The Internet technology has created an opportunity to increase the productivity of traditional businesses as well as to start new highly productive businesses based on novel business models. The labels, old economy and Internet economy, point to the significant difference in productivity. The Internet economy revenue is growing twice as fast as Internet economy employment. However, both types of economies are expected to converge as traditional businesses rapidly adopt the Internet technology.

In entering the e-business world, a firm strategically positions itself to conduct its activities differently from its competitors. E-business is about the radical redesign of traditional value chains and the construction of new ones. E-business makes demand driven production possible where customer orders serve as signals for production. By integrating all members of the supply chain, the end demand can be immediately communicated to all supply chain members. The computer manufacturer Dell is an outstanding example. Also, major automotive manufacturers have launched initiatives to build vehicles to meet individual customers’ specifications and deliver them in one to two weeks.

Internet enabled traditional and the newly created dot-com businesses engage in e-commerce. E-commerce is defined as the use of technology mediated exchanges by business for the purposes of selling goods and services over the Internet. E-Commerce is growing fast. The sales of global e-commerce grew from millions in 1997 to billions in 1998 and to hundreds of billion in 2000 and are expected to reach into trillions. E-commerce is categorized into Business-to-Business (B2B), Business-to-Consumer (B2C), and Consumer-to-Business (C2B). The majority of sales is in B2B and is projected to grow from 43 billions (1998) to 1.3 trillion (2003). During the same period B2C is expected to grow from 7.8 billions to 108 billions.

B2C is growing much slower than B2B and is only 0.5% of the e-commerce business. It is predicted that on-line purchases will increase from $20B in 1999 to $50B in 2002. U.S. online sales for the month of August 2001 were running at 4 billion dollars per month with 15 million households shopping online. There is about 25% year-on-year increase in the volume of sales. Contributors to slower growth include high Internet access costs, lack of PC at home, lack of customer trust, concern about privacy and security, lack of government regulations. Surveys show that over 70% of consumers do not trust the companies to preserve their privacy. Several studies have explored
the antecedent factors of consumer trust in the context of on-line shopping (reputation and size), most dot-com ventures do not have either. Also, consumers give up after a few attempt and look for alternative sites. Furthermore, breaking old habits is difficult. Most consumers prefer to shop in a real store, taking their purchases home with them. Some products such as books and CDs are more suitable merchandise for EC than groceries that may need inspection. Using EC for digital goods has significant advantage because goods are also delivered through Internet. There are additional market impediments for global e-commerce. Difficulties in fulfillment may be the reason why 70% of U.S. Companies selling on-line do not accept international orders.

Customers need more than just the product. They demand superior shopping experience spanning the entire process from articulating to fulfillment of their needs. Fulfillment impacts customer satisfaction 10 times more than selling. Fulfillment problems include lost orders, incomplete or inaccurate product availability information, and late shipments. Customers expect not only on-time delivery but also instant access to their order histories, shipping information and up-to-the-second product availability information. Many of these functions require deep integration between front-end on-line ordering systems and back-end supply chain and logistic applications. Both FedEx and UPS offer systems that can integrate delivery status and other information from the shippers directly into the e-commerce systems. They can also provide on-line capability for customers to initiate return of packages on the web and link them to drop-off locations. They also provide the customer with the ability to track returns and check account information. Ironically, consumer concerns on late delivery has increased and concerns over the security of credit cards and personal information has decreased from 1999 levels.

B2C is uniquely customer centric. Heterogeneity of user profile has become a major problem facing online shopping service providers. One universal service is not likely to satisfy all public users whose cognitive and demographic profiles differ substantially. Consumers exhibit different behavior and express varied concerns that firms must take into account. For example, 1/4 browse on-line and buy from brick and mortar stores, 1/5 buy from merchants they know, and 1/5 are interested in saving time and maximizing convenience. Firms such as American Express have learned to compile customer information from a range of sources and build a comprehensive view of the customers. They have developed capabilities to anticipate and meet customer needs in real time by delivering customized services superior to their competitors, leading to higher revenues and customer retention.

