



Web-based Procurement New Roles for Intermediaries

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Abstract. The electronic markets vs. electronic hierarchies debate initiated by (Malone et al. 1987) has been superseded by the discussion about dis- or reintermediation in the electronic marketplace. Many of the arguments given for either side are equally correct—because the arguments have been applied to different domains in different situations from specific perspectives—and yet the debate falls short of covering the complexity and dynamics of the ongoing market structure change. The goal of this paper is therefore to develop a more differentiated framework that facilitates the understanding of chances and threats resulting from inter- and cybermediation. The framework suggests to distinguish roles, opportunities and threats for cybermediaries in different situations. While the framework is meant to structure the debate in general, we will focus on public sector procurement to show its application.

Key Words. intermediary, cybermediary, market, hierarchy, network, dis-, re-, cybermediation, public procurement, electronic procurement

1. Assessing the Current Debate

1.1. Market vs. hierarchy

Malone et al. (1987) used and applied transaction cost economics to argue that increased use of IT will facilitate a “move-to-the-market”. Reduced information and coordination cost, better possibilities of product representation, standardization effects etc. will give market-like coordination a comparative cost advantage over hierarchical coordination.

This argument has been challenged in the following years by a number of authors which have added further factors that need to be considered such as non-contractible issues, e.g., quality and trust, (Bakos and Brynjolfsson, 1993), relationship-specific investments, small number bargaining, product attributes, and demand and technological uncertainty (Clemons and Reddi, 1993). Consequently these

authors hypothesize a move-to-the-middle, i.e., a growing importance of network relations. In addition, and in partial contrast to the predominantly economic reasoning, Holland and Lockett (1994) argue that the coordination form chosen by companies is less the result of transaction cost assessment but rather the result of strategic decisions.

1.2. Dis- vs. reintermediation

As the Web has brought a much wider and faster proliferation of electronic commerce than many of the protagonists have anticipated, the focus of debate has shifted somewhat from the issue market vs. hierarchy to the question of dis- vs. reintermediation (Benjamin and Wigand, 1995; Sarkar et al., 1995). While both debates relate to market structure changes, they can be seen as complementary. For example, disintermediation might indicate a trend towards hierarchy, as functions of intermediaries are reintegrated. On the other hand, disintermediation might be interpreted as a trend from centralized markets with market intermediaries towards decentralized markets.

The disintermediation thesis. Benjamin and Wigand (1995) have hypothesized effects of the proliferation of the Web on the restructuring and redistribution of profits among the stakeholders along value chains. While the consumers are likely to benefit from extended information and reduced prices, intermediaries are facing the risk of being bypassed by suppliers who try to capture the opportunity of (re-)establishing an electronic direct sales channel and to reduce sales commissions (disintermediation).

The rebuttal: cybermediation. Based on transaction cost comparisons, Sarkar et al. (1995) argue that

although the Web apparently has lowered transaction costs of the disintermediated transaction, a number of factors in the emerging electronic marketplace have contributed to making intermediated transactions an attractive option where $tc_{SC} > tc_{SI} + tc_{IC}$ (the cost of supplier-customer transactions (tc_{SC}) are higher than the sum of supplier-intermediary (tc_{SI}) and intermediary-customer (tc_{IC}) transactions).

Sarkar et al. give another, perhaps even more important, argument by asserting that intermediaries must not be seen as pure transaction cost minimizing actors. They often add value to transactions by providing distinctive services. Many new intermediaries provide services enabled and leveraged by the possibilities of the emerging information and communication infrastructure (ICI) services, mainly the Internet or the Web. With the proliferation of the Internet, such actors have emerged by offering services which quickly respond to the requirements of the electronic marketplace. These new actors are often termed cybermediaries, *intermediaries in cyberspace*. By negotiating favorable deals, bundling and pooling services on the supply side and demand on the other side, cybermediaries achieve cost advantages for intermediated transactions.

1.3. The synthesis: Combining intermediation options

The main lesson from the ongoing debate is that there is no deterministic, transaction cost based mechanism driving intermediaries out of the market. While, on the one hand, transaction costs put pressure on some traditional intermediaries and may lead to disintermediation, new business models evolve, on the other hand, providing rich opportunities for re- and cybermediation.

As a result, there is a plethora of mixed-mode governance forms, i.e. combinations of hierarchical, market and network mechanisms that companies employ sequentially or concurrently (see also Klein, 1996). Recent developments in the tourism industry illustrate a mixed-mode industry structure driven by the dynamics of inter-, dis- and cybermediation (Giaglis et al., 1999).

1. travel agents intermediate transactions between tourism principals and customers
2. CRS/GDS intermediate the relationship between tourism principals and customers with services based on the capabilities of data storage, informa-

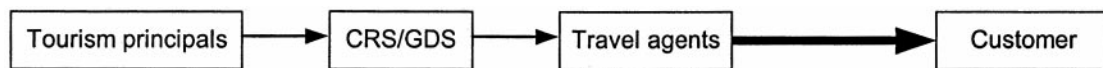


Fig. 1. Traditional industry structure in tourism.

