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Technological potential of logistics service providers and the relationship dynamics.

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The stake of Technological Effort for logistics service providers

Abstract

The paper discusses many results of a survey among French logistics service providers. The defended idea is that 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 joint flows management. Technological Effort thus emerges as a strategic trajectory of pertinent differentiation for the logistics service providers.

L'enjeu de l'effort technologique pour les prestataires logistiques

Résumé :

Notre papier porte sur plusieurs résultats d'une enquête effectuée auprès des prestataires logistiques français. L'idée défendue est que l'effort technologique des prestataires de services logistiques contribue à la performance de la relation et plus généralement de la chaîne logistique dans sa globalité. Etre innovant semble constituer un indicateur d'autonomie et de capacité à copiloter les flux. L'effort technologique apparaît ainsi comme une trajectoire stratégique de différenciation pertinente pour les prestataires logistiques.

Since the early 1990s, a large body of literature has emerged concerning the problem of control and rationalization of materials and information flows. Concomitantly, logistics service providers have taken on increasingly precise responsibilities. In an earlier paper (Sauvage, 1999), we examined the perspectives and growth opportunities of logistics service providers that were caught in an upheaval of market expectations. 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. In this paper we are building upon our previous finding 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.

Christopher (1997) notes that the challenge of the contemporary firm lies in enhancing the technological potential, a lever that reduces time frames and enhances the reliability of logistics. The objective of this article is to show that in a highly competitive context characterized by time compression, technological potential becomes a key variable and a primordial means of differentiation for logistics service providers. Technological potential consists in the capacity to implement new organizational and technical solutions in order to improve flows management. Two propositions on the relationship-related consequences will be tested. The analysis of interorganizational relationships in terms of the technological potential and thus innovation has enriched classical models of power that essentially examine firm's arbitrations along the conflict-partnership continuum. Behavioral 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). Our objective is to build on the idea of Alter (1999), who concluded that technological potential, an indicator of an organization's innovation capacity, is a superior structuring source of power for logistics service providers' strategies. This approach can be viewed as part of the analysis of the role of innovation in contractual theories and consequently in the Williamson paradigm (Williamson, 1985) about market and hierarchy.

From 1970 to the present, the company has passed from the era of

domination strategies by cost to differentiation strategies by customer service. 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 generalization of Just-in-time organizations is a managerial response to that principle of "customer is the king." Simultaneously, some have begun to question the pertinence 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 translated by erosion of competitiveness, even by effects contrary to the perception of quality by the customer. Aurifeille (1997) cites the example of the 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 of logistics is poorly understood. Christopher (1997) 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 (Le Ny, 1999). 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 flows management through time frames. One example of such control is the ability to quantify the impact the each option or variant of a product on delivery time. Customers can thus adapt their demand if they want a product delivered more quickly. Preeminence 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, Mercosur, North American markets and Southeast Asian markets.

In this context, subcontracting of distribution to providers able to consolidate diffuse tight flows and to thus cushion the effects of volatility of demand spontaneously become 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 over all the logistics organization. Logistics outsourcing consequently becomes an instrument of conquest and control in management of global logistics of the firm (Artous and Salini, 1999).

We postulate that the leadership of logistics service providers lies in their capacity to innovate in the area of joint flows management. Specifically, providers must maintain very close ties to technologies, particularly information technology. This relationship is invariably reinforced as the trend toward reduction of cycle times along the supply chain becomes more pronounced.

1 – Logistics activities, a vector of diffusion of information technologies

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 (Fabbe-Costes and Colin, 1995), 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 coordinate human and material resources, determine organizational choices and 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 are relying 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 the boundaries of the organization, 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 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 truckers who aspire to rise from their status of simple subcontractors.

2 – Acceleration of cycles and the growing role of technological potential

The end of the 20th century is 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 has 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-'90s. 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 bar codes and standardized E.D.I. techniques between the principal 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 in 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 activate backup networks if necessary. The intensive use of increasingly efficient electronic transfer technologies has become a *sine qua non* condition to remain 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.

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 (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 this type of 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 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 favors 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 sub-contracting 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 alii* (1998) explored the diffusion of technological knowledge with dominant suppliers. They concluded that suppliers selected must be managerial, innovative and reactive. They bear a substantially closer resemblance to partners than to sub-contractors. 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 the technological potential? Logics of power and the quest for a

competitive advantage through costs triggers opposition forces and defensive behaviors, whether it be the fight against entrenchment of the "other" in the relationship or the manipulation of dependency factors (Sauvage and Nahon, 2000). Among sub-contractors in the automobile industry, this reaction to power and the pressures of the dominant actor are manifested by segmentation of the customers. The best customers benefit from preferred treatment and 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 technology approach adopted by suppliers and providers. Specifically, we have formulated two propositions related to the third-party logistics sphere:
Proposition 1: The technological potential of the logistics service provider is correlated with the duration of the relationship with the customers.
Proposition 2: The technological potential of the logistics service provider is correlated with the degree of involvement in a relation of joint flow management

