

ELECTRONIC COMMERCE: EMERGING PATTERNS  
AND STRATEGIC IMPLICATIONS

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## ABSTRACT

Advances in information technologies enable firms to expand electronic commerce - the exchange of valuable information, goods and services across electronic media. This paper looks at how businesses are adopting and using technologies like the Internet and World Wide Web for electronic commerce. I propose that electronic commerce will dramatically reduce transactions costs requiring managers to re-develop their firm's strategy to focus on more fundamental sources of competitive advantage. I identify responses required to compete in a low transactions cost environment and provide illustrative examples of firms executing such a strategy.

## **1.0 Introduction**

Advances in information technologies and electronics have resulted in two simultaneous shifts: a dramatic expansion of computing hardware and software capabilities and an equally dramatic fall in the unit cost of information technologies. This combined with greater demand for information processing is leading to the widespread adoption of powerful desktop computers, communications equipment and software, creating the building blocks of a global information infrastructure or "infostructure". Today the Internet and its various applications and information services such as those provided by the World Wide Web provides a prototype of the emerging global infostructure.

This paper looks at the implications of this emerging infostructure on business practice and strategy. It proposes that electronic commerce, the application to this infostructure to supporting business transactions and strategy will dramatically reduce transaction costs. Managers will have to rethink the firm's business strategy and responses to the new opportunities and threats presented by these changes.

## **2.0 The Internet as a Prototype of the Global Infostructure**

The Internet provides users with access to a variety of electronic communication, information retrieval and interaction capabilities. These include: electronic mail and news services to send or broadcast messages to other users, file transfer to access and retrieve files from remote computers, the ability to use and connect to remote computers, and seamless user access and browsing of multimedia documents distributed across multiple server computers through the World Wide Web (WWW). Emergent services on the WWW and Internet include video-conferencing, telephony and the distribution of audio.

Since 1993 the Internet has grown at an exponential rate. The number of host computers connected to the Internet increased from 1.3 million to 12.8 million between January 1993 and July 1996 spanning over 150 countries. Drivers of rapid Internet growth include: customer demand for inexpensive communications, the availability of interesting content, the lowering of technology costs, and the availability of useful software for Internet

publishing such as WWW servers and browsers. Furthermore all major vendors have agreed to conform to the Internet, and both governments and businesses have embraced the Internet as a critical resource.

The decentralized ownership and management of the Internet also supports its growth. All firms who are connected to the Internet plan and pay for their own connections to the Internet and share in the capitalization of the overall network and costs of their own portion of the network<sup>b</sup>. This decentralized planning and funding model for a telecommunications infrastructure distributes investment risks permits the Internet to grow quickly to meet user needs.

In 1995 the Nielsen/CommerceNet survey[Nielsen Media Research, 1995 #17] of Internet demographics estimated 37 million people over the age of sixteen in USA and Canada had access to the Internet. About 18 million had access to the WWW. Both the Nielsen and Hermes [2] project surveys found Internet users are well educated and affluent, making them an ideal target for marketing. These surveys also showed users of the Internet were primarily men with a large number of international users. Respondents to the various surveys also said that they gathered purchase related information over the network, stating that convenience was more important than price for many purchase decisions. The Nielsen survey also noted that 2.5 million WWW users have already purchased products over the Internet. In addition, users stated that their gathering of purchase related information on the Internet surpassed the use and effectiveness of direct mail.

With the rapid global growth in corporate and consumer uses of the Internet, it has become the largest common interactive marketing infrastructure in the world. As a worldwide interconnected and interactive network of multimedia information it also constitutes the prototype of the emerging "global infostructure". Even as the Internet expands in capabilities and size, its key features remain the same:

- Interconnected networks which allow global communication and distribution of multimedia information

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<sup>b</sup> See Varian[1] for a discussion of the economics of the Internet.

- Interactive and greater user control over access and communication of information
- Decentralized control over networks, publishing and information servers
- Open standards for interconnection of hardware or software applications.

The emerging business uses of this global infostructure promise to dramatically alter business practice and competition. Below I examine current patterns of business use, and the emerging consequences of this infrastructure on business practice and strategy.

