

The Emergence of Cybermediary in the Electronic Marketplace: An Economic Perspective¹

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ABSTRACT

The Internet has become an important infrastructure for business operations as well as commercial transactions. Since the Internet transcends the limits of distance, homogenizes time, and makes location irrelevant, more and more business firms have engaged in cooperative relationships in the cyberspace, and cybermediaries have thus emerged. This study uses business functions as the unit of analysis to analyze how the Internet can reduce transaction costs and explains why firms make disintegration decisions. Although many studies argue for the emergence of cybermediaries from the perspective of transaction cost economics, our analysis shows that transaction costs are not the only reason motivating cybermediation; it also depends on whether or not firms can appropriate the economic values generated from conducting business via cybermediation.

Keyword: Cybermediary, Internet, Transaction Costs theory, Electronic Marketplace

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INTRODUCTION

Business managers and scholars have paid much attention since the 1980s to the effects of inter-organizational systems (IOSs) on a firm's competitive advantage and market structure. Through inter-organizational networks, well-known cases such as American Hospital Supply and McKesson were reported to benefit from increasing operational efficiency, locking in trading partnerships, and creating greater abilities to customize products and services (Cash & Konsynski, 1985; Johnson & Vitale, 1988). To economize on transaction costs and to achieve economies of scale, these proprietary IOSs have been used as a means to reduce supplier base and to enhance the quality and efficiency of business transactions (Kekre & Mudhopadhyay, 1992). However, along this line of inquiry, several researchers proposed that the evolution of market structure should evolve into different directions. For example, Malone et al. (1987) proposed that due to the reduced coordination costs of business transactions enabled by IOSs, the market structure would evolve from hierarchy to market. Clemons & Row (1992) decoupled the choice of governance structure as ownership and cooperation, and contended that IT would lead the market to "move to the middle." Based on the analysis of the effects of IT on agency and transaction costs, Gurbaxani & Whang (1991) argued that either "move to the hierarchy" or "move to the market" is possible, depending on other organizational and environ-

mental factors such as the role of information systems, the characteristics of information flows, and the culture of organizations.

The advent of the Internet has brought about numerous speculations regarding its impact on intermediaries. For example, Wigand & Benjamin (1995) conjectured that the forms of electronic marketplace would evolve from single-source electronic channels to biased markets, to unbiased markets, and finally to the personalized markets. Their conjecture implied that the emerging electronic marketplaces could pose a direct threat to traditional intermediaries, a phenomenon termed dis-intermediation (e.g., Daniel & Klimis, 1999; Gellman, 1996; Lewis, 1997).

Other observers, however, noted that there exist some kinds of re-intermediation processes in the electronic marketplaces. The re-intermediation processes are based on unbundling the functions of traditional intermediary institutions, and take advantage of the automation and substitution effects empowered by the Internet (Westland & Clark, 1999). These net-based forms of intermediation are, for example, cybermediary (Bichler & Segev, 1998; Sarkar et al., 1996), electronic broker, infomediary (Hagel & Singer, 1999), hybrid intermediary (Rao, 1999), and "go-between service provider" (Vandermerwe, 1999). Just as Sarkar et al. (1996, 1998) have predicted, firms might make their choice between dis-intermediation and re-intermediation based on the effects of transaction costs.

Although these studies largely used transaction cost theory as the analytical

paradigm, most of them seemed to focus on the operational costs of coordination, instead of the intangible part of transaction costs (e.g., transaction risk) (Clemons & Row, 1992). In addition, most of them did not articulate their unit of analysis, and hence usually concluded with vague results. Based on transaction cost theory, this paper then analyzes the effects of the Internet on intermediaries in terms of specific business functions in attempting to shed new lights into how firms deal with their business functions in the electronic marketplace.

In this study, we separate common business-to-business and business-to-consumer interactions into four basic business processes: information processing, fund processing, material processing, and knowledge processing. These are fundamental to conducting individual business activities as we see in reality. Using these basic processes as the unit of analysis, we can analyze how firms make decisions regarding the integration/disintegration of business functions as well as about how they re-arrange these processing functions in terms of dis-intermediation and re-intermediation.

The plan of the paper is as follows. Section 2 provides a brief review of the literature relevant to our analysis. Based on transaction cost analysis and with business functions as the unit of analysis, Section 3 analyzes how and why many different types of cybermediaries have emerged in the electronic marketplace. The evolution of the American auto industry is discussed in Section 4 to illustrate the forms of the cybermediaries analyzed

in the previous section. Finally, Section 5 contains some concluding remarks.

