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Article *in* Internet Research · October 2001
DOI: 10.1108/10662240110402803 · Source: DBLP

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Keywords

Internet, Economy, Innovation, Strategy

Abstract

Electronic commerce or business is more than just another way to sustain or enhance existing business practices. Rather, e-commerce is a paradigm shift. It is a "disruptive" innovation that is radically changing the traditional way of doing business. The industry is moving so fast because it operates under totally different principles and work rules in the digital economy. A general rule in e-commerce is that there is no simple prescription and almost no such thing as an established business or revenue model for companies even within the same industry. Under such conditions, an analytical framework is needed to assist e-commerce planners and strategic managers in assessing the critical success factors when formulating e-commerce business models and strategies. This research develops an analytical framework based on the theories of transaction costs and switching costs. Both demand-side and supply-side economies of scale and scope are also applied to the development of this framework. In addition, e-commerce revenue models and strategies are also discussed. Based on the analytical framework developed by this research, this paper discusses the five essential steps for e-commerce success. They are: redefine the competitive advantage; rethink business strategy; re-examine traditional business and revenue models, re-engineer the corporation and Web site; and re-invent customer service. E-commerce planners and strategic managers will be able to use the framework to analyze and evaluate the critical successful factors for e-commerce success.

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Internet Research: Electronic Networking Applications and Policy
Volume 11 · Number 4 · 2001 · pp. 349–359
 · ISSN 1066-2243

Introduction

E-commerce has changed the way many companies do business. To them, e-commerce is no longer an alternative but an imperative. Many companies are struggling with the most basic problem: what is the best approach for establishing and doing business in the digital economy? Some companies are moving their businesses entirely to the Web (e.g. egghead.com). Some are establishing subsidiaries, then spinning them off as separate online business entities (e.g. barnesandnoble.com) (Gulati and Garino, 2000). Others are investing in or merging with online startups (e.g. PetSmart). There is no simple prescription and almost no such thing as an established e-commerce business model for companies even within the same industry. The industry is moving so fast because it operates under totally different principles and work rules in the digital economy. It is all knowledge-intensive and technology-based. The biggest challenge most companies face is not how to imitate or benchmark the best e-commerce business model in their industry but how to fundamentally change the mindset of operating the traditional business. E-commerce is more than just another way to sustain or enhance the existing business practices. Rather, e-commerce is a paradigm shift. It is a disruptive innovation or technology that is radically changing the traditional way of doing business.

Electronic commerce is a disruptive innovation

Bower and Christensen (1995) introduce the concepts of disruptive and sustaining technologies or innovations. They contend that sustaining innovations are those technologies or processes that foster improved product performance or business operations, while disruptive technologies are those that initially tend to degrade performance but promise greater long-term potential. The technological changes that damage established companies have two important characteristics. First, they typically present a different package of performance attributes – ones that, at least at the outset, are not valued by existing customers. Second, the performance attributes that

existing customers do value improve at such a rapid rate that the new technology or innovation can later invade those established markets. Only at this point will mainstream customers embrace the technology (Bower and Christensen, 1995).

Most current e-commerce practices cannot match the traditional business models in some key performance attributes, such as privacy and security in business-to-consumer (B2C) commerce, and the robustness and capacity of the dedicated electronic data interchange system in business-to-business (B2B) commerce. However, there are streams of technological innovations to improve these key performance attributes for the disruptive technology. For example, streams of incremental innovations in certificate signature technologies will eventually replace the current secure socket layer technology to improve online transaction security. Furthermore, those performance attributes associated primarily with the disruptive technology, which are not realized or valued by existing customers at the outset, once they become established in the new market, streams of sustaining innovations will raise each attribute's performance along steep trajectories to quickly satisfy the needs of mainstream customers. For example, e-commerce allows both customer and supplier to reduce transaction costs significantly and to enable information to reach more people without sacrificing the richness of content (Evans and Wurster, 1997).

