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Angaben zur Veröffentlichung / Publication details:

Meck, Astrid. 2001. “Shopbots, powershopping, powersales: new forms of intermediation in e-commerce - an overview.” Augsburg: Volkswirtschaftliches Institut, Universität Augsburg.

Beitrag 203, Volkswirtschaftliche Diskussionsreihe, Universität Augsburg

Shopbots, Powershopping, Powersales: New Forms of Intermediation in E-Commerce – An Overview

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July 2001

Abstract:
With the advent and proliferation of the Internet many aspects of business and market activities are changing. New forms of intermediation also called cybermediaries are becoming increasingly important as a coordinator of interaction between buyers and sellers in the electronic market environment. Especially the overwhelming abundance of information offered by the Internet promotes the development of new intermediaries like malls, shopbots, virtual resellers etc. This paper provides a detailed overview of different new forms of cybermediation and illustrates their influence on consumer choice, firm pricing and product differentiation strategies.

Keywords: comparison shopping, cybermediaries, e-commerce, shopbots

JEL-Classification: L81

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Introduction

With the advent and proliferation of the Internet many aspects of business and market activities are changing. The importance of the Internet as a medium for market transactions is rapidly increasing, thereby supporting the development of interconnected marketplaces that facilitate the exchange of a wide variety of products and services as well as the exchange of information. Meanwhile a rapidly growing number of intermediaries that perform the mediating tasks in the world of electronic commerce, called cybermediaries (Sarkar, Butler, Steinfeld 1995) or digital intermediaries (Chircu, Kauffmann 1999), provide help to manage the overwhelming abundance of information offered by the Internet. These new intermediation services assist buyers and sellers in searching for relevant information and in matching customers with suppliers by filtering these information. These services are likely to become increasingly important in electronic market environments because they promise to offer the products that match the buyers' needs at the best price. In addition, purchases that are concluded over traditional bricks-and-mortar channels are also affected by the increasing number of customers who use the Internet as a source of product information and as a searching tool for goods. Therefore, the progress of Information Technology may also influence the underlying microstructure of physical markets and hence the specific trading mechanisms that affect the price formation process.

This paper specifically focuses on the growing number of cybermediaries providing help as a coordinator of information only in the business-to-consumer electronic commerce. I do not consider intermediation services concerning the logistics and transportation elements of a transaction nor these that support of payments are not a subject of this paper. After briefly resuming the impact of developments in information technology on market structures as well as on the roles and functions of intermediaries in section 1, a detailed overview of the different new forms of intermediation will be given in section 2. Herein only new services will be taken into account that are not assumed by traditional players right away. Intermediaries that have existed before and that are now simply offering their services in the Internet will be disregarded as well. The last section examines the impacts that are likely to occur on consumer choice as well as on firms' pricing and product strategies.

1 Roles and functions of intermediaries

The interactions between buyers and sellers in a market are accompanied by transaction costs arising from all activities associated with the exchange of goods and services like finding appropriate suppliers or potential consumers, securing that the terms of contracts are fulfilled or arranging the billing and payment. In physical markets transaction costs can be lowered by the interposition of intermediaries.[1] As defined by Spulber (1999, p. 3), an intermediary is an agent or middleman who "coordinates the exchange of goods and services either by purchasing from suppliers for resale to buyers or by helping buyers and sellers to meet and transact." Traditional intermediaries thus provide a range of roles and functions that lead to the creation of value in the marketplace such as[2]:

- Aggregation of buyer demand and seller products

  Instead of each customer having to negotiate the terms of a transaction individually with each seller, an intermediary who aggregates buyer demand or seller products can achieve economies of scale or scope, reduce transaction costs and asymmetry in the bargaining power of customers and suppliers.

- Searching and matching

  Intermediaries coordinate transactions for their customers and suppliers by providing a central place of exchange (a store or a catalog), thus saving search and transportation costs for both sides of the market. Search costs are the time and transportation costs of finding a trading partner as well as costs arising from the process of gathering and processing information about the characteristics of trading partners, including their location, product quality, price offers and contract terms**.** Intermediaries reduce these search costs by providing a smaller number of easily identifiable trading partners. Further, in a market with *m* sellers and *n* buyers the interposition of an intermediary can reduce the contacts required to be fully connected. Instead of *mn* contacts in a disintermediated market an intermediary can collect complete information about the sellers with *m* inquiries and pass on the information to the buyers with *n* additional transfers of information. The

[1] Although the literature agrees that intermediaries lower transaction costs, a consistent definition of what roles and what value they provide does not exist. The literature only agrees that an intermediary is a market participant that coordinates transactions between a consumer and a supplier, but more complex definitions always detail the roles for different sets of transactions (Bailey 1998b, p. 17).

[2] A detailed review of roles and functions of intermediaries can be found in Spulber (1999).

intermediary thereby leads to a reduction of overall processing and coordination costs because the total amount of transactions necessary to secure full connectivity are only $m+n$ instead of mn transactions. Disintermediated trade carries risks for trading partners who must search and bargain over the terms of exchange every time a match is made. The intermediary may be able to locate the appropriate consumer or seller more easily because he acquires a better knowledge of the market. He may also provide a price discovery mechanism and therefore can alleviate these uncertainties by providing a trading focal point and by posting buy and sell prices.

- Pricing and facilitation

  Pricing and all activities that facilitate the handling of a business transaction provided by intermediaries serve to clear markets. Intermediaries coordinate the activities of buyers and sellers by choosing ask prices for consumers and bid prices for suppliers. In case of a demand or supply imbalance an intermediary can adjust ask and bid prices to clear markets, or hold inventories to smooth the pattern of purchase and sales. Further, to bring its purchases and sales into balance an intermediary is able to reset prices in order to ration consumers and stimulate supplies. By means of these activities, intermediaries are able to allocate their goods and services, to reduce the risk of supply and demand fluctuations and to coordinate the trades of their customers and suppliers.

Progress in information technology dramatically changes the spectrum of possibilities for making transactions in the marketplace. As transactions are carried out electronically, search costs (Bakos 1997), coordination costs (Malone, Yates, Benjamin 1987) and payment processing costs are decreasing. The extensive reduction in transaction costs changes the manner in which the various players are able to interact. Firms can capture value by internalizing activities that were sourced out before. Using interorganizational computer networks, manufacturers are able to distribute their goods directly eliminating non-value adding activities that often slow order acquisition and processing, introduce errors, increase costs, as well as vulnerability to external partners. As suppliers and consumers increasingly rely on the Internet as a transaction medium, intermediaries who help to reduce market friction in physical markets may be eliminated which leads to disintermediation.[3] In particular because of its lower search costs and ease of information acquisition, the Internet reduces

[3] Disintermediation occurs when a middleman gets pushed out of the market by other firms, or when the services it provides become irrelevant as other ways to get a transaction done become available. A detailed review of the discussion about disintermediation, reintermediation and intermediation can be found in Chircu and Kauffman (2000).

problems of information imperfections and thus directly affects some coordinating roles of traditional intermediaries. Hence traditional firms providing matching services such as aggregation and facilitation for buyers and suppliers in a traditional, established market may partly become superfluous.

