

# e-Commerce and e-Business

Zorayda Ruth Andam

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**e-ASEAN Task Force**

**UNDP-APDIP**

## PREFACE

One the many challenges facing the countries in the Asia-Pacific today is preparing their societies and governments for globalization and the information and communication revolution. Policy-makers, business executives, NGO activists, academics, and ordinary citizens are increasingly concerned with the need to make their societies competitive in the emergent information economy.

The e-ASEAN Task Force and the UNDP Asia Pacific Development Information Programme (UNDP-APDIP) share the belief that with enabling information and communication technologies (ICTs), countries can face the challenge of the information age. With ICTs they can leap forth to higher levels of social, economic and political development. We hope that in making this leap, policy and decision-makers, planners, researchers, development practitioners, opinion-makers, and others will find this series of e-primers on the information economy, society, and polity useful.

The e-primers aim to provide readers with a clear understanding of the various terminologies, definitions, trends, and issues associated with the information age. The primers are written in simple, easy-to-understand language. They provide examples, case studies, lessons learned, and best practices that will help planners and decision makers in addressing pertinent issues and crafting policies and strategies appropriate for the information economy.

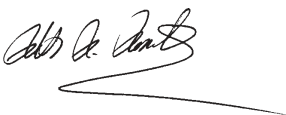
The present series of e-primers includes the following titles:

- The Information Age
- Nets, Webs and the Information Infrastructure
- e-Commerce and e-Business
- Legal and Regulatory Issues for the Information Economy
- e-Government;
- ICT and Education
- Genes, Technology and Policy: An Introduction to Biotechnology

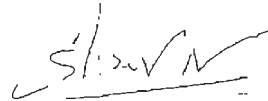
These e-primers are also available online at [www.eprimers.org](http://www.eprimers.org). and [www.apdip.net](http://www.apdip.net).

The primers are brought to you by UNDP- APDIP, which seeks to create an ICT enabling environment through advocacy and policy reform in the Asia-Pacific region, and the e-ASEAN Task Force, an ICT for development initiative of the 10-member Association of Southeast Asian Nations. We welcome your views on new topics and issues on which the e-primers may be useful.

Finally, we thank all who have been involved with this series of e-primers-writers, researchers, peer reviewers and the production team.



Roberto R. Romulo  
Chairman (2000-2002)  
e-ASEAN Task Force  
Manila. Philippines



Shahid Akhtar  
Program Coordinator  
UNDP-APDIP  
Kuala Lumpur, Malaysia  
[www.apdip.net](http://www.apdip.net)



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## INTRODUCTION

In the emerging global economy, e-commerce and e-business have increasingly become a necessary component of business strategy and a strong catalyst for economic development. The integration of information and communications technology (ICT) in business has revolutionized relationships within organizations and those between and among organizations and individuals. Specifically, the use of ICT in business has enhanced productivity, encouraged greater customer participation, and enabled mass customization, besides reducing costs.

With developments in the Internet and Web-based technologies, distinctions between traditional markets and the global electronic marketplace—such as business capital size, among others—are gradually being narrowed down. The name of the game is strategic positioning, the ability of a company to determine emerging opportunities and utilize the necessary human capital skills (such as intellectual resources) to make the most of these opportunities through an e-business strategy that is simple, workable and practicable within the context of a global information milieu and new economic environment. With its effect of leveling the playing field, e-commerce coupled with the appropriate strategy and policy approach enables small and medium scale enterprises to compete with large and capital-rich businesses.