Disruptive attributes of electronic commerce

The Internet is transforming the rules of competition and inventing new value propositions. The changes made possible by the Internet are strategic and fundamental (Ghosh, 1998). Senior executives in the traditional brick-and-mortar business facing the challenge of transforming their businesses in the digital economy must be able to understand the disruptive nature of e-commerce. Some of the major disruptive attributes brought by the Internet commerce include:

- *Economics of exchanging information*. The trade-off between richness and reach in information exchange is now being blown up. Information can reach many people through the Internet without sacrificing the richness of the contents (Evans and Wurster, 1997).
- *Connectivity and interactivity*. In e-commerce, connectivity exists between information systems, and communication is two-way and is in real time (Gossain and Kandiah, 1998). These features enable real-time pricing, customer interactions, and very low cost for distributing information goods.
- *Network economies of scale*. Network effects are much stronger in the digital economy. Marketing programs must take advantage of the network effects to build a critical mass of installed customer base.
- *Speed of change*. Executives in every industry must learn to lead and change in "Internet time."
- *Economics of abundance*. Information is a source of revenue (Rayport and Sviokla, 1995) and every business is an information business (Evans and Wurster, 1997; Earl, 1999). In the digital economy, information or knowledge products can be reproduced and distributed for near zero marginal cost.
- *Merchandise exchange*. All-purpose stores or generalists can offer enormous variety (offered by many individual specialists) without building huge display areas that rack up costs and alienate many shoppers.
- *Prosumption*. Customer defines the end product, i.e. the convergence of design with development process and the production of goods and services by customers made possible by the Internet (Tapscott, 1996).
- *Industrial context*. Value was created within the context of industrial sectors, such as manufacturing, retail, and financial services. In the digital economy, value generated in e-business communities transcends industrial sectors (Tapscott, 1999).

Executives must be able to identify and take advantage of these key performance attributes of e-commerce innovation to create new products and services, reach new markets, build customer loyalty, achieve market leadership, optimize business processes, enhance human

capital, and harness technology. Failure to recognize these disruptive attributes when formulating e-commerce strategy and business models may even lead to the demise of the business.

Business transformation process

Much has been written about e-commerce business models and strategies, such as reconfiguration of value chain, alliances and partnerships, integration throughout the company. But these approaches provide little systematic assistance for executives who seek to understand the underlying strategic logic of e-commerce. The following sections present an analytical framework based primarily on the economic reasons to offer business executives and scholars useful tools to evaluate whether a company's e-commerce business model and strategy are viable.

Any organization's input-output transformation process can be represented by:

$$X \rightarrow \square \rightarrow Y$$

In the traditional physical economy (or marketplace), X represents raw materials, such as ore, rubber, and plastic, or parts and components, or all of the necessary inputs that are required to produce the finished products or services. Y represents the finished products or intermediate goods used as inputs to another transformation process. Any organization's transformation process includes one or more of the following four value-adding activities: alter, transport, inspect, and store (Meredith and Schaffer, 1999). Traditional management's focus was to improve the transformation "box" by implementing techniques such as total quality management, lean manufacturing, and process re-engineering. In contrast, in the digital economy (or marketspace), X represents data or information used to create valuable products or services (Ys) for the customers. Value creation process in the digital economy involves five steps: gather, organize, select, synthesize, and distribute (Rayport and Sviokla, 1995). Management should go beyond concentrating on improving the transformation "box" to focus on how to take advantage of the disruptive nature of e-commerce and how to gather and utilize information to create more value for the customers. Table I summarizes and compares these two different business transformation processes. Since information will not be depleted during and after the value creation process, and the more people share the information, the more valuable it becomes, the digital economy relies on the economic principle of abundance.

An analytical framework for evaluating e-commerce business models

A business model (design) is defined by Slywotzky (1996) as:

> The totality of how a company selects its customers defines and differentiates its offerings, defines the tasks it will perform itself and those it will outsource, configures its resource, goes to market, creates utility for customers, and captures profits. It is the entire system for delivering utility to customers and earning a profit from that activity.