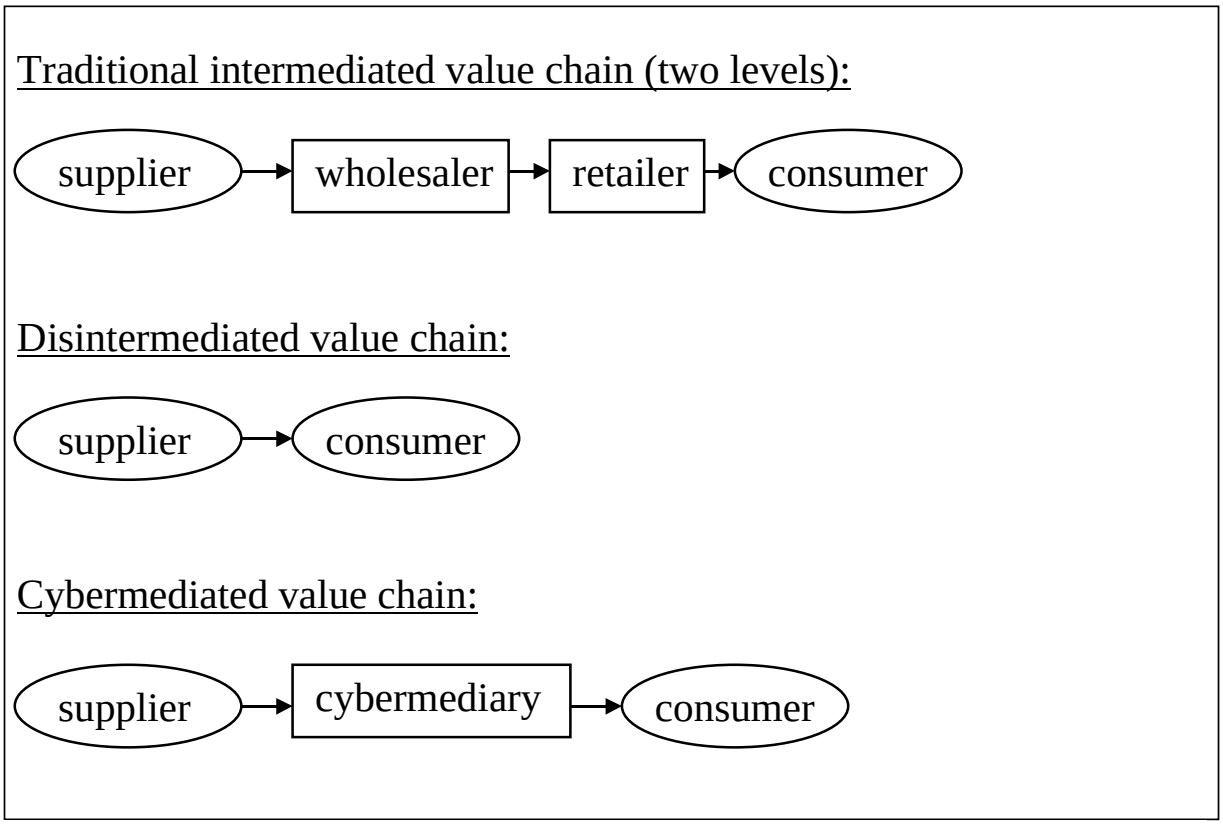


Figure 1: Value Chains in Internet Commerce (With reference to Bailey, 1998a, p. 18)

But at the same time, technological innovations associated with electronic commerce require other forms of intermediation that are able to cope with the new opportunities arising from them and that cannot be associated with the bricks-and-mortar world of traditional business. New goods (information or digital goods) and new business models (like Yahoo or eBay) are possible to be created in the presence of technology. Further, the progress in information technology enables entirely new ways of organizing a transaction. As Information Technology allows further fragmentation of the electronic supply chain (Chircu, Kauffman 1999) an organizational shift from intra-firm transactions to market transactions is also likely to occur. While some of the traditional intermediaries may become less important as information technology facilitates communication between customers and suppliers, the growth of electronic markets supports the creation of intermediaries that perform the mediating tasks in the world of electronic commerce, called cybermediaries (Sarkar, Butler,

Steinfeld 1995) or digital intermediaries (Chircu, Kauffmann 1999). These cybermediaries create opportunities for transactions to occur that simply did not exist in the marketplace before during the absence of the Internet. As cybermediaries strongly rely on the communication-enhancing capabilities of the Internet, they are able to transfer many roles and functions of the traditional intermediaries into the virtual space of the new marketplace, such as aggregation, expertise, search, facilitation, matching and settlement capabilities (Chircu Kauffmann 1999, p. 5). But not all roles and functions are equally significant in the new market environment as they are in physical markets. In markets such as consumer markets which are characterized by a large number of products and infrequent purchases, cybermediaries that mainly focus on certain areas like provision of information and matching respectively linking will become increasingly important. Finally, intermediaries providing marketing information that allow suppliers to tailor their products based on their marketing strategy and on their customers` needs play an important role (Bailey, Bakos 1997; Sarkar, Butler, Steinfield 1995). In the following section, first of all the new forms of intermediaries in the business-to-consumer market will be looked at closer.

Cybermediaries					
Aggregation		**Searching and Matching**		**Other services**	
Supplier	Consumer	Window shopping	Comparison shopping	Pricing	Facilitation
Mall • Coolshopper.com • iMall.com • Cybermal.com • Cyberstore.com Virtual reseller • ChristmasShop.com	Coshopping • LetsBuyIt.com • Coshopper.com	Search Engines • Infoseek.com • Lycos.com Directories • Yahoo.com	Customer driven pricing • Priceline.com • IhrPreis.de Shopping by request • Respond.com • Yellout.com Intelligent agents • Price comparison: Bargainfinder PriceFinder.com Evenbetter.com • Feature comparison: FireFly.com	Pricebots • Books.com	Privacy protection • TRUSTe.com Handling of payments • BidPay.com • PayPal.com

Table1: Overview of different types of cybermediaries

2 Cybermediaries

The Internet represents a platform for innumerable forms of cybermediaries calling themselves virtual reseller, shopbot or directory etc. Despite their creative names, these new intermediaries take over functions that are equal to those of traditional intermediaries in physical markets. Therefore, in the following overview the cybermediaries are distinguished according to their roles described in the section above, beginning with cybermediaries that provide aggregation services. Furthermore, different intermediaries that provide searching and matching services are looked at in detail. For the sake of completeness, also cybermediaries will be taken into account that offer pricing and facilitation services (as can be seen in table 1).