On another plane, developing countries are given increased access to the global marketplace, where they compete with and complement the more developed economies. Most, if not all, developing countries are already participating in e-commerce, either as sellers or buyers. However, to facilitate e-commerce growth in these countries, the relatively underdeveloped information infrastructure must be improved. Among the areas for policy intervention are:

- High Internet access costs, including connection service fees, communication fees, and hosting charges for websites with sufficient bandwidth;
- Limited availability of credit cards and a nationwide credit card system;
- Underdeveloped transportation infrastructure resulting in slow and uncertain delivery of goods and services;
- Network security problems and insufficient security safeguards;
- Lack of skilled human resources and key technologies (i.e., inadequate professional IT workforce);
- Content restriction on national security and other public policy grounds, which greatly affect business in the field of information services, such as the media and entertainment sectors;
- Cross-border issues, such as the recognition of transactions under laws of other ASEAN member-countries, certification services, improvement of delivery methods and customs facilitation; and
- The relatively low cost of labor, which implies that a shift to a comparatively capital intensive solution (including investments on the improvement of the physical and network infrastructure) is not apparent.

It is recognized that in the Information Age, Internet commerce is a powerful tool in the economic growth of developing countries. While there are indications of e-commerce patronage among large firms in developing countries, there seems to be little and negligible use of the Internet for commerce among small and medium sized firms. E-commerce promises better business for SMEs and sustainable economic development for developing countries. However, this is premised on strong political will and good governance, as well as on a responsible and supportive private sector within an effective policy framework. This primer seeks to provide policy guidelines toward this end.

I. CONCEPTS AND DEFINITIONS

What is e-commerce?

Electronic commerce or e-commerce refers to a wide range of online business activities for products and services.<sup>1</sup> It also pertains to “any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct physical contact.”<sup>2</sup>

E-commerce is usually associated with buying and selling over the Internet, or conducting any transaction involving the transfer of ownership or rights to use goods or services through a computer-mediated network.<sup>3</sup> Though popular, this definition is not comprehensive enough to capture recent developments in this new and revolutionary business phenomenon. A more complete definition is: *E-commerce is the use of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation between or among organizations, and between organizations and individuals.*<sup>4</sup>

International Data Corp (IDC) estimates the value of global e-commerce in 2000 at US\$350.38 billion. This is projected to climb to as high as US\$3.14 trillion by 2004. IDC also predicts an increase in Asia’s percentage share in worldwide e-commerce revenue from 5% in 2000 to 10% in 2004 (See Figure 1).

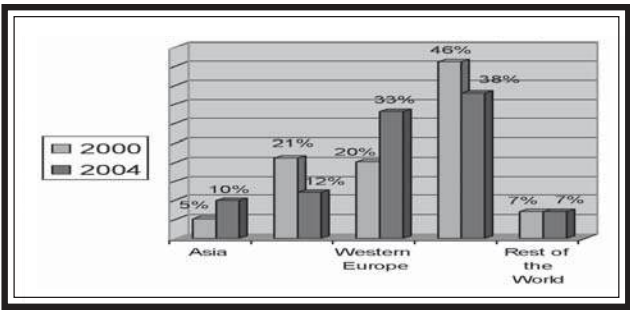


Figure 1. Worldwide E-Commerce Revenue, 2000 &2004 (as a % share of each country/region)





Asia-Pacific e-commerce revenues are projected to increase from \$76.8 billion at year-end of 2001 to \$338.5 billion by the end of 2004.

*Is e-commerce the same as e-business?*

While some use e-commerce and e-business interchangeably, they are distinct concepts. In e-commerce, information and communications technology (ICT) is used in inter-business or inter-organizational transactions (transactions between and among firms/organizations) and in business-to-consumer transactions (transactions between firms/organizations and individuals).

In e-business, on the other hand, ICT is used to enhance one's business. It includes any process that a business organization (either a for-profit, governmental or non-profit entity) conducts over a computer-mediated network. A more comprehensive definition of e-business is: *"The transformation of an organization's processes to deliver additional customer value through the application of technologies, philosophies and computing paradigm of the new economy."*

Three primary processes are enhanced in e-business:<sup>5</sup>

1. **Production processes**, which include procurement, ordering and replenishment of stocks; processing of payments; electronic links with suppliers; and production control processes, among others;
2. **Customer-focused processes**, which include promotional and marketing efforts, selling over the Internet, processing of customers' purchase orders and payments, and customer support, among others; and
3. **Internal management processes**, which include employee services, training, internal information-sharing, video-conferencing, and recruiting. Electronic applications enhance information flow between production and sales forces to improve sales force productivity. Workgroup communications and electronic publishing of internal business information are likewise made more efficient.<sup>6</sup>

### **Is the Internet economy synonymous with e-commerce and e-business?**

The Internet economy is a broader concept than e-commerce and e-business. It includes e-commerce and e-business.