In this section, an analytical framework is presented based on the concepts of both demand- and supply-side economies of scale and scope as well as the theories of transaction costs and switching costs. Table II summarizes the framework which can be used to assist business managers or scholars in analyzing the viability of a company's e-commerce business model. However, there is no single dominant effect or cost advantage that will provide a long-term sustainable competitive advantage for a company. But without an understanding of the underlying strategic logic of digital economy, companies will not be able to take full advantage of the disruptive power of e-commerce.

Scale effect

According to the technological view of the firm, the firm is regarded as a synergy between different units at a given point in time to exploit economies of scale or of scope (Tirole, 1988). Economies of scale exist when the production cost of a single product decreases with the number of units produced. In traditional volume industry, larger firms tend to have lower unit costs. In general, traditional economies of scale have generally been exhausted at scales well below total market dominance. Ideally, the strategy was to optimize the level of production

Table I Transformation processes in the physical and virtual economies

X→ □ → *Y*	Physical (marketplace)	Virtual (marketspace)
Transformation process (□)	Alter, transport, inspect, and store	Gather, organize, select, synthesize, and package
Input (X)	Raw materials or intermediate goods	Data or information Sources of input: information generated and gathered from the traditional physical transformation process; and information about customer
Output (Y)	Finished products/services or intermediate goods	Information or knowledge products or services; New information services bundled with physical products
Role of information	Supporting element that facilitates the traditional physical transformation process	Source of value
Economic principle	Economics of scarcity	Economics of abundance
Management focus	Improve the transformation process (□)	Gather and utilize information (*X*) to create more value (*Y*s) for the customer

at the minimum efficiency scale. The traditional economies of scale based on manufacturing are referred as supply-side economies of scale.

Large firm size used to serve as an effective entry barrier in the industrial economy. However, e-commerce and virtual value chain has redefined the concepts of economies of scale which allow small companies to achieve low unit costs for products and services in markets dominated by big companies (Rayport and Sviokla, 1995). Also in e-commerce, online superstores have the ability to spread fixed costs over a larger customer base and offer a wide selection of goods to frequent visitors. For example, Amazon.com is able to apply the same software written to help organize auction listings to toy-selling teams to rearrange their catalog by price, age group and other variables (Anders, 1999).

In contrast to the traditional supply-side economies of scale, a product exhibits demand-side economies of scale (network effect or positive network externalities) if the more people that use such a product, the more valuable it is to its users. Unlike the supply-side economies of scale, demand-side economies of scale do not dissipate when the market gets larger. Success and failure are driven as much by consumer expectations and luck as by the underlying value of the product (Shapiro and Varian, 1999). Therefore marketing strategy designed to influence consumer expectations in order to achieve "critical mass" is vital in markets in which strong network effects exist. In addition, strategies such as the timing of strategic moves, assembling a powerful group of strategic partners, aggressive in pricing and in exploiting relationships with complementary products, are crucial in building and sustaining a critical mass of installed base of customers (Shapiro and Varian, 1999).

Supply-side and demand-side economies of scale strengthen each other in the network economy. The growth on the demand side reduces the unit cost (and price) on the supply side and makes the product more appealing to other users. The result is the acceleration of growth in demand for the products even more.

Scope effect

Economies of scope are cost-saving externalities between product lines. For example, the production of good A reduces the production cost of good B (Tirole, 1988). The traditional concept of economies of scope (or supply-side economies of scope) was the rationale for corporate related diversification strategy in the industrial economy. In the marketspace, Rayport and Sviokla (1995) indicate that businesses can redefine economies of scope by drawing on a single set of "digital assets" (i.e. information companies collected about their customers) to provide value across many different and disparate markets.