LITERATURE REVIEW

Basic Forms of Business Processes

To analyze how firms make decisions about the governance of business transactions, this study utilizes Michael Porter's (1985) value chain model to derive four basic forms of business processes (see Table 1). It is maintained in the study that the impacts of IT on each business process can be different. For example, information processing function can be automated or substituted by information systems, whereas other business functions may be facilitated by IT to make transactions faster, more convenient, and more economical (Malone & Rockart, 1992). Since these basic processes have different potentials to be transformed by IT, the impacts of the Internet on their transaction attributes can also be different. Therefore, it is natural to use each basic business process as the unit of transaction cost analysis for evaluating the impacts of IT on a firm activity. Similarly, the general channel functions can also be decomposed into the basic business processes for analyzing the impacts of the Internet (see Table 2) (Kotler, 1995).

Transaction Costs Analysis

Williamson's (1975, 1985) work on transaction costs provides the theoretical framework for analyzing the structure of

Table1: Relationships between the basic forms of business processing and value activities

Value activities Basic forms of business processing	Primary activities					Support activities	
	Inbound logistics	Operations	Outbound logistics	Marketing & sales	Service	Procurement	Technology development
Fund	✓	✓	✓	✓		✓	
Material	✓	✓	✓	✓	✓	✓	
Information	✓	✓	✓	✓	✓	✓	✓
Knowledge		✓		✓	✓		✓

Table2: Relationships between the basic forms of business processing and channel functions

Channel functions Basic forms of business processing	Information	Promotion	Negotiation	Ordering	Financing	Risk taking	Physical possession	Payment	Title
					✓	✓		✓	
Fund						✓	✓		
Material						✓			
Information	✓	✓	✓	✓	✓	✓		✓	✓
Knowledge	✓								

commercial activities. Transaction costs analysis focuses on a firm's choice between internalizing an activity and relying on external market agents. In terms of governance structures, organizations can choose from unified governance, bilateral governance (relational contracting), trilateral governance (neoclassical contracting), to market governance (classical contracting) (Williamson, 1986). Prior studies on marketing channels also provide similar conceptualization relating to the two extremes of governance mode, such as quasi-hierarchical structure/quasi-

market structure (Gulati, 1995), and vertical quasi-integration/quasi-diversification (Clemons & Row, 1992). However, the basic concept remains the same that firms choose the structure to minimize transaction governance and execution costs (Williamson, 1991).

Two major sources of transaction costs can be identified. One is the object of the business transactions, and the other is the nature of the actors conducting transactions. With respect to business transactions, various forms of asset specificity and the complexity of product

description have been identified as the major sources of transaction costs. Opportunism and bounded rationality among the business actors also cause transaction costs. Here we briefly describe these components of transaction cost analysis.

Asset specificity

Asset specificity refers to the situation where an input used by a firm cannot readily be used by other firms because of site specificity, physical asset specificity, human asset specificity, and time specificity (Suomi, 1991; Williamson, 1985). Among these four kinds of specificity, physical and human assets are specific investment of a firm, and each of them can be either time or site specific, or both (Suomi, 1991).

Complexity of product description and bounded rationality

The complexity of product description refers to the amount of information needed to specify the attributes of a product detailed enough to allow potential buyers to make a selection. Bounded rationality refers to the situation where actors taking part in a transaction cannot behave fully rational to outside observers due to missing information or the ambiguous nature of the task.

Opportunism

Opportunism can be defined as self-interest seeking with guile (Williamson, 1985). Actors conducting a transaction exert themselves to mislead, distort, disguise or confuse the other actors involved in the transaction. It leads to

information asymmetry, a state in which one actor knows more than the others.

Choice of governance structure

In terms of the degree of asset specificity of a transaction, the investment that a firm has to make can be characterized as non-specific, mixed, and idiosyncratic. Together with the frequency of the focal transaction, a firm can identify the appropriate governance structure for the transaction (see Table 3). However, when the description of the transaction is so complex that it raises uncertainty of the transaction, there is only one choice for the firm: the unified governance (see Table 4).

Further, sourcing an input factor externally may entail extra costs for the firm in obtaining market information, communicating with geographically separated vendors, transporting goods, and holding inventories (Gurbaxani & Whang, 1991). Accordingly, transaction costs may be classified into two categories: one is associated with establishing and maintaining contractual relationships with outside parties; the other is caused by the loss of operational efficiencies (see Table 5). In this paper, we propose that both kinds of the costs should be included in the transaction cost analysis.

