

An Economic Framework for Understanding the Internet-driven New Economy

Nikhilesh Dholakia, Ruby Roy Dholakia, Nir Kshetri, and Myung-Ho Park

Abstract

Infrastructure innovations have had far-reaching impacts on markets and marketing in the past. The latest such infrastructure revolution -- the Internet -- is presently underway. Marketers need to focus their attention on how Internet-based and other forms of electronic commerce will shape markets and marketing in the future. In this paper, an economic framework based on agency costs, transaction costs, and network externality is presented to examine how the Internet might transform electronic markets and marketing institutions and practices in general.

INTRODUCTION

While new methods of marketing communications and product distribution emerge from time to time in competitive settings, new market-shaping infrastructures appear but rarely. In the past 150 years, we witnessed the occasional but far-reaching transformation of markets, and of marketing, through the emergence of revolutionary infrastructures such as the railways, the electric grid, the telephone system, and the highway system (see, for example, Klein 1994). Each of these infrastructure innovations created new markets, transformed existing markets, spawned new marketing institutions, and altered marketing practices and concepts in significant ways.

The latest such infrastructure revolution is presently underway. The advancement and convergence of telecommunications and information technologies has ushered in a new infrastructure for information exchange (for reviews of information-age convergence, see National Academy of Sciences 1994). Variouslly dubbed as the "information superhighway" or "I-way", "cyberspace", "Information infrastructure", and a virtual "marketspace" (for definitions or early use of such terms, see Anderson 1995, Gibson 1984, Kirkpatrick 1994, Rayport and Sviokla 1995), a definitive label for this new and evolving infrastructure is likely to emerge only after key parameters are settled over time through public and private policies that are attempting to bring some order to the wild growth of this new electronic frontier (for public policy perspectives, see Hart, Reed and Bar 1992, Miller 1996). In this paper, we will focus on that part of the new information infrastructure that has already achieved a high degree of global standardization: the Internet.

The key question addressed in this paper is this: How has the Internet shaped (and will continue to shape) markets and marketing? We will answer the question by analyzing the market-shaping characteristics of the Internet from an economic

perspective. Using this perspective, we will examine how the Internet is shaping and will continue to shape markets, marketing institutions, and marketing practices.

The discussion in this paper is organized into three major sections. The first section provides a brief review of electronic markets, the growth of Internet, and its emerging implications for electronic markets. The second section discusses the economic impact of the Internet on markets, marketing institutions, and marketing practices from three perspectives: agency costs, transaction costs, and network externality. The third and final section offers concluding comments and discusses the emerging research needs from a marketing perspective.

INTERNET AND ELECTRONIC MARKETS

Electronic Markets

Electronic markets and electronic commerce are not new concepts. Electronic markets have existed since the 1970s, sometimes even earlier. Ranging from credit-card transaction systems (Orme et. al. 1995) to airline reservation systems and store-specific electronic shopping systems (Malone, Yates, and Benjamin 1989), electronic methods of buying and selling have been around for a while. By the late 1980s, Malone, Yates, and Benjamin (1989) concluded that the development of electronic marketplaces was inevitable and ultimately, many, if not most, transactions would be conducted electronically. Bakos (1991, p. 296) introduced the terms electronic marketplace and electronic market system which he defined as “an interorganizational information system that allows the participating buyers and sellers to exchange information about prices and product offerings”. Other terms appeared with the growth of Internet, and its transformation into a commercial medium.

Internet as a New Infrastructure

The Internet grew out of the defense (ARPAnet), scientific (NSFnet), and academic (Bitnet) computer-based communications networks that were sponsored and supported by the United States government (Hart, Reed and Bar, 1992). Selected members of the academic community and some government agencies were its primary users for nearly two decades. Within these user categories, however, the user base and scope of usage of networked text-based communications expanded rapidly in the 1980s and the 1990s: from university scientists working on defense projects to nearly all professors in the United States, and from major research universities to all types of educational institutions including community colleges.

Parallel to these government-sponsored networks, companies had been building Local Area and Wide Area Networks for their internal communication needs. From the late 1980s, after the formation of the Internet Corporation as a coordinating agency, it became clear that there was more to be gained by the merging and inter-networking of these disparate public and private networks than by keeping them separate (National Academy of Sciences 1994).