The Internet economy pertains to all economic activities using electronic networks as a medium for commerce or those activities involved in both building the networks linked to the Internet and the purchase of application services<sup>7</sup> such as the provision of enabling hardware and software and network equipment for Web-based/online retail and shopping malls (or "e-malls"). It is made up of three major segments: physical (ICT) infrastructure, business infrastructure, and commerce.<sup>8</sup>

The CREC (Center for Research and Electronic Commerce) at the University of Texas has developed a conceptual framework for how the Internet economy works. The framework shows four layers of the Internet economy-the three mentioned above and a fourth called intermediaries (see Table 1).

Table 1. Internet Economy Conceptual Frame

Internet Economy Layer	Layer 1 - Internet Infrastructure: Companies that provide the enabling hardware, software, and networking equipment for Internet and for the World Wide Web	Layer 2 - Internet Applications Infrastructure: Companies that make software products that facilitate Web transactions; companies that provide Web development design and consulting services	Layer 3 - Internet Intermediaries: Companies that link e-commerce buyers and sellers; companies that provide Web content; companies that provide marketplaces in which e-commerce transactions can occur	Layer 4 - Internet Commerce: Companies that sell products or services directly to consumers or businesses.
Types of Companies	Networking Hardware/Software Companies Line Acceleration Hardware Manufacturers PC and Server Manufacturers Internet Backbone Providers Internet Service Providers (ISPs) Security Vendors Fiber Optics Makers	Internet Commerce Applications Web Development Software Internet Consultants Online Training Search Engine Software Web-Enabled Databases Multimedia Applications	Market Makers in Vertical Industries Online Travel Agents Online Brokerages Content Aggregators Online Advertisers Internet Ad Brokers Portals/Content Providers	E-Tailers Online Entertainment and Professional Services Manufacturers Selling Online Airlines Selling Online Tickets Fee/Subscription-Based Companies
Examples	Cisco AOL AT&T Qwest	Adobe *Microsoft *IBM Oracle	e-STEEL Travelocity e-Trade Yahoo! ZDNet	Amazon.com Dell

Based on Center for Research in Electronic Commerce, University of Texas, "Measuring the Internet Economy", June 6, 2000; available from [www.Internetindicators.com](http://www.Internetindicators.com).





## What are the different types of e-commerce?

The major different types of e-commerce are: business-to-business (B2B); business-to-consumer (B2C); business-to-government (B2G); consumer-to-consumer (C2C); and mobile commerce (m-commerce).

### *What is B2B e-commerce?*

B2B e-commerce is simply defined as e-commerce between companies. This is the type of e-commerce that deals with relationships between and among businesses. About 80% of e-commerce is of this type, and most experts predict that B2B e-commerce will continue to grow faster than the B2C segment.

The B2B market has two primary components: **e-frastructure** and **e-markets**. E-frastructure is the architecture of B2B, primarily consisting of the following:<sup>9</sup>

- logistics - transportation, warehousing and distribution (e.g., Procter and Gamble);
- application service providers - deployment, hosting and management of packaged software from a central facility (e.g., Oracle and Linkshare);
- outsourcing of functions in the process of e-commerce, such as Web-hosting, security and customer care solutions (e.g., outsourcing providers such as eShare, NetSales, iXL Enterprises and Universal Access);
- auction solutions software for the operation and maintenance of real-time auctions in the Internet (e.g., Moai Technologies and OpenSite Technologies);
- content management software for the facilitation of Web site content management and delivery (e.g., Interwoven and ProcureNet); and
- Web-based commerce enablers (e.g., Commerce One, a browser-based, XML-enabled purchasing automation software).