Internet as a Means to Lower Transaction Costs

To analyze the impact of the Internet on transaction costs, we first review the previous studies on the effects of IOSs. IOSs have been argued to have three kinds of effects on economic activities:

Table 3: Matching governance structures with commercial transactions (under low uncertainty)

(Sources: Williamson, 1986, p.17)

		Investment characteristics		
		Non-specific	Mixed	Idiosyncratic
Frequency	Occasional	Market governance (classical ontracting)	Trilateral governance (neoclassical contracting)	
	Recurrent		Bilateral governance (relational contracting)	Unified governance

Table 4: Matching governance structures with commercial transactions (under high uncertainty)

(Sources: Williamson, 1986, p.17)

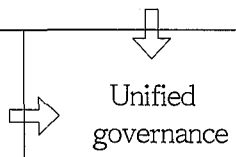
		Investment characteristics		
		Non-specific	Mixed	Idiosyncratic
Frequency	Occasional	Market governance (classical ontracting)	Trilateral governance (neoclassical contracting)	
	Recurrent		Bilateral governance (relational contracting)	 Unified governance

Table 5: Market coordination costs

(Source: grubaxani & Whang, 1991)

Market transaction costs	Operational	Search costs Transportation costs Inventory holding costs Communications costs
	Contractual	Costs of writing contracts Costs of enforcing contracts

Table 6: Different effects of IOS on transaction costs (Source:Suomi,1991)

Effects	Transaction costs				
	Asset specificity		Complexity	Bounded rationality	Opportunism
	Human	Physical			
Integration	Scheduling of staff	Just-in-time thinking	Standardization of messages	Cross-checking	Simultaneous presentation of many products
Brokerage	Choice among experts	Choice among material possibilities	Presenting possibilities in comparable way	Set up of standards	Presentation of all possibilities
Communication	Fast contact with experts	Speed up of material functions	Faster negotiation	Instant check up of facts	Change to check up different possibilities

communication, integration, and brokerage effects (Malone et al., 1987) (see Table 6). An understanding of these effects can serve as a foundation for our subsequent analysis of the impact of the Internet on the governance of a firm's business functions.

The communication effect can have the strongest influence on the specificity of time and place. It allows more information to be communicated in the same amount of time with a much lower cost. Also, with electronic linkages, the feasibility of processing transactions, monitoring performance, making decisions, and sharing information/documentation across different times and locations can all be enhanced tremendously (Pitt et al., 1999; Suomi, 1991). Consequently, the communication effect can lower asset specificity, and thereby the search and communication costs as well.

The integration and brokerage effects

are alternative means for firms to eliminate the problem of "information impactedness" (Williamson, 1975), or information asymmetry, a situation in which each party involved in the transaction uses information strategically. Further, the integration effect can eliminate the problems of physical asset, time, and site specificity through the integration and monitoring of business processes that create or use information, thus establishing operational efficiency and saving contractual costs. The problem of "moral hazard," where one party to a transaction may undertake certain actions that adversely affect the other party in the transaction but this party cannot monitor them perfectly (Kreps, 1990), can also be reduced to a less extent when the firm integrates with business partners electronically. Many advantages have been identified about adopting this kind of hierarchical mode. For example, by linking inde-

pendent organizations that regularly exchange goods and services, the integration effect allows (Ciborra, 1994):

- providing benefits of vertical integration at lower costs without requiring actual ownership of other organizations;
- removing layers of distribution channels by selling directly to end customers rather than through intermediaries;
- shipping and receiving goods more efficiently by aggregating supplies and demands.

Therefore, the integration effect gained from IOSs is almost certain to change the basic structures of market-places to the advantage of the parties integrated as against those not integrated, thus enabling the integrated firms to gain far-reaching competitive advantages (Steinfeld & Caby, 1993; Steinfeld, Caby & Vialle, 1993).

The brokerage effect allows a broader set alternatives to be presented and considered and thus can lead to greater decision-making effectiveness, i.e., improving the quality of the alternative eventually selected as well as reducing the cost of the entire product selection processes. From the market-making perspective, the brokerage effect can improve market signaling and the communication of incentives, and so the risks of moral hazard and adverse selection can be significantly diminished (Kreps, 1990). For customers, it is easier to monitor past performance and to check reputations of a

specific vendor. For sellers, they can use sophisticatedly IT-based auction or bidding mechanisms to reveal customers' valuations and expectations (Philips, 1988), so that they can devise tailored policies for customer services. As a result, the brokerage effect can dramatically reduce the searching, communicating, and *ex ante* contracting costs through better market coordination mechanisms provided by IOSs.

Because the Internet can be regarded as a kind of IOS characterized by its ubiquity and interactivity, the aforementioned effects of IOSs also apply to it. The major difference between typical IOSs and the Internet, however, is that the Internet by its very nature is an open, cooperative system, whereas IOSs often are proprietary, dedicated systems (Apte & Vepsäläinen, 1987; Cash & Konsynski, 1985; Suomi, 1991). Therefore, the Internet has a virtually unlimited (in consumer market) or larger (in industrial market) potential user basis than those of the traditional proprietarily owned IOSs. This provides the Internet with a greater potential to benefit from economies of scale and scope and network externalities, thus motivating firms to engage in various forms of cooperation with other market agents, i.e., vertical quasi-integration, outsourcing, quasi-diversification etc. (Clemons & Row, 1992). In other words, firms are motivated to appropriate the operational cost savings provided by network externalities and economies of scale, hence leading the market structure to "move to the middle." Since the roles played by market intermediaries are aggregation, trust, facil-

itation of market operations, and matching in the electronic marketplace (Bailey & Bakos, 1997; Malone et al., 1987; Resnick et al., 1995; Williamson, 1975), there of course should be some form of intermediary that can appropriate the economic value created by the Internet. We next discuss how each business process can benefit from the Internet.