These demand-side economies of scope, combined with the demand-side economies of

Table II E-commerce cost model

	Demand	Supply
Scale effect	Demand-side economies of scale (network effects or network externalities) Metcalfe's law: the usefulness or utility of a network equals the square of the number of users *Key question*. How to reach the critical mass? Superior technology, products, or services Customer expectations management (e.g. competitive pre-announcements) Timing of strategic moves Strategic partnerships	Supply-side economies of scale *Key question*. How to lower the unit cost of providing products and/or services? Physical product/economy: increase scale to minimize average cost (subject to natural capacity limits – law of diminishing returns) Digital (or knowledge-based network) economy/ information products: volume-driven strategy to spread fixed (sunk) cost
Scope effect	New concept of economies of scope: $X \rightarrow f(\cdot) \rightarrow [y]$, where X = digital asset (e.g. information about the installed base of customers); $f(\cdot)$ = transformation process; and $[y]$ = lines of businesses, $y_1, y_2, \ldots, y_n$ *Key question*. How to leverage on a single set of "digital assets" to provide value across many different and disparate markets?	Traditional concept of economies of scope Economies of scope realized when costs are reduced by producing two or more products jointly (rather than in specialized firms): $C_1(y_1, 0) + C_2(0, y_2) > C(y_1, y_2)$ or $\sum C_i(y_i) > C(\sum y_i)$, where $\}_i(\cdot) =$ cost function; y = output and $i = 1, \ldots, n$. *Key question*. How to supply a bundle of outputs demanded by the market at lower total cost than some combination of two or more single-product or service providers?
Switching costs (the extent of a customer's lock-in to a given supplier)	Monetary value of: hassle or inconvenience of switching suppliers; Investment in multiple complementary and durable assets specific to a particular technology or system; and customer perceptions of a product or service *Key question*. How to increase customer's switching costs of using your company's products or services?	Switching costs are nonlinear. Companies need to estimate their revenue stream from a new customer to figure out how much to spend to acquire that customer: marketing cost (price discounting and/or advertising) plus R&D and setup cost Total switching costs = costs the customer bears (demand side) + costs the new supplier bears (supply-side) *Key question*. How to maximize the value of installed customer base by selling complementary products or services?
Transaction costs (The costs that the consumer or the producer pays to make the transaction happen)	Search, information, decision, bargaining, contracting, policing, and enforcement costs *Key question*. How to reduce your customer's (transaction) costs of doing business with you?	Lower transaction costs (search, contracting, and coordination costs) in the digital economy enables companies to effectively redesign organizational structures and reconfigure the entire value creation network or system *Key question*. How to transform value proposition and organizational structures to enhance value creation for the customers?

scale discussed earlier, make the network effects even stronger in the digital economy. Building and sustaining a critical mass of installed base of customers (scale effect) is valuable because growth on the scale side increases the number of potential customers for cross selling merchandises (scope effect), which in turn will enable the company to build an even larger customer base.

Amazon.com dominates the online retailing market through strong customer relationships made possible by exploiting its digital assets. The company is able to constantly expand its scope to provide customers products and services across numerous industrial sectors. The result is an even larger installed base of customers – its most important assets, which Amazon.com will be able to exploit later on.

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In light of Amazon.com's success, brick-and-mortar superstores hope to take advantage of the scope effect by using the Internet for cross-category merchandising. They have the ability to spread fixed costs over a larger customer base but may have a harder time projecting an appealing image to customers across all categories (Anders, 1999). Even so, they are still in a better position to take advantage of the scale and scope effects in e-commerce.

Unable to take advantage of the demand-side economies of scope by widening their offerings, online specialty merchants are trying to differentiate their businesses by providing unique value for the online shoppers. For example, eToys can gift-wrap several items from an order separately, and then send them in one big shipment. General merchandisers are not likely to imitate that cumbersome, costly service (Anders, 1999). Nevertheless, failure to exploit the demand-side economies of scope and unable to differentiate themselves from the online superstores by providing unique value for customers, many online specialty stores, such as Toysmart.com, Furniture.com, Living.com, and MotherNature.com, had to shut down operations and liquidate their assets permanently.

Switching costs

Switching costs are a case of idiosyncratic investment, i.e. investment in multiple complementary and durable assets specific to a particular technology or system. Once the two parties have traded, staying together can yield a surplus relative to trading with other parties (Tirole, 1988). For example, companies can open part of their extranet to allow partners to access trade-specific information and their internal processes. The goal is to alter the way in which the users, typically external managers, make decisions related to the use of the extranet and make the trading partners dependent upon this information (Riggins and Rhee, 1998).