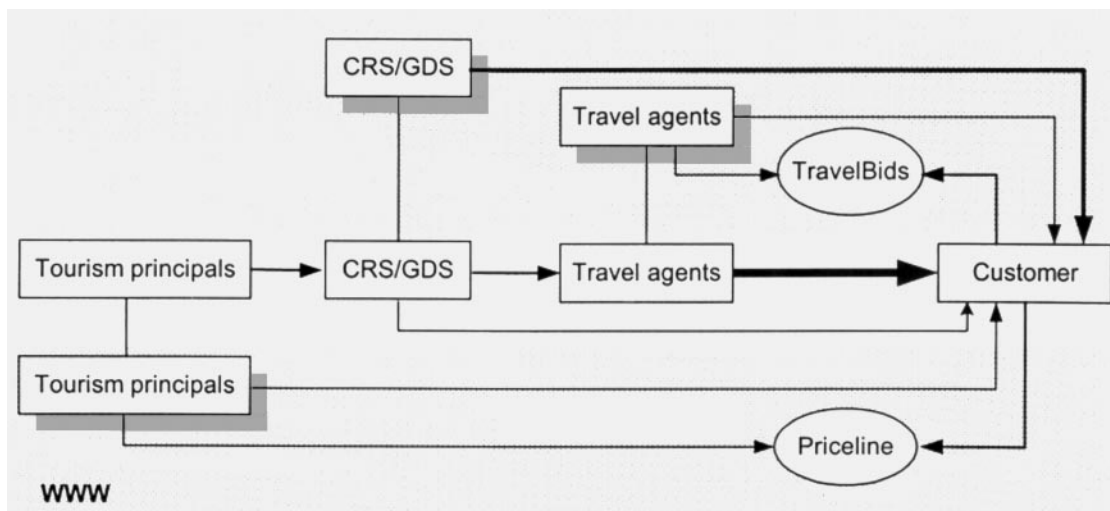


Fig. 2. Cybermediated industry structure in tourism.

- tion retrieval and transaction processing in the 70s (an early form of cybermediation: supplier—retailer)
3. tourism principals attempt to sell direct, using the Web as a medium for business transactions (disintermediation: suppliers bypass retailers);
 4. travel agents use the Web as well to develop differentiated value propositions and reinforce their position (reintermediation: retailer);
 5. new players like TravelBids.com and Priceline.com enter the market and position themselves between customer and supplier or between customer and traditional intermediary, while incumbent players like the CRS/GDS establish sales channels to consumers (cybermediation: new intermediaries enter the electronic marketplace leveraging the potentials of the Web and use them to overcome shortcomings of incumbent industry players—and probably for fear of cannibalizing their existing business).

Fig. 1 depicts the traditional scheduled flight ticket sales channels in tourism. Fig. 2 outlines the current structure leveraged by the potential of Internet and WWW.

On balance, market structure changes are characterized by an increasing differentiation of market channels. The resulting outcome is a mixed-mode structure that represents a continuum of combinations of traditional channels, dis-, re- and cybermediation.

2. Extending the Perspective: a Framework for Analysis

In order to explain the rich picture of the mixed-mode structure we will extend the transaction cost perspective. In addition to different intermediary roles, industry settings and contingencies have to be considered in order to develop a broader and more differentiated understanding of intermediaries' opportunities:

1. Roles and linkages: players' functions and roles as well as the main business relations assigned to the roles. The linkages capture the quality of relationships to the main business partners.
2. Furthermore, the business environment has to be specified. As the variety of inter- and cybermedi-

aries in business-to-business or business-to-consumer markets, for distribution or procurement, with a broad or narrow set of functions is too diverse to be classified. We try to cover it by a number of contingencies: industry, product and transaction characteristics which determine the chances and threats related to the different roles.

3. There is no determinism between contingencies and cybermediaries' roles, instead there are varying degrees of freedom for strategic choice. We therefore take into account the strategic opportunities and threads related to different roles in different settings.

2.1. Roles and linkages

Several lists of roles and functions of inter- and cybermediaries are given in the literature, e.g., typical functions of retailers (Gümbel, 1985), facilitation of knowledge and information, supply and demand aggregation, supplier and customer matching, trust, and marketing information (Bailey, 1997). In general terms, the intermediary's role is based on its ability to overcome inefficiencies of decentralized markets. There are two basic functions cybermediaries can build their businesses on: search and exchange (Choudhury and Konsynski, 1998).

Search or information economies. As the emergence of the Web has multiplied potential relations between suppliers and customers, intermediaries have positioned themselves to offset part of the problems caused for suppliers and customers in terms of market transparency, information about market partners, issues of opportunism and trust, etc. The value intermediaries can provide depends on the transaction characteristics that reflect the quality of the relation between suppliers and customers (r_{CS}) and on the relations they have established or which they are able to establish between customers (r_{IC}) and suppliers (r_{SI}).