E-markets are simply defined as Web sites where buyers and sellers interact with each other and conduct transactions.<sup>10</sup>

The more common B2B examples and best practice models are IBM, Hewlett Packard (HP), Cisco and Dell. Cisco, for instance, receives over 90% of its product orders over the Internet.

Most B2B applications are in the areas of supplier management (especially purchase order processing), inventory management (i.e., managing order-ship-bill cycles), distribution management (especially in the transmission of shipping documents), channel management (i.e., information dissemination on changes in operational conditions), and payment management (e.g., electronic payment systems or EPS).<sup>11</sup>

eMarketer projects an increase in the share of B2B e-commerce in total global e-commerce from 79.2% in 2000 to 87% in 2004 and a consequent decrease in the share of B2C e-commerce from 20.8% in 2000 to only 13% in 2004 (Figure 2).

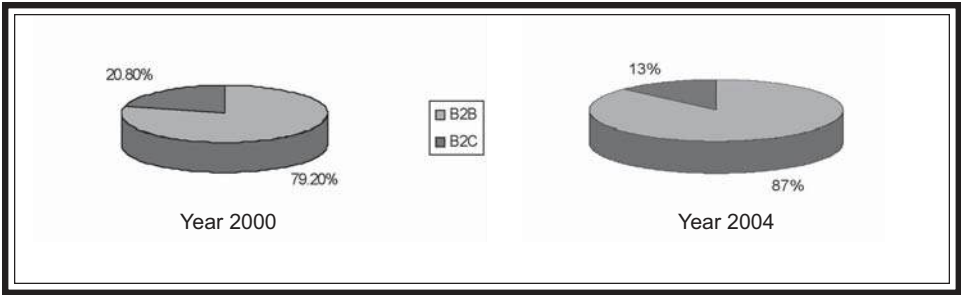


Figure 2. Share of B2B and B2C E-Commerce in Total Global E-Commerce (2000 and 2004)

Likewise B2B growth is way ahead of B2C growth in the Asia-Pacific region. According to a 2001 *eMarketer* estimate, B2B revenues in the region are expected to exceed \$300 billion by 2004.

Table 2 shows the projected size of B2B e-commerce by region for the years 2000-2004.

Table 2. Projected B2B E-Commerce by Region, 2000-2004 (\$billions)

	2000	2001	2002	2003	2004	As a % of worldwide B2B commerce, 2004
North America	159.2	316.8	563.9	964.3	1,600.8	57.7
Asia/Pacific Rim	36.2	68.6	121.2	199.3	300.6	10.8
Europe	26.2	52.4	132.7	334.1	797.3	28.7
Latin America	2.9	7.9	17.4	33.6	58.4	2.1
Africa/Middle East	1.7	3.2	5.9	10.6	17.7	0.6
TOTAL	226.2	448.9	841.1	1,541.9	2,774.8	100.0

Box 1. Benefits of B2B E-Commerce in Developing Markets

The impact of B2B markets on the economy of developing countries is evident in the following:

**Transaction costs.** There are three cost areas that are significantly reduced through the conduct of B2B e-commerce. First is the reduction of search costs, as buyers need not go through multiple intermediaries to search for information about suppliers, products and prices as in a traditional supply chain. In terms of effort, time and money spent, the Internet is a more efficient information channel than its traditional counterpart. In B2B markets, buyers and sellers are gathered together into a single online trading community, reducing



search costs even further. Second is the reduction in the costs of processing transactions (e.g. invoices, purchase orders and payment schemes), as B2B allows for the automation of transaction processes and therefore, the quick implementation of the same compared to other channels (such as the telephone and fax). Efficiency in trading processes and transactions is also enhanced through the B2B e-market's ability to process sales through online auctions. Third, online processing improves inventory management and logistics.

**Disintermediation.** Through B2B e-markets, suppliers are able to interact and transact directly with buyers, thereby eliminating intermediaries and distributors. However, new forms of intermediaries are emerging. For instance, e-markets themselves can be considered as intermediaries because they come between suppliers and customers in the supply chain.