Total switching costs include those borne by the consumer to switch suppliers (e.g. inconvenience of switching suppliers, investment in specific assets, and the perceptions of a product or service), and those borne by the new supplier to serve the new consumer (e.g. marketing and research and development costs). Shapiro and Varian (1999) advise that switching costs must be evaluated relative to (the future streams of) revenues on a per-customer basis, and then add up these costs across the entire installed customer base to value that base. For example, Internet service providers need to estimate their revenue stream from a new customer to figure out how much to spend to acquire that customer. They suggest, "as a rule of thumb, the profits a supplier can expect to earn from a customer are equal to the total switching costs plus the value of other competitive advantages the supplier enjoys by virtue of having a superior product or lower costs than its rivals" (Shapiro and Varian, 1999).

Several strategies that can be applied to increase customer or trading partner's switching costs in the new economy include prosumption, i.e. involving consumers in the actual design and production processes (Tapscott, 1996); building and sustaining online communities (Armstrong and Hagel, 1996); and developing a strong trust relationship with the end-customers by participating in the new business ecosystems (Gossain and Kandiah, 1998). The new business ecosystem or e-business community (Tapscott, 1999) or b-webs (Tapscott *et al.*, 2000), is an Internet-based model of value creation. It is a linked and constantly evolving relationship among business partners under a shared vision for marketspace to create new value through the increased number and variety of information, services, and products available to the customer.

Transactions costs

Transaction costs theory, pioneered by Coase (1937) and Williamson (1975, 1985), suggests that a firm will tend to expand precisely to the point where "the costs of organizing an extra transaction within the firm becomes equal to the costs of carrying out the same transaction by means of an exchange on the open market." Transaction costs are the searching, negotiating, monitoring, and enforcement costs that have to be borne to allow a market exchange between two parties to take place. These costs depend on four factors: the amount of uncertainty, how opportunistic the trading parties are, the specificity of any assets used in

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the activity, and the frequency of the transactions. Since individuals and organizations are cognitively limited and cannot collect and process the information they need to make all decisions, it is difficult to foresee all the possible contingencies in a transaction. In addition, the coordinating costs (i.e. the cost of coordinating resource and processes) and contracting costs associated with market transactions can be prohibitively costly. Economic benefits from vertical integration arise when internalization overcomes transaction difficulties associated with market exchange.

Transaction costs theory also implies that the boundaries of the firm are set by the economics of exchanging information. Markets allow the exchange of thinner information among a large group of people, whereas organizations enable the internal exchange of rich information. The boundaries of the firm are determined at the point where one form of exchanging information becomes less cost-effective than the other. Thanks to internetworking and Internet technologies, the trade-off between reach and richness in information exchange has been broken (Evans and Wurster, 1997). In addition, the costs of many kinds of market transactions have been dramatically reduced. In the digital economy, the concept of a separate negotiated deal at each step of the value creation cycle becomes a reasonable, often compelling, proposition (Tapscott *et al.*, 2000).

As a result, the traditional value chains were fragmented or "disaggregated" into multiple potential opportunities for purely physical businesses. A new division of labor that transcends the traditional organizational boundaries changes the rules of competition and companies' way of organizing their value-creating activities. It is now easier and cost-effective to disaggregate out many value-creating activities out to the open market. Many companies, such as eBay and Cisco Systems, are also able to take advantage of the coordination (connectivity and interactivity) tools enabled by the Internet technologies to expand their business in highly focused areas of competency. Tapscott *et al.* (2000) suggest that planners must transform the value proposition for the benefit of the end-customer by understanding how Internet technologies enable them to add new forms of value in every step of the value-creating process. In addition, they must be able to creatively "reaggregate" a new set of value offerings as well as the enabling resources, structures, and processes.

