
Title: Electronic markets: Economic foundations and Impact on Globalization.

Author: Narciso Perales Dominique
Departamento de Organización de Empresas
Facultad de Ciencias Económicas y Empresariales.
Universidad Complutense
Madrid, 28223, SPAIN
Telephone:34-1-3942505 Fax:34-1-3942371
email: NPERALES@santandersupernet.com

IntroductionIntroduction

Electronic Commerce is the most astonishing newness on trading practices. A broad range of products and services are involved with electronic commerce, from car pieces, shares, airline tickets to software or even books. Nowadays the more important electronic commerce activities are business-to-business, but electronic purchases from private households will create a market of \$4-5 billions by the year 2003 (Johnson and Ott 1995). Electronic commerce is the rational evolution from other trading mechanisms that already permit exchange with no direct contact between seller and buyer, i.e. phone or mail. Electronic commerce may improve quality of trading communication: speeding up, automating or enriching it with more information and/or multimedia features. Therefore, at least all the business that are already conducted by phone or mail can be developed through electronic devices.

Nicholas Negroponte (1991), director of the MIT Media Lab, has explained in a very intuitive manner how electronic links are changing everything upside down : *From Atoms to bits*. Business are usually established on trade basis (atoms interchanges) Information Technology permits information trade without physical trade (bits interchanges) . Digital environments can evoke material ones and sometimes they are more efficient making unnecessary to work with *atoms*.

Bits can be exchanged in Electronic Hierarchies or in Electronic Markets (henceforth EM). Electronic Hierarchies are those electronic links based on pre-established bilateral relations (Bakos 1991). The aim of Electronic Hierarchies is to increase efficiency in trading relations through quicker and cheaper communication. That it is possible because electronic links reduce labour costs, minimise errors and favour management practices as Just in Time. The most paradigmatic examples of

Electronic Hierarchies are Electronic Data interchanges (EDI), like the ones that link supermarkets and suppliers or those connecting car makers, suppliers and dealers.

On the other hand, in EM the decisions about transactions and relations are not pre-established. EM are not an incremental innovation but a revolutionary one (Quelch and Klein 1995). EM can be analysed as a new marketplace, Rayport and Sviokla (1994) have denominated it the *Marketspace*. The *Marketspace* theory describes the transition from physically defined markets to markets based in and controlled by information. In this transition, information does not merely add efficiency to the transaction; it adds value. In the *marketspace* is possible to avoid physical constraints as location and time, changing the way business compete. The storefront of a physical shop can not sell outside its village, a virtual shop can sell outside its country. Other characteristic of EM is opening time, they are running as time as wanted because it is not necessary to have on-line human contact. Examples of EM are the majority of Stock Exchanges, some evolved EDI systems like Flower markets in Holland, or the business developments on Internet. This paper stresses expressly the importance of unique attributes of Internet as an electronic market field. The World Wide Web (WWW) provides, as a competitive environment, not only multimedia capacities (images, sounds...) on different computer platforms but a universal system of communication between all the agents in a global virtual market, almost potentially.

The objective of this paper is to define through economic theory a framework that explains wherefore electronic markets are arising. This purpose is attempted to accomplish using the so called Transaction Cost Economics. This branch of Economics is also titled “nanoeconomics” because the scope of the analysis is each transaction without any aggregation. The importance of transaction costs for EM are often quoted but there are not yet any study that systematise the influence of Transaction

costs in EM. In this paper we will try to effectuate this systematisation making use of an extended view of transaction costs: the exchange costs.

In the Literature (e.g. Benjamin 1995) is usually stated that EM are feasible for products with low asset specificity and ease description. However, this paper extend the scope of EM. The main idea underlying this essay is that electronic markets arise when exchange costs are lower than in traditional markets. This paper will deal with questions like: which Products/services are more suitable for EM developments, when an EDI will evolve to an EM, Globalisation and EM....

EM and Exchange costs

The reason for using a Transaction Costs approach to study the beforehand questions is due to the belief in Williamson(1985) assertion that *"As compared with other approaches to the study of economic organization, transaction costs economics is more microanalytic and is more selfconscious about its behavioral assumptions."* This paper is based in an expanded view of transaction costs: Exchange Costs. As Demsetz(1997) states, any service or product has production costs and exchange costs. Exchange costs is a construct that includes information costs and transaction costs (ex ante and ex post). In the following sections each component of Exchange costs is analysed in reference of transactions in EM.