Facilitating Conditions

The popularity of text-based communications such as e-mail, news groups, discussion groups, bulletin boards, and chat lines had laid the groundwork for the rapid growth of Internet. People realized that they could communicate with thousands of others with similar interests and access electronic information at thousands of locations through protocols such as Gopher, FTP, and Telnet. Real excitement and explosive rates of growth, however, were triggered by the invention of the multimedia World Wide Web (WWW) protocol. Invented at the CERN laboratory in Switzerland and refined at the NCSA laboratory in Illinois, WWW and the Mosaic browser opened up new vistas of Internet usage and electronic commerce (Hoffman and Novak 1995).

WWW and easy-to-use web browsers such as Mosaic, Netscape, and Internet Explorer facilitated access to and use of the Net in a variety of ways. First, these graphic interfaces were inviting and involving, and became more enticing as sound, animation, and video capabilities were more widely available. Second, graphic displays set the user free to some extent from the tyranny of the keyboard; finding and manipulating information became a point-and-click experience. Third, new websites and competition among existing web portals provided fresh and exciting content every day. In the world of television, this would be like having new channels, shows, and movies added to the schedule every day.

Internet and Electronic Markets: Emerging Implications

The Internet has been shaping up as an ideal marketing communication medium. When it is used as both a communication and a distribution medium, it confers a dual advantage. This is why publishers, software companies, music houses, movie companies, graphic designers, photographic services, banks, insurance companies, reservation systems, and education and training providers became very interested and some leading players started deriving early benefits of the Internet.

The business potential of the Internet beckoned many firms. By the end of 1995, there were 40,000 commercial websites (Gupta and Chatterjee 1997). The number of business websites was estimated to reach to 100,000 by 2000 (Nua Internet Surveys 1997). Since the registration of the first domain name in March 1985, the number of domain names worldwide has been growing exponentially. There were 623 Web sites in December 1993, which increased to about 100, 000 in January 1996 (Goldstein 2000). This number exceeded 1.5 million by the end of 1997 (Friel 1997), which further increased to 3.7 million in December 1998, and 9.5 million in December 1999 (Goldstein 2000). By mid-March 2001, there were 32.7 million domain names worldwide (DomainStats.com 2001). Likewise, by mid-2000, there were more than 2.1 billion Web pages in existence with a daily addition of about 7 million new pages (Nua Internet Surveys 2000) and an annual growth rate of about 100 percent (Nielsen 2000). Sites began to get talked up in the media, or get listed as "cool sites" or "hot sites" by various services such as Yahoo. Such superior sites were as likely to belong to small and mid-sized firms as to large firms.

Not only marketing firms rushed to be connected to Internet, millions of users also made a dash to the new medium. Estimates in the mid-1990s ranged around 2 million new connections every thirty days. Many of these individuals had their computers connected by high-speed links while others attempted to navigate the Cyberspace with slower modem-based links. People using the Net could surf (go from one Internet site to another), browse (explore the contents of a site), lurk (drop in on an ongoing discussion without contributing to it), or ask for specific information.

A strong advantage offered by the Net is its transparent global reach. Firms from any part of the world can create a strong web presence and reach out to potential customers globally. Similarly, users from any part of the world can be connected to the Net and access information, goods and services from any supplier small or large, local or global. According to one study, in the mid-1990s Australia was the second largest Internet user in relation to its population, with over fifty percent of its Internet use by corporations (Tse, Sutton, Tsang and Stuart 1995). By the late 1990s, the largest Internet markets outside the United States were in Europe, with United Kingdom, the Netherlands, Germany, and the Scandinavian countries exhibiting prolific growth (Tomic 1998).

These connections between marketers and customers, and between customers themselves have transformed almost every dimension of market transactions. Suddenly, it has become possible to have many-to-many connections (see Table 1) and yet simulate a "one-to-one" relationship (Peppers and Rogers 1993). Despite the large volume of transactions generated over widely dispersed (time and geography) markets, it is possible to provide immediate, and direct responses to supplier's offerings. The Internet enables users to become informed and knowledgeable by connecting with like-minded users. Realizing the benefits of such electronic communities, marketers and cybermediaries have started promoting and supporting such electronic user-to-user interactions.

Table 1 here

ECONOMIC IMPACTS

In economic terms, electronic infrastructures such as the Internet affect the market system by influencing the economic benefits and costs experienced by institutions. We will treat the overall marketing system as consisting of sectors of institutions such as households, firms, and governments agencies (Pandya and Dholakia 1992). Thus, the overall marketing system in the United States comprises of all households, firms, and government agencies in the country and the relationships among these. When a new infrastructure, such as the Internet, becomes significant in terms of size (i.e., number of institutions and nodes connected), it starts affecting the economic benefits and costs within an institution as well as across institutions. Three important types of impacts have been identified in the literature dealing with the economics of electronic infrastructure: agency costs, transaction costs, and network externalities. We will review these three types of impacts briefly, followed by an integrative view of economic impacts of the Internet.