New sources of revenue

Table III presents some issues associated with the e-commerce revenue model. E-commerce provides companies with new sources of revenues and additional opportunities to offer new (information) services in addition to, and sometimes independent of, the traditional products or services sales.

In e-commerce, pricing issue is important in the sense that it can be done in real time and product or service can be priced below their unit cost even in the long term, as long as other e-commerce revenue models, such as online advertising and referral fees, are sustainable.

Another revenue issue in e-commerce is whether companies can benefit from the "synergy effect" by offering cross-selling opportunities online. Does the customer value the benefit of one-stop shopping in e-commerce? Kay (1984) broadens the traditional concept of economies of scope to include the notion of synergy. The question is whether the total revenue generated (rather than total cost saved) from one single e-commerce site (generalist), is greater than some combinations of two or more single-product providers (specialists).

Gossain and Kandiah (1998) contend that in the new business ecosystems, the customer perceives greater value and benefit from the ability to "one-stop-shop" with a known and trusted company. Companies such as Amazon.com, Marshall Industries, and Edmunds.com provide good examples of offering complementary products or services to the end-customers from a single "trust" source. To exploit the e-commerce synergy effect, companies must be able to maintain a trust relationship with their end-customers through constantly providing value-added information, products and services, and the consistent level of experience and overall quality of the time that customers spend at companies' e-commerce sites.

Table III E-commerce revenue model

Source of revenue	
Product/service sales (traditional commerce)	Total revenue: $R = \sum p_i y_i$, where p_i = price; y_i = product or service and $i = 1, \ldots, n$. Total cost: $C = \sum C_i(y_i)$ or $C(\sum y_i)$, $C_i(\cdot)$ = cost function Total profit: $\pi = R - C$ *Key question*. How to maximize profit and minimize cost?
E-commerce provides companies with additional opportunities for revenue: Web site advertising, referral, subscription or membership fee, commission or transaction fee, and service or consulting fee, and other	Total profit: $\pi = (R - C) + E$ or $[\pi = (R + E) - C]$, where E = new sources of revenue, independent of original products or services sales, which were enabled by e-commerce and information technology (e.g. using information to create additional value for the customer) *Key question*. How to use information to create value in both marketplace and marketspace? *Key issues:* pricing issue: product or service could be priced below the unit (or marginal) cost Synergy effect (cross-selling opportunity): does customer value the benefit of one-stop shopping, i.e., is the total revenue from one single (generalist) e-commerce site $(R[\sum p_i y_i + E])$ greater than some combinations of two or more single-product providers (specialists) $(\sum[R_i(p_i y_i)])$? On-line brand equity or loyalty effect

E-commerce value creation model and strategy

The analytical framework developed in this paper can be applied to evaluate whether a company's e-commerce business model is viable. Specifically, a viable e-commerce model satisfies many of the following characteristics.

- design programs that take advantage of the Internet network effects and other disruptive attributes to achieve a critical mass of installed base of customer;
- leverage on a single set of digital assets to provide value across many different and disparate markets;
- build trust relationships with customers through e-business communities or e-webs to increase their costs of switching to other vendors;
- transform value propositions and organizational structures for enhanced value creation; and
- generate synergy effects on e-commerce product and service offerings.

Table IV extends the model presented in Table I to include the goals and strategies of each step of the business transformation process. The central idea is that executives in the e-commerce world should go beyond focusing primarily on improving the transformation efficiency. Rather, they should think "out-of-the-box" and take advantage of the disruptive attributes of e-commerce to create new value for the customers.