### **3.0 Business Use of the Internet: Current Practices**

Our research identified six categories of Internet use to gain competitive or cost advantages. These are:

- To apply internets for redesign enterprise wide information systems.
- To leverage worldwide resources.
- To improve product support and customer service
- To bypass traditional intermediaries
- To provide value added information services
- To access specific market segments through new media channels

Below I provide illustrative case examples of the above applications.

#### **3.1 Intranets: Redesigning Enterprise Wide Information Systems**

Many firms are building Intranets for implementing enterprise wide communications and firm specific applications. For example, at Morgan Stanley Inc., a major New York based investment bank the WWW is used to access routine information or to replace the routing of key paper reports faxed or delivered to multiple people. Analysis of paper broadcasting processes in the firm revealed that the company could realize between \$300,000 and \$700,000 annually in savings per single process. In the first eighteen months of using the WWW, the company has already realized over \$1 million in documented annual savings, and nearly all of the company's 10,000 employees access the company's web server on a weekly or daily basis.

Managers at Morgan Stanley recognize that timely access to relevant information and knowledge is a critical source of advantage in the industry.

While web servers dramatically reduce the costs of internal publishing and information broadcast, an emerging focus of Intranet developers is to use the Intranet for the distribution and maintenance of software applications across the firm and to support workflow. A critical problem faced by the information technology staff in organizations such as Morgan Stanley is the update and reconfiguration of systems. Languages such as Java and ActiveX enable companies to create portable applications that can be delivered to customers on demand and run on different hardware platforms. This can dramatically reduce system installation and support costs. In addition WWW technologies can be used to support work flow and training.

For Morgan Stanley, the shift to WWW applications and the use of Java or ActiveX will enable seamless distribution of information and client side applications. The shift to WWW reduces the costs of key corporate processes, installation costs of new software, and training costs by providing a consistent interface across platforms. In addition applications can run independent of hardware and operating system platforms reducing buyer dependence on specific hardware and software providers.

### **3.2 Leverage Worldwide Resources: The Small Business Advantage**

The low costs of user or publisher participation in the emerging infostructure enable small firms to access expertise, information and markets worldwide at low costs. In 1996 it costs less than \$3000 for hardware and software and as low as \$650/month for a shared T-1 access to the Internet in New York City. This is a sufficiently low cost for small business and many individuals to set up servers on the Internet. Thus the Internet effectively lowers barriers to small firms to enter and compete in providing products to the global market place.

As a consequence firms are also able to gather information and competitive intelligence across the Internet. For example Japonica Partners a small investment firm has created the Japonica Interactive Network. This network allows users to share company analyses and reports with institutional networks, as well as communicate with customers of key companies to

support corporate research. Using the Internet for interaction through electronic mail and WWW facilities, Japonica can leverage the expertise of many institutional investors and analysts and identify potential firms for take-overs, re-structuring or investment [3].

Individuals and other small businesses also have access to a tremendous amount of free and useful information over the Internet. For example, the Securities and Exchange Commission's (SEC) EDGAR filings provide Internet users with detailed information on public companies, ranging from corporate financial statements, executive pay, directors, and events that affect the performance of the firm. This information is used for education, research, marketing and investment purposes by individuals and companies.

### **3.3 Improved Product And Customer Support**

A number of firms are using the Internet as a way to redefine customer relations and support. For example General Electric's plastics division provides its industrial customers with the GE Select diskette that automatically dials the customer to GE Plastics WWW server. Alternatively if users have worldwide web access they can use the Internet to connect to the GE server directly. Once connected to the web server, customers can find out about the various plastics products of GE, the processes that can be applied to these products, and detailed technical specifications. Previously technical support staff mailed this information to the customers or alternatively provided help over telephones. Another way the GE site enhances customer value is by hosting a tech tip of the week contest. Users of the web system can use electronic mail to send any discoveries in the use of GE Plastics' products to the Tech Tip of the Week contest. The Tech Tip contest provides GE with new ideas to share with its customers in the use of its products. These tips also enable GE sales representatives to illustrate new uses of products to prospective clients. On-line surveys of the site suggest 70 percent of users are affiliated with the plastics industry. While GE cannot yet quantify cost savings, more and more customers are using this facility. Increasingly calls to 1-800 numbers for customer inquiries and product support are referred to this site on the Web. User surveys show many users of the WWW site initially learned about the facility after calling the 1-800-numbers.