Agency Costs

In any institution where the owner, manager, or leader (in other words, the overseer of the institution) has to delegate activities and operations to others (the operatives or agents), a divergence between the interests of the owner/manager/leader and those who carry out the delegated tasks is likely to arise. This gives rise to a category of costs that economists call agency costs (Fama 1980, Jensen and Meckling 1973, Ross 1973). These include costs of coordination and monitoring of operations, as well as opportunity costs when operatives make decisions that are not in the interests of the overseer. While the agency cost literature has focused mostly on the behavior of managers and workers in a firm, in principle a broadened concept of agency costs and benefits can be extended to all types of institutions (including households and government agencies) that populate a marketing system.

Information technology (IT) has two distinct impacts on agency costs (Gurbaxani and Whang 1991). On the one hand, information technology makes it possible to effectively coordinate and monitor the activities of the agents running the day-to-day operations of an institution, including far-flung global operations. By doing so, IT lowers agency costs. The massive delayering, downsizing, and reengineering in the American economy offers evidence of the paring of agency costs by firms, albeit with the accompaniment of significant human misery (Brynjolfsson, Malone, Gurbaxani and Kambil 1994, Miller 1996). A different impact on agency costs may occur because IT enables the delegation of operating authority to an ever wider range of operatives. This is the essence of another contemporary business trend: the employee "empowerment" movement, which has gone particularly far in IT-intensive firms such as FedEx. Empowered employees (or agents) can make quick decisions in situations that may, for example, require an on-the-spot redressing of a customer complaint. Such empowered agency is likely to bring economic benefits to the owners and overseers, especially in service-oriented businesses (Berry and Parasuraman 1991). It could also potentially give rise to opportunity costs due to agent/operators acting contrary to the interests of overseers. Firms that have taken the empowerment philosophy to heart believe that the economic benefits far outweigh the potential costs.

As far as marketing activities are concerned, the growth of Internet opens up possibilities of extending the "agency" for a variety of marketing related functions to operatives located at the farthest reaches within a firm's organization, and even beyond that into other firms and the household sector. The agents located outside a firm may be intermediaries or customers. The following typify some of the early patterns of such interinstitutional and intersectoral transfers of agencies:

- A customer can place his/her order for a printer at the Hewlett-Packard (HP) Web site or over the telephone. When the order is placed, it actually goes to FedEx, which stocks all the products that HP sells online at a dedicated "e-distribution facility". FedEx ships the order and sends an e-mail notification to the customer that the printer is on its way. Also an inventory notice goes to HP that the stock of printers in FedEx has reduced by one (King 1999).
- Through its World Wide Web (WWW) site, FedEx allows customers to track the progress of their packages using the airbill number.

- For a period, DEC allowed interested parties to "log on" to and "test drive" one of its new computer models through its WWW site.
- On the Dell and Gateway computer company sites, customers can configure and build the computer systems of their own choosing.

Because the Internet cuts across all institutional sectors—firms, government agencies, nonprofits, households—it enables the maximization of economic benefits possible through an extremely wide extension of agency for selected tasks. Not just tasks such as selling, promoting, ordering, and shipping can be delegated, but also (eventually) tasks such as inventory management, product design, product testing, and even production scheduling are likely to be delegated. Along with garnering the anticipated competitive benefits, firms undertaking such extensions may also expose themselves to potential opportunity costs and risks stemming from such "universal agencies". From a marketing systems perspective, we are likely to see the emergence and growth of institutions and methods to control and manage the potential risks and opportunity costs of wide-ranging agencies. To deal with such risks and costs, new forms of insurance, regulations, payment systems, and security arrangements are already being experimented with and more are surely on the way.

Transactions Costs

It is now well accepted that transactions across institutions are not costless, and that contractual or hierarchical structures emerge to control and minimize transaction costs (Williamson 1975). Research on marketing channels has utilized transaction-cost analysis extensively to understand channel structures and behaviors.