Table IV E-commerce value creation strategies

Business transformation process	X → □ → Y		
Goal	Reach the critical mass by building an installed base of customer	Improve transformation process efficiency	Create numerous innovative information services
Strategy	• Achieve demand-side economies of scale • Increase installed customer base's collective switching costs • Reduce customer's transaction costs (i.e., make it easy for customers to do business with you)	• Apply conventional management techniques (e.g., TQM, process re-engineering) to improve efficiency • Achieve supply-side economies of scale and scope to reduce supply-side switching costs (R&D and setup costs) • Lower transaction costs in the digital economy enables companies to design new organizational structures and to reconfigure value creation systems for enhanced value creation	• Transform value proposition by taking advantage of the demand-side economies of scope • Increase user's (or buyer's) switching costs by offering value across many different and disparate markets

Five steps to e-commerce success

This article suggests that the process for transforming traditional business practices and building a framework for e-commerce success must include the following five essential steps:

(1) *Redefine competitive advantage*. E-commerce is changing the basis of competition. The economics and speed of conducting business are changing. Management of fixed costs and customer expectation has become critical for success. The Internet is transforming how people sell things in a host of industries. Executives must redefine their competitive advantages in terms of cost, differentiation, and marketing. For example, e-commerce will continue to reduce the transaction costs of sellers and increase the penetration of the sellers' messages into the market. On the other hand, it will be more difficult for sellers to differentiate their products, and consumers will be more easily able to compare prices and features from a number of sellers. In addition, e-commerce has changed the rules of distribution. Compaq built the best retail-distribution network in the computer industry in the 1990s but cannot compete with Dell's "fast and light" direct sales approach enabled by the Internet technology (Browning and Reiss, 1999).

(2) *Rethink business strategy*. It is very simple to set up a Web presence but quite difficult to create a Web-based business model (Ghosh, 1998). Executives must generalize thinking beyond building a Web site to designing an architecture that will support company's e-commerce strategy. E-commerce technologies make it cost-effective and easy for customers to interact with a company and at the same time, reveal their purchase pattern and preference. Overall, executives must take a comprehensive look at how they can focus all investment behind a single winning strategy that makes it easy for customers to

do business with them. For example, a company can leverage its brand name and the existing physical stores to serve its e-commerce customers (e.g. toysrus.com), or offers customers assistance in the whole process of purchasing a product (e.g. edmunds.com) or commodity (plasticsnet.com).

(3) *Re-examine traditional business and revenue models*. Rayport and Sviokla (1995) describe participating in e-commerce as competing in both the marketplace and the marketspace. Products and services exist as digital information in the marketspace and can be delivered through information-based channels. Information itself is a source of value and presents opportunities to develop new relationships with customers at very low cost (e.g. FedEx and UPS). It also presents opportunities to create new services (i.e. new business and revenue models) and to improve internal efficiency (e.g. Boeing's intranet). Executives must pay attention to how their companies create value in both the physical traditional business and the e-commerce information world.

(4) *Re-engineer the corporation and Web site*. A Web site should not simply be used as a channel of providing marketing and company background information (i.e. brochureware). It should be a channel to collect customer information through interactions, transactions, and/or personalization. The most effective Web sites are also able to foster a feeling of community among customers (Armstrong and Hagel, 1996). To implement a customer-centered e-commerce model, a company needs to integrate its suppliers, back-office functions, and front-office functions in order to achieve the organizational flexibility necessary to move at Internet speed and to satisfy customer demand. In sum, a company must reengineer the customer-facing business processes from the end-customer's point of view. The integration must be invisible because effective e-commerce is a seamless, customer-focused operation that works toward the highest level of customer satisfaction. Dell Computers' build-to-order model has built stronger and deeper relationships with customers (Browning and Reiss, 1999).

(5) *Re-invent customer service*. The strategic and fundamental changes brought by the Internet are affecting every company's relationship with its customers and the value propositions for many companies. Companies must take advantage of e-commerce's disruptive attributes and be able to build cost-effective total experience and loyalty-enhancing relationships with the most profitable customers. To achieve this goal, producers must create specific products that are imbued with the knowledge, requirements, and tastes of individual customers because in the Internet economy consumers become involved in the actual design process (Tapscott, 1999). Companies need to involve customers in the product development process through initiating technology-facilitated dialogue, i.e. a willingness to give consumers access to the company and to view their actions and feedback as integral to developing and improving products (McKenna, 1995). In addition, companies must gather knowledge about their customers by building and controlling a comprehensive customer database, i.e. a digital asset made up of customer profiles and preferences. Amazon.com is able to redefine economies of scope by drawing on a single set of digital assets to provide value across many different and disparate markets to maximize customer value.

