safe and secure on-line environment. While the marketing concept is not new, it has become even more important in the digital economy. E-marketing is infused with technology leading to increases in efficiency as well as the creation of new business models that add value for partners and customers. These models can be organized according to product, price, distribution, promotion and relationship marketing level of transformation.

Partnership alliances have different levels of commitment to e-marketing/business. Some partnerships start with brochureware as the basic Web presence, whereas others adopt various levels of e-marketing/business for increased efficiency and effectiveness. The levels of e-marketing/business transformation are shown in Table I.

Level	Basic characteristics
Presence	Basic presence with static content, including graphics and information about company and its products and services. Batch orders
Interaction	Catalogue orders, consumer services, establishment of an online communication channel, which delivers targeted information to customer segments or specific partners, through an interactive content. Web site is used for marketing
Transaction	Initial B2B functionalities through home page focusing on transactions and sales facilitation. Moderate integration of core systems (ERP, SCM) with Internet applications (often via intranet). Customer-specific applications become more prominent with full interactivity. Sales, distribution, auctions, business-to-business interactions
Transformation	Full functionalities and systems integration. Web services connect applications and processes. Intelligent agents, Web analytics, customer-oriented products and sophisticated cross-selling applications alter Web site in a virtual enterprise. Complete realization, acceptance and implementation of Internet capabilities transform the whole business marketing strategy. Business-to-business processes, direct digital customer contact, SCM optimization and full information visibility among customers using CRM systems, and among partners using PRM systems

Table I.
Levels of
e-marketing/
business
transformation

The basis for cooperation in virtual organizations is the contract, in which the encapsulated service and cooperation support services can be completely specified. Partially defined contracts are used by service suppliers to advertise their services and by service customers to search for services. Consequently, the contract is the basis for dynamic partnerships (Adanez, 2000; Francescini and Rafele, 2000; Ouzounis and Tschammer, 1999).

A service level agreement (SLA) is a contracting tool keyed to a client's service performance expectations identifying the responsibilities of both the service supplier and customer. The supplier and customer determine beforehand which specific services and performance levels will be provided or required, and the metrics by which those capabilities will be measured. Criteria for SLAs between partners are classified in Table II.

The establishment of SLAs is an iterative process. It consists of the establishment of the customer requirements, the determination of service supplier capacity to meet customer requirements, the development of the SLA system, the negotiation, the evaluation and maintenance. The development of a SLA system is the most important process, since it incorporates criteria definitions and metrics for the customer and the supplier as well as specific methodologies and techniques.

PRM paradigms (models)

Partnerships between organizations can range from a standardization of exchanges, "arm's length relationships", to virtual dynamic collaborative alliances (Lambert *et al.*, 1996). Each relationship has its own level of commitment to e-marketing/business driving its development, as well as its own unique integration platform. The partnership model will vary from case to case and over time and it is based on infrastructure, people, information and joint processes, chosen by the involved partners. A qualitative mapping of partnership paradigms along the dimensions of integration and e-marketing/business transformation is developed, based on the above key areas. Partners will adopt different steps of integration as they join in collaborative efforts. Depending on factors such as volume and scope of message transactions and data/process sharing, organizations fall within one of the following steps of integration based on their infrastructure:

Service level agreements criteria	Classification and weights
Service	Standard, segment differentiation, customized
Price	Unique price, differentiated prices, customer oriented
Credit policy	Price conditions related to customer profile and loyalty
Quality	Service level performance
Response time	Lead-time, cost
Credibility	Consistency, reliability, image, transaction experience, trust
Legal issues	Warranties, indemnities, limitations of liability

Table II.
Service level criteria

- Step 1. Synchronize message transactions – Ability to synchronize individual business processes through messaging transactions such as EDI and XML.
- Step 2. Data sharing – Ability to share historical data for reporting and process validation.
- Step 3. Process sharing – Ability to create and share a single business process to be used by all partners across multiple channels.
- Step 4. Collaborative planning and evaluating – Ability to plan and evaluate key performance indicators.

The degree of process integration should be clearly defined so that everyone involved in the partnership model knows which are joint processes and which are separate. Members establish their rules of engagement with alliance partners, choosing one of the e-marketing/business transformation levels (Table I). Four types of partnership models activated in virtual environment are proposed each with a different degree of integration and e-marketing/business transformation (Figure 2).