Information costs in EM

The presence of Information costs exclude pure accepting-price behaviours in markets. A very evident cause of information costs are Information asymmetries (Buyer-seller)

about products' quality. At first sight, in an electronic environment there exists less "bandwidth" than in direct contact with product and seller. In an EM is not possible to examine a physical product only its representation. Hence, EM are suppose to increase information asymmetries and customers will discount the probability of buying a "lemon"(Akerlof 1970). However, this enlargement of the information asymmetry might not occur in those products that their quality can be delimited by a set of variables, i.e. commodities or branded products. Moreover, this information asymmetry disadvantage of EM is reversed for Information-based products. It is easier to scrutinise or test Information products in EM than in traditional markets.

Information costs comprise also the cost of acquiring information about the products. Probably the most straightforward advantage of EM is that they lower this searching cost. It is possible to browse quickly and at no-cost among different offerings. This decrease of searching costs will lead to "Efficient" markets for those products with a low Information asymmetry when marketed through EM. As Bakos (1991) asserts EM reduce seller margins because they provide price information that will compel to fix prices at marginal costs. This effect will increase buyer welfare not only for commodities but even for more differentiated products because EM enable customer to locate suppliers that better match their needs.

Focusing the analysis on Internet as a marketplace, Internet has a unprecedented huge capability to accumulate data and Information and simultaneously has a user-friendly interface to access information and therefore to distribute it to whom request. The reduction in the cost of looking for the information is both caused by the improvement of technological capabilities to search and by the overwhelming lowering in the cost of publishing information.

Ex ante transaction costs

Ex ante Transaction Costs are those expenses entailed to drafting and negotiating an agreement. First of all it is necessary to indicate a drawback, the complete itemisation of contracts is a prerequisite for trading in EM. That represents a cost, moreover, a barrier to the extend of EM. However, this compulsory specification is also one of the EM success factors. When contracts become standardised the marginal ex ante transaction cost is nearly reduce to zero. There are no variable costs (personnel)to be charged in each transaction. Contract specification represents a volume economy , which beyond a certain break even point makes the average ex ante transaction costs lower than in a traditional market.

In addition. EM provide important scale economies for Ex ante Transaction costs. The use of Information Technology almost introduce the no rivalry consume faculty : More than one client can be using it at the same time with no loss on quality of the service. In reality there is a limit in the bandwidth of the network and in the processing capability from the computer server provider of the virtual product, but the cost of increasing this capacity is negligible. This cost is certainly very much lower that enlarging negotiating capacity by traditional methods (i.e. More salesmen)

It is very straightforward that electronic links are suitable are for highly repeated transactions. That is the basis of EDI systems and EM like airlines reservation systems or Stock Exchanges. Nevertheless, improvements on information technologies have modified the trade off between volume-cost of specify contracts. The WWW has lowered dramatically the cost of Electronic commerce developments and has enabled for low-numbers transactions business.

For this kind of business EM also reduce ex ante transaction costs. Information technology allows to standardise the difference, customising every contract with no variable costs (personnel)to be charged in each transaction.

Furthermore, EM lessen ex ante transaction costs reducing the cost of enabling negotiations. Computer terminals (or clients) provide some kind of ubiquity, agents save travelling costs switching them to cheap telecommunications. Time limitless in EM eases negotiation, deals can be made (if wanted) 24 hours a day.

Ex post Transaction Costs

The assessment of Ex Post Transaction Costs is the most puzzling question around Electronic markets. The correct minimising of this Ex Post TC is the only way to exploit the capabilities of EM reducing Information and Ex-Ante TC. Ex-post TC include: maladaptation costs, haggling costs to correct ex post misalignments, set up and running costs of monitoring governance structures and the bonding cost of effecting secure commitments.

The compulsory clarification ex ante of contracts in EM may reduce ex-post transaction costs. Standardisation and digitalisation of information permit to automate transaction control and reduce also this ex-post TC eliminating low-effective clerical work (like checking if invoices match with delivery notes). Nevertheless, the biggest section of ex post TC can be consider as “friction” costs due to a lack of trustworthiness between contracting agents. Effective EM developments need users’ confidence, wariness drives to risk premiums.