2.1 Aggregation

2.1.1 Aggregation of suppliers

Malls and virtual resellers are intermediaries that allow the aggregation of suppliers. Like traditional physical malls, they provide infrastructure for the producer and offer a virtual place where consumers can browse through the different offers of merchants sorted by categories without having an already set idea of the product they are looking for. In general, these virtual malls concentrate on a certain geographic area and they may focus on a variety of “stores”, selling a variety of products. Malls often provide links to stores that are not explicitly part of the mall. The source of their income are the fees they charge from their “renters” for the provision of cyberinfrastructure. Malls like e.g. Cybermal or Cybersuperstore typically provide cyberinfrastucture for external producers, but they do not stock goods or sell products directly. Intermediaries that take an active part in sales by keeping their own stocks and by selling goods at their own profit are called “virtual resellers”. Often these resellers are product-focused like e.g. The Christmas Shop. Among others, they obtain products directly from manufacturers, who may hesitate to sell their goods to consumers directly for fear of alienating retailers upon which they depend. Virtual resellers thus represent an example of where the interposition of efficient network-based intermediaries allows goods to be offered at lower price without linking producer and consumer directly.

2.1.2 Aggregation of consumers

Coshopping, Powershopping, Powerbuying and PowerSales all represent the Internet version of an old business model – the collective order – or considering different forms of business organization – the purchasing cooperative. By concentrating buyers into big lumps, these intermediaries also want to exploit the bargaining leverage a smaller buyer lacks in comparison to a large buyer. An example of a coshopping intermediary can be **seen below** in figure 2.

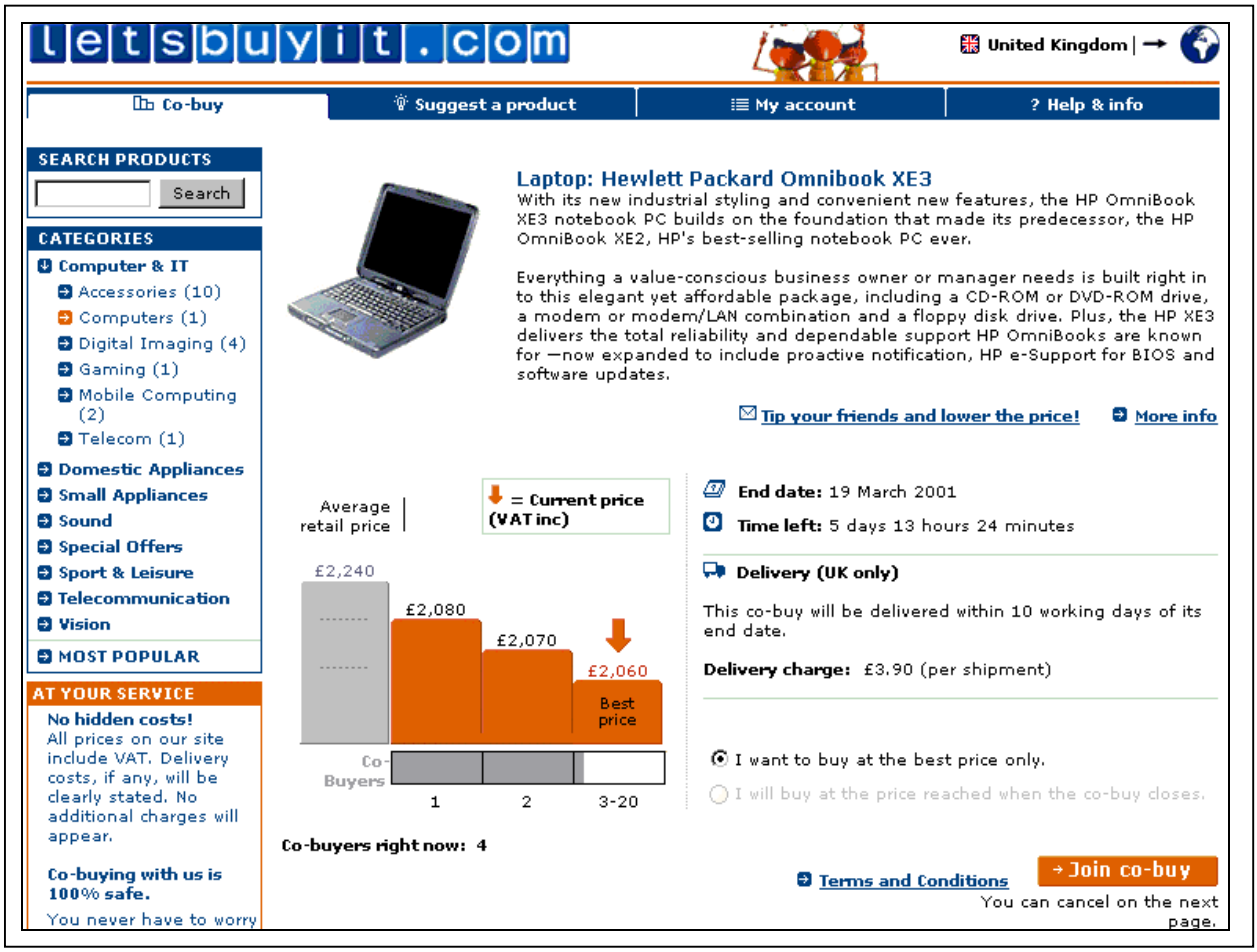


Figure 2: User Interface screen capture from www.letsbuyit.com.