Type I
There is no sense of long-term joint commitment or joint operations between the involved parties, just standardization of products/services, terms and conditions. The relationship ends with the fulfilment of the concrete operation. The interest in integration is to synchronize message transactions by establishing information and communication technology standards, session

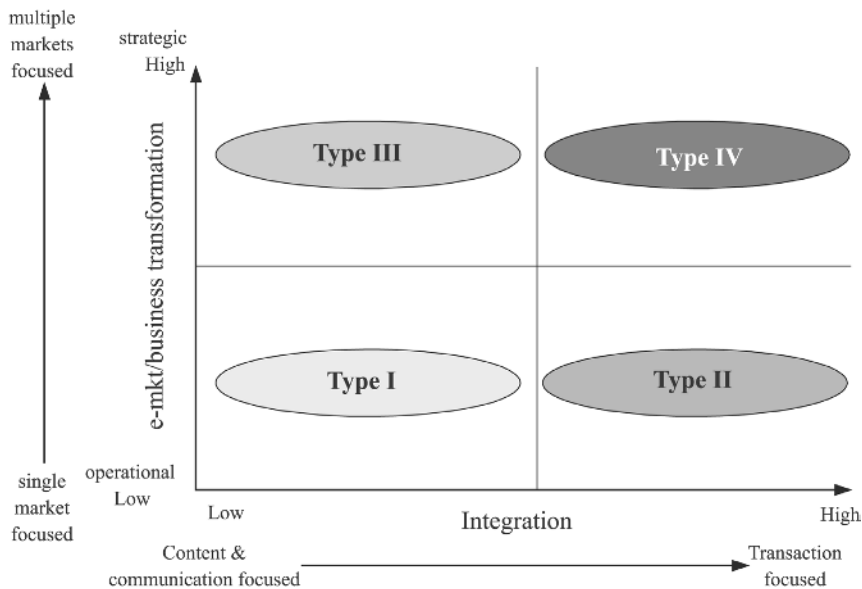


Figure 2.
E-partnership alliances
paradigms

and connection agreements and also by solving major security issues. The model demands some level of information sharing about purchase orders and product specifications. This partnership usually has a short-term focus and involves only specific brochureware marketing activities. Partners can share various types of information including offerings or requests, either before or after a purchase is made. Basically, one directional information flow does exist providing little opportunity for partners' interaction.

Type II

The focus is on the creation and sharing of specific processes by all partners across the enterprise. This model typically involves even more information sharing about capacity, production schedules, marketing/sales plans, inventory and cost. Innovative Internet technologies deal with electronic transactional aspects of partner relationships. Value chain constellation is applied in an operational manner and in segments of supply chain only, as opposed to a dynamic virtual network approach, that of strategic and integral supply chain involvement. Transition of supply chain from a push model toward the consumer, to a condition in which the consumer is pulling the product/service via actual demand, is noticed.

Type III

Individual supply chain partners start to interact with one another and determine prices and availability of goods and services, as well as delivery terms. Successful negotiations are usually finalized with a contract. This model supports joint marketing of processes by involving strategic decisions and units. The main characteristics are commitment to a longer-term relationship, joint planning of processes and operational integration. The focus is in application integration, which consists of data, and interface integration. In this model it may be useful and appropriate to share planning and forecasting data.

Type IV

It focuses on joint performance, joint development of marketing objectives, commitment to share resources, and corporate strategy consistency. It also maintains dynamic relationships, full sharing and visibility of information based on analytical and KM capabilities. Finally, this model emphasizes collaborative planning forecasting and replenishment methodologies. Collaborative virtual alliances enable trading partners to work together on new products design, customer demands forecasts, based on real-time visibility across the entire supply chain, flexibility of supply and sourcing options, and customer responsiveness (build on demand).

Conclusions

The Internet offers high-speed communication and tight connectivity and opens new venues for marketing and trade, such as virtual markets. It also facilitates collaboration among virtual partners and makes virtual integration a reality by

providing a centralized optimal solution for the decentralized involved members. The focus of marketing management has shifted from efficient functional activities to their coordination in virtual markets through partner relationship and KM. Technological, organizational, human, informational business-oriented aspects describe the transformation of marketing occurring in e-business environment. Integration of data, applications and processes, is extremely important, which means that managing relations and partnerships is therefore fundamental. The successful operation of today's networked supply chains mandates that every member must be able to share information with trading partners and customers in real-time, preferably without manual intervention. A collaborative platform among partners supports the partner relationship management and the conversion of the information available to knowledge. Partners' data analysis processing allows alliance members to derive information and partners' intelligence from data warehouse systems by providing tools for querying and analysing data, leading to a multi-dimensional view of the specific partners. The outputs of partners' data analysis are useful to evaluate partners' readiness to collaborate and to compare and analyse real-time business performance and customer satisfaction.

The e-partnership alliance paradigms (models) provide a useful roadmap for identifying specific key elements and dimensions related to integration and e-marketing business transformation commitment for future development or current evaluation of relationship practice in virtual markets. The role of e-marketing is tending to move away from one of merely satisfying customer/partner needs to one of a more collaborative goal driven by the notion of a "virtual alliance", which is facilitating the market/business processes with a customer-centric perspective.