ANALYSIS OF THE EFFECTS OF THE INTERNET

Figure 1 depicts the analytical process of the paper for evaluating how the Internet can influence the transaction and operational costs of business processes. We first analyze the transaction attributes of each business process and then conclude with the appropriate governance structure. In the second phase, the impacts of inter-organizational information systems, including the Internet, are analyzed in terms of transaction costs, and the revised conclusion of governance structure is subsequently derived.

In the third phase, we analyze the potential of operational cost savings provided by the Internet for each business process and explain why the Internet-based intermediaries emerge.

Transaction Costs Analysis of the Basic Business Processes without the Internet

As argued by Williamson (1975), transaction-specific investments pose firms in a weaker bargaining position in the post-contractual phase. In the presence of information impactedness, e.g., transaction complexity and ex ante and ex post information asymmetry, internal organization is favored for firms to facilitate adaptive and sequential decision making, and thus reduce the risks of ex post transaction costs (Williamson, 1975).

Table 7 illustrates the transaction attributes of the four basic business processes. Generally speaking, since fund processing occurs frequently with large volumes and typically needs to meet some dedicated schedules, it therefore bears a high degree of time specificity and should

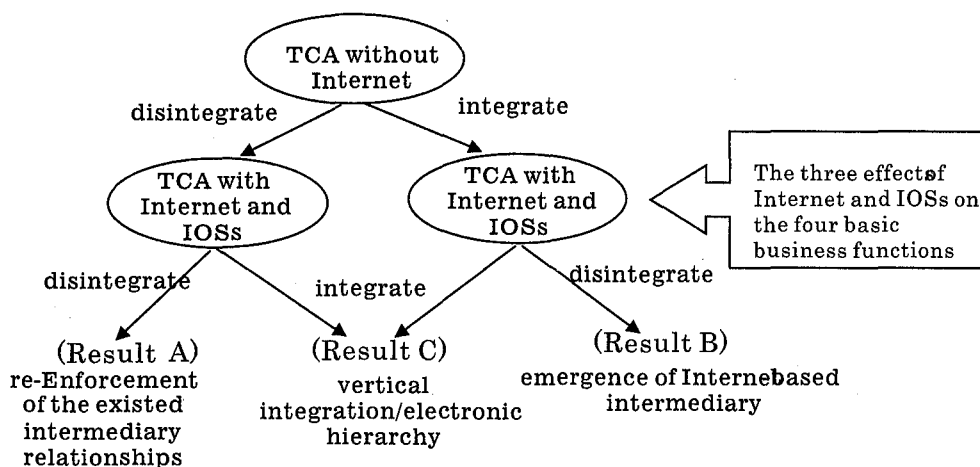


Figure 1 : Analytical Framework

Table 7: Transaction cost analysis of basic business processes without the Internet

Transactions/exchange		Fund	Material	Information	Knowledge
Transaction cost dimensions					
Asset specificity	Site	High	High		
	Physical asset			High	
	Time	High	High	High	High
	Human				High
Volumes		Large-Small	Large-Small	Large	Large
Information asymmetry		High	High	High	High
Complexity		High	High	High	High
Number of suppliers		Some	Some	Some	Seldom
Contractual costs	Writing	Low	Low	High	High
	Enforcing	High	Low	High	High
Operational costs	Search			High	High
	Transportation		High		
	Inventory		High		
	Communication	High	High	High	High
Transaction costs		High	High	High	High
Governance structure		Unified Governance	Unified Governance	Unified Governance	Unified Governance

be governed within the boundaries of the firm. Because material processing, such as warehousing and distribution, involves high levels of site and time specificity and also occurs frequently with large volumes, such processing should be maintained within the firm as well. Information processing generally requires computerized operations, and so it can exhibit a high level of physical asset specificity (e.g., dedicated information systems) and human asset specificity. Moreover, because the value of information depreciates with time, information processing also has a high degree of time specificity and should thus be governed by the unified structure as well. Knowledge processing, such as

technology development, often involves special human interaction and expertise, causing a higher degree of human specificity. Further, due to environmental velocity, both information and knowledge processes usually are time-specific. Thus, overall, the four basic processes discussed above are all highly transaction specific and most of them occur frequently with large processing volumes. Besides, these business transactions often are complex in nature and replete with asymmetric information in the exchanges. The concern of information impactedness should therefore lead firms to govern these business functions within the firm (Williamson, 1975).