First of all, EM are limited by the perceptions about the reliability of Electronic commerce technologies. The target market is restricted to those who already trust in this technologies. EM are grounded on virtuality, doubts about the reality of the images render impossible EM trading . EM technology must be sure enough to convince users. EM are inefficient for unconvinced users because they will ask for too high warranties.

Ex post TC are mainly conditioned by the credibility of markets agents commitment in regard to do not pursue opportunist behaviours. Possible information asymmetries on product quality is a source of bigger ex-post TC that ensure from “lemons”. The biggest trouble it is on experience goods, where there are ex post information costs. It is easier to reduce ex-post TC in EM for information products, commodities or branded goods.

A credible guarantee of contract fulfilment in EM may be derived from the presence of asset specificity, like substantial investments in EM technology or the settlement of warranties e.g. In Stock Exchanges every agent must settle a important amount of money to participate in the EM. This investments act as “Hostages” that represent a credible commitment to do not act opportunistically. The risk of losing this costly entry/exit barriers improves relationships based on mutual trust (Williamson 1985). Heck y Ribbers has observed asset specificity as a facilitator factor for the successful diffusion of EM (1996). Another way to control opportunistic behaviours is the use of a counteracting institution that ensures or takes care of EM dealings (e.g. Reuters for currency trading, SABRE or AMADEUS in airline tickets...).

Hostages is a too expensive assuring method for sporadic transactions as home

shopping . Besides, Internet business do not need specific investment in technology by users. In these cases, companies' reputation is a very forthright indicator of trustworthiness that reduces information costs and Ex post Transaction costs. The trouble is how to obtain this reputation status on EM. Companies who already have a valuable brand name may use it as a scope economy and extend their operations to EM. It is important to state that Internet is a new market and it is rejuvenating mature markets. New entrants can develop (e.g. amazon as a bookseller) "Inside EM reputation" that represent a threat for well established brands.

Despite reputation, the presence of mistrust restricts the range of business activities actually available on Internet. Internet users do not rely yet in payments on the net. The majority of Internet businesses are not paid by customers but financed selling advertisement banners. In order to reduce mistrust the few payments made on Internet are established as third party payments. Both contracting part use a third institutions that act as a trustee of the deal, this is the philosophy of as the e-cash and the cybercash projects or even in the new security protocol for credit cards payments (SET).

Exchange Cost analysis

In table 1 the previous analysis is abridged. It is very evident the suitability of EM for Information-based products or services. In these cases Information Costs and Ex ante TC are always lower than in the classical marketplace. EM also reduce the cost of transporting the information based products to the customer (directly distributed by the electronic network). Further, if searching and ex ante TC capabilities are well employed, EM are an appropriate market channel for commodities and well known branded products too.

Exchange Costs	Unhomogeneous Physical Products	Commodities or Well known Brands	Information-Based Products or Services
<ul style="list-style-type: none"> Information Costs <ul style="list-style-type: none"> Searching Costs Information Asymmetry Ex Ante Transaction Costs Ex Post Transaction Costs 	<p><</p> <p>≥</p> <p>≤</p> <p>?</p>	<p><</p> <p>=</p> <p><</p> <p>?</p>	<p><</p> <p><</p> <p><</p> <p>?</p>

Figure 1 Exchange Costs in Electronic Markets Vs Classical Markets

As it may be inferred from the previous section, one of the EM success factor is to control Ex post transaction costs. There is not a unique strategy to accomplish this objective, each business must search it strategy and this capability will be his most valuable competitive advantage.

Trustworthiness and Ex post Transaction costs explains the *renaissance* of online malls. (The Economist 1997) . The first online mall were conceived only as web addresses to lok for something. Despite it is difficult to attract clients to a web site , the key succes factor is to increase users' confidence, and now Online mall are acting as trustees of the business developments they include.

This exchange costs framework can explain a wide range of EM bearings. Another well know behaviour on Internet are successful business developments having exponential growth. Internet

business are touched with the so-called bandwagon effect. After they surpassed a certain critical mass individual demand depends positively on aggregate quantity of the good demanded. The reasons is that success is a credible signalling device that acts as a measure of trustworthiness, and increase the interest in this business since success reduce ex post transaction cost (and Information costs too).