The discount achieved depends on how many buyers sign up for a specific good within a fixed period of time. The size of the coshopping intermediary, in particular, is important for buyers. Little and relatively unknown services are hardly successful in aggregating enough buyers to exploit the improved position of power. In contrast to the customer who is legally bound to purchase the good as soon as he accepts the order for it, the retailer is not obligated to deliver the good. “Die von uns präsentierten Waren und Produkte stellen keine bindenden Angebote unsererseits dar, sondern dienen nur dazu, Sie zur Abgabe eines bindenden

Angebotes zu motivieren" (General Standard Terms and Conditions of *LetsBuyIt.com*). That means that a buyer gets to know whether he will receive the desired good or not only after the subscription period has expired. Therefore, coshopping is not suitable for impatient buyers. In addition to this, the range of products offered on these coshopping sites is very limited and long delivery times constitute a common problem. The question, therefore, is whether buyers using coshopping are in fact able to achieve the best bargains or whether other cybermediary services like search engines and shopbots perform a much better job in finding the same goods at a lower price. It may be that customers choose to buy from coshopping cybermediaries because they provide supplementary services which offer buyers additional utility, e.g. fast delivery, smooth handling of payment and queries or complaints, a good product support. Cybermediaries may extract profit by charging a fee to producers to be evaluated, or may charge consumers for their service. As mentioned above, coshopping intermediaries have the organizational structure of a purchasing cooperative. One new and interesting aspect of these online cooperative associations is that the Internet supported the creation of platforms that enable buyers to cooperate in purchases.

2.2 Searching and matching

Several intermediary services provide help to customers searching for an appropriate seller offering. But one has to distinguish between services that facilitate the search for parties interested in selling or buying and other services that additionally provide help in comparing prices and other features of the item in order to make an optimal purchase decision. Following Moukas et al. (2000) cybermediaries are further differentiated in two types: those sites that allow "window shopping" and others that allow "comparison shopping". In the following all those services will be considered as comparison shopping which take over the search for customers and which either assume a proposal after having examined certain criteria or pass a complete selection to the customers.

2.2.1 "window shopping"

Search sites like Lycos and Infoseek provide users with the capabilities for conducting keyword searches of extensive databases of Web sites. Typically, search sites do not allow

browsing of the database directly, and they are rarely topic specific. In contrast to search services, using directories requires less previous knowledge. They help consumers find producers by categorizing Web sites and providing structured menus to facilitate navigation. There are three types of directory services. General directories like Yahoo provide a general index of a large variety of different sites. These sites often support browsing as well as keyword searches of the index. Some commercial directories only provide indices of commercial sites on the Web, simply acting as a directory of externally existing commercial sites. Some directories are equivalent to publishers of paper-based industry guides focusing on information about a specific commercial area, often listing firms that do not even have Web sites. Finally, specialized directories are topic oriented, often even as simple as a single page created by an individual interested in a topic. Theses pages assist in supporting commercial exchanges by helping consumers with technical and evaluative information about a good or a particular producer, in addition to simple search support. At present these services are usually free of charge to consumers, but in future may demand fees.

But these services only assist in finding sites that more or less match what one is looking for. The consumer still has to browse through different merchants' sites almost as if he was window shopping and has to sort out sites in order to find the best match**.** While he does so, he allows merchants to continue to compete with one another with regard to pricing, service, warranty, Web-site presentation, design and so on.

2.2.2 Comparison shopping

2.2.2.1 Customer driven pricing

Sites like Priceline.com or IhrPreis.de are searching on behalf of the buyer. But in addition to the good the user of the site also has to specify the amount of money he is willing to pay. Search orders are binding for the user which means that if the intermediary can find a retailer offering the searched good for the quoted price, the user has to buy the good. This service requires a good knowledge of the product and its market price if the consumer wants to realize a good deal. The agents on the other hand depend on the customer to truly reveal their marginal ability to pay. There is a big risk for consumers of simply misjudging prices that can be realized in search of a bargain. Mainly flights, travels and cars are sold via this service

because retailers can sell their surplus stocks without advertising them. This business model is not new, price agencies have existed before exploiting the time and geographical constraints a buyer had to face in the form of search costs. As customers also increasingly rely on information collected online to research purchases, and as a growing number of comparison shopping tools are available online, this service might become unnecessary with regard to the business-to-consumer trade unless they manage to offer extra services to the consumer that generate additional utility. Different business models are underlying these intermediary services. Some are free of charge for the consumer. It is highly probable that these services either extract a commission from the manufacturer or do not pass on the whole discount. Others charge a fee to the amount of a fixed percentage of the saving.

2.2.2.2 Shopping by request

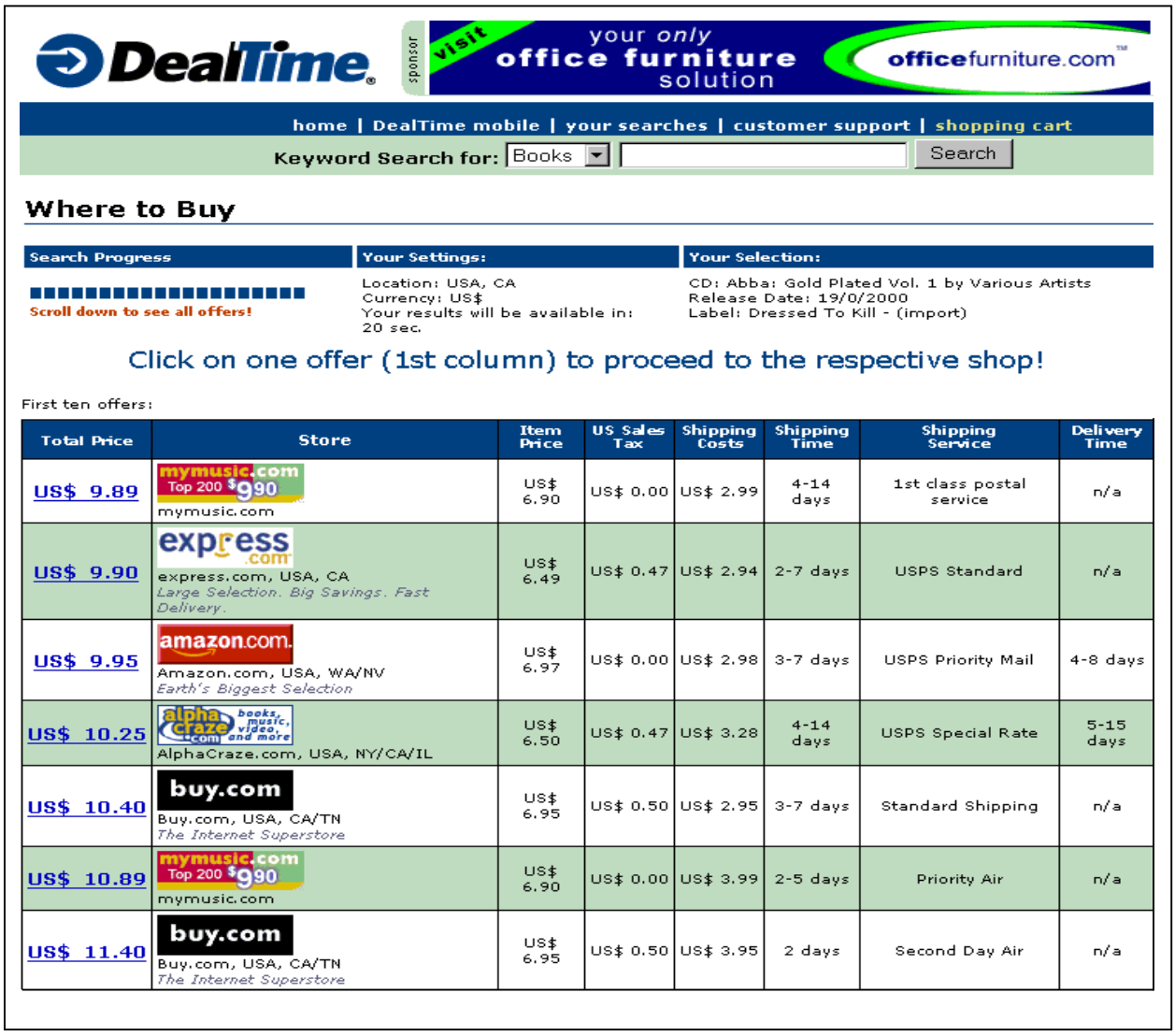
An intermediation service that is strongly related to the customer driven pricing service described above but less formalized are sites like Respond.com or Yellout.de. Whenever goods cannot be compared schematically, these intermediaries offer help. The customer can exactly describe the good he is searching for because the description is given in full text. The inquiry is then sent to the affiliated retailers. Offers made by the retailers are passed on via the intermediary to the customer. All inquiries are treated anonymously to prevent the retailer from circumventing the intermediary by contacting the buyer directly. Hence the customer can decide with whom he wants to get in touch. These sites extract profit either by charging a mediation fee from the prospective buyer or by a share of the selling price.