Exchange or allocation economies. As the efficiency of transactions depends largely on their volume and predictability, intermediaries are pooling and buffering demand (r_{IC}) for the suppliers. This, in turn, provides value for the customers if they gain access to volume discounts through the intermediaries' demand pooling (see for example <http://www.accompany.com>). Furthermore customers

benefit through the higher level of experience of the intermediaries which leads to more efficient transactions with suppliers (r_{SI}).

In order to capture the role and the value propositions of intermediaries, we distinguish three generic settings (Fig. 3):

The linkages between the players which encapsulate the quality of the relations can be described in various ways: along the lines of governance structures (market, hierarchy, network), in terms of contractual relations, power, customer ownership, transfers, exclusivity etc. A typical role of intermediaries is to manage and balance the relations between multiple suppliers and multiple customers: depending on the respective situational requirement, they are bundling, pooling, buffering, linking, isolating, storing, trans-

forming etc. in order to achieve a match between differing interests and requirements of suppliers and customers. Table 1 gives some examples of intermediaries' roles in retail and the benefits to the business partners linked.

The stylized roles summarized in Table 1 can be illustrated by current examples on the Web:

Demand aggregation: accompany. Accompany (<http://www.accompany.com>) is an innovative online buying service. Accompany is trying to initiate virtual customer pools so that individual customers can benefit from volume discounts offered by suppliers. Discounts are thus not the result of negotiations but of Web-enabled pooling and aggregation of demand. Accompany contributes to shifting bargaining power

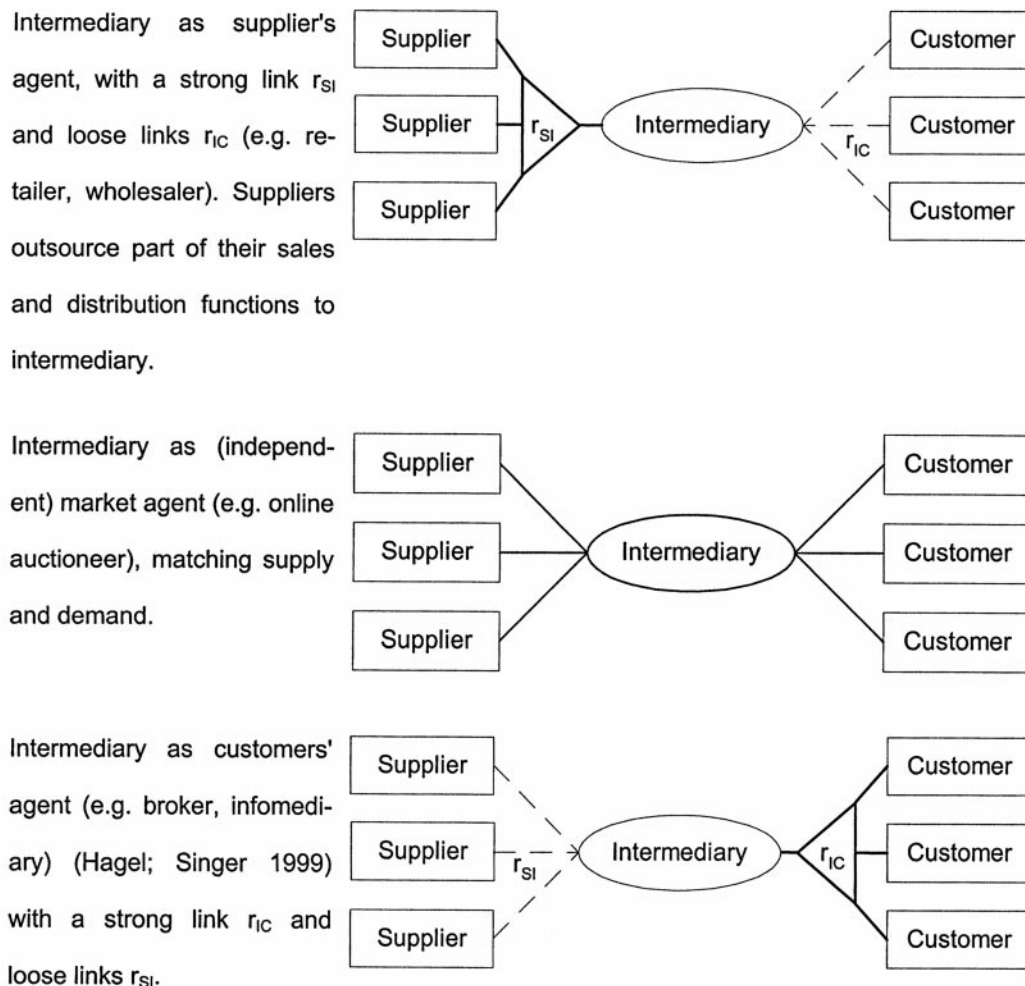


Fig. 3. Stylized intermediary roles.