Information technology offers possibilities of reducing transaction costs or shifting these to buyers (Bakos 1991, Benjamin and Wigand 1995, Gurbaxani and Whang 1991, Malone, Yates, and Benjamin 1989). If consumers order tickets through an online system, for example, airlines save the costs associated with travel agent commissions and ticketing agents. Even before Internet-based stock trading became popular, Charles Schwab passed on some of these savings to its customers: it offered a 10% discount commissions on stock trades placed through its automated, phone-based Telebroker system. In the past, systems to facilitate smooth, low-cost transactions (such as American Airlines sponsored Sabre and Schwab's Telebroker) required investments in proprietary and specific information technology assets.

Internet has further reduced the transaction cost. For example, the average cost of a banking transaction is estimated to be \$1.27 in a branch and \$0.27 in an ATM, whereas it is \$0.01 on the Internet (UNCTAD 2000). In a market system where Internet access is ubiquitous the possibilities of minimizing transaction costs open up to any one who has a few thousand dollars available to set up an Internet server (Hoffman and Novak 1995). American Airlines, Schwab, and countless other service providers have quickly moved the capabilities of their formerly proprietary and dedicated transactions systems to the universal platform of the Internet. Such transaction cost savings, as well as the potential to reach untapped markets, are some of the factors fueling the phenomenal growth in Internet-based commerce.

Many administered and vertically integrated marketing systems evolved, at least in part, to minimize transaction costs (Arndt 1983, Gummesson 1987). As the Internet and similar technologies drive down transaction costs, the rationale for such vertical arrangements will partly disappear. We have seen some movement towards "hollow" and "virtual" corporations (Rheingold 1993). The growth of Internet and electronic commerce will intensify the pressure on some vertical market systems to loosen their interfirm linkages, or to delink altogether (Benjamin and Wigand 1995). Of course, Internet-based commerce also spawns interorganizational arrangements of a different kind. New, looser, and open forms of organizational arrangements are emerging to deal with the fluidities of markets in cyberspace (Sarkar, Butler, and Steinfield 1995). Collaborative planning systems linking "suppliers' suppliers and customers' customers" to reach new levels of information sharing, interaction and integration or what Anderson Consulting (1999) defines as "eSynchronized" supply chains are evolving rapidly. Many companies are forming networks that perform different steps in the value chain and are enjoying the "coordination and scale of large firms and the flexibility, creativity, and low overhead of small companies" (Johnston and Lawrence 1989). For instance, an international group of fourteen chemical and petroleum companies agreed to form a global electronic marketplace for B- to-B transactions and services. Their site called Envera would link suppliers, customers, logistics service providers and financial institutions into a network enabling a variety of business transactions between trading members which is expected to save up to 80 percent of the processing and invoice costs (Chang 2000).

Internet portals – both generic and specific to particular categories – have evolved as the first-level cybermediaries. Such new intermediaries have interposed themselves between producers (or service providers) and consumers by taking advantage of new, emerging economies of scale, scope, and knowledge (Lee and Clark 1996). These are places where consumers often stop first, as soon as they enter the Internet, and then may proceed elsewhere. To ensure that consumers do not stray too far and revert back to the portal sites, concepts of “stickiness” and “aggregation” have appeared. These are ways of minimizing search costs, increasing the productivity of search, extending the scope of search (within a category, across multiple categories), facilitating easy transfer to cognate and related activities (e.g., from seeking information to suggesting related books, music, investments), facilitating user-to-user communications, and providing external benefits (such as entertainment, news, scheduling, weather, financial services).

Network Externalities

Many infrastructure technologies are network technologies; they create networks of people and institutions by linking them together. The economic benefit of the network derived by each linked node increases as the size of the network expands. Thus, the telephone network was of little value when just a few people had phones, but its value increased enormously when universal service was established. Economists have labeled this effect "network externality" (Katz and Shapiro 1985, 1986), and have recommended the formulation of sales strategy based on the benefits of such externality (Shapiro and Varian 1998). Network externalities of earlier networks, such as the telegraph and

telephone networks, have had a substantial impact on the American marketing system (Fischer 1987, Mueller 1993).

In terms of network externality, the impact of Internet is likely to be far greater than prior networked technologies such as the telegraph and the telephone. This is because the rate of growth of the Internet is unprecedented in the history of electric and electronic networks, and its reach is global. If the mid-1990s growth rates are sustained, for example, the entire population of our planet would be connected to the Internet by 2003 (Negroponte 1995). While this is unlikely to happen, as the rate of growth has dampened somewhat, it does give an indication of the order of magnitude by which Internet growth exceeds the growth rates that characterized other networked electric and electronic technologies.