Electronic commerce is at an early stage of development and vaguely understood. There are few established rules on how to organize and implement e-commerce. The majority of EC business models are innovative and unproven. The source of e-commerce knowledge is generally unreliable. The knowledge often comes from venture capitalists, investment bankers, and technically oriented entrepreneurs. They
do not have a good track record of building e-business organizations that endure the test of time. Compared to the US, European dot-coms have had a lower rate of failure. This may indicate a higher level of scrutiny in Europe before money was made available to dot-com businesses. The question is what are the appropriate methods for acquiring e-business systems. Current e-business projects are required to be completed in “Internet Time”. System development techniques must reflect responsiveness and flexibility in meeting changing requirements. The current trend is for highly customizable packaged software for data warehousing and enterprise resource planning (ERP) and On-line outsourcing of Applications to Application Service Providers. Firms may need to develop new investment models that include measures of market expansion, revenue per customer, and customer satisfaction metrics.

Implementing e-commerce projects in “Internet time” is an enormous challenge. E-commerce is the use of information technology in business. The novel organization strategies, CRM, personalization and mass customization needs to be incorporated into the business models. Use of information technology by an organization usually requires major restructuring of the organization. The scale of change may be enormous depending on the organization and nature of the opportunity. CISCO Systems is a success story and an example of a restructured organization that is reportedly transacting over 90 percent of its dealings with the distributors over the Internet.

The web site is where the consumer and the firm conduct their business and must become the focus of attention. The web site must have the functionalities that enable the firm to acquire, sell and retain customers. E-commerce sites are eminently easier to leave than physical store as the customer has less time invested than shopping in a physical store. Customer support was claimed as the main reason for the demise of many dot-coms. Consumers are frequently disappointed at how little depth exists beneath the user interface for providing customer support. Improved scales to measure all the dimensions of perceived quality of web sites must be developed.

E-commerce is developing along several fronts. One trend is towards providing same day fulfillment. E-commerce companies are forming alliances with local affiliates. Customers are enabled to pick-up and return their purchases in locations close to their favorite shopping areas. Personalization is another area of common concern for future development of e-commerce. An objective of personalization is to enable the firm to know their customers and interact with them one-on-one to provide each customer with a unique website experience. Personalization allows businesses to customize their marketing mix. For example, instead of competition on the bases of price alone, it would be possible to treat each customer differently as a frequent buyer enjoying perks and special treatments. Each customer may also be targeted with useful advertisements that inform his/her needs, and given credit for viewing the
Targeted customer may also get discounts for introducing friends who buy from the same site. Furthermore, targeted customers may be provided with customized products that fit their individual needs and served in locations that are attractive to them.

Internet offers the medium for the adoption of technologies that can enhance e-commerce further. For example, the cyber space is the natural habitat for intelligent agents. Intelligent agent technology offers a very powerful and suitable mean to integrate the Internet in a synergistic way. Intelligent agents can be personalized for each individual to perform tasks 24 hrs a day. The tasks may range from simple stimulus-response to complex deliberative decisions. For example, intelligent agents can provide support for making purchasing decisions for customers as well as for companies. These agents are goal-driven, capable of planning, and reasoning under uncertainty with imprecise and incomplete information, and learning. The software core of the intelligent agent may incorporate fuzzy logic and other soft-computing techniques. Intelligent agents can provide assistance and inform all phases the purchase decision from information gathering to generation of alternatives to making a choice. Mobile agents are a special type of intelligent agent that can find information for such activities as brokering, negotiation and payment. Mobile agents can roam wide area networks, interact with foreign hosts, perform tasks on behalf of their users and subsequently return to the original computer after achieving the goals. Mobile intelligent agents raise concerns in such areas as security, export controls, legal jurisdiction, taxation and international issues that need to be addressed.

In the long-run, the Internet economy and the old economy will converge giving rise to more innovative and productive businesses capable of competing in the global arena. Organizations will learn how to build and successfully deploy quality e-commerce systems. New technologies will enable more powerful systems that support new business models. In particular, in spite of all the challenges, e-commerce systems based on intelligent agent technology is inevitable. Intelligent agents will be part of the information architecture of next generation of e-commerce software and websites will be powered to serve the customer as well as the firm.

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