2.2.2.3 Intelligent agents or shopbots

Intelligent agents also referred to as shopbots or shopping robots are software agents that “automatically gather and collect information from multiple online vendors about prices and other attributes of consumer goods and services” (Kephart, Greenwald 2000, p.1). To make use of a shopbot the customer simply has to visit the shopbot site and to quote the name of the item he is looking for in the given search field. The shopbot instantly queries all associated retailers checking whether they have the good in stock, its price and maybe even the probable

delivery time of the good. The search results are displayed in an offer comparison table as can be seen in figure 3.

Depending on the type of shopbot these tables list the total price of the good searched for and other elements of the price like item price, shipping costs, applicable sales tax along with the retailer's name and other delivery information. Some shopbots sort the table by price or by retailer. Other by contrast sort by default by total prices, but the consumer can determine the kind of sorting by any criteria listed in the columns of the comparison table. After the consumer has evaluated the information, he can surf directly to the retailer's web site via a link to finalize the purchase.



Total Price	Store	Item Price	US Sales Tax	Shipping Costs	Shipping Time	Shipping Service	Delivery Time
US$ 9.89	mymusic.com Top 200 $9.99 mymusic.com	US$ 6.90	US$ 0.00	US$ 2.99	4-14 days	1st class postal service	n/a
US$ 9.90	express.com express.com, USA, CA *Large Selection. Big Savings. Fast Delivery.*	US$ 6.49	US$ 0.47	US$ 2.94	2-7 days	USPS Standard	n/a
US$ 9.95	amazon.com. Amazon.com, USA, WA/NV *Earth's Biggest Selection*	US$ 6.97	US$ 0.00	US$ 2.98	3-7 days	USPS Priority Mail	4-8 days
US$ 10.25	alphaCraze.com books, music, video and more AlphaCraze.com, USA, NY/CA/IL	US$ 6.50	US$ 0.47	US$ 3.28	4-14 days	USPS Special Rate	5-15 days
US$ 10.40	buy.com Buy.com, USA, CA/TN *The Internet Superstore*	US$ 6.95	US$ 0.50	US$ 2.95	3-7 days	Standard Shipping	n/a
US$ 10.89	mymusic.com Top 200 $9.99 mymusic.com	US$ 6.90	US$ 0.00	US$ 3.99	2-5 days	Priority Air	n/a
US$ 11.40	buy.com Buy.com, USA, CA/TN *The Internet Superstore*	US$ 6.95	US$ 0.50	US$ 3.95	2 days	Second Day Air	n/a

Figure 3: User Interface screen capture from www.DealTime.com.

The success of a shopbot depends on its ability to offer value added services to consumers and manufacturers. BargainFinder, one of the first agents for price comparison, was launched as

an experiment by Anderson Consulting in 1995. At the outset, it queried ten compact disc stores on the World Wide Web to find a CD. The search capability was limited because the user had to specify both the musician and the album title. Since BargainFinder only provided users with price information, CD suppliers quickly put it on their “persona non-grata list”, denying the shopbot access to their databases. Simply bypassing other value-added services that were offered on the merchants’ Web-site, BargainFinder promoted price competition. Because only a small fraction of CD buyers used this shopbot, the CD suppliers could resist.

Since the launch of BargainFinder, the level of shopbot sophistication and the range of products represented by shopbots have expanded dramatically. A shopbot available at shopper.com claims to compare 1,000,000 prices and 100,000 computer-oriented products. Many shopbots specialize in a single product category like Pricefinder.com that shops for memory and processor chips only. Especially bookbots (Bargainbot.com, MX BookFinder.com) are very popular in the US because no retail price maintenance for books exists. One of the most popular shopbots, MySimon.com, can be used to search for a variety of product categories like office supplies, groceries, toys, apparel, and consumer electronics. Other providers on the German market that enable search over a variety of product categories are GuensTiger.de, Preisauskunft.de, Vivendo.de or DealTime.de (DealTime). In the meantime also a software exists that works as a browser-add-on in the background. All the customer has to do is merely to look for the desired good on a website. Without being noticed, Evenbetter.com is continuously searching for a supplier offering the same product at a lower price.

Besides the search for prices, shopbots can also search for features. Firefly.com (Firefly), for example, is a matching intermediary that allows individualized recommendations for CDs. Based on members’ ratings for music the customer is familiar with, Firefly recommends music that he or she can be expected to like. This collaborative filtering technology can also be used in other areas than music to generate individual recommendations. Amazon.com (Amazon) uses the collaborative filtering technology to recommend additional books to a customer, searching for a special book, he might also be interested in. In opposition to BargainFinder Firefly has been very successful right from the beginning because the marketing information and matching intermediary roles of Firefly add value to both, the customer and the supplier (Bailey, Bakos 1997, p. 12).