Table 1. Comparison of intermediaries' roles in retail business

Model Actor	Demand aggregation	Reverse auction	Demand collection
Role of intermediary	Identifying attractive products with significant volume discounts and pooling demand; reduce coordination cost for participants.	Information platform in order to limit communication cost and expose bids to numerous travel agents.	Broker for the customers and has established an efficient process to forward the customer offers to multiple airlines.
Suppliers' benefit	Suppliers gain sales volume.	Suppliers get additional sales at a lower price.	Suppliers have an additional option to sell their products at a customer-fixed price using a differentiated channel. They can also learn about customers' preferences
Customers' benefit	Individual customers who pool their demand get access to significant volume discounts.	Customers can specify their offers and might get small discounts.	Customers can specify their offers with a fixed price and some flexibility regarding the other attributes.

to customers while at the same time providing safeguards against frictions in the service delivery. For running aggregation processes, the time limit for joining is made transparent on the Web. E-mail notification is offered. The business model of Accompany is not restricted to particular product features but rather to markets where suppliers are offering volume discounts and where customer preferences can be pooled. Accompany negotiates with suppliers to identify and get volume discounts on popular products.

Reverse auction: travel bids. TravelBids (<http://www.travelbids.com>) is a reverse auction. In contrast to traditional auctions, customers take an active role to specify their preferences for tourism offerings. Customers have a wide range of attributes which they can specify or intentionally leave open in order to improve their chances to get low-priced offers. On this market, all bids are visible, for everyone to see, so prospective customers can view other listings and see the results. The bidding period can be set between 1 and 72 hours. Unsuccessful bids can be repeated. Customers' requests are posted on TravelBids, which is a specialized electronic market. TravelBids' fee of USD 10 for successful bids is split between travel agent and customer. On the supplier side, not tourism principles but travel agents bid to fulfill the demand. Travel agents use their knowledge to identify flights

that fit the customers preferences and use part of their commission in order to gain additional orders.

Demand collection: priceline. At a first glance, Priceline (<http://www.priceline.com>) appears to be a similar solution: based on the assumption that supplier-side fixed prices do not always lead to an optimal allocation of products and services, Priceline has set-up a market platform for airline tickets, new cars and mortgages. Customers can specify their preferences including the price. Priceline then advertises these binding offers to airlines, car companies, or financial services companies who can decide whether they want to fulfill this additional demand at the listed price. Airline customers do, however, not give a detailed specification but specify only day, place of departure and place of arrival and request a flight operated by any major airline. In this way the airlines have sufficient scope to fulfill the demand if they wish so to do, and the chances that the offers are met is increased. During the second week of January 1999, 10,000 tickets and 2,000 hotel rooms were sold via Priceline while about 50,000 offers were not met. Priceline earns a commission for every sold ticket of USD 10–20. The specified offers are forwarded sequentially in a highly efficient and patented process to the potential suppliers. Customers' offers are binding and have been substantiated by a credit card authorization. The

airlines can decide depending on their current load factor and price policy whether they want to take additional customers at the listed price. Feedback is given to the customers within hours.

2.2. Contingencies

The analysis of several cases (e.g., Benjamin and Wigand, 1995; Bailey, 1996; Giaglis et al. 1999) gives anecdotal evidence that dis- or reintermediation choices reflect industry characteristics as much as the influence of technology.

Channel characteristics. Characteristics of the industry or—in a narrower view—the channel to be intermediated such as

- supply-demand-ratio, fragmentation of supply, latent or fragmented demand,
- degree of market transparency,
- allocation inefficiencies,
- degree of regulation and regulation issues,
- degree of concentration,
- intensity of competition,
- value chain structure (established roles of intermediaries, role of suppliers),
- degree of price volatility and price discrimination,

determine the entry barriers and possible roles and business models for new intermediaries. For example, players in historically protected markets are typically less agile and flexible to adapt to new challenges. Markets with a high level of price discrimination theoretically pose numerous options for arbitrage activities if the intermediaries circumvent the obstacles set-up by the incumbents to protect their turf.

Product/service characteristics. Industry characteristics are largely influenced by product and production characteristics as well as distribution structures. This is especially the case for services and information products that are sold electronically. (Rayport and Sviokla, 1994) call this kind of market electronic “marketspace” in contrast to the electronic marketplace, where physical products are sold. Rayport and Sviokla distinguish product or service content, context and infrastructure. Configuration of content,

context and infrastructure are often challenged and realigned as a result of innovations.

Several criteria that determine the opportunities for intermediaries are:

- customer price sensitivity (price sensitivity vs. brand loyalty),
- product complexity and degree of standardization,
- peculiarity (unique service offerings vs. commodities),
- degree of standardization and exchangeability of products and services,
- possibilities and cost of bundling and configuration,
- (marginal) production cost, and
- perishability.