The General Electric site is instructive in three ways. First, it represents a way in which customers can receive direct and detailed information from the company, virtually any time and anywhere at low cost. Second, it represents some displacement in the cost of customer support directly to the customer who now searches through the web site at their discretion to solve problems. Third it represents a way in which GE can learn new and interesting facts about its products and leverage the knowledge of its customers to further add value to customer support. By displacing routine customer information provision services to the Internet, firms are focusing their efforts on providing more value added services to customers. Many other firms are providing similar customer support information including information update or even software upgrades over the Internet.

### **3.4 Disintermediation: The Bypass of Traditional Intermediaries and Creation of New Market Spaces**

The ability to communicate at low cost through the Internet allows firms to completely disintermediate various intermediary roles in transacting or connecting to suppliers and customers[4].

For example Virtual Vineyards is a small California based wine retailer that sells wine from over 40 smaller specialty California vineyards on its WWW site. This company has no real storefront except on the World Wide Web. Its electronic store is implemented through partnerships with Wells Fargo Bank, different vineyards, a third party warehouse and Federal Express for transportation. At the Virtual Vineyards WWW site, a customer can browse through information about wines from different vineyards and get expert recommendations on selections. Using an online order form the user can order the wines, then pay with a credit card, or Cybercash instantly in a secure manner. Alternatively payment information can be faxed or conveyed by phone to the company. Once an order is completed the wine can be shipped using ground transportation, two days or even next morning air delivery.

In contrast to the traditional liquor store Virtual Vineyards is able to provide rich value added information about food and wines to their customers. Their electronic mailing list informs subscribed users of new prices and products. Their frequently asked questions sections respond to customer questions



received over electronic mail. These include suggestions for selecting wine. As Peter Granoff, the co-founder of Virtual Vineyards notes "the Internet allows users to receive information, otherwise lost in different stages of traditional distribution networks".

Virtual Vineyards incurs virtually no inventory costs, and has low fixed costs. Only a small inventory of wine is stored at the company's warehouse to fulfill fast orders. The remainder is delivered to the warehouse in almost a just in time basis based on orders. Orders have been received from all over the world, such as a large order for 18 bottles (\$780) from Johannesburg, South Africa. While California accounts for 25% of sales, half the sales orders are from the East Coast, and 10% is international and growing (especially Japan).

The Virtual Vineyards case is instructive in three ways. First like mail order firms Virtual Vineyards is able to bypass traditional distribution intermediaries and to avoid storefront rental and labor costs. Second, the firm is able to access both the domestic United States and international markets at far lower costs than prior models of business and provides users with otherwise difficult to access products. Third unlike mail order catalogs, through electronic mail and other mechanisms, Virtual Vineyards is able to establish a better and more inter-active relationship with its customer base at low cost. The owners can respond to user concerns. Given the growth in mail order services, and Internet services like Virtual Vineyards, traditional retail outlets to upscale consumers can be expected to experience substantial bypass and earnings pressure.

### **3.4 Value Added Information Services: Information Brokerage**

As the Internet grows as a infostructure, numerous companies have emerged as information brokers who solely provide value added information on the Internet. For example Yahoo, Infoseek, Altavista and others provide search and directory services on the Internet. Yahoo currently contains entries of interesting sites, sorted by different subject categories, while Altavista

provides a full text search engine on the Net. These services reduce the search costs of Internet users who wants to discover a piece of information<sup>1</sup>.

These examples illustrate the emergence of new businesses to provide value added information services in the infostructure. While advertising and subscriptions fund many information vendors, low cost payments and settlement systems such as Cybercoins or Netbill which reduce transaction costs to a fraction of a cent will enable information providers to price on a pay per use basis and expand their markets to new viewers.

### **3.5 Market Segmentation and Channel Management**

As the user base of the Internet and emerging infostructure increases, its users and content becomes more diverse. In this new environment which users can traverse at great speeds, users will select specific sites that best meet their information and other interests. Thus this new marketplace is segmenting along gender, ethnicity, lifestyles, interest, age, income, professional and other demographic categories. The Internet makes it increasingly easy and inexpensive to communicate up to date information targeted and tailored to the interests of specific user groups. For example, Indiaserver is a site on the Internet that provides expatriate Indians with news from their home country, combined with calendars of Indian community events, and other information geared to those interested in India. This site helps communicate specific product and promotion campaigns targeted to this community of two million in America who have the second highest average family incomes in the United States following the Japanese. This creates a small but attractive demographic for targetted product advertising to a community with high disposable income.