3 - Variables studies, methodology and results

The technological potential includes several components.
First, there is the capacity of adaptation and insertion in the information system of the partner. Dornier *etii 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 capacity 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 I.S.O. 9000 assurance certificates allows logistics service providers to reinforce their credibility, particularly in response to calls for tender. I.S.O. 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 coordinate was operationalized by the creation of a score ranging from 0 to 7, obtained from the aggregation of Boolean responses related to 7 activities considered 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 improves 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 alii* (1992) demonstrated the influence of the formalization of third-party logistics on performance and monitoring capacities. Responses were measured based on a seven-point Likert scale.

The consequences of the technological potential on the nature of the relationship with the customer was evaluated by 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. After we inventoried logistics service providers, 1081 sites were identified. The mail questionnaire was sent in 1997 to the managers of these 1081 sites. The usable response rate was 9.15% (99 responses by the specified deadline).

Results

There are formidable doubts as to the pertinence 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 Principal Component Analysis to elucidate the principal dimensions of the constructs. The information contained in the various items is summarized. Principal Component Analysis (PCA) was then performed on standardized variables (centered 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 alii* (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 alii*, 1984).

Statistical analysis of the technological potential reveals that only one dimension encompasses 53.5% of the information (Figure 1). 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% of the information. These two dimensions are interpreted as duration of the relationship and involvement in joint management of logistics activities.

Figure 1: Structure of constructs

Percentage of variance Explained	Explanatory variables used	Cronbach's α (loadings)
Technological potential 53.5% of variance is explained by a single factor	Nature of services provided ISO 9000 certification effort Information exchange technology	α = 0.57 (0.74) (0.75) (0.69)
Nature of relationship 76.42% of variance is explained by two dimensions interpreted as : -involvement in joint management of logistics -duration of relationship with shipper	-involvement in co-control of logistics control and planning of time Management of supply flows formalization of dysfunction management procedures -duration of relationship	α = 0.73 (0.94) (0.93) (0.51) (0.94)

Figure 2: Results of hypothesis test

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**

The proposition that the nature of the relationship model adopted is correlated with the technology relation maintained by the logistics service providers can be partially accepted. The technological potential 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 potential is a necessary but insufficient condition for the continuity of the relationship. In his conclusions on management of supply chains by demand, Le Ny (1999) suggests that the main obstacle remains behavioral. 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. Baldwin and Clark's (1997) work on modular production advocate this point of view. 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, 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 sole 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 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 present considerable technological potential are highly involved in managing logistics 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 coordination 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 (La Londe and Powers, 1993). 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, E.D.I. 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.

Conclusion

The development of technological potential 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. To quote Alter (1999), 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. According to Mason-Jones and Towill (1999), 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--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 potential 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 behaviors 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. In the automobile industry, Langlet (1999) observes that automobile manufacturers currently regret the absence of prescribing and expert subcontractors. Relationships and services provided are overly dedicated and specific. Economy of scope, competencies and expertise remain difficult. In contrast, the multispecialization of operators would be an interesting strategy that is worth developing. For the SME/SMI fabric, multispecialization of providers seems indispensable to enhance the efficiency of outsourcing of heterogeneous and diffuse volumes. For the large business market, multispecialization 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 favors improvement of processes and reduction of cycle times.

The innovation approach for logistics outsourcing has given rise to strategic perspectives that run counter to traditional viewpoints. In contrast with Artous and Salini (1999), we consider the size of the provider as a success factor on the logistics market. "*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. 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 alii* 's (2000) conclusions on 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.

Bibliography

Aijo, T. S. (1996), "The Theoretical and Philosophical Underpinnings of Relationships Marketing", *European Journal of Marketing*, Vol. 30, No.2, pp. 8-18.

Alchian, A. and Demsetz, H. (1972), "Production, Information Costs, and Economic Organization", *American Economic Review*, Vol.62, march, pp. 777-795.

Alter, N. (1999), *Le Management aujourd'hui, théories et pratiques*, Editions Démos, Paris.

Artous, A. and Salini, P. (1999), *Management stratégique des firmes de transport et de logistique*, Editions Liaisons, Paris.

Aurifeille, J. M. (1997), "Marketing et logistique: du soutien tactique à la collaboration stratégique" *in* Aurifeille, J. M., Colin, J., Fabbe-Costes, N., Jaffeux, C. and Paché, G., *Management logistique: une approche transversale*, Litec, Paris, pp. 5-32.