Table 2 illustrates opportunities for intermediaries induced by characteristics of different information products and services, respectively. It compares three products by characteristics which determine suppliers’ incentives for flexible pricing and setting up additional marketing channels which might generate additional volume under restricted conditions. Under these conditions, (new) intermediaries are beneficial for suppliers, as they enable them to establish a separate market without affecting their prime market and established marketing channels.

Moreover, it has to be noted that technological innovations often fundamentally change product characteristics in the electronic marketplace and thus offer opportunities for fast movers to redefine established value propositions.

Transaction characteristics. We are extending the arguments above and have listed a number of cost drivers which result from doing business with multiple vendors. These drivers determine the transaction costs for customers. Table 3 indicates ways for intermediaries to reduce these costs.

2.3. Strategic opportunities and threats

Cybermediaries build their business on roles and functions evolving within the virtual marketplace (and marketspace). In our analysis a number of such functions have already been highlighted:

- information services,
- efficient coordination of exchange relations,
- balancing suppliers’ interest and customer needs,

Table 2. Comparison of product characteristics

Products Characteristics	Online media products	Ticket for scheduled flight	Mortgage
Initial production cost	High level of fixed cost (first-copy cost).	High level of fixed cost (aircraft, crew, fuel, etc.).	Fixed cost for product design and infrastructure.
Marginal cost for additional product or copy	Marginal cost close to zero.	15–20% of overall costs are related to the number of passengers (ground service, food, etc.) within a given contingent of seats.	Marginal cost is related to opportunity cost, i.e., alternative allocations of the capital.
Individualization cost	Fixed cost for initial IT solution (individual filters etc.). Variable cost for content selection and combination (not for creating new content) close to zero.	Fixed cost for setting-up yield management and booking systems, low variable cost for price discrimination based on service level and contractual features: right to return or change ticket, advance booking, restrictions regarding timing etc.	Low cost for individualization, however, long term effects result from the decisions taken.
“Shelf-life”	Depending on content, the value of stock prices etc. depends on the delay between event and publication.	Flight schedule defines the shelf life, after the gate has closed the over-stocked seats are worthless.	Not allocating money to a mortgage leads to a loss in interest payments if the money is not allocated at all or a loss of a fraction of the interest in case short term interests are lower.

Table 3. Potential role of intermediaries related to transaction characteristics

Transaction characteristics	Potential impact of intermediary
Information asymmetries	Reducing information asymmetries for customers and suppliers, facilitating supplier and customer matching
Uncertainty	Reducing uncertainty
Frequency	Increasing frequency of transactions for customers and suppliers
Asset specificity	Reducing asset specificity
Risk of opportunism	Reducing the risk of fraud as trustworthy third party
Confidence	Providing a secure platform guaranteeing privacy
Execution cost	Providing electronic payment, clearing and logistic services

- adding distinctive value, typically based on the potential of the new ICI,
- specific exchange institutions such as trust and credibility mechanisms.

If a new cybermediary provides these functions, the position of suppliers and established intermediaries is threatened. Thus, and as the visibility of business models on the Web is very high, suppliers might attempt to capture some of the cybermediaries' value

propositions themselves. Even new cybermediaries might try to modify value propositions and capture some market share. Tourism industry examples like Priceline.com or Travelbids.com illustrate how cybermediaries can leverage IT for a targeted customer group with known transaction characteristics. However, both business models are so similar that the respective companies put much emphasis on differentiating themselves and depend on maintaining a balance of incentives for customers and suppliers as

well. The sustainability of intermediaries' value propositions depends on their substance, their attractiveness, the market structure and most importantly, the achieved customer base and customer relations. Functions based on information economies like matching and identifying the right business partners are more vulnerable than features based on exchange economies like pooling.

Factors increasing the defensibility of the position of suppliers in relation to inter- or cybermediaries are product and service design, establishment of a learning relationship with customers, and the opportunity to establish entry barriers.

Overall, opportunities in an emerging marketplace based on leveraging IT, using market malfunctions and arbitrage opportunities, and looking for complementarities are volatile, and we are observing considerable market structure dynamics in the electronic market.

3. Designing a Business Model for a Procurement Intermediary

The proposed framework is not only meant to analyze existing markets and the roles of intermediaries but can also be applied to guide the process of planning the business of a cybermediary. To illustrate the application of the framework we will focus on public procurement in Europe, especially Germany, which is a promising application area because the potential impact of electronic commerce and cybermediation is extremely high. The main potential is in price reductions by increasing market transparency, by generating higher order volumes and by dodging price discrimination and market segmentation strategies of suppliers. But even the reductions in administrative cost in the procurement processes have been estimated to be about US\$725 million in the USA in 1997 (Prasser and Müller, 1999). In the US, this potential has early been recognized. It led to a governmental initiative towards the development and introduction of a common procurement system obligatory for all Federal Government institutions. Based on the Federal Acquisition Streamlining Act (FECAT, 1994) platform standards, institutions and a regulatory framework for the tendering process have already been developed. This approach, however, cannot be easily transferred to the European procure-

ment sector because the European Union covers 15 sovereign national states with different administrative processes and organizational levels and each state has its own national laws and regulations. Thus, different national systems inter- or cybermediating the procurement process will prevail for the foreseeable future.