In summary, while early uses of the Internet primarily focus on publishing and improving the flow of information or access to information by firms and individuals, the true potential of this infostructure lies in transforming the relationship between customers and suppliers and enabling the widespread exchange of goods and services. Below we examine the requirements and

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<sup>1</sup>While search and access tools to information on the Net is now available from the desktop, the explosion in information on the Net is reducing the precision of responses to search queries. Nevertheless search and access to information is cheaper and generally more simplified

consequences of advancing this infostructure to support high value transactions.

#### **4.0 Advancing the Infostructure to Support Business Transactions**

Advances in five key infrastructures are required for firms to realize substantial savings or revenue growth from electronic business transactions. These include: improved user interfaces and network access, software agent technologies, low cost settlement and payment processes, transaction templates, and security and trust mechanisms. These infrastructures are discussed below.

High speed network access and multimedia capabilities are an imperative for firms to present their advertising or other information in a compelling way to customers. Today key bottlenecks of poor multimedia capabilities and poor network access facilities for most users are being overcome as desktop personal computers, monitors and software for displaying multimedia improve rapidly and as network technologies such as Asymmetric Digital Subscriber Loop and cable modems increase usable bandwidth to the home.

Software agents are programs that users can customize to perform an information search or processing function. Software agent technologies will allow customers to search for goods and find the lowest price on a specific good. Agent technologies can also determine the best fit of a product to consumer preferences. While agent technologies in a distributed computer network are still in the infancy, complex software agents are currently being created which allow users to surf the WWW automatically and retrieve objects of importance to them. For example Andersen Consulting's BargainFinder program already provides an experimental software agent to support music shopping over the Internet. This agent finds the lowest price on the music product across multiple stores. Firefly's agent technologies in contrast studies user behaviors and selections on the Internet to infer preferences using a clustering technique and suggest other products that may be of interest to a customer.

Efficient paper-less payment and settlement systems are the third key infrastructure necessary for extensive direct transactions. Various systems

currently exist such as First Virtual, Cybercash and Digicash. Current electronic payment and settlement systems charge merchants or users at a comparable rate to credit cards. The transaction fees are expected to drop substantially as this market becomes more competitive. Fees will approximate to a few pennies per transaction, dramatically reducing the transaction costs of payment and settlement. These new systems will enable inexpensive payments and settlements to support electronic commerce, and they will complement existing cash and credit card mechanisms.

Transaction templates are another infrastructure requirement for widespread electronic commerce. Transaction templates provide both formal languages and standardized ways of describing products, contracts and other attributes of transactions. Standardized message formats are important as they provide well agreed upon models for users to specify products and to receive information on quality, price, and other features of the product. Previous Electronic Data Interchange (EDI) initiatives have developed some text based standardized templates for message exchange customized to different industry sectors. In the United States the American National Standards Institute X.12 series formally specifies EDI standards. While current EDI standards are being implemented on the Internet, more specialized standards including those incorporating multimedia features are required for describing consumer goods and expanding descriptions for features and quality attributes. Advanced transaction templates will make it easier for software agents to search and compare products and should accelerate the growth of electronic commerce.

Another key infrastructure required for electronic commerce are security and trust mechanisms to mitigate against various transaction risks confronted by buyers and sellers. The three basic components to this infrastructure are discussed below.

**Authentication** systems verify the counter party to an electronic communication, and transaction is whom she or he purports to be. The technology to solve this problem using public key cryptography is well known but must be implemented by certificate authorities. Certificate authorities are trusted third parties who certify public keys of other parties and hence verify

the other party's authenticity. Various industry groups and the United States Post Office are beginning programs to establish certificate authorities to support electronic commerce.

**Security** mechanisms assure that messages between electronic trading partners remains confidential, or protect the hardware and software from unauthorized access. A number of good technical solutions are available for security. Commercial encryption systems (such as those using the RSA algorithms) provide robust security for message transfer as long as the keys used to encrypt messages are of a large size. Firewall software and hardware monitors traffic to and from the firm's internal network, enforcing various limitations on access and transfer of messages consistent with the firm's policies.