In most types of networks, the potential value of a network increases in proportion to the size of a network. Thus, in a television network, the larger the reach of a program or channel, the more valuable it is to advertisers. The television network, however, is a one-to-many network and the increase in potential value of the network is directly proportional to the size of the network. Positive network externality benefits are obtained in many-to-many networks such as telephone, fax, and e-mail networks. In such networks, the relationship between the value and size of the network is curvilinear. In the initial stages, the potential value of the network is low as network size increases. After a critical size is reached, however, the potential value of the network rises exponentially. Each new user past the critical size adds potential value at a proportion greater than the size of the network. For example, the so-called "Metcalfe's law" states that the value of a network increases in proportion to the square of the number of access points to the network. Perceptions of rising value begin to drive the size of the network -- those unconnected feel the need to get connected to derive value, and the rates of growth zoom upwards. Such a critical size was evidently reached for the Internet in the early 1990s.

Potential value of a many-to-many network translates into realized value for the users -- economic as well as non-economic value -- depending on the needs and activity patterns of users. Telephone networks are of value to the household as well as the business sectors because they enable users in these sectors to keep in touch and engage in transactions. Fax networks, on the other hand, are used primarily by businesses because households do not find it easy to convert the potential value of a fax connection into realizable economic or social value. As a network, the Internet offers multiple ways of communication and therefore its potential value is realizable by all types of users -- households, the corporate sector, and government agencies. This is one reason why the Internet growth has been so dramatic.

CONCLUDING OBSERVATIONS

What are the implications of the dramatic growth of Internet, and the attendant changes in agency costs, transactions costs and network externalities, for the market system and marketing? Table 2 provides a summary of potential impacts on producers, market intermediaries, and consumers. The emerging scenario is that of producers and cybermediaries competing to capture the benefits of Internet-based E-commerce,

traditional intermediaries facing some threats, and consumers facing an increasing range of choices (in terms of products and prices) but also rising search costs.

Table 2 here

If the growth rates are sustained at high levels and as commercial applications of the Internet multiply, there will be an intense race to capture the economic benefits arising from the possibly lower agency costs, lower transaction costs, and exponentially rising positive network externalities of Internet. In this race, the institutions that come out ahead may not be the ones that dominated markets in the industrial age. Just as shopping malls and discount merchandisers captured the external benefits of population shifts to suburbia and exurbia, so too new "marketspace" institutions are likely to capture most of the economic benefits of Internet's network externality. The emergent successful players will be characterized by their abilities to understand: (1) computer-mediated (rather than televisual) communications, (2) asynchronous, many-to-many (rather than synchronous, one-to-many) communications, (3) interactive (rather than passive) consumer behavior, (4) spontaneous, loose, open (rather than administered, tight) channels, and (5) real-time (rather than delayed) market feedback mechanisms.

Uncertain Business Models

In principle, the idea of building an electronic marketing system that lowers agency and transaction costs and offers rising benefits of network externality is very appealing. By early 1999, about 40% of traditional large retailers in the U.S. had opened E-commerce sites and the remaining retailers were racing to do so (Grover 1999). Not only large organizations, but also small and medium sized enterprises (SMEs) are extensively using the Internet in business transaction. By early 2001, a quarter of small businesses in the U.S. were using the Internet for providing customer service and support and 10 % were using email marketing to promote services (Nua Internet Surveys 2001).

Similarly, direct producer-to-customer E-commerce sites and various types of cybermediary sites were also proliferating. While the appeal of E-commerce was evident in these trends, it was not clear if the business models to turn E-commerce into a profitable activity had crystallized. Even in the case of Amazon.com, the most prominent of cybermediaries, the net loss widened from 397 million in the first nine months of 1999 to \$866 million in the corresponding period of 2000¹. Similarly, Priceline.com, once lauded for its innovative business model is now hanging on the edge of oblivion. Its stock prices, once soaring at \$162 (Selicaro 2001) plunged to near \$2 by mid-March 2001.

For producers with established distribution channels, E-commerce offered an exciting opportunity as well as a major risk – of losing the support of their traditional channels. This has prompted companies such as Compaq to search for business models that would capture the benefits of E-commerce while not alienating traditional channels (Egermann 1997). Similarly, established retailers also faced a dilemma. They could not ignore E-commerce and had to open up transaction-oriented websites. At the same time,

¹ <http://biz.yahoo.com/fin/20001030/amzn/ti.html>

they risked cannibalizing their own high-margin, in-store business by increasing volumes of low-margin, Internet business (Grover 1999).