Virtual markets drive the need for a highly integrated value-added supply chain between the partners, but integration is driven by cooperative rather than competitive strategies. A shift towards one-to-one marketing is viewed as a result of effective management of partners' collaborative networks.

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Value-adding partnerships and co-opetition models in the grocery industry

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Keywords *Supply-chain management, Efficiency, Consumer behaviour*

Abstract *Leading representatives of the European grocery industry formed the European efficient consumer response initiative in 1995. The goal of this strategic alliance is set to reengineer the way in which business is done in the industry by implementing cooperative strategies between retailer and manufacturer in order to fulfill consumer wishes better, faster and at less cost. Efficient consumer response appears thereby in many facets, from a "simple" dyadic value-adding partnership to a sophisticated form of co-opetition, where supply chain members have both relationship types – competition and cooperation – at the same time. Our paper discusses these issues first on theoretical bases and then presents empirical results of a comprehensive analysis within a selected European efficient consumer response initiative showing the success factors of managing efficient consumer response partnership relations.*

Introduction

The European grocery industry is embedded in a dynamic environment, where product managers are facing changing markets affected by the information age, more demanding consumers, and new retail formats (Price Waterhouse Cooper, 2000; Clarke, 2000).

Consequently, the interface between manufacturers and retailers in the grocery industry has also changed (Ferne, 1999). That can be observed by a remarkable power shift within the various distribution channels in the worldwide retail industry. Today's channels are far more concentrated and consolidated than they were 20 years ago. This is owing to factors such as better access to valuable information by using POS-data, the replacement of manufacturer brands by store brands and sophisticated retail logistics systems (Kotzab and Schnedlitz, 1999). Nevertheless, all players within this industry are confronted with extreme rivalry, primarily resulting from aggressive price competition. However many players are not performing well and have faced a loss of productivity and market share (Seth and Randall, 1999).

In this atmosphere, different organizations such as the Food Marketing Institute (FMI) or the Coca-Cola Retailing Research Group have proposed new business models that should help to enhance the performance in the grocery supply chains in the USA and European markets. These approaches are known



as efficient consumer response (ECR) and supplier-retailer collaboration (CCRRGE, 1994; Salmon, 1993). The models suggested collaboration among competitors on a manufacturer as well as on a retail level (Svensson, 2002). Bengtsson and Kock (2000) refer to arrangements such as co-opetitive relationships where companies within a supply chain compete and collaborate at the same time.

The paper at hand focuses on ECR and discusses this approach as a co-opetitive arrangement for the grocery industry. We expand on the original proposal of Brandenburger and Nalebuff (1996) and validate our proposition on the basis of a case analysis within one European ECR-initiative.

Value-adding partnerships and co-opetition models

Any relationship between manufacturers and retailers can be designed through a party-controlled coordination mechanism in order to meet any partnership need. Thereby either retailers or manufacturers are, depending on the power structure in the market, the dominating part. However the involved partners can also agree on the strength of harmonization, and might organize their interactions on different *modi vivendi* (Meffert, 1999) such as:

- value-adding partnerships, which could occur through intensified dependence structures (Johnston and Lawrence, 1988); and
- co-opetition models where the optimization of a single system is only possible by optimizing the total system (Brandenburger and Nalebuff, 1996).

Both concepts refer to the idea of integrating different marketing flows of independent organizations that can be seen as an extension of Porter's (1985) competitive advantage concept.

Value-adding partnerships

Value-added partnerships were first discussed by Johnston and Lawrence (1988), and received an update by Hines (2000) who suggested the creation of value networks by outsourcing competitive advantages. Therefore all partners can achieve advantages by leverage knowledge and skill within the complete supply chain (Hines, 2000).

Such arrangements focus on vertical collaborations by diminishing non-value-adding and increasing value-adding activities between supply-chain partners. The successful integration of activities creates the competitive advantage of the total chain.

However, the direction of the collaboration is strictly vertical and can be reduced to the integration of certain processes of only two players, thus meaning the management of dyadic relationships (Swoboda, 1997). The results of such partnerships are described as win-win, because the effort of optimization is centered on the interface between manufacturer and retailer.

Co-opetition

Co-opetition is “a revolutionary mindset that combines competition and cooperation” (Brandenburger and Nalebuff, 1996) and is based on the belief that “You can’t do it alone” (Moore, 1997) and on the principles of game theory.