Transaction Costs Analysis of the Basic Business Processes with the Internet

The impacts of the Internet on transaction costs are threefold: (1) lowering or relaxing the constraints of asset specificity; (2) decreasing the problems of product complexity and information asymmetry, and (3) reducing operational barriers of coordination (Gurbaxani & Whang, 1991; Malone et al., 1987; Sarkar et al., 1996; 1998; Suomi, 1991). Since the Internet has become the standard and ubiquitous communication platform, the communication effect not only can relax the constraints of site, time and physical specificities to the least extent, but can save

substantial operational cost as well. Through the integration effect facilitated by tighter coordination and performance monitoring, the problems of transaction complexity and information asymmetry can then be alleviated as a result. The brokerage effect, when coupled with the positive network externalities generated by the Internet, can greatly expand the number of potential suppliers and buyers of an individual transaction. As a result, the influence of the ex ante and ex post small-numbers-bargaining problems can be significantly reduced by the Internet.

According to the above analysis, the transaction costs of most business processes can be reduced via the Internet (see Table 8). Among the four basic busi-

Table 8: Transaction cost analysis of basic business processes with the Internet

Transactions/exchange		Fund	Material	Information	Knowledge
Transaction cost dimensions					
Asset specificity	Site	High → Low	High		
	Physical asset			High → Low	
	Time	High → Low	High → Low	High → Low	High → Low
	Human				High
Volumes		Large-Small	Large-Small	Large	Large
Information asymmetry		High → Low	High → Low	High → Medium	High
Complexity		High → Low	High → Low	High → Medium	High
Number of suppliers		Some → Many	Some → Many	Some → Many	Seldom → Some
Contractual costs	Writing	Low	Low	High → Medium	High → Medium
	Enforcing	Low	Low	High → Medium	High → Medium
Operational costs	Search			High → Low	High → Low
	Transportation		High → Medium		
	Inventory		High → Medium		
	Communication	High → Low	High → Low	High → Low	High → Low
Transaction costs		Medium	Medium	Medium	Relatively High
Governance structure		Bilateral governance	Bilateral governance	Bilateral governance	Bilateral governance

ness processes, fund, material, and information processes may be shifted from unified governance toward bilateral governance due to the capabilities of the Internet in reducing transaction costs. For knowledge processing, however, due to its equivocal nature and the human-specific asset involved, the problem of information asymmetry and the *ex post* transaction costs encountered in this kind of processes are still difficult to be effectively reduced by the Internet. Consequently, this processing function is maintained within firms in most cases.

How Firms Appropriate Economic Values Provided by the Internet

As illustrated above, three of the four basic business processes can become more feasible for outsourcing because of the effects of the Internet on transaction costs. However, this does not mean that firms necessarily have to engage in cooperative relationships with outside vendors for sure. It depends on whether these newly emerged intermediaries can provide outsourcing firms with competent economic values (Steinfield et al., 1995). For information and fund processing, the Internet is essentially the best medium for an intermediary to grasp the benefits of a large user basis. As for information processing, firms often face the problem of information overload and distortion when searching market information through multi-layered information channels (Bavelas, 1950; Stern & El-Ansary, 1988). These problems can become signified in the world of cyberspace because of

the hyperlink property of the WWW's document structure. The Internet-based intermediaries, e.g., infomediary, which can gather and filter information directly through the Internet, are in the right position to provide firms with value-added information services. As argued by Vandermerwe (1999), with the brokerage effect and network externalities of the Internet, these infomediaries will have greater abilities to attract and subsequently lock in more customers than their counterparts in the physical world. As a result, the inverting cost structure of the infomediary services will make the business customers enjoy more cost advantages than before. Similarly, the Internet-based fund intermediaries also can provide tremendous cost advantages to attract firms to outsource their fund processes. As B-to-B and B-to-C e-commerce proliferates online, it becomes inefficient for firms to process individual payment transactions due to small payment amounts or their lack of special processing equipments (e.g., CA server) (Froomkin, 1997). Since the Internet-based fund intermediaries are specialized in payment and fund processing, they can aggregate individual payment transactions into economic processing volumes and thereby achieve scale economies. Meanwhile, due to the commodity nature of fund processing, the outsourcing firms need not to bear the risks of losing control and incurring higher transaction costs when partnered with the Internet-based fund intermediaries. Both the information and the fund processes, therefore, have a very high possibility to become the real intermediary business on

the Internet. For material processing, such as logistics, the situation is slightly different, however. Since processing physical materials consumes the constrained capacities of individual firms, the inverting cost structure does not apply to this case. Instead, the Internet-based logistics intermediaries can benefit from the electronic integration effect by reducing unnecessary works of inventory and redistribution to a less extent. Moreover, the Internet also can facilitate value-added logistical innovations, such as virtual warehousing and vendor-managed inventory, which can be used to lock in outsourcing firms by the Internet-based logistics intermediaries (Rao, 1999). Therefore, it appears that material processing has vast potential to become another Internet business model. Table 9 shows the different economic values that can be created by the Internet in the aforementioned processing functions.