**Transparency in pricing.** Among the more evident benefits of e-markets is the increase in price transparency. The gathering of a large number of buyers and sellers in a single e-market reveals market price information and transaction processing to participants. The Internet allows for the publication of information on a single purchase or transaction, making the information readily accessible and available to all members of the e-market. Increased price transparency has the effect of pulling down price differentials in the market. In this context, buyers are provided much more time to compare prices and make better buying decisions. Moreover, B2B e-markets expand borders for dynamic and negotiated pricing wherein multiple buyers and sellers collectively participate in price-setting and two-way auctions. In such environments, prices can be set through automatic matching of bids and offers. In the e-marketplace, the requirements of both buyers and sellers are thus aggregated to reach competitive prices, which are lower than those resulting from individual actions.

**Economies of scale and network effects.** The rapid growth of B2B e-markets creates traditional supply-side cost-based economies of scale. Furthermore, the bringing together of a significant number of buyers and sellers provides the demand-side economies of scale or network effects. Each additional incremental participant in the e-market creates value for all participants in the demand side. More participants form a critical mass, which is key in attracting more users to an e-market.

### *What is B2C e-commerce?*

Business-to-consumer e-commerce, or commerce between companies and consumers, involves customers gathering information; purchasing physical goods (i.e., tangibles such as books or consumer products) or information goods (or goods of electronic material or digitized content, such as software, or e-books); and, for information goods, receiving products over an electronic network.<sup>12</sup>

It is the second largest and the earliest form of e-commerce. Its origins can be traced to online retailing (or e-tailing).<sup>13</sup> Thus, the more common B2C business models are the online retailing companies such as Amazon.com, Drugstore.com, Beyond.com, Barnes and Noble and ToysRus. Other B2C examples involving information goods are E-Trade and Travelocity.

The more common applications of this type of e-commerce are in the areas of purchasing products and information, and personal finance management, which pertains to the management of personal investments and finances with the use of online banking tools (e.g., Quicken).<sup>14</sup>

eMarketer estimates that worldwide B2C e-commerce revenues will increase from US\$59.7 billion in 2000 to US\$428.1 billion by 2004. Online retailing transactions make up a significant share of this market. eMarketer also estimates that in the Asia-Pacific region, B2C revenues, while registering a modest figure compared to B2B, nonetheless went up to \$8.2 billion by the end of 2001, with that figure doubling at the end of 2002-at total worldwide B2C sales below 10%.

B2C e-commerce reduces transactions costs (particularly search costs) by increasing consumer access to information and allowing consumers to find the most competitive price for a product or service. B2C e-commerce also reduces market entry barriers since the cost of putting up and maintaining a Web site is much cheaper than installing a "brick-and-mortar" structure for a firm. In the case of information goods, B2C e-commerce is even more attractive because it saves firms from factoring in the additional cost of a physical distribution network. Moreover, for countries with a growing and robust Internet population, delivering information goods becomes increasingly feasible.

#### *What is B2G e-commerce?*

Business-to-government e-commerce or B2G is generally defined as commerce between companies and the public sector. It refers to the use of the Internet for public procurement, licensing procedures, and other government-related operations. This kind of e-commerce has two features: first, the public sector assumes a pilot/leading role in establishing e-commerce; and second, it is assumed that the public sector has the greatest need for making its procurement system more effective.<sup>15</sup>

Web-based purchasing policies increase the transparency of the procurement process (and reduces the risk of irregularities). To date, however, the size of the B2G e-commerce market as a component of total e-commerce is insignificant, as government e-procurement systems remain undeveloped.

#### *What is C2C e-commerce?*

Consumer-to-consumer e-commerce or C2C is simply commerce between private individuals or consumers.

This type of e-commerce is characterized by the growth of electronic marketplaces and online auctions, particularly in vertical industries where firms/businesses can bid for what they want from among multiple suppliers.<sup>16</sup> It perhaps has the greatest potential for developing new markets.