Conclusion

Electronic commerce is a disruption innovation – an innovation that revolutionizes and transforms traditional commerce. Conventional business wisdom may no longer apply. Nevertheless, there is a tendency for firms to use the same approaches that were successful in the traditional business practices – thus implementing e-commerce to sustain current strategy and operations. Such firms are slow in recognizing the possibilities for employing new product or service concepts and ways of competing that might allow them to capitalize upon the new innovation's potential.

References

Anders, G. (1999), "Web giants Amazon, eToys bet on opposing market strategies", *Wall Street Journal Interactive Edition*, November 3, http://interactive.wsj.com/archive/retrieve.cgi?id=SB941666571967749918.djm

Armstrong, A. and Hagel, J. III (1996), "The real value of online communities", *Harvard Business Review*, May-June, pp. 134-41.

Bower, J.L. and Christensen, C.M. (1995), "Disruptive technologies: catching the wave", *Harvard Business Review*, January-February, pp. 43-53.

Browning, J. and Reiss, S. (1999), "Business on Internet time", *Wall Street Journal Interactive Edition*, 23 April, http://interactive.wsj.com/archive/retrieve.cgi?id=SB924809707855657851.djm

Coase, R.H. (1937), "The nature of the firm", *Economica*, Vol. 4 No. 4, pp. 386-405.

Earl, M.J. (1999), "Strategy-making in the information age", in Currie, W.L. and Galliers, B. (Eds), *Rethinking Management Information Systems*, Oxford University Press, New York, NY, pp. 161-74.

Evans, P.B. and Wurster, T.S. (1997), "Strategy and the new economics of information", *Harvard Business Review*, September-October, pp. 70-82.

Ghosh, S. (1998), "Making business sense of the Internet", *Harvard Business Review*, March-April, pp. 126-35.

Gossain, S. and Kandiah, G. (1998), "Reinventing value: the new business ecosystem", *Strategy & Leadership*, Vol. 26 No. 5, November-December, pp. 28-33.

Gulati, R., and Garino, J. (2000), "Get the right mix of bricks and clicks", *Harvard Business Review*, May-June, pp. 107-14.

Kay, N.M. (1984), *The Emergent Firm*, St Martins Press, New York, NY.

McKenna, R. (1995), "Real-time marketing", *Harvard Business Review*, July-August, pp. 87-95.

Meredith, J.R. and Schaffer, S.M. (1999), *Operations Management for MBAs*, John Wiley & Sons, New York, NY.

Rayport, J.F. and Sviokla, J.J. (1995), "Exploiting the virtual value chain", *Harvard Business Review*, November-December, pp. 75-85.

Riggins, F.J. and Rhee, H. (1998), "Toward a unified view of electronic commerce", *Communications of the ACM*, Vol. 41 No. 10, October, pp. 88-95.

Shapiro, C. and Varian, H.R. (1999), *Information Rules: A Strategic Guide to the Network Economy*, Harvard Business School Press, Boston, MA.

Slywotzky, A.J. (1996), *Value Migration: How to Think Several Moves Ahead of the Competition*, Harvard Business School Press, Boston, MA.

Tapscott, D. (1996), *The Digital Economy: Promise and Peril in the Age of Networked Intelligence*, McGraw-Hill, New York, NY.

Tapscott, D. (Ed.) (1999), *Creating Value in the Network Economy*, Harvard Business School Press, Boston, MA.

Tapscott, D., Ticoll, D. and Lowy, A. (2000), *Digital Capital: Harnessing the Power of Business Webs*, Harvard Business School Press, Boston, MA.

Tirole, J. (1988), *The Theory of Industrial Organization*, The MIT Press, Cambridge, MA.

Williamson, O.E. (1975), *Markets and Hierarchies: Analysis and Antitrust Implications*, Free Press, New York, NY.

Williamson, O.E. (1985), *The Economic Institutions of Capitalism*, Free Press, New York, NY.