It will take many years to establish the specific modalities of converting the *potential* benefits of E-commerce into *practical* benefits in terms of strong and growing profit margins. This is a challenge that needs to be addressed both by strategic marketing practitioners and by researchers studying the nature and operation of electronic markets.

Focusing on Consumers and Marketing Institutions

It should be noted that, after the early euphoria over Internet-based commerce has settled, the pace of changes in marketing systems and methods will be dictated not by the pace of technological change but by the rate and nature of changes in consumer behavior. While in retrospect many changes in the market-oriented lifestyles and behaviors of consumers may appear dramatic, such changes are fairly slow compared to the rate of technological change. For example, after over a century of experience with the telephone and over four decades with the television, consumers' use of these media for shopping is limited and supplementary compared to in-store retail commerce. Similarly, consumers' participation in Internet-based commerce will remain supplementary to established forms of commerce for decades to come. From a marketing systems perspective, in the foreseeable future, we can expect to see the emergence and growth of a significant and parallel set of marketing institutions that offer electronic forms of commerce, in competition with but also complementary to established forms of commerce. In selected arenas, such institutions may surpass and supplant established forms of commerce. It is in these arenas that the electronic wheel of retailing will spin the fastest.

Emerging Marketing Research Needs

The question of how widespread and entrenched electronic markets will become is an open one. It is certain, however, that they will play an increasingly significant role in the markets and marketing methods of the future. A great deal of strategic research and practitioner-directed counsel on electronic commerce and Internet-based marketing is already on the bookshelves and news stands. What we lack are systematic studies of how the marketing systems, institutions, practices, and concepts will transform as a result of these changes. We have presented a sampling of economic perspectives that could be used to plan and conduct such research. The changes, however, are not merely economic. Internet-based commerce will have deep political, cultural, and social implications as well (see Brown 1995, Miller 1996). It is, of course, easier to take a historical perspective on such changes; and there is no doubt that future historians will find the emergence and growth of electronic commerce a fascinating topic of study. Major public policy changes, and mass private investments that will shape Internet and its successors, are happening now. To have some influence on such changes, or at least to prepare the field of marketing as to what systemic changes lie ahead, marketing research that looks at the immediate past, the present, and the immediate future is very important at this juncture. Just as significant studies of how distribution and market systems of a high-level economy operates appeared in the middle decades of this century, major studies of how

Internet-based and other forms of electronic commerce will shape our markets are needed in the closing decade of the century.

REFERENCES

- Anderson, Christopher (1995), "The Internet: The Accidental Superhighway", *The Economist*, July 1, 5-20. [URL: <http://www.economist.com>]
- Andersen Consulting (1999), *e-Europe takes off*. Available at <http://www.ac.com> (accessed on December 23, 1999).
- Arndt, Johan (1983), "The Political Economy Paradigm: Foundation for Theory Building in Marketing", *Journal of Marketing*, 47 (Fall), 44-54.
- Bakos, Yannis J. (1991), "A Strategic Analysis of Electronic Marketplaces", *MIS Quarterly*, September, 295-310.
- Benjamin, Robert and Rolf Wigand (1995), "Electronic Markets and Virtual Value Chains on the Information Highway", *Sloan Management Review*, Winter, 62-72.
- Berry, Leonard L. and A. Parasuraman (1991), *Marketing Services: Competing Through Quality*. New York: The Free Press.
- Brown, Stephen (1995), *Postmodern Marketing*, New York: Routledge.
- Brynjolfsson, Erik, Thomas W. Malone, Vijay Gurbaxani, and Ajit Kambil (1994), "Does Information Technology Lead to Smaller Firms?", *Management Science*, 40 (December), 1628-1644.
- Chang, Joseph (2000), "Chemical makers plan Internet service", *Chemical Market Reporter*, 257 (13), 5.
- DomainStats.com (2001), <http://www.domainstats.com>
- Egermann, Franz (1997), "The Compaq Optimized Distribution Model," in *COTIM-97 Proceedings*, N. Dholakia, E. Kruse and D. R. Fortin (eds.), Kingston, RI: RITIM, 171-174.
- Fama, E.F. (1980), "Agency Problems and the Theory of the Firm", *Journal of Political Economy*, 80 (April), 288-307.
- Fischer, C. (1987), "The Revolution in Rural Telephony: 1900-1920" *Journal of Social History*, 21, 1, 5-26.
- Friel, Daniel (1998), "Window on the Web," *Business Economics*, (July), 66-67.
- Gibson, William (1984), *Neuromancer*, New York: Ace.
- Goldstein, David (2000), *History of the Internet*
<http://www.nic.at/english/geschichte.html>
- Grover, Mary Beth (1999), "Lost in cyberspace," *Forbes*, 163 (March 8), 124-128.
- Gummesson, E. (1987), "The New Marketing: Developing Long-Term Interactive Relationships", *Long Range Planning*, 20 (4), 10-20.
- Gupta, Sunil and Rabikar Chatterjee (1997), "Consumer and Corporate Adoption of the World Wide Web as a Commercial Medium," in *Electronic Marketing and the Consumer*, Robert A. Peterson (ed.), Thousand Oaks, CA: Sage, 123-138.
- Gurbaxani, Vijay and Seungjin Whang (1991), "The Impact of Information Systems on Organizations and Markets", *Communications of the ACM*, 34 (1), 59-73.
- Hart, Jeffrey, R. Reed, F. Bar (1992), "The Building of the Internet: Implications for the Future of Broadband Networks", *Telecommunications Policy*, November, 666-89.
- Hoffman, Donna L. and Thomas P. Novak (1995), "Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations", July 11. [URL: <http://www2000.ogsm.vanderbilt.edu/cmepaper.revision.july11.1995/cmepaper.html>]