**Trust** mechanisms provide legal or alternative frameworks for resolving any disputes that arise during transactions. Trust facilitates transactions and reduces the risks confronted by buyers and sellers. Besides certificate authorities, trust mechanisms that must be adapted for electronic commerce include: cyber-notaries, insurance, and laws to govern international and interstate transactions. As electronic commerce spreads a key unresolved issue is the jurisdiction of individual states and international countries over transactions that may over a network.

While the progress to technical solutions is rapid, transaction templates, security policies, trust mechanisms and a legal framework to govern electronic commerce require institutional commitment as well as new levels of consensus among these different industry stakeholders. Institutional agreements are likely to substantially lag the capabilities made feasible by new technologies. Two features will most likely characterize the widespread institutional adoption and use of the emerging infostructure. First trade associations will become umbrella organizations where specific industry members can share knowledge and develop transaction templates and trust mechanisms of use to the industry. This will mean that transaction oriented applications on the Internet will initially be constructed or adapted to the specialized needs of specific industries. Once these industry specific systems become stabilized they will establish gateways to systems that serve other



communities<sup>c</sup>. Second the processes of communication and ratification of templates or other systems will increasingly be electronic and less formal. Proposals will be made, evaluated, and firms will accept them as de facto standards if it solves problems before formal ratification by a standards body like the American National Standards Institute. Standard setting processes will thus accelerate and have the potential of being more open to review by different interested parties.

When new software agent technologies, transaction templates and security and trust mechanisms gain widespread use, the transaction costs incurred by firms and individuals will fall dramatically. Transaction costs[5, 6] are the various costs incurred in the purchase or sale of a good or service. These costs include those of searching for and identifying products, drafting, negotiating and safeguarding the terms of a sale or purchase, payment and settlement, and the costs incurred to enforce contracts or to correct and resolve contract disagreements. Lower transaction costs, will make markets more efficient and competitive. This will have major consequences for firm strategy.

## **5.0 Competing in the Wired World: Redefining Strategy**

How will firms thrive in electronic market spaces characterized by low transaction costs and greater market efficiency? As transactions costs fall companies that previously exploited information asymmetries between buyers and sellers (such as real estate brokers), or those companies that leveraged transaction cost advantages by locating close to customers to reduce the customers' search and purchase costs (e.g., retailers) will find their profit margins and competitive advantage erode. This poses a key managerial challenge in the wired world.

A second major challenge in the wired world will be to adapt marketing and promotion strategies to capture the user's mindshare in an infostructure with an increasing overabundance of information. As the costs of electronic

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<sup>c</sup> The Securities Industry Association currently provides a forum for its industry members to define a certificate authority and certification policy requirements for its member firms. This will enable shared industry wide electronic authentication of counter parties for secure transactions over the Internet.



publishing plummet, every person connected to the infostructure can become a worldwide publisher. In this increasingly noisy environment, the consumer's attention will become the critical and scarce resource

To respond to the challenges of greater market efficiency, lower margins and information overload managers will have to reorganize firm's strategy and organization for competitive advantage. I use the case of Amazon Books to illustrate various responses for market leadership, and identify key strategic responses below.

### **5.1 Competing in the Wired World: The Case of Amazon Books**

Amazon Books a web based retailer exemplifies many successful responses to the emerging business environment. Amazon is effectively becoming the Internet's version of a book store "category killer" like the chain Barnes & Noble in the physical space.

Amazon offers a catalog of over 1.1 million books enabling buyers to purchase books anytime, anywhere on the WWW. This selection is typically over five times what can be carried in the largest bookstore. A large selection provides buyers with a greater probability of finding their specific choice available through Amazon. However, Amazon incurs virtually no direct warehousing, or sales persons and rental costs as they have automated the order process and directly ship most books from the publishers warehouse to the buyer. By not operating retail facilities or intermediate warehouses, Amazon can save costs they can pass on the customer. These strategies simultaneously lower costs and increase the scale of Amazon's business.

In addition Amazon involves their customers in the selling process, by having them review books on the web and make suggestions to friends. Their ministore program allows other websites to create mini-bookstores which leverage Amazon's inventory and delivery system to offer books. Those who open minibookstores get a commission ranging from 3% to 8%. These strategies involve customers in creating benefits for Amazon, other customers and proliferate the Amazon brand across the WWW. Amazon has also created automatic software agents that users can program to alert them

on special offers and new book arrivals by specific authors or themes. This allows Amazon to tailor service to specific clients.