Contrary to value-adding partnerships, co-opetition includes horizontal collaborative relations as well as competitive relations in vertical and horizontal directions and at the same time. Brandenburger and Nalebuff (1996) suggest therefore the concept of value net, which places a single company between customers and suppliers (= vertical dimension) who can be either complementors or competitors (= horizontal dimension). The goal is to identify the symmetries between the vertical and horizontal dimension. Thereby the players can obtain different roles, thus allowing us to put this logic into a supply-chain context by adding one other dimension to Brandenburger and Nalebuff’s (1996) value net (see Figure 1).

As illustrated in Figure 1, the supply-chain perspective overcomes the static categorization of market players into competitors and partners, and promotes the idea of differing between competitors and complementors on a situational, functional and indifferent role allocation in a vertical as well as in a horizontal direction.

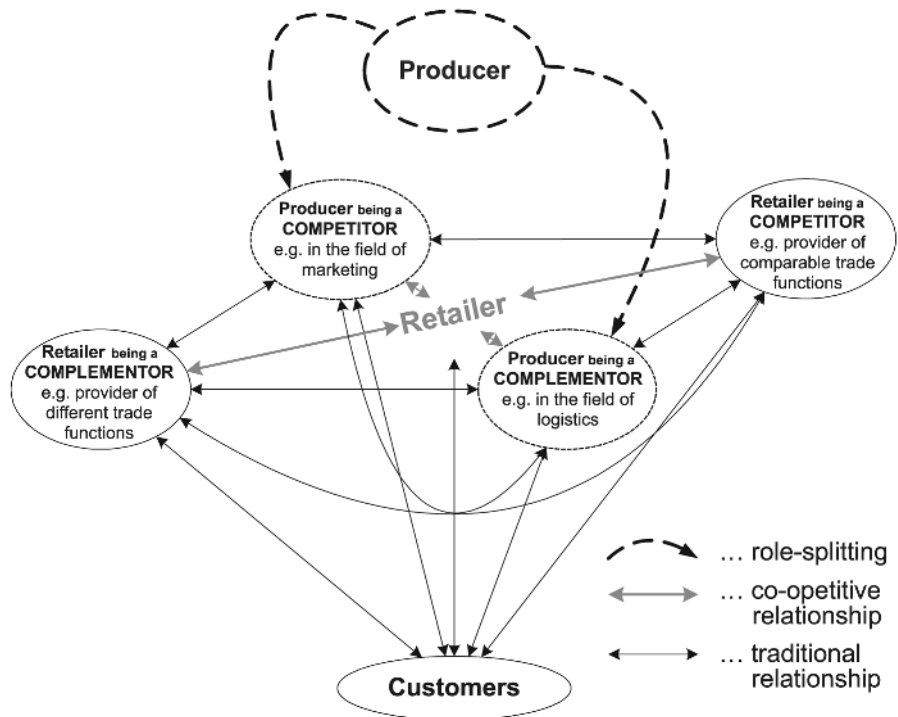


Figure 1.
Multidimensional and
directional view of
Brandenburger and
Nalebuff's (1996) value
net – integrating a
supply chain perspective
from a retailer's point of
view

According to Tsai (2002) this allows a multi-directional learning and benefiting from one another, while at the same time competing with one another for internal resources and external market shares. Such a result has been testified by Bengtsson and Kock (2000) within the Swedish brewery industry. In this case, the market players cooperated on the “invisible” logistics side (= e.g. common packaging standards or return channels) and competed at the “visible” marketing arena (= e.g. heavy promotion spending).

Overall, the paradox or “schizophrenic” notion of collaborating with competitors has been regarded since Hamel *et al.*’s (1989) article as a vivid form of competition and a “win-proposal”. The traditional win-lose or friend-foe paradigms have been becoming obsolete in collaborations, which to some extent seems to be the result of the rising complexity and dynamics, especially in fast moving consumer goods markets.

In some markets, a number of industry players started collaboration programs aiming for win-win or untraditional win-proposals, which are known as efficient consumer response (ECR) in order to re-gain profitability. While many logistics researchers define ECR as a special supply-chain management approach, we make the effort to discuss ECR from our suggested supply-chain value net point of view, thus assuming that ECR is one co-opetition model for the grocery industry.

ECR – co-opetition in grocery industry

ECR can be understood as a customer-oriented reengineered value-added management strategy for the grocery supply chain. Its basics refer to harmonization and cooperative adaptation of commonly agreed business processes as well as standards that can help to avoid the duplication of costs and to improve the service. This results in so-called win-win-win situations, where all partners within the supply chain (producer, retailer and end user) can gain profitability by doing more with less (e.g. Svensson, 2002).