- Jensen, M.C. and W.H. Meckling (1973), "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure", *Journal of Financial Economics*, 3 (October), 305-360.
- Johnston, Russel and Paul R. Lawrence (1989), "Beyond Vertical Integration-The Rise of the Value-Adding Partnership," *Harvard Business Review*, 66 (July/August), 94-101.
- Katz, Michael L. and Carl Shapiro (1985), "Network Externalities, Competition, and Compatibility", *American Economic Review*, June, 424-440.
- Katz, Michael L. and Carl Shapiro (1986), "Technology Adoption in the Presence of Network Externalities", *Journal of Political Economy*, 94, 822-41.
- King, Julia (1999), "Shipping Firms Exploit IT to Deliver E-commerce goods," *Computerworld*, 33 (31), 24.
- Kirkpatrick, David (1994), "A Look Inside Allen's Think Tank: This Way to the I-Way", *Fortune*, July 11, 78-80.
- Klein, Maury (1994), *Unfinished Business: The Railroad in American Life*, Hanover, NH: University Press of New England.
- Lee, Ho-Geun and Theodore H. Clark (1996), "Impacts of the Electronic Marketplace on Transaction Cost and Market Structure," *International Journal of Electronic Commerce*, (Fall), 127-149.
- Malone, Thomas W., JoAnne Yates, and Robert I. Benjamin (1989), "The Logic of Electronic Markets", *Harvard Business Review*, May-June, 166-172.
- McKenna, Regis (1995), "Real-Time Marketing", *Harvard Business Review*, July-August, 87-95.
- Miller, Steven E. (1996), *Civilizing Cyberspace: Policy, Power, and the Information Superhighway*, New York: ACM Books.
- Mueller, M. (1993), "Universal Service in Telephone History: A Reconstruction," *Telecommunications Policy*, 17,5, 352-369.
- National Academy of Sciences (1994), "Realizing the Information Future: The Internet and Beyond" [URL: <http://xerexes.nas.edu:70/1/nap/online/rtif>]
- Negroponte, Nicholas (1995), *Being Digital*, New York: Alfred Knopf.
- Nielsen, J. (2000), *Kill the 53-day Meme*, <http://www.useit.com/alertbox/9509.html>,
- Nua Internet Surveys (1997), "Commercial Sites," May 12th.
- Nua Internet Surveys (2000), "Number of Pages Online Tops 2.1 Billion," July 13th.
- Nua Internet Surveys (2001), "The Kelsey Group: US Small Businesses Move Online," February 7th.
- Pandya, Anil and Nikhilesh Dholakia (1992), "An Institutional Theory of Exchange in Marketing", *European Journal of Marketing*, 26 (12), 19-41.
- Peppers, Don and Martha Rogers (1993), *The One to One Future: Building Relationships One Customer at a Time*, New York: Doubleday.
- Rayport, Jeffrey E. and John J. Sviokla (1995), "Managing in the Marketpace", *Harvard Business Review*, 72 (November-December), 141-150.
- Rheingold, Howard (1993), *The Virtual Community: Homesteading on the Electronic Frontier*, Reading MA: Addison-Wesley.
- Ross, S. (1973), "The Economic Theory of Agency: The Principal's Problem", *American Economic Review*, May, 134-139.
- Sarkar, Mitra Barun, Brian Butler, and Charles Steinfield (1995), "Intermediaries and Cybermediaries: A Continuing Role for Mediating Players in the Electronic