Following the above analysis, three possible outcomes of governance decision can be derived as in Figure 1. Result A denotes that the firm disintegrates certain

business processes from within the boundaries of the firm regardless of whether IOSs and/or the Internet have been adopted. This kind of governance decision aims at further reducing the communication and operating costs among business partners. As a result, the existing cooperation relationship can be reinforced with the new communication technologies. For example, the recent advent of logistical integration and supply chain management is the result of cooperative partners taking advantage of the communication and integration effects of IOSs (Christopher, 1992). Result B denotes that the firm not only concentrates on optimizing the existing cooperation relationship but also tries to create new values based on the ubiquitous characteristic of the Internet. In this regard, the emerged cybermediaries focus on their core competencies of providing better services and new values to their customers through the Internet, thus resulting in new business models. For example, Federal Express, by concentrating on its capability for managing efficient logistical networks, has become an attrac-

Table 9: Economic values of the Internet on basic business processes

Transactions/exchange Transaction cost dimensions		Fund	Material	Information	Knowledge
Governance structure		bilateral governance	Bilateral governance	bilateral governance	unified governance
Benefits from Internet	Communication effect	yes	Yes	yes	yes
	Brokerage effect	yes		yes	
	Integration effect	yes	Yes	yes	yes
Business models		financial intermediary	logistics intermediary	infomediary	electronic hierarchy

tive business partner whenever a company tries to develop its B-to-B as well as B-to-C business. Ticketmaster provides consumers with low-priced tickets by auction. Amazon provides an integrated buying experience to the customers from books searching, transaction, to delivery. The last possible outcome, Result C, denotes that the firm takes the Internet to further added value on the original business functions within the firm. A well-known example is Dell, which uses the Internet to further exploit its successful direct-sale business. In addition, the threats of those emerged cybermediaries also stimulate existing industrial giants to explore new ways of conducting business on the Internet, e.g., Barnes & Nobble and Charles & Schewab.

Since this paper aims at answering why cybermediaries have emerged from the perspective of transaction cost analysis, the focus thus is on the Result B described above. In Figure 1, in addition to the effect of reduced transaction costs, what makes cybermediaries emerge is their ability to create new added values and to sustain benefit against competitive industrial giants. Consequently, a case is presented subsequently to illustrate how different types of cybermediaries have emerged and why these cybermediaries can compete against their rivals with their unique add-on values.

ILLUSTRATIVE CASE THE AMERICAN AUTO INDUSTRY

In this section, the discussion is

centered around the impact of the Internet on the American auto industry. The reasons for the emergence of cybermediaries are illustrated in terms of the three effects of the Internet on the four basic business functions.

The market structure of the American auto industry

Traditionally, exclusive dealer networks are the dominant channels for auto manufacturers to market and distribute their products as well as to provide services. Through exclusive dealership, auto manufacturers can exert close control over their channel members to execute their marketing strategies and pricing policies, and guarantee a high service level. The relationships between the auto manufacturers and their dealer networks typically are based on various contractual arrangements (from subsidiaries to independent multi-manufacturer dealers). Under these circumstances, dealers have to take over a huge array of functions such as selling, financing, and repairing cars (see Figure 2). To some extent, these contractual arrangements are beneficial to the manufacturers, since they do not have to bear the increased transaction costs from market expansion and service enhancements (Bucklin, 1996). However, as competitive pressure continues to mount up and the cost structures change with the growth of the Internet, maintaining the cost advantage of the physically disintegrated governance structure becomes problematic.

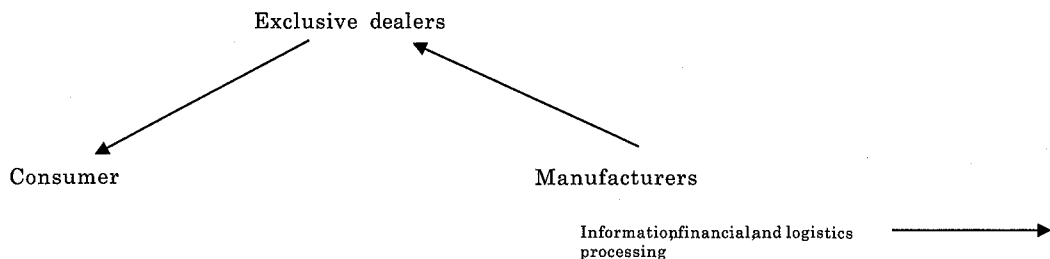


Figure 2: The manufacturer-exclusive dealers market structure of the American auto industry