Owing to these effects, many proponents among logistics and marketing researchers promote ECR as one of the best strategic and collaborative initiatives within the grocery industry (Bowersox and Closs, 1996; Kotzab, 1999). The vision of ECR, according to the first promoters of this concept, (the Food Marketing Institute and Kurt Salmon Associates) is to set up a consumer-driven distribution system, in which replenishment and production is permanently managed by the consumers’ POS-activities (Salmon, 1993).

The harmonization of the supply-chain activities among the supply-chain partners is based originally on four pillars (Salmon, 1993):

- (1) efficient store assortment, meaning to provide a complete and easy-to-shop assortment of products wanted by the consumers;
- (2) efficient promotion refers to the harmonization of the promotion activities between manufacturer and retailer by communicating benefits and value;

- (3) efficient new product introduction focuses on the development and introduction of new products, best placed to satisfy current and prospective consumer wants; and
- (4) efficient replenishment through maintaining high in-stock levels of the required assortment.

By realizing these ideas in a supply-chain-wide setting, the total chain can profit.

This ECR-approach has been “customized” for the European market into the two strategic blocks called “demand-side” and “supply-side”. While the supply-side represents the logistics interests of the channel, the demand-side should guarantee the focus on the consumer. Their implementation suggests the loss of functional and organizational borders within and between firms. The transformation from departmental completion to inter-organizational solutions eliminates financial and procedural waste from the channel. This structure encourages team members to work for an increase in the performance of the entire channel (ECRE, 2002).

The total savings by applying ECR-tools and techniques result mostly from total-chain reduction of inventory by speeding up cycle-time. The typical trade-off between quality, time and costs will be eliminated (according to Salmon, 1993; ECRE, 1996; Kotzab, 1999). The savings were calculated with US\$30 billion for the US-market and €25 billion for the European grocery industry. Other scientific studies on inter-firm coordination within supply-chain relations have confirmed the benefits of ECR-like arrangements for the involved companies (e.g. Stank *et al.*, 1999).

Co-opetition beyond market exchange and hierarchical mechanisms

The implementation of channel-wide collaborative standards and processes replaces the philosophy of market exchange by hierarchical mechanism (Picot *et al.*, 2001). Thus, collaborative coordination of different activities between the market partners and the harmonization by vertical integration is regarded as a performance driver to overcome the unsatisfactory profit situation of the stagnant grocery industry (Ahlert, 1999).

In that sense, ECR can be characterized as a hybrid-integrative-governance structure which is placed in-between markets and hierarchies. Setting up a hybrid-integrative-governance structure means that the partners recognize mutual interests in establishing certain norms and rules. This set of policies controls a certain behavior and rewards it positively and negatively (Heide, 1994).

In such a case, strategic trust-based alliances govern the dependency of the involved parties which can then be seen as a variation of Williamson’s (1987) “credible commitments” or Heide’s (1994) suggestion of non-market governance structures. Consequently, ECR helps to increase opportunistic behavior in the

chain, and also allows to maintain the relationships between the partners (Whipple *et al.*, 1999).

From a supply-chain perspective this implies that the characteristics of competition might change, which is discussed within literature as changing from single company vs single company to supply chain vs supply chain (e.g. Christopher, 1992).

Corsten (2000) thereby introduced the notions of collaboration/competition on different levels, whether companies agree on common standards/processes, assets or capabilities. The idea is to gain first critical mass on an industry level by agreeing on general valid standards (e.g. EDI) that are relevant for the total chain. These standards can then be further applied to specific partnerships (e.g. collaborative planning, forecasting and replenishment) which are set up between capable players. The quality of competition could so be driven by the ability of players to set up such partnerships and not based on prices.

A case of collaboration with competitors in the Austrian grocery industry

In this section we present results from an ongoing case observation of ECR within the Austrian grocery industry. Both authors are actively involved in the ECR-academic partnership in Austria and have performed various research projects within the Austrian ECR-setting. Our findings refer to a methodological “conglomerate”, consisting of quantitative and qualitative methods for analyzing secondary and primary data. The data were gathered by a number of surveys among ECR-member companies, personal interviews with managers involved in ECR at several national and international ECR-conferences and group meetings.

A characterization of the Austrian grocery market

The Austrian grocery industry is a highly concentrated market where the two largest retail players account for approximately 70 percent of the total volume of €11 billion (AC-Nielsen, 2001). The number of retail outlets diminished in the last 30 years from more than 20,000 (late 1960s) to fewer than 8,000 outlets in 1996 (AC-Nielsen, 1996) and now holds at a level of 6,656 outlets (AC-Nielsen, 2001).

The market also experienced a shift from smaller outlets to large store formats (e.g. hypermarkets), where outlet sizes between 400 and 1,000 m² and store formats between 1,000 and 2,500 m² account for 43 percent and 28 percent of the total sales volume respectively (AC-Nielsen, 2001). The grocery store density of ten stores for every 10,000 inhabitants is much lower than the total retail store density of 81 for every 10,000 inhabitants and its decrease is expected to continue (Schnedlitz, 1994).