3.1. The setting

The setting in the public procurement channels can be characterized by a number of contingencies introduced in chapter 2.2.

Channel characteristics. Public procurement in Germany is a highly specialized and regulated field. Regional or city councils, schools, and various public service and administrative units are ordering products and services. They are linked to public procurement offices that do purchases of larger amounts and higher values in order to guarantee favorable prices and delivery conditions. Fig. 4 depicts the structure of public procurement.

However, public procurement is subject to several restrictions:

- Public procurement is bound to prescribed principles of order placement in order to assure a fair solicitation process and avoid fraud; transactions are supervised by a central authority, the Bundesrechnungshof.
- Procurement offices typically have only limited knowledge about product qualities and offers (information asymmetry) as their scope and experience is limited to some well known products often supplied by regional suppliers. Product and/or supplier experts are distributed over various requisition units.
- Volume price reductions are only partly exploited since different procurement offices buy the same goods and services independent of each other.
- Decisions for order placement are regularly biased by regional economic policy.

As a result, the theoretical market potential for supply—ideally a Europe-wide procurement process (EU call for tenders)—is not exploited and exceptional conditions in price, quality and service are seldom gained (Pergioudakis et al., 1997). Moreover, economies of scale are rarely achieved as most standardized low price products are bought separately by the requisition units, the administration offices,

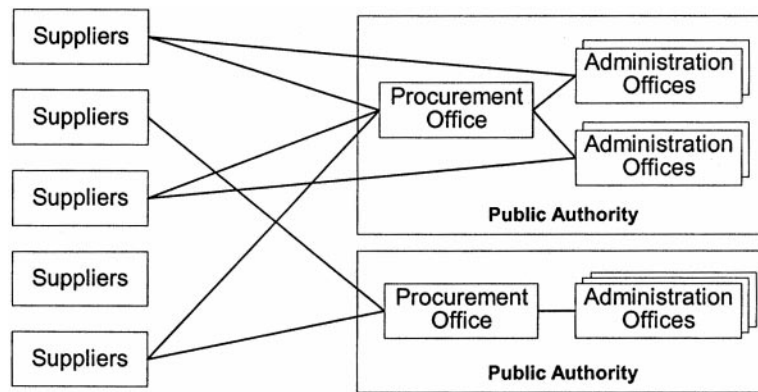


Fig. 4. Traditional setting in public procurement.

without making use of the high potential of volume discounts possible for commodities. Purchases of investment goods are usually done by the procurement offices. Although these offices often bundle the demand of several local administrative offices, the total volume is relatively low as the number of offices included is fairly small.

Transaction characteristics. Transactions in public procurement are strongly regulated. The process of order placement is prescribed in detail. There are different procedures (free order placement, limited, national and EU-wide call for tenders) that have to be applied according to order volume. Information gathering for high value orders must be achieved through a formal call for tender where requirements are made public and competing offers are solicited. After the bids are submitted, there is no possibility for further bargaining. A limited call for tender applies for the procurement of a high end personal computer for instance. It requires the solicitation of three offers from which the cheapest has to be taken. Replacement orders or highly specific requests can be placed free hand.

Though the call for tender is intended to assure competition and best prices in the market this effect is often limited by strong relationships to regional suppliers. Often, personal contacts, knowledge and trust have gradually evolved with these relationships. As a consequence, procurement offices are locked in such relationships up to a certain extent.

Product/service characteristics. The array of products and services ranges from school to fire brigade equipment. Among standard products like office

equipment, there is a high proportion of specialized products for which no market exists outside the public sector. Other products and services are bundled according to special needs in the public sector. This leads to strong product or service specificity tying procurement offices close to suppliers, thereby gaining strong (monopoly-like) bargaining positions.

3.2. Roles and linkages

There is a broad set of functions a cybermediary might build its business on:

- provide market and product information,
- reduce information cost,
- support product and service evaluation,
- speed up requisite-delivery-cycle,
- aggregate demand, and
- provide additional service for municipalities.

Table 4 describes the functions and links of five stylized roles for cybermediaries in public procurement. The former three reflect information economies, the latter two exchange economies.

Associated with the roles in Table 4 are linkages of different quality and intensity. Generally, the linkages can be distinguished in supply side linkages (information and exchange), customer side linkages (consultant and demand aggregator) and the middle position of a trader (see Fig. 3). The intensity of linkages increases with the role's core function from information economies (information broker, information exchange) to transaction economies (demand aggregator, trader). More intensive linkages imply higher investments on the one hand but a more stable and better defensible positions on the other hand.