The changed competitive conditions in the industry

There are two trends that challenge the firms in the auto industry today. The first is that the increasingly saturated markets reduce the profitability of both the manufacturers and the exclusive dealers. Since the exclusive dealers bear high costs of capital for their sites and inventories, selling too few cars in today's overcrowded markets makes them operate with very narrow margins (Dudenhoffer, 1997). The second trend is that the increasingly blurred picture of a product makes product differentiation reduce to only design characteristics, as contrasted with brand identity before. As a result, the focus of market competition moves away from the simple durable good "car"

to a complex service bundle, including financing and insurance. In order to fulfill the mobility-related needs of consumers, a variety of new contractual arrangements have thus emerged, such as pool leasing (a compact car for everyday and a station wagon for the holidays), car sharing and car rentals. Since these new types of dealership operate relatively independently from the auto manufacturers, they are not so tightly constrained by the established contractual relationships as their competing exclusive dealers (see Figure 3). In other words, they can enjoy greater degrees of freedom in innovating service offerings and can diversify more easily into those newly established distribution channels (Schogel, 1997).

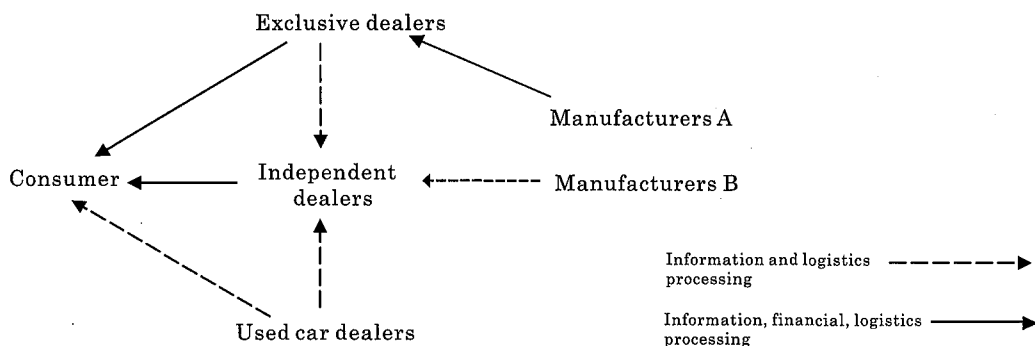


Figure 3: The evolved market structure of the American auto industry

The emerging cybermediaries in the auto industry

There are three kinds of service offerings in the auto industry, namely - information, logistics, and financial services. In contrast to digital products, vehicles require a physical infrastructure for storage and distribution. Traditionally, the whole transaction process of selling cars must take place in the physical world because of the non-separability of service offerings. As the Internet arises as a convenient platform for communication, transaction and distribution, the disintegration of service offerings becomes increasingly flexible. Three kinds of effects are particularly relevant for intermediaries to pursue operational efficiency and customer values. The first is the communication effect, which makes independent dealers capable of providing efficient sale processes at a lower cost, i.e. product search, negotiation, transaction, financing and insurance. In this regard, not only can the traditional information services be digitalized but the concept of total care can also be better fulfilled, e.g., new car information, configuration of vehicles, customer complains handling, and bundled offers in combination with public transport (Klein & Selz, 2000). All the players in the auto industry can thus benefit from the communication effects brought about by the Internet, unless they overlook the possibility of providing better services with the net. The higher order effects of brokerage and integration, however, only favor independent dealers as well as cybermediaries, because the exclusive dealers are so constrained by the established

contractual arrangements.

In the auto industry, consumers are often annoyed by the lack of market transparency, as characterized by discriminated regional prices and services. Since the ability of the Internet and Web technology transcends the limits of location and brand identity, it is natural that cybermediaries have the chance of becoming the best brokers for quality, pricing, and technical information. The philosophy of service provision has also been radically changed by the fact that customers can use Web browser to serve themselves, as opposed to the manufacturer-centered model in the past. As a result, companies such as Kelley Blue Book, AutoVantage, Carpoint, and Look4Cars have arisen as the automotive information brokers (Selz & Klein, 1997), aiming at providing consumers with arbitrage opportunities. In addition, the integration effect of the Internet makes independent dealers capable of providing consumers with "one-stop shopping" services. More and more automotive service brokers have thus emerged with their unique capabilities of managing various cooperative service provisions more effectively (Selz & Klein, 1997). For example, companies like DealerNet and Auto-By-Tel not only offer on-line information, pricing and quoting services, but also provide additional services like financing, insurance, and direct links to car dealers. In other words, the traditional way of aggregating service provisions in the physical world has been disaggregated and re-integrated as the various bundled services offered in the virtual world. Both the information and service broker-

age models are so distinct that the traditional exclusive dealers lack the abilities to appropriate the innovative rents created by the Internet. Consequently, the American auto industry is radically transformed by the emerged cybermediaries, as depicted in Figure 4.