- Marketplace”, in *COTIM-95 Proceedings*, R. R. Dholakia and D. Fortin (eds.), Kingston, RI: RITIM, 82-92.
- Selicaro, Dan (2001) "Curtain Call for Priceline.com," *Upside*, 13 (2), 36-37.
- Shapiro, Carl and Hal R. Varian (1998), “Versioning: The Smart Way to Sell Information,” *Harvard Business Review*, 76 (November-December), 106-114.
- Tomic, Vesna (1998), “Global update: Internet spreads its reach,” *Telephony*, (March 16), 32-36.
- Tse, Sandy, David Sutton, Philip Tsang and Charles Stuart (1995), "The World Wide Web: Changing the Way We Work, Learn and Play," in *COTIM-95 Proceedings*, R.R. Dholakia and D. Fortin (eds.), Kingston, RI: RITIM, 165171.
- UNCTAD (2000), *Building Confidence: Electronic Commerce and Development*, United Nations Conference on Trade and Development, UNCTAD/SDTE/MISC.11.
- Wigand, Rolf T. and Robert I. Benjamin (1995), “Electronic Commerce: Effects on Electronic Markets,” *Journal of Computer-Mediated Communication*, 1 (3).
Available at <http://www.usc.edu/dept/annenberg/voll/issue3/wigand.html>
- Williamson, O. E. (1975), *Markets and Hierarchies*, New York: Free Press.

Table 1: An Evolutionary Perspective on Market Transactions

Historical Phase	Premodern Pre-Industrial Age	Modern Industrial Age	Postmodern Information Age
Overall characterization of market transactions	One-to-One	One-to-Many	Many-to-Many
Nature of relationship	Personal relationship	Mediated relationship	Electronically mediated, simulated "one-to-one" relationship
Market Response	Immediate and Direct	Delayed and Indirect	Immediate and Direct
Volume of Transactions	Limited	Large	Large
Market Reach	Local	National	Global
Information Sources for Buyers	Personal sources of information	Media-dependent, plus some word-of-mouth	Net-based impersonal and "personal" sources
Connection among Buyers	Limited, personal	Non-existent, or Very Limited	Extensive, Impersonal

Table 2: Economic Effects of Internet and Impacts on Marketing

Economic effects		Impacts on		
Type of cost/ benefit	Internet-related effects	Producers and Providers	Market Intermediaries	Consumers
Agency Costs and Benefits	<ul style="list-style-type: none"> · Lower coordination and control costs · Potentially greater opportunity costs and risks of delegated agency · Greater benefits of wide-ranging agency 	<ul style="list-style-type: none"> · Cost savings from flatter organization · Potential delegation of agency to customers · Ability to reach vast, geographically spread markets at modest costs 	<ul style="list-style-type: none"> · Traditional intermediaries face threat of being bypassed · New cybermediaries have opportunity to capture agency-delegation benefits by “aggregating” large numbers of repeat-visiting users 	<ul style="list-style-type: none"> · Convenience of “self service” available at desktops and in homes · With some investment of time, ability to control many aspects of market transactions
Transaction Costs	<ul style="list-style-type: none"> · Faster, more direct transactions · Lower transaction costs 	<ul style="list-style-type: none"> · Shorter and faster production and order-processing cycles · Lower costs and stronger profit margins 	<ul style="list-style-type: none"> · Direct transactions threaten traditional intermediaries · Cybermediaries may benefit from lower transaction costs 	<ul style="list-style-type: none"> · Faster access to desired items at potentially lower prices
Network Externality	<ul style="list-style-type: none"> · Positive externality of large networks · Negative externality when networks are intrusive 	<ul style="list-style-type: none"> · Frantic race to create large, ubiquitous, user-friendly networks · Trade-offs have to be made between reaching out to (“assisting”) users and infringing on their private time and (virtual) space 	<ul style="list-style-type: none"> · Cybermediaries attempt to aggregate users and to become their “network of networks” – that is, a one-stop site for multiple types of transactions in cyberspace 	<ul style="list-style-type: none"> · Incentives available to join networks, and to switch networks · Greater choices but increasing search costs · Standardization (no/low choice) becomes appealing if it lowers search costs without significant price penalty