This type of e-commerce comes in at least three forms:

- auctions facilitated at a portal, such as eBay, which allows online real-time bidding on items being sold in the Web;
- peer-to-peer systems, such as the Napster model (a protocol for sharing files between users used by chat forums similar to IRC) and other file exchange and later money exchange models; and



- classified ads at portal sites such as Excite Classifieds and eWanted (an interactive, online marketplace where buyers and sellers can negotiate and which features “Buyer Leads & Want Ads”).

Consumer-to-business (C2B) transactions involve reverse auctions, which empower the consumer to drive transactions. A concrete example of this when competing airlines gives a traveler best travel and ticket offers in response to the traveler’s post that she wants to fly from New York to San Francisco.

There is little information on the relative size of global C2C e-commerce. However, C2C figures of popular C2C sites such as eBay and Napster indicate that this market is quite large. These sites produce millions of dollars in sales every day.

### *What is m-commerce?*

M-commerce (mobile commerce) is the buying and selling of goods and services through wireless technology-i.e., handheld devices such as cellular telephones and personal digital assistants (PDAs). Japan is seen as a global leader in m-commerce.

As content delivery over wireless devices becomes faster, more secure, and scalable, some believe that m-commerce will surpass wireline e-commerce as the method of choice for digital commerce transactions. This may well be true for the Asia-Pacific where there are more mobile phone users than there are Internet users.

Industries affected by m-commerce include:

- **Financial services**, including mobile banking (when customers use their handheld devices to access their accounts and pay their bills), as well as brokerage services (in which stock quotes can be displayed and trading conducted from the same handheld device);
- **Telecommunications**, in which service changes, bill payment and account reviews can all be conducted from the same handheld device;
- **Service/retail**, as consumers are given the ability to place and pay for orders on-the-fly; and
- **Information services**, which include the delivery of entertainment, financial news, sports figures and traffic updates to a single mobile device.<sup>17</sup>

Forrester Research predicts US\$3.4 billion sales closed using PDA and cell phones by 2005 (See Table 3).

### **What forces are fueling e-commerce?**

There are at least three major forces fuelling e-commerce: economic forces, marketing and customer interaction forces, and technology, particularly multimedia convergence.<sup>18</sup>

Table 3. Forrester’s M-Commerce Sales Predictions, 2001-2005

Device	2001	2002	2003	2004	2005
Sales closed on devices (in billions)					
PDA	0.0	0.1	0.5	1.4	3.1
Cell phone	0.0	0.0	0.0	0.1	0.3
Sales influenced by devices (in billions)					
PDA	1.0	5.6	14.4	20.7	24.0
Cell Phone	0.0	0.0	0.1	0.3	1.3

**Economic forces.** One of the most evident benefits of e-commerce is economic efficiency resulting from the reduction in communications costs, low-cost technological infrastructure, speedier and more economic electronic transactions with suppliers, lower global information sharing and advertising costs, and cheaper customer service alternatives.

Economic integration is either external or internal. External integration refers to the electronic networking of corporations, suppliers, customers/clients, and independent contractors into one community communicating in a virtual environment (with the Internet as medium). Internal integration, on the other hand, is the networking of the various departments within a corporation, and of business operations and processes. This allows critical business information to be stored in a digital form that can be retrieved instantly and transmitted electronically. Internal integration is best exemplified by corporate intranets. Among the companies with efficient corporate intranets are Procter and Gamble, IBM, Nestle and Intel.

Box 2. SESAMi.NET.: Linking Asian Markets through B2B Hubs

SESAMi.NET is Asia’s largest B2B e-hub, a virtual exchange integrating and connecting businesses (small, medium or large) to trading partners, e-marketplaces and internal enterprise systems for the purpose of sourcing out supplies, buying and selling goods and services online in real time. The e-hub serves as the center for management of content and the processing of business transactions with support services such as financial clearance and information services.

It is strategically and dynamically linked to the Global Trading Web (GTW), the world’s largest network of trading communities on the Internet. Because of this very important link, SESAMi reaches an extensive network of regional, vertical and industry-specific interoperable B2B e-markets across the globe.