Case Summary

The Internet, given its inherent characteristics, has been the driver for many new types of value provisions and has led to the deconstruction of the value chains in many industries (Dutta et al., 1998). Although the reduced transaction costs and the communication effect are the focal points when people are blessing the power of the Internet, what make the ways of competition so different are the second order effects of the Internet, i.e. the brokerage and integration effects. Through the brokerage effect, firms have the opportunity to relieve the burden of routine services and to transfer transaction costs to the customer side. On the other hand, customers are more than will-

ing to take over the tasks, since they can gain the opportunity to arbitrage and enjoy responsive service provisions. By exploiting the value of integration and the flexible architecture of Web technology, the cybermediaries enjoy a greater ability to break down the aggregated service provisions and then re-integrate them into flexibly bundled services. As a result, the emerged service brokers break the traditional revenue mix and provide new value propositions by aligning the best interests of the customers and the service companies. Since these new business opportunities stand only a trivial part of turnover in the earlier life cycle of the Internet and have been largely neglected by the industrial giants (Modahl, 2000), sooner or later, these newly emerged service brokers will transform the rules of competition in the industry.

In the American auto industry, the emerged information and service brokers are the result of the interactions between competition and the three effects of the Internet. The cybermediaries are in a

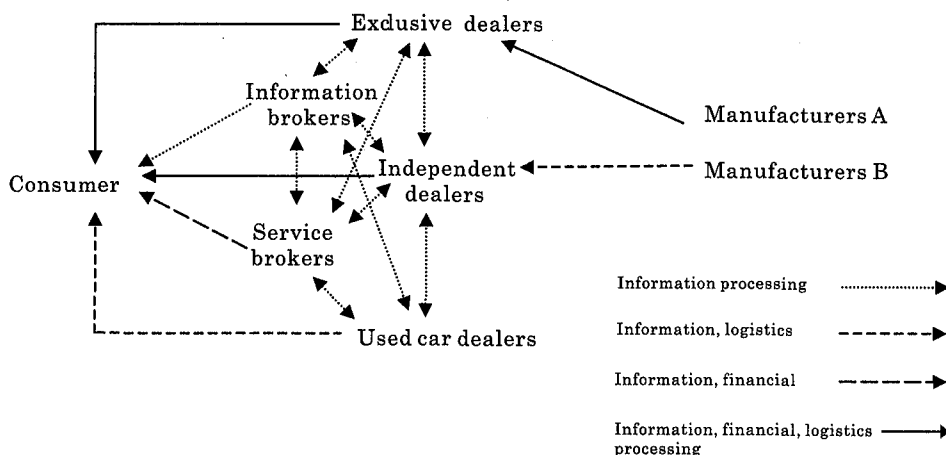


Figure 4: The evolved market structure of American auto industry with cybermediaries

better position than both the exclusive dealers and the auto manufacturers in the Internet world, because they are not so suppressed by the structural inertia and the profit pressures from their stakeholders. Consequently, they have greater freedom to catch up with the trends and may eventually become the key players in the industry.

CONCLUDING REMARKS

According to the analysis of transaction costs and the illustrative case, fund, material, and information processes are found to be suitable for cybermediation on the Internet while knowledge processes are not. This is because the former three processes are execution-driven and separable transactions in which the Internet can reduce transaction costs more effectively. On the contrary, knowledge processes typically have to rely upon tacit knowledge, which in general is not easily transferable even with the modern information and communication technologies. As a result, fund, material, and information processes are disintegrated from within the firm and become feasible business models on the Internet, while knowledge processes remain as the core function of individual firms. For example, the auto manufacturers remain concentrated on their ability of R&D and manufacturing cars.

Although the Internet has transformed the ways that firms conduct business, there are still some institutional factors that may hinder the progress of

electronic commerce. For example, the perceived uncertainties are greater in the electronic marketplace than in the physical world because the unreliable network infrastructure, insecure transaction environment, and incomplete policy-related regulations make electronic-based transactions vulnerable. The high risk of failed transactions certainly will discourage firms from engaging in more complex cooperative relationships in the electronic marketplace. As a result, the higher order effects of the Internet will not take place until the environment becomes more matured. With regard to this, we expect there will be more and more "credit-providers" emerging, e.g., CA, rating agencies, aiming at reducing transaction risks as well as uncertainties. With these specialized cybermediaries, a greater revolution of market structure should be expected.

In sum, this study utilizes transaction cost analysis as well as the economic effects of the Internet to explain why firms decide to disintegrate their business functions and how the Internet shapes the new forms of cybermediaries. In contrast to prior research, this study takes "processing functions" as the unit of analysis. Our analysis appears to be able to justify the emergence of the various forms of cybermediaries, such as infomediaries, logistics intermediaries, fund intermediaries, and service brokers on the Internet.

However, the current analysis has some limitations. For example, our approach of decoupling business activities into basic business processes is not derived and justified based on sound theories, though such

a classification is practically meaningful and intuitive. Future research can focus on the detailed functions of supply chains or distribution channels in order to gain additional insights into the new Internet-based business models.

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