Exchange costs disclose why EM represent an important threat for market intermediaries. The characteristics of electronic linkages erode middlemen's value chains. Their tasks usually are mainly fasten on exchange costs. They exploit customer proximity, reducing information costs or minimising ex ante or ex post transaction costs . Successful EM developments control and reduce Exchange costs then they shorten distribution channels. Intermediaries must take advantage of their reputational assets reorienting their business to the management of information in order to create value.

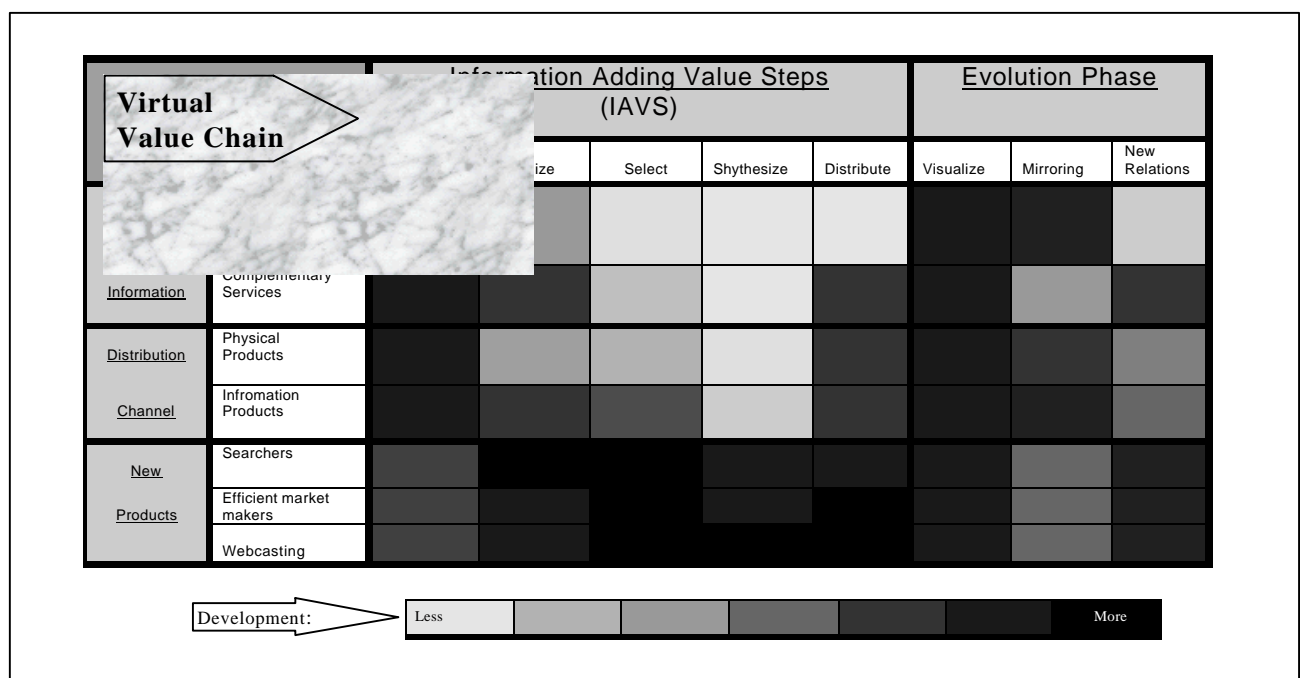
Finally, Exchange costs hypothesis gives an explanation to the evolution, that Malone et al (1989) had pointed out, from EDI systems to EM. EDI systems increase efficiency reducing exchange costs in repeated transactions. If ex post TC cost has been reduced among participants it is an economy of scope to extend the use of the EDI system to a broader range of products (e.g. SABRE from American Airlines tickets to every thing related with travelling)

Beyond Economising Exchange Costs

During this essay, EM have been studied from an exchange cost approach. We consider Exchange costs as the determinants of EM bearings, but in certain cases EM reduce also production costs. The most straightforward example is information-based services. EM allow to split production of the service (information management) and its distribution to the final customer. This splitting permits to make use of economies of scale in the production and/or in the distribution of this Information services. The economies of scale proceed from the switch of labour to capital. EM facilitate increases in information services' productivity. In these kind of services there will not exist the so-called services' productivity lag or Baumol's cost disease. Productivity in Information services will not stagnate. Their relative prices will be more competitive.