Besides that, consumers' spending on food is declining. While in 1976 17 percent of the total budget of private consumers was used for this category, in

2000 the number was down to 13 percent (ÖSTAT, 2001, p. 48). Still, the share of food articles within the total range of products in a typical grocery assortment is more than 50 percent. Some discount retailers and hypermarkets are responding to these trends and are replacing food items with non-food items (Oehme, 2001; Liebmann and Zentes, 2001).

These developments are accompanied by heavy price competition. A study of GfK (2002) shows that the share of promotion articles is up to 60 percent and it seems that consumers expect the players to offer promotions. Taking the detergent category as an example where 44 percent of the products are promotion articles, 52 percent of all consumers are full or mainly "promotion clients", meaning that these end users only buy a price-promoted brand (Lever Fabergé, 1999).

In general, competition takes place not only on the manufacturers' level (brand vs brand) but also at the retailers' level (retail format competition; e.g. discounter against supermarket, grocery store against drug store) leading to a decline of brand, product and retail format loyalty.

This characterization shows why it would make sense to establish partnerships without reducing competition.

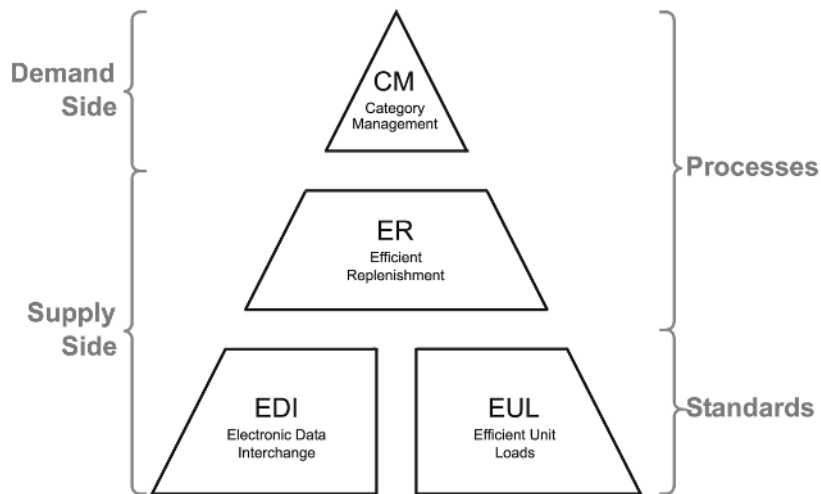
Initiating end-user-driven value-chain management in the Austrian grocery supply chain

Right after the formation of ECR-Europe (in 1995), representatives of the Austrian grocery industry formed the Austrian ECR-initiative in 1996. Within the past six years, ECR-Austria has attracted some 70 member companies and about 150 managers and, in fact, represents the most important players from the industry (e.g. Procter & Gamble, Unilever, Johnson & Johnson, Beiersdorf, Felix Austria, Masterfoods, etc.), retailing (e.g. Spar Austria, DM Drogeriemarkt, Tengelmann, Rewe Austria etc.) and logistics service providers (e.g. Kühne & Nagel, Rail Cargo Austria, etc.).

Despite having horizontal competitors within this arrangement, the group members have constructed, via several working groups, a basic ECR-business model that differentiates between four ECR-areas, which are further subdivided into supply-side, demand-side, processes and standards categories (ECRA, 1997, 1999). The logical structure and interdependencies standing behind this national adaptation of the ECR-concept can be seen in Figure 2.

Both supply-side and demand-side include the "involved" departments (e.g. procurement, logistics, marketing and sales) at both retailer and manufacturer levels. Processes and standards represent the way in which business should be done in this special pipeline. The suggested standards are values that members agree to adopt and primarily concern various logistics and marketing activities among supply-chain partners (ECRA, 1997):

- (1) Efficient unit load (EUL) refers to logistics packaging standards supporting a steady flow of merchandise within the total grocery supply



Source: ECRA (1997)

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partnerships

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Figure 2.
ECR-concept in Austria

chain. In this instance, a cooperation between retailers and vendors in the fields of unit labeling (e.g. EAN-128 pallet label), application of generally accepted norms and sizes (e.g. ISO master module), optimization of order quantities, avoidance of re-supplies and better logistical operations, is suggested.