Baldwin, C. Y. and Clark, K. B. (1997), Managing in an Age of Modularity, *Harvard Business Review*, Sept-Oct, pp. 84-93.

Baudry, B. (1995), *L'économie des relations interentreprises*, La découverte, Paris.

Colin, J. (1989), Du conteneur à la logistique: vers la dissolution des modes de transport ?, *Culture Technique*, Vol.19, pp. 216-224.

Christopher, M. (1997), *Marketing Logistics*, Butterworth-Heinemann, Oxford.

Daugherty, P. J., Stank, T. P. and Rogers, D. S (1992), The Impact of Formalization on Warehousing Firms, *International Journal of Logistics Management*, Vol.3, No.2, pp. 49-61.

Dornier, P. P., Ernst, R., Fender, M. and Kouvelis, P. (1998), *Global Operations and Logistics*, John Wilet and Sons, New York.

Fabbe-Costes, N. and Colin, J. (1995), Les stratégies développées par les prestataires logistiques confrontés à la tentation des chargeurs de réintégrer des opérations logistiques, Communication at the 7th World Conference on Transport Research, Sydney, Australia.

Ford, J. K., McCallum, R. C. and Tait, M. (1986), The Application of Exploratory Factor Analysis in Applied Psychology: A Critical Review and Analysis, *Personnel Psychology*, Vol.39, pp. 291-314.

Gentry, J. J. (1996), "Carrier involvement in buyer-supplier strategic partnerships", *International Journal of Physical Distribution and Logistics Management*, Vol.26, No.3, pp. 14-25.

La Londe, J. B. and Masters, J. M. (1994), Emerging Logistics Strategies: Blueprints for the Next Century, *International Journal of Physical Distribution and Logistics Management*, Vol.24, No.7, pp. 35-47.

La Londe, J. B. and Powers, R. F. (1993), Disintegration and Re-Integration: Logistics of the Twenty-First Century, *International Journal of Logistics Management*, Vol.4, No.2, pp. 1-12.

Lamprecht, J. L. (1995), *ISO 9000 et les services*, AFNOR, Paris.

Langlet, L. (1999), *Synthèse de la mission Michigan*, document de travail, University of Michigan, Ann Arbor.

Lele, M. (1986), How Service Needs Influence Products Strategy, *Sloan Management Review*, Vol.28, No.1, pp. 63-70.

Le Ny, J. (1999), La “demand Chain”, clef du “supply chain management”, dossier L’Art du Management de l’Information, *Les Echos*, 22-23 October.

Lieb, R. C. and Randall, H. L. (1996), "Comparison of the Use of Third-Party Logistics Services by Large American Manufacturers 1991, 1994, and 1995", *Journal of Business Logistics*, Vol.17, No.1, pp. 305-320.

Mason-Jones, R and Towill, D.R. (1999), Using the Information Decoupling Point to Improve Supply Chain Performance, *The International Journal of Logistics Management*, Vol.10, No.2, pp. 13-26.

Paché, G. (1996), L'entreprise en réseau entre mythes et réalités, *Gestion 2000 - Management et Prospective*, Vol.12, No.1, pp. 33-50.

Perrien, J., Chéron, E. J and Zins, M. (1984), *Recherche en marketing, méthodes et décisions*, Gaëtan Morin Editeur, Québec.

Rosenbloom, B. (1999), *Marketing Channels, a management view*, The Dryden Press, Orlando.

Sauvage, T. (1997), *Vers une conceptualisation de la relation d'agence entre les institutions du canal de distribution: Application à la relation prestataire logistique - client*, Thesis es Sciences de Gestion, Université d'Aix-Marseille II.

Sauvage, T., (1999), *Alliances ou simples collaborations: Vers des mégaprestataires logistiques ?*, Colloque National de la Recherche dans les Instituts Universitaires de Technologie, Harmattan, Paris.

Sauvage, T. and Nahon, D. (2000), "Les politiques fournisseurs dans l'automobile et la grande distribution: reflexions sur le pouvoir et la dependance", *in Faire de la recherche en logistique et distribution*, Vuibert, Paris, pp.159-170.

Van de Ven, A. H. (1976), On the Nature, Formation, and Maintenance of Relations Among Organizations, *Academy of Management Review*, Vol.1, No.4, pp. 24-36.

Van Laarhoven, P., Berglund, M. and Peters, M. (2000), Third-party logistics in Europe - five years later, *International Journal of Logistics Management and Physical Distribution*, Vol.30, No.5, pp. 425-442.

Williamson, O. E. ,1985, *The Economic Institutions of Capitalism*, The Free Press, New York.

Zaheer, A. and Dirks, K. (1999), "Research on strategic information technology: a resource-based perspective", *in* Venkatraman N. and Henderson J. C., *Strategic management and information technology*, Jai Press, Stamford Connecticut.