All these strategies have led to 35% a month growth in the sales of Amazon and a well recognized brand name in the Internet world. We can learn a number of lessons from Amazon and other examples on the WWW.

### **5.2 Market Leadership: The Importance of Scale and Specialized Organization**

Price wars and competition for standard products will increase as software agents identify the lowest cost suppliers. In the emerging infostructure where nearly all electronic storefronts are a few mouse clicks away, a hundred different electronic storefronts for the same product will be unnecessary unless each storefront carries unique merchandise or provides better prices. To realize substantial profits a virtual store like Amazon must have sufficient scale to negotiate lower prices from its suppliers and a high turnover of books with low margins to realize substantial net profit. When merchandise is not easily differentiated, markets will favor firms with economies of scale. Larger firms will be able to negotiate lower unit costs in merchandise or parts procurement and distribution, enabling higher margins.

Amazon by aggressively adding titles and publishers to its distribution system is rapidly creating scale deterring entry by smaller competitors. By involving customers in reviewing books and building their own electronic ministores Amazon further expands its reach, turnover of books, and increases its scale. The latter illustrates Amazon leveraging externalities or weak interdependencies between customers to generate increasing returns to scale.

Another example of increasing returns from externalities is illustrated by Netscape who provided their browser virtually free of charge and established the dominant market share. Netscape is constantly enhancing its browser to provide new features that rely on its proprietary server. As more users use the Netscape browsers, other firms that develop innovative features on the WWW are likely to initially license their technologies to Netscape, giving Netscape a market advantage in the markets for server and browser software. This in turn creates a bandwagon effect, leading more users to adopt Netscape technologies and greater dominance of Netscape products in the marketplace.

The ability to exploit externalities for increasing returns to scale is a key source of competitive advantage<sup>d</sup>.

In addition to leveraging scale, Amazon minimizes costs by specializing its organization to effectively utilize information technology for coordination. Amazon minimizes warehouses and inventories, using information technology to coordinate with customers, payment services, publishers warehouses, and logistics providers like Fedex and UPS for order processing, payment, product delivery and fulfillment. If Barnes and Noble were to compete with Amazon, they would have to build a similar virtual model while maintaining their physical retail store model. Few firms are able to simultaneously reconcile and successfully operate different business models.

### **5.3 Market Leadership: Leveraging Learning Relationships**

Another source of superior rents arises from leveraging learning relationships[8] to resell to the same customer or provide superior customer service at a premium price.

Using a software agent a customer can specify both general preferences and specific product requirements to a potential supplier like Amazon. Similarly, a supplier like Amazon can then suggest products which meet the buyer's need. Such systems reduce customer search costs and memory costs, but requires precise and sometimes private information from the customer. As firms like Amazon collect information from their customers and track their purchases, they can leverage the growing information assets to improve the service relationship and thus generate greater revenues or enter into a repeated service relationship with their customers with lower marketing costs.

Other examples of agents supporting specialized learning relationships includes Individual Inc., which provides a customizable news filtering service to clients. Individual representatives invest in learning the new needs of their clients, and adaptive software is used to continue learning and

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<sup>d</sup> See Katz and Shapiro[7] for a detailed discussion of competition given externalities.

adapting products to better match user needs. This forms the basis of providing a customized daily filtered news feeds.

#### **5.4 Market Leadership: Leveraging Proprietary Rights and Differentiation**

A second source of market leadership and superior returns arises from innovation or differentiation of products and services. When an innovation or information is proprietary and protected by patent, copyright or trade secret, the firm can gain superior returns on investment. Service marks on brand and domain names, copyrights on information and artwork, patents on security mechanisms and other Internet technologies provide firms with competitive advantage.

Differentiation is also a key source of competitive advantage. For example, the selection of smaller California vineyards by Virtual Vineyards permits its customers to buy unique merchandise not typically available in retail outlets.