- (2) Electronic data interchange (EDI) refers to the implementation of electronic data exchange which enables the transfer of standardized and structured data between the various partners in the supply chain. The members have proposed certain EDI standards (e.g. ORDERS, DESADV, INVOIC) in order to minimize errors with regard to order management, order processing, invoicing, inbound logistics and the management of activity data.
- (3) Efficient replenishment (ER) aims at the “heart” of the logistics process: the replenishment of merchandise within the supply chain. ECR-Austria proposes replenishment techniques (e.g. cross-docking, continuous replenishment, forecast data exchange) in order to guarantee lower inventory levels, quicker replenishment processes, quick responses to fluctuation in demand, better use of transportation capacities and fewer returns.
- (4) Category management (CM) refers to a joint planning process between retailers and vendors in order to offer a customized set of products to be managed as a strategic business unit. Within ECR-Austria, CM is expected to reengineer the dialogue structure between retailers and

vendors, to increase product profits, to lower the lead-time from the distribution center (DC) to the stores and to increase inventory turns.

Alvarado and Kotzab (2001) recognized this approach as a variation of Heide's (1994) hybrid-governance structure.

The savings potential for the Austrian grocery industry has been evaluated at approximately €73 million, which should result in 0.67 percent lower end-user prices (Franzmair, 1999). It is precisely this small number which makes the motivation to join the ECR-movement understandable. The trends in the Austrian market would make it almost impossible to gain market share via expansion or even by price reductions. In fact, the price levels have remained steady over the last 20 years. Improving results seemed only possible by rearranging the way business was being conducted in this industry (see Kotzab *et al.*, 2002).

Compared with other international ECR-arrangements, the Austrian approach can be characterized as the most holistic one. It contains the integration of manufacturers, retailers and logistics service providers and aims for integration of other interest groups such as market research organizations, banks and advertising agencies in order to cover all network members of the industry.

Evaluation of co-opetition in the Austrian grocery industry

Figure 3 refers to the results of a recent survey research among 45 ECR-member companies (approximately two-thirds of all Austrian ECR-member companies) and shows how these member companies have adopted the suggestions of ECR-Austria (Glavanovits and Kotzab, 2002).

First, we can confirm the hierarchical order of the Austrian ECR-concept (see Figure 2 and Figure 3). More than 90 percent of respondents stated that they use basic standards such as EDI and EUL together with norms like the EAN-article identification. Second, we could see a lower implementation level of all other advanced processes (CR, CM) and strategies (CPFR).

When looking at other dimensions characterizing the importance of standards compared with processes in Austrian ECR-partnerships, the same tendency can be observed (Teller and Kotzab, 2003):

- (1) More than a third of respondents stated that over 50 percent of their total transaction volume is guided by these standards (EDI: 60.7 percent, $n = 28$; EUL: 34.6 percent, $n = 26$), while this share of transactions operated by CM (25 percent, $n = 16$) and ER (0 percent, $n = 27$) is rather small.
- (2) The majority of ECR-business partners are found in the field of EDI and EUL, with more than two out of five respondents working with more than 15 partners according to ECR-standards (EDI: 64.3 percent, $n = 28$; EUL: 42.3 percent, $n = 26$). Compared to that, the number of CM partners is, in most cases, under 15 (CM: 82.2 percent, $n = 17$).