In a much broader scope Rayport and Sviokla, , have analysed value creation through Information Technology. After they had specified in 94 the theory of *marketspace*, in 1995 they have defined the virtual value chain (VVC) (RAYPORT ; SVIOKLA 1995). They think that companies use IT first to visualize physical process in order to improve efficiency. The second step is to obtain mirroring capabilities and therefore make the process they use to do but through IT. The last step is to obtain new relationships with the electronic links, new ways to create value or new customers. They have summarized the *Adding Value steps (IAVS)* in five points: Is possible to add value gathering the information, organizing it, selecting, synthesizing, or distributing it. These is a very clever way to analyze how the management of the information can add value to our products or can create new products. The VVC provides a toolbox of management techniques that facilitate the use of EM characteristics (mainly Exchange cost reduction) to create value.

Perales and Vicente (1997) have employed the virtual value chain (VCC) concept analysing 210 companies sites¹ on Internet, reporting how companies in are using the Information Adding Value Steps : gather, organize, select , synthesize, distribute. They have classified the different strategic business approaches into three streams : Marketing and Information, Distribution Channel and New Products. This three categories condense nearly all the diversity of products and services that actually are operative in Internet at this moment (PERALES 96). Their *raison d'être* is that economising exchange costs they are creating value.



Source :PERALES N. and

VICENTE D.(1997)

Figure 2 Virtual value chain analysis

The main use of the WWW is as **information channel**. The WWW is a very appropriate method for marketing , to strengthen brand and corporate image. This use of the Web deals intensively

¹ The methodology they have used is not the the random sample . The rate of marketing services/ other products is aproximatly 10 to 1, this bias would make the study

with the capability of gather information and to distribute it. The objective of this kind of developments is to use the information available now in a new media. Moreover, as marketing tools, web sites could be used as data-mines of visitors, visualizing operations in a very efficient way. The WWW is the perfect way to furnish more information to enhance customer service; gathering, organizing and principally distributing the information to whom is allowed to request it creating new services in a new communication channel with the client.²

Distribution channel is a very evident apply of the marketspace, mirroring the usual physical operation in an electronic product catalogue (multimedia and on-line)³. This developments mainly gather and distribute information with no transformation. Outlets, Discount or auction houses are indeed concerned with the WWW because they have in it a worldwide potential market. Moreover, the WWW allows to distribute directly through the net purely information products (software, encyclopedias, databases...) or intensive in information (e.g. financial services). This business are more touched with the information management and they gather, organize and select the information but indeed they add value distributing the information in a new manner.

It is very difficult to render a precise pattern for all the **new** sorts of **products** serviceable through marketspace. One characteristic is that they are deeply concerned with information management and they are primary financed selling advertisements spaces rather than with subscription fees. The three principal new products are :Searching engines, Mediating players (Efficient market makers) and personalized information providers (webcasting). In an exchange cost approach we can resume that this virtual products are successful when the transaction cost of obtaining the information (loss of quality,

useless. They had analysed 70 web sites of each category.

² e.g. Drivers in computer and software industry, package information in mail express...

³ The products they found are consisten with the previous Exchange cost analysis: Branded wear, books ,bottled wine, computer products...

expenditure of time, price) directly through the market (Internet) is bigger than the cost of their use (via publicity viewed, subscription or pay per view). All this new products and services are intensive in the use of the IAVS specifically in the following ones :

- The searching engines⁴ create value mainly organizing the huge amount of information in the net, selecting and having a user-friendly interface to access to this information.
- The Efficient market makers⁵. Select the price and characteristics of the products from the Web pages and then they condense it in order to avoid the market inefficiencies (essentially geographic or information asymmetries). They act as mediating agents creating new links between producers and clients.
- The webcasting⁶ services select and synthesize the information published on the web or in the news to present to the user only the contents asked for.