In the meantime well-known sellers like Amazon tolerate queries from agents like e.g. DealTime, as one can see in the comparison list above, for two reasons. First, in addition to the prices other product information are sent along which allows a certain degree of differentiation. Second, as shopbots become increasingly important as a search tool for consumers, not being listed on the site may constitute a competitive disadvantage since consumers will not have the opportunity of being transferred to their sites. Third, finally, because of the progress of agents merchants have no choice to deny the access to their online catalogues. As soon as online catalogues are present on the Web, they are forced to interoperate with the shopbot (Moukas 2000). The merchant blocking problem was solved by Jango.com and similar shopbots by having product requests originate from each consumer's Web browser instead of a central site. To merchants the requests from a Jango-augmented Web browser therefore appeared to be requests from real consumers (Moukas 2000).

Different ways of profit generation are possible for shopbots. Generally shopbots generate revenue directly from the merchants. Allowances can be paid

1. for each hit made to their site as a result of a shopbot recommendation
2. for a sale made as the result of a shopbot recommendation (as a percentage of the volume of the procured transaction or depending on the amount of concluded transactions)
3. for a favorable placement on shopbot generated lists
4. or a combination of all three models resulting in merchants paying two or more services in order to obtain the maximum exposure for their products

Shopbots outperform and out-inform humans by providing extensive product coverage in a few seconds. Even a patient and determined human shopper could not achieve the same quantity of information after having spent hours of manual search. Thereby shopbots are not only significantly reducing buyers search costs[4], they also uncover numerous retailers who would otherwise have remained unknown to the customer. Since every retailer is just "one click away" switching costs are reduced accordingly. Being programmed to look for the best price only, they ignore additional offerings of merchants eliminating any views and ideas associated with a retailer's brand name.

[4] Brynjolfson and Smith (2000b) let students gather information about 30 prices. This took 3 minutes using an internet shopbot, 30 minutes by visiting internet retailers directly and 90 minutes to make phone calls to physical stores.

Relating to customers, important criteria for shopbots are that they scan a sufficient amount of retail sites and that they visit sites often enough. Preferably, they provide a real time search to avoid false recommendations. Further, a clear structure of the comparison table, a good user advice and the amount of product information are important (Stoltenberg 2000). But especially the clearly structured representation of the underlying comparison price is important.

2.3 Other services

Books.com represents an early pricebot that automatically queries the catalogues of the three big online booksellers in the US: Amazon, Borders.com and BarnesandNoble.com. After having determined the price offered on these sites, books.com slightly undercuts the lowest of the three quoted prices (by one percent of the retail price). As an increasing number of customers rely on shopbots to search for product and price information, it becomes advantageous for sellers to increase the flexibility of their price setting strategies. Pricebots allow to change a price that was set a priori very quickly, enabling sellers to achieve real-time dynamic pricing on millions of titles. Thus completely new dimensions of price discrimination are offered.

For the sake of completeness a few services that facilitate the completion of business transactions helping buyers to benefit from electronic marketplaces will shortly be named. Some cybermediaries like TRUSTe.com help to avoid information asymmetries by ensuring privacy protection. They provide warranties to each buyer and seller with regard to the completion of delivery or the payment of the delivered good or service respectively. Other cybermediaries offer special services regarding the handling of payments. BidPay.com and PayPal.com, for example, allow the payment to be processed via Internet securing the confidential data.

3 Impact of cybermediaries on market participants

Production, distribution and pricing of goods and services over the Internet are creating an entirely new environment for consumers and merchants alike. Assumptions that are typically considered unrealistic for physical markets, such as perfect information and negligible search costs, seem to be fulfilled for the Internet – some already consider the Internet to be a nearly perfect or frictionless market. In addition, the cybermediaries described above further facilitate the ease of information acquisition at low search costs.

In a market for homogenus goods where search costs are either negligible or non existent, the traditional Bertrand model of price competition would predict that all goods will be priced at marginal costs of production. Hence if there are no fixed costs firms will earn zero profit. Introducing search costs leads to prices substantially higher than marginal costs. Without describing the research done on search costs in detail, one can say that there is a close relationship between consumer search costs and a firm's pricing practices. Sellers are enabled to maintain prices substantially above their marginal costs even if only low costs of search on the buyer's part exist leading to price dispersion. The introduction of a market system providing price information, therefore, may dramatically reduce seller profits and increase buyer's welfare (Bakos 1997). Building on Steve Salop's (1979) spatial competition model of differentiated products, Bakos (1997) further concluded that complete market failure may ensue in cases of extremely high search costs. Given that extremely high search costs can cause the market to break down completely, "electronic marketplaces will enable `missing` markets, thereby creating substantial social surplus".

But if cybermediaries really help to reduce allocative inefficiencies depends on the way in which the introduction of cybermediaries affects the behavior of the market participants. And in particular, which impact cybermediaries have on firms' profits and pricing policies as well as on consumer surplus and the overall market outcome.

3.1 Impact on consumer behavior and consumer benefits

In general, all cybermediaries facilitating search and matching ease the access to greater amounts of dynamic information. Therefore, they allow consumers to choose from a wider

selection of goods and services. An overwhelming quantity of information is provided by the Internet which has to be found, sorted, processed and presented. Any customer may search the Internet by himself, but without an intermediary's support it is virtually impossible to be successful in finding the results desired. Even by the help of a search engine, the most simple form of an intermediary specialized in search assistance, it is very costly and time-consuming. Often the customer is overloaded with the abundance of information or he does not find the result desired due to a wrong keyword. The ability of some cybermediaries to amass, analyze and control large quantities of specialized data allows comparison shopping and may accelerate the process of finding items. Providing one-click access to price and product information from numerous competing retailers, shopbots substantially reduce buyer's search costs for product and price information. Besides, the ability to destroy any expectations and images combined with a retailer's brand name by listing only summary information from both well-known and rather unknown retailers, they reduce switching costs accordingly. As a result of these given facts, competition may increase in markets served by shopbots and retailer margins may be reduced – in particular with respect to homogenous physical goods (Bakos 1997).

Coshopping and customer driven pricing services which also promise great bargains to the customer compete with shopbot services. Although coshopping services fail to offer such a wide variety of goods and lack fast delivery, their strength might consist in providing bigger bargains through concentration of market power. This also might hold for consumer driven pricing services. Which one of these services enables price-sensitive consumers to realize the best bargain still has to be seen.