Table 4. Stylized roles for public procurement intermediaries (*IC*: intermediary—customer link; *IS*: intermediary—supplier link)

Role	Functions	Links
Information Broker	Information search on customer demand, identification of qualified vendors, acquisition of competitive offers for customer bids, active solicitation of suppliers/bidders on call for tenders	<i>IC</i> : trust-based relation <i>IS</i> : open information exchange
Information Exchange	Collect, integrate and compare information about suppliers and products (multi-vendor catalogue)	<i>IC</i> : broadly accepted information channel <i>IS</i> : access to product and price information
Public Procurement Consultant	Activate and integrate expert knowledge, expert platform for the exchange of know how and experience, product and supplier validation, support for customer requirements specification, match customer requirements to products, combine products/services to solutions	<i>IC</i> : expert network <i>IS</i> : cooperative information policy
Demand Aggregator	Negotiate volume discounts with suppliers/vendors, collect, pool and aggregate demand for negotiation volumes, prepare transactions	<i>IC</i> : trust in contract fulfillment <i>IS</i> : bargaining relationship
Public Sector Trader	Demand forecast, purchase on different (international) markets, and sell to public institutions	<i>IC</i> : bargaining relationship <i>IS</i> : bargaining relationship

3.3. Opportunities and threats

The roles proposed in Table 4 open different opportunities for a cybermediary in the marketplace. Each role is linked to a specific set of success factors and revenue models. Success depends on customer acceptance and is threatened by possible counteractions of suppliers and the competition of new entrants.

The roles based on search economies are mostly threatened by imitation through new or established players. For example, trade journals specialized on the public sector might diversify into electronic information supply. Federations or interest groups in the public sector could extend their information and consultancy services, as well. Or established broker services could turn to the public procurement sector.

The roles based on transaction economies are more defensible because bypassing is risky for customers and suppliers. Nevertheless, procurement offices might use information and allocation services provided by a cybermediary and still bypass it when executing the transaction. There are already some established informal procurement arrangements to facilitate the exchange information about products,

interesting suppliers and offers. Such networks could use cybermediary services to pave the way for relations to suppliers and establish a supplier network of its own. However, current practice of cooperation in such networks actually relies on circulating letters as a means of coordination. Thus, coordination costs are very high and open leave much room for more effective cybermediary solutions.

Another threat to a new cybermediary can be an attack from an incumbent intermediary. In some regions, procurement co-operations are established which have the role of traditional intermediaries. But these procurement co-operations only attract a limited number of customers since they are typically based on fixed relationships and often regionally bound. As a consequence, they might not easily gain the critical mass of demand to compete with efficient cybermediaries. Other incumbent intermediaries offer services for EU-call for tenders (adoption of product descriptions, translation, publication). As they are highly specialized, a new cybermediary could take a co-operation strategy.

Table 5 summarizes critical success factors for the different roles, revenue models and the chances and risks associated with them.

Table 5. Chances and risks associated with the intermediary's roles

Role	Critical success factors	Revenue model	Chances (C) and risks (R)
Information broker	Reputation, market intelligence, learning effects	Search fee	C: opaque market, distributed expert knowledge, R: easy to imitate, low entry barriers, customer bypassing risk
Information exchange	Market transparency, information economies of scale (usage fee < customer search cost)	Usage fee, member contributions	C: information asymmetry, R: easy to imitate, depends on supplier cooperation
Public procurement consultant	Expert reputation, know who (experts), solicit experts in public procurement	Consultancy fee, expert compensation included	C: knowledge deficiencies in public administration, R: expert bypassing
Demand aggregator	Customer attraction, bargaining power	Discount margins	C: exploit economies of scale, R: critical mass required, supplier and customer bypassing
Public procurement trader	Knowledge about public sector demand and supply	Profit margins	C: market arbitrage, R: wholesaler/supplier bypassing

3.4. Cybermediary evolution and a mixed-mode solution

The tourism industry examples indicate that the electronic distribution channels are subject to frequent changes: moves by one party are often countered by actions of another party. Business models are imitated and modified.

If a new intermediating player in public procurement wants to position himself, an information broker or information exchange would be a good entry point as the required investments are limited and yet there is an opportunity to establish links with the respective industry players and to proof the concept. If these roles can be played successfully, an extension of the business model in the direction of a public procurement consultant or even a demand aggregator can be envisioned. While the necessary investments and risks are rising, the value propositions are getting richer and the revenue potentials are increasing. Furthermore, if a development path along the sketched models is foreseen from the beginning, a lead can be maintained by switching (faster) to the next role before potential imitators have had a chance to establish themselves.

A comparison of the different models reveals that they are not mutually exclusive but some of them may be combined concurrently, e.g., the roles demand aggregator and public procurement consultant can be embodied in one cybermediary business model. Depending on the level of competition and the market dynamics, several cybermediaries might compete, specializing on different roles or role combinations.