#### **5.4 Leveraging the Media for Creating Brands**

Low cost electronic publishing results in an explosion of marketing information available across multiple channels (for example web sites). Capturing the consumer's mind share (attention) and making them aware of, and helping them interpret product information in this fragmented and noisy environment is a critical precursor to product sales. Thus integrated cross media push/pull strategies will be essential to success in this environment. "Push" strategies make special offers (discounts, coupons, sales) to push the product out to the market place and are most appropriate for lower value added products without a strong brand identity[9] The emerging infostructure can support various push strategies ranging from offering on-line discounts or coupons, to prizes for visiting sites or playing and winning games<sup>e</sup>. For example, Amazon's discounts, and 3% to 8% fees to WWW sites which establish cobranded Amazon book stores illustrates a push strategy.

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<sup>e</sup> See for example: <http://www.riddler.com>

Pull strategies use advertising to build brand identity and “pull” the customer to the product. A brand provides sellers with a price premium over generic products. Branding typically associates a number of valued characteristics with the branded product and reduces the information processing required of the customer to value the product. A brand also establishes a reputation for the seller and a promise between the seller and customer, that the seller will honor the commitments associated with the brand identity. It reduces information overload because the valued attributes of a product are previously communicated with the customer as an attribute of the brand. Building a brand, through advertising over multiple channels will overcome problems of channel fragmentation confronted by sellers. Amazon’s requirement of affiliate sites to prominently display the Amazon logo reflects a brand proliferation strategy.

Building and maintaining brand identities become more challenging in the emerging infostructure. The low cost entry of entry on the Internet enables individuals to bypass traditional advertising channels, promotion and brand management efforts to become opinion leaders influencing brand evaluation and identity. Indeed preserving brands is made difficult when inexpensive Internet publishing allows individuals to disseminate unfavorable reports on products and services to a worldwide audience. For example, when users identified a flaw in Intel's Pentium processor, the discovery was originally transmitted on and discussed on Internet newsgroups. IBM and others made available software to determine if there was a Pentium error. Intel initially played down the error as insignificant and not likely to affect most users. However, discussions on the Internet created substantial consumer pressure, that spilled across to other media. This led Intel to change its policy, apologize for the problem, and permit users to replace flawed chips at no charge. This episode substantially undercut Intel's investment in the Intel Inside brand promotion campaign.

Marketing managers must extend their advertising and brand management strategies to adapt to the new media and opinion leaders on the emerging global infostructure. Innovative and integrated cross media strategies are critical for creating repeated exposures of consistent and complementary marketing messages to consumers. The new media can be used in innovative



ways to engage potential customers in a repeated dialogue and to build a brand identity[10]. For example users can contribute favorable comments and experiences with a product to a web site or become involved in a game around the product (see the interactive ZIMA site or Hellman's (www.mayo.com) site ) while developing brand awareness.

In summary firms that implement effective market push strategies, leverage brand identities in the new media to reduce the information "overload" problem confronted by consumers and capture their attention.

## 7.0 Conclusions

In summary electronic commerce will lead to competitive environment characterized by low transaction costs and an excess of information. To compete effectively in this new environment, firms will have to re-organize around fundamental source of competitive advantage arising from leveraging scale, proprietary advantages from innovation or differentiation, and specialized customer relations. As the Amazon minicase illustrates, a firm may incorporate multiple dimensions in their strategy using technology to lower costs, create customer specialized relationships and accomplish scale. Firms must also organize to compete effectively. Amazon also illustrates inexpensive electronic communications will make many of the existing assets and strategies of firms (such as warehouses, location, marketing tactics and distribution of operations) obsolete and sub-optimal for electronic commerce.

Some firms not well positioned for electronic commerce will have to exit from specific industries. Thus electronic commerce will dramatically alter the competitive environment of firms. Managers will also have to devise new online marketing and cross-media brand management programs. Brand strategies across multiple channels can reduce the information overload and channel fragmentation confronted by customers in this media.

Although electronic commerce is in its infancy, it promises to dramatically alter the structure and processes of commerce. Electronic commerce is a *competitive necessity* as suppliers and customers communicate through new media, but for it to accelerate we need new software agents, transaction



templates, security and trust systems, and improvements in network access and hardware. This transition requires broader social consensus on how to govern transactions over electronic media. Managers will have to invest substantial effort and time, participating in their different industry groups to develop rules, trust mechanisms, and other standards for electronic transactions. It is likely that the social consensus required for exchanges in electronic media will evolve far more slowly than the technical methods for electronic commerce.

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