Also, it has to be investigated whether the appearance of cybermediaries lead to greater price sensitivity and therefore promotes vanishing brand loyalty. Brynjolfson and Smith (2000b) investigated whether shopbots substantially weaken the market positions of branded retailers, brand name and customer loyalty. Actually, one does not expect brand recognition to be as important on electronic markets as on physical markets, but in fact it is. By analyzing consumer behavior through panel data gathered from an Internet shopbot in the market for books, they could verify that more well-known online retailers and retailers a customer has dealt with before could maintain a 3.1 % – 6.8 % margin advantage, respectively, in contrast to less known retailers. Amazon has invested millions in developing its online brand position. Being one of the well-known retailers, prices quoted by Amazon are constantly higher than

prices found via shopbot services. Because of its prompt delivery practices, Amazon is widely regarded as a legitimate business actor. Intangible qualities such as brand recognition thus also seem to play an important role in purchase decisions than the actual price.
Can companies such as Amazon sustain their current competitive position? Right now we are situated in the founding phase of cybermediaries. New cybermediaries can easily enter electronic markets. But as electronic markets mature, some cybermediaries will soon have established their own brand name. Offering additional services like warranties, fast delivery, smooth handling of payment and queries or complaints as well as a good product support will help to establish good reputation so that the margin advantages of branded retailers may shrink. As can be observed, an increasing number of coshopping services offers warranties for their mediated goods. Also some of the directories and search sites described above are beginning to provide evaluations of sites.

In particular for small firms this development offers new perspectives – besides the general facilitation of entering the market, the transparency of the market increases and one may participate in reputation. Established intermediaries may place their reputation at the disposal of small and new intermediaries. This will lower market entry barriers and promote competition.

3.2 Impact on firm strategies

As shown above cybermediaries endanger firms‘ profit margins by decreasing buyer search costs. Brynjolfson and Smith (2000a) examined price differences between online and bricks-and-mortar stores for books and CDs with respect to absolute level, dispersion and frequency of change. They found that prices on the Internet are significantly lower (9 to 16 percent). Taking shipping and handling costs as well as other costs associated with the online purchase into account (sales taxes), prices on the Internet are still far lower than prices in stores. Second, the variance in prices is lower on the Internet than in physical markets. The remaining price dispersion in the market of homogenous goods is explained by the authors by brand equity of the merchant which carries significant weight even on the Internet. Like Bailey (1998a), they also found that Internet stores are far more sensitive to price changes and that Internet sellers change their advertised prices more often and by significantly smaller

margins than offline outlets. With menu costs only being a fraction of the ones in physical markets, firms can increase their turnover enormously by carrying out only a marginal price change if e.g. slightly undercutting the prices of the competitors leads to a top position in a shopbot comparison table. Concluding that the Internet helps to create a world of frictionless commerce with increasing competition, firms will find it increasingly difficult to generate sustainable profits without finding new strategies for profit margin preservation.

Some strategies that are discussed in literature are only transferred from traditional to electronic markets. For instance, with regard to information or digital goods that are characterised by low reproduction and distribution costs, a well-known strategy to increase profits is bundling. Given that the costs of reproduction are negligible and that no goods are incluced that provide negative utility – each of these conditions seem easily satisfied for the Internet used as a sales channel – Bakos and Brynjolfsson (2000) found that selling a bundle will be “remarkably superior” with respect to seller profits and welfare than selling each good of the bundle individually. Because a collective bundle is more attractive to a wider audience, more consumers will purchase it, enabling the seller to gain higher profits. Bakos and Brynjolfsson (2000) conclude that a multigood monopolists will increase profits by bundling their goods instead of selling them individually. Single-good firms on the other hand should sell their good to an intermediary that will incorporate the good into their multiproduct bundle. Compared to other single-good retailers, the competitive position of bundlers is much better. Whenever a customer can choose to buy a single good or a bundle that contains the good, he will choose to buy the bundle.

With respect to commodities, firms could apply the traditional strategy of product differentiation. The variety of goods thus has the effect that firms are no longer competing with one another for the price of identical products. Especially the rise of price-matching devices such as shopbots will lead firms to differentiate their products on grounds other than price (Varian 1999). For example, offering consumer-specific versions of a given product is a form of differentiation that is likely to occur. Another approach are loyalty programs for shopping which are to generate consumer lock-in. Complicating the comparison of products, firms avoid vicious price competition. This method is consistent with the findings of Eaton and Grossman (Eaton, Grossman 1986). When firms are able to choose the level of differentiation before presenting product information, the unique equilibrium will consist of

firms choosing the maximum level of differentiation possible and full revelation of product information. Following a product differentiation strategy, firms increase profits by providing consumers with relevant product information (Lewis, Sappington 1994). Therefore, cybermediaries providing comparison shopping services have to ensure that they enable firms to supply the customer with this kind of information. At present the services of intermediaries are mainly limited to comparing the prices of different suppliers.

A new strategy of maintaining profit margins for firms consists in the exploitation of the interactive nature of the medium which is not only very conductive to develop customer relationships (Hoffman, Novak, Chatterjee 1995), it also enables firms to uncover consumer tastes without them being aware of it and without having to look at their purchase decisions. By employing “cookies”, a firm can monitor customers‘ navigational and purchasing behavior. When revisiting the retailer’s web site, the cookie placed on the user’s computer reveals all information about the customer‘s surf and purchase behavior which were collected during previous visits. Combined with demographic information, a retailer might be able to customize prices accordingly, maximizing his revenue.

In markets where comparison shopping cybermediaries exist, firms can consider the customer’s use of such intermediaries for price discrimination. Using shopbots is a signal for the customer’s price sensitivity. Thus retailers may use this information as part of a price discrimination strategy – charging lower prices to shopbot consumers than to those consumers who visit their web site directly. As customers visiting a web site via a shopbot are more sensible to shipping and handling fees (Brynjolfsson, Smith 2000b), retailers should further adopt different pricing strategies for shipping costs for shopbot consumers than they would for consumers visiting their site directly. Implementing more advanced cybermediaries such as Books.com that offer pricing facilities, firms can engage in a form of third-degree price discrimination.

4 Concluding remarks and outlook on future research

As electronic marketplaces become increasingly important to carry out business-to-consumer market transactions on both the consumer and producer side, new intermediary services are developed, offering aggregation, facilitation, matching and pricing services in accordance with the need resulting from new commercial environments.

In particular cybermediaries providing searching and matching services have a major impact on costs occurring during the search of price and product information. These cybermediaries offer services which range from simple search assistance via search engines to more sophisticated services that provide comparison shopping and collective order. The underlying business models of the various cybermediaries may differ with respect to how revenue is generated. Some cybermediaries only charge buyers or sellers, other gain profits by offering marketing services such as provision of banners, links, interstitial or interactive games. So far, the research on cybermediaries suggests that they will have a significant effect on the way commercial transactions take place and, as electronic markets mature, will have significant impact on market performance.