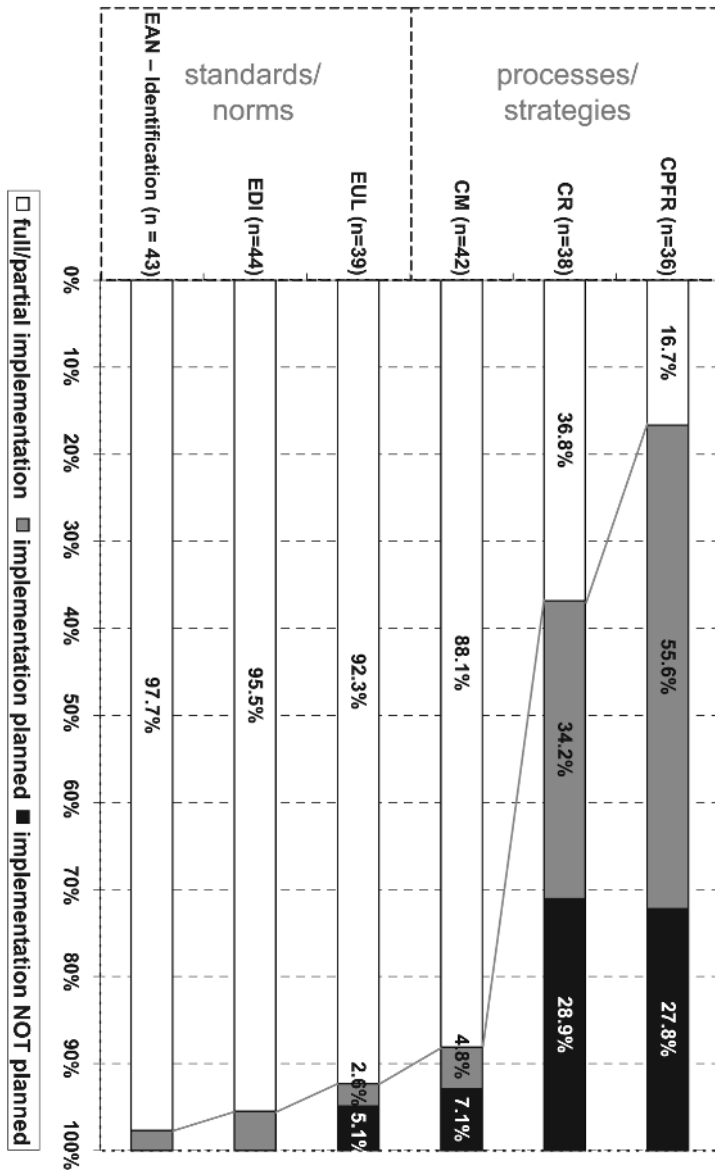


Figure 3.
Implementation level of
ECR-standards and
processes

These results confirm Corsten’s (2000) notions of different ECR-platforms (industry ECR with general standards, network ECR with common processes and partnership ECR with individual capabilities).

From a co-opetitive point of view, we see the results of Bengtsson and Kock’s (2000) study in the Swedish beer industry confirmed. It is also worth noting that in the Austrian grocery industry all supply-chain members gain in the same manner by adapting collaborative logistics techniques that allow economies of scale. However, competition is continued on the marketing side, where some partners can adapt better category management solutions than others.

Managing vertical and horizontal partnerships in grocery industry
Alvarado and Kotzab (2001) have placed the Austrian ECR-movement in an early stage of a relationship portfolio. In such a position, most efforts aim to establish and to maintain the ECR-relationship.

Because both horizontal and vertical relationships have to be managed in a co-opetitive environment, it is expected that soft factors, such as trust and/or commitment, might dominate the successful launch of ECR-programs (Meffert, 2001). Issues such as these have already been introduced in the field of relationship marketing.

According to Bengtsson and Kock (2000), information and social exchange is the key to initiate co-opetition, especially for horizontal relationships. Table I shows those success factors that had been considered by the members of ECR-Austria as most important while implementing and working with ECR arrangements.

We could identify function/situation-specific factors, depending on which ECR-area has been chosen. While in the case of the standards implementation,

	ECR-area specific implementation factors			
	EUL (<i>n</i> = 26)	EDI (<i>n</i> = 27)	ER (<i>n</i> = 26)	CM (<i>n</i> = 17)
Define goals and set up plans	1.50	1.33	1.08	1.18
Involve employees into planning processes	1.92	1.70	1.69	1.59
Inform employees	1.88	1.69	1.85	1.47
Commitment of partners to apply the standards	1.16	1.12	1.54	1.76
Harmonize ECR-goals with overall company goals	1.60	2.08	1.62	1.76
Long term implementing phase	2.19	2.31	2.04	2.71
Customer orientation	2.19	2.07	2.19	2.29
Top management support and commitment	-	1.89	1.69	1.50
Training	-	1.79	1.73	1.47

Table I.
Perceived importance of factors that ease the implementation of ECR

Note: Likert scale; 1 = totally agree; 5 = totally disagree; the bold values are the most important ones, the italicized values the second most important.

Source: Glavanovits and Kotzab, 2002

respondents referred to the commitment of all partners to apply the standards, the implementation of processes seems to be rather goal-driven, thus inducing a shared vision of the involved partners.

Once again, we can confirm Bengtsson and Kock's (2000) argument of social exchange being more important in such arrangements than economic exchange. However, competition might now be driven by the resource of having the ability of better translating such soft factors to allow ECR-driven exchange.

Conclusion

The goal of our paper was to discuss value-adding partnerships and co-opetition in the field of the grocery industry. We therefore expanded Brandenburger and Nalebuff's (1996) value net to a supply-chain value net. We then defined ECR as a co-opetition model and applied our theoretical conceptualization to the Austrian grocery industry. Our analysis has shown that competition and collaboration can be performed at the same time, even in the very competition-intense atmosphere of the grocery industry. The case of ECR in Austria validates Bengtsson and Kock's (2000) heterogeneity proposition in the sense that collaboration takes place "far away from the consumer" – here in logistics – and competition is kept "near the consumer" – here in marketing (e.g. category management) issues. Overall, ECR tolerates cooperative arrangements while pursuing economies-of-scale-oriented strategies in order to elude the stagnant development of the industry.

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