Conclusions : Impact on Globalization Conclusion : Strategic Implication Conclusion : Strategic Implication

This paper has analysed EM from an Exchange cost approach. The ambition of this paper is to elucidate some of the crucial issues in electronic markets drilling down on the nature of transactions. EM are arising from the inefficiencies of traditional markets. EM seek to reduce the effort required to move market elements in search of clearance (Perales and Vicente 1997). EM level and grease the market rubbing grade when exchange costs are lower than in traditional markets. For the majority of

⁴ Yahoo, Infoseek, Altavista, Lycos, Magellan, Ole....

⁵ by example Priceweb for computers, or Bargains fonder for CDs

⁶ Pointcast, Crayon and the majority of on line services (Compuserve, America Online, MSN...)

products EM attributes reduce searching and ex ante TC. Commodities, branded and Information-based products are very apropos for EM. Presumably, the critical success factor for EM is to control ex post transaction costs, and to reach this objective the imperative is user trustworthiness. Nevertheless EM capabilities exceed Exchange cost economising. As it has been studied, In EM is possible to create value with information management.

The growth of electronic markets, specially Internet as a marketpace, change Markets scope, pushing to globalisation. This market structures lead to new business strategies that fit in the new environment. In an EM, customers do not make any difference among companies' geographical localisation. There exist the so-called Sviokla's rule of thumb: "If you can't tell exactly where the transaction occurred, it happened in the *marketpace*." Consequently, localisation in EM is not conditioned by customers' proximity but only directed by the search of lower inputs costs. This is a radical change of market conditions for many products and services. A very intuitive consequence for those Products and Services that can be effectively exchanged by EM, is that local companies will cease to obtain monopolist rents, their markets become contestable.

De-localisation is possible since the cost of being a multinational is dramatically reduce by EM. Globalisation is an economy of scope for business deployed at Internet. They can extent the target market at no-cost (There are no difference in the procedures for national or international deliveries by courier). Furthermore, when information is codified translation to different languages is not really an expensive investment. From another point of view The globalisation of competition through EM breeds specialisation. Adam Smith had staded that "The specialisation is determined by the extent of the market". Internet as a Global market with hundred of millions of potential customers will lead to much more specialised businesses.

REFERENCES

- ACKERLOF (1970) : "The market for lemons". *Quarterly journal of Economics* 84, pp. 488-500.
- BAKOS,Y. (1991) : ["Information links and electronic marketplaces: the role of interorganizational information systems in vertical markets."](#), *Journal of Management Information Systems*. Fall 1991, Vol 8, n° 2, pp.31-52
- BENJAMIN R WIGAND R (1995) "Electronic Markets and Virtual Value Chains on the Information SuperHighway" *Sloan Management Review*, Winter, pp.62-72
- DEMSETZ H. (1995) "*The Economics Of The Business Firm: Seven Critical Commentaries*" Cambridge university press 1995
- HECK E.; RIBBERS P.(1996) "*Economic effects of electronic markets*" Working paper of Tilburg University department of information systems and auditing, and center, june.
- JOHNSON B. OTT J. "Banking on Multimedia" *The Mckinsey Quarterly*, 2, pp:94. 1995
- MALONE T, YATES J BENJAMIN R (1989)"The logic of Electronic Markets" *Harvard Business Review*, May- June , pp. 162-172
- NEGROPONTE Nicholas (1991) : *Being Digital* , Alfred A Knopf, New York .
- PERALES N. (1996): "*vIrTual strategies :beyond markets and organizations*" , Procedures of the European Union COST Congress in management and new technologies, CSIC, Madrid 25-27 June 1996
- PERALES N. and VICENTE D.(1997) "*Internet as a marketpace:a framework using the virtual value chain*" Procedurings of the International Congeress of IAMOT Gotheborg Sueden , 21-22 June 1997.
- [QUELCH, J.A ; KLEIN, L.R \(1996\).: "The Internet and International Marketing."](#) *Sloan Management Review*. Spring. Pp. 60-70
- RAYPORT ,J.F ; SVIOKLA J.J (1995) : "Virtual value chain". *Harvard Business Review*. Nov.dec.
- RAYPORT, J.F ; SVIOKLA, J.J (1994) : "Managing in the Marketspace". *Harvard Business Review*. November-December. Pp. 141-150.
- The Economist* (1997) "Internet Shopping The once and future mall" vol 345, nimber8041 1st-7th November pp80-82
- WILLIAMSON O(1985) "*The Economic Institutions Of Capitalism*" Free Press.