Decreases in search costs below a certain level may destabilize a monopolistic equilibrium and dissolve seller profits. In markets for homogenous goods price competition increases while market power of sellers is reduced accordingly. In markets for differentiated products, seller profits decline smoothly as search costs are reduced. If search costs are low enough, buyers will take all product offerings into account and will purchase the one serving best their needs, resulting in a socially optimal allocation (Bakos 1997).

But one may not yet predict whether lower search costs and price-matching policies lead to something approximating marginal-cost pricing and vigorous competition, as electronic markets mature. Implementing product differentiation and price discrimination strategies, firms may prevent great profit margin deterioration. Theoretical analyses offer no firm conclusion about how lower search costs will affect consumer prices in the long-run. Although a lot of research has been done in the field of search costs, little has been done to

model the search basis for the role of intermediaries and especially for the role of cybermediaries. Modeling the effects of decreasing search costs, Internet specific characteristics have to be taken into account. Unlike the common method of sequential search which forms the basis of most models, the search method underlying the Internet is different. Cybermediaries and in particular shopbots allow buyers to compare many offerings simultaneously.

Keeping the fact in mind that we are still in the founding phase of cybermediaries, the question is which kind of services will be established. This mainly depends on which distribution channels the firms choose within the scope of electronic commerce. Taking into consideration that the possibilities of distribution have changed strongly because of the progress in the field of Information Technology, firms have to decide on the most efficient way of distributing their goods. Thereby, they also have to consider different possibilities resulting from product differentiation opportunities as well as new flexible pricing methods emerging from electronic commerce. With regard to pricing strategies an interesting aspect may be to analyze the formation of supply which derive from the ability to make use of the information generated from cookies to set a price or to exploit access data information, i. e. to analyze optimal price setting strategies taking into account from where the user entered the page whether from a shopbot or a search engine. But regarding the variety of business models, it has to be seen which business models will have a chance to survive in the long term and which impact results from them.

References

Bailey, Joseph P. (1998a); Electronic Commerce: Prices and Consumer Issues for Three Products: Books, Compact Discs, and Software, Organisation for Economic Co-Operation and Development, OCDE/GD 4, http://www.rhsmith.umd.edu/tbpp/jbailey/pub/phdthesis.pdf, downloaded 2000-12-22.

Bailey, Joseph P. (1998b); Intermediation and Electronic Markets: Aggregation and Pricing in Internet Commerce. Ph.D. Thesis, Technology, Management and Policy, Massachusetts Institute of Technology. http://www.rhsmith.umd.edu/tbpp/jbailey/pub/phdthesis.pdf, downloaded 2000-12-22.

Bailey, Joseph P.; Bakos, Yannis (1997); An Exploratory Study of the Emerging Role of Electronic Intermediaries. In: International Journal of Electronic Commerce, Vol. 1, No. 3.

Bakos, J. Yannis (1997); Reducing Buyer Search Costs: Implications for Electronic Marketplaces. In: Management Science, Vol. 43, No. 12.

Bakos, Yannis; Brynjolfsson, Eric (2000); Bundling and Competition on the Internet: Aggregation Strategies for Information Goods, http://www.stern.nyu.edu/~bakos/, downloaded 2000-01-16.

Brynjolfsson, Erik; Smith, Michael D. (2000a); Frictionless Commerce? A Comparison of Internet and Conventional Retailers. http://ecommerce.mit.edu/research/papers.html, downloaded 2000-11-09.

Brynjolfsson, Erik; Smith, Michael D. (2000b); The Great Equalizer? Consumer Choice Behavior at Internet Shopbots. http://ecommerce.mit.edu/research/papers.html, downloaded 2000-11-09.

Chircu, Alina M.; Kauffman, Robert J. (1999); The “EBay of Blank”: Digital Intermediation in Electronic Commerce. http://www.misrc.umn.edu/wpaper/default.asp, downloaded 2001-03-24.

Chircu, Alina M.; Kauffman, Robert J. (2000); Reintermediation Strategies in Business-to-Business Electronic Commerce, International Journal of Electronic Commerce, Vol. 4, pp. 7-42.

Eaton, Jonathan; Grossman, Gene M. (1986); The Provision of Information as Marketing Strategy. In: Oxford Economic Papers, Vol. 38, No. 3, pp. 166 – 183.

Hoffman, Donna L.; Novak, Thomas P.; Chatterjee, Patrali (1995); Commercial Scenarios for the Web: Opportunities and Challenges. http://www.ascusc.org/jcmc/vol1/issue3/hoffman.html, downloaded 2000-11-01.

Kephart, Jeffrey O.; Greenwald, Amy R. (2000); Shopbots and Pricebots. www.cs.brown.edu/people/amygreen/publications.html, downloaded 2000-11-01.

Lewis, Tracy R.; Sappington, David E. M. (1994); Supplying Information to Facilitate Price Discrimination. In: International Economic Review, Vol. 35, No. 2, pp. 309 – 327.

Malone, Thomas W.; Yates, Joanne; Benjamin, Robert I. (1987); Electronic Markets and Electronic Hierarchies. In: Communications of the ACM, Vol. 30, No. 6, pp. 484 – 504.

Moukas, Alexandros et al. (2000); Agent-Mediated Electronic Commerce: An MIT Media Laboratory Perspective. In: International Journal of Electronic Commerce, Vol. 4, No. 3, pp. 5-21.

Sakar, Mitra Barun; Butler, Brian; Steinfield, Charles (1995); Intermediaries and Cybermediaries: A Continuing Role for Mediating Players in the Electronic Marketplace. http://www. Ascusc.org/jcmc/vol1/issue3/sakar.html, downloaded 2000-10-15.

Salop, S. (1979); Molopolistic Competition with Outside Goods. In: Bell Journal of Economics, Vol. 10, No. 1, pp. 141 – 156.

Spulber, Daniel F. (1999); Market Microstructure: Intermediaries and the Theory of the Firm. Cambridge University Press.

Stoltenberg, Silke; Exklusivstudie Preisvergleiche. http://wiwo.de/WirtschaftsWoche/Wiwo_CDA/0,1702,13054,00.html, downloaded 2000-12-01.

Varian, Hal R. (1999); Market Structure in the Network Age. http://www.sims.berkeley.edu/~hal/people/hal/papers.html, downloaded 2000-12-01.

Wigand, Rolf T.; Benjamin, Robert I. (1995); Electronic Commerce: Effects on Electronic Markets. http://www.ascusc.org/jcmc/vol1/issue3/wigand.html, downloaded 2000-11-13.