4. Conclusions

We have given a stylized description of the dis- vs. reintermediation debate and have linked it to the electronic markets vs. hierarchy debate. Based on the distinction of different roles for intermediaries, we have developed an explanatory framework and have illustrated how the framework can be used to develop and assess the business model(s) of cybermediaries. The following propositions highlight our findings:

1. In any market, there is a wide range of functions which might be incorporated in various roles for cybermediaries.
2. A precondition for successful cybermediation is carefully balancing the relations to suppliers and customers. Further success factors are an efficient IT infrastructure and a good reputation as basis of trust.
3. The position of the cybermediaries is often volatile as suppliers or customers might attempt to bypass them or new entrants might attempt to overtake them. A dense network of relations to business partners and a flexible combination of roles and functions are used as competitive defense.

The electronic marketplace is characterized by a high level of structural dynamics. We are expecting to see the emergence of new business models and a growing differentiation of channel options for suppliers and customers likewise. The framework presented can

help to analyze the development in different channels, the resulting options for cybermediaries and the evolution of their business models.

References

- Bailey J. The emergence of electronic intermediaries. In: *ICIS Proceedings*. 1996:391–399.
- Bailey J, Bakos Y. An exploratory study of the emerging role of electronic intermediaries. *International Journal of Electronic Commerce*. 1996;1(3):7–20.
- Bakos Y. The emerging role of electronic marketplaces on the internet. *Communications of the ACM*. 1998;41(8):35–42.
- Bakos JY, Brynjolfsson E. Why Information Technology Hasn't Increased the Optimal Number of Suppliers. In: Nunamaker JF and Sprague R. H. eds. *Proceedings of the 26th HICSS, Vol. IV: Collaboration Technology and Organizational Systems & Technology*. Los Alamitos, CA: IEEE Computer Society Press, 1993:799–808.
- Benjamin R, Wigand R. Electronic markets and virtual value chains on the information superhighway. *Sloan Management Review*. 1995;36(2):62–72.
- Choudhury V, Konsynski BR. Inter-organizational information systems and the role of intermediaries in marketing channels: A study in two industries. In: Kemerer CF ed. *Information Technology and Industrial Competitiveness: How IT Shapes Competition*. Boston, Dordrecht, London: Kluwer, 1998:67–90.
- Clemons EK, Reddi SP. Some propositions regarding the role of information technology in the organization of economic activity. In: Nunamaker JF, Sprague RH, eds. *Proceedings of the 26th HICSS, Vol. IV: Collaboration Technology and Organizational Systems & Technology*. Los Alamitos, CA: IEEE Computer Society Press, 1993:809–818.
- Clemons EK, Row MC. Electronic consumer interaction, technology-enabled encroachment, and channel power: The changing balance between manufacturer's electronic distribution and established retailers. In: *Proceedings of the 31st HICSS*. Los Alamitos, CA: IEEE, 1998; VI:321–328.
- FECAT—Federal Electronic Commerce Acquisition Team, *Streamlining Procurement through Electronic Commerce*. Virginia, USA, 1994.
- Giaglis GM; Klein S, O'Keefe RM. Disintermediation, reintermediation, or cybermediation? The future of intermediaries in electronic marketplaces. In: Klein S, Gricar J and Novak, J eds. *Proceedings of the 11th International Bled Electronic Commerce Conference*. Kranj, 1999.
- Gümbel R. *Handel, Markt und*. Wiesbaden, Gabler, 1985.
- Hagel III J, Singer M. *Net Worth—Shaping Markets when Customers Make the Rules*. Boston, MA: Harvard Business School Press, 1999.
- Holland CP, Lockett G. Strategic choice and inter-organisational information systems. In: Nunamaker JF, Sprague RH eds. *Proceedings of the 27th HICSS, Vol. IV: Collaboration Technology, Organizational Systems and Technology*. Los Alamitos, CA: IEEE Computer Society Press, 1994:405–413.
- Klein S. The configuration of inter-organisational relations. *European Journal of Information Systems*. 1996;5(5):92–102.
- Malone T, Yates J, Benjamin R. Electronic markets and electronic hierarchies. *Communications of the ACM*. 1987;30(6):484–497.
- Pergioudakis BZ; Doukidis GI, Pappas JD. Defining an Architecture for Electronic Public Procurement in Europe. In: Vogel DR, Gricar J, Novak J, *Proceedings of the 10th International Bled Electronic Commerce Conference*. Kranj, 1997:127–149.
- Prosser A, Müller R. Fentliche Beschaffung mittels Electronic Commerce. *Wirtschaftsinformatik*. 41(3):256–266.
- Rayport JF, Sviokla JJ. Managing in the marketplace. *Harvard Business Review*. 1994;141–150.
- Rockart J, Scott-Morton P. Networked Forms of Organisation. In: Scott-Morton P ed. *The Corporation of the 1990s*. New York: Oxford University Press, 1991.
- Sarkar MB, Butler B, Steinfield C. Intermediaries and Cybermediaries: A continuing role for mediating players in the electronic marketplace. *Journal of Computer Mediated Communication*. 1995;1:3 [Available on-line at: <http://jcmc.huji.ac.il/vol1/issue3/sarkar.html>].

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