**Market forces.** Corporations are encouraged to use e-commerce in marketing and promotion to capture international markets, both big and small. The Internet is likewise used as a medium for enhanced customer service and support. It is a lot easier for companies to provide their target consumers with more detailed product and service information using the Internet.



### Box 3. Brazil's Submarino<sup>19</sup>: Improving Customer Service through the Internet

Brazil's Submarino is a classic example of successful use of the Internet for improved customer service and support. From being a local Sao Paulo B2C e-commerce company selling books, CDs, video cassettes, DVDs, toys, electronic and computer products in Brazil, it expanded to become the largest company of its kind in Argentina, Mexico, Spain and Portugal. Close to a third of the 1.4 million Internet users in Brazil have made purchases through this site. To enhance customer service, Submarino has diversified into offering logistical and technological infrastructure to other retailers, which includes experience and expertise in credit analysis, tracking orders and product comparison systems.

**Technology forces.** The development of ICT is a key factor in the growth of e-commerce. For instance, technological advances in digitizing content, compression and the promotion of open systems technology have paved the way for the convergence of communication services into one single platform. This in turn has made communication more efficient, faster, easier, and more economical as the need to set up separate networks for telephone services, television broadcast, cable television, and Internet access is eliminated. From the standpoint of firms/businesses and consumers, having only one information provider means lower communications costs.<sup>20</sup>

Moreover, the principle of universal access can be made more achievable with convergence. At present the high costs of installing landlines in sparsely populated rural areas is a disincentive to telecommunications companies to install telephones in these areas. Installing landlines in rural areas can become more attractive to the private sector if revenues from these landlines are not limited to local and long distance telephone charges, but also include cable TV and Internet charges. This development will ensure affordable access to information even by those in rural areas and will spare the government the trouble and cost of installing expensive landlines.<sup>21</sup>

### What are the components of a typical successful e-commerce transaction loop?

E-commerce does not refer merely to a firm putting up a Web site for the purpose of selling goods to buyers over the Internet. For e-commerce to be a competitive alternative to traditional commercial transactions and for a firm to maximize the benefits of e-commerce, a number of technical as well as enabling issues have to be considered. A typical e-commerce transaction loop involves the following major players and corresponding requisites:

The **Seller** should have the following components:

- A corporate Web site with e-commerce capabilities (e.g., a secure transaction server);
- A corporate intranet so that orders are processed in an efficient manner; and
- IT-literate employees to manage the information flows and maintain the e-commerce system.



**Transaction partners** include:

- Banking institutions that offer transaction clearing services (e.g., processing credit card payments and electronic fund transfers);
- National and international freight companies to enable the movement of physical goods within, around and out of the country. For business-to-consumer transactions, the system must offer a means for cost-efficient transport of small packages (such that purchasing books over the Internet, for example, is not prohibitively more expensive than buying from a local store); and
- Authentication authority that serves as a trusted third party to ensure the integrity and security of transactions.

**Consumers** (in a business-to-consumer transaction) who:

- Form a critical mass of the population with access to the Internet and disposable income enabling widespread use of credit cards; and
- Possess a mindset for purchasing goods over the Internet rather than by physically inspecting items.

**Firms/Businesses** (in a business-to-business transaction) that together form a critical mass of companies (especially within supply chains) with Internet access and the capability to place and take orders over the Internet.

**Government**, to establish:

- A legal framework governing e-commerce transactions (including electronic documents, signatures, and the like); and
- Legal institutions that would enforce the legal framework (i.e., laws and regulations) and protect consumers and businesses from fraud, among others.

And finally, the **Internet**, the successful use of which depends on the following:

- A robust and reliable Internet infrastructure; and
- A pricing structure that doesn't penalize consumers for spending time on and buying goods over the Internet (e.g., a flat monthly charge for both ISP access and local phone calls).

For e-commerce to grow, the above requisites and factors have to be in place. The least developed factor is an impediment to the increased uptake of e-commerce as a whole. For instance, a country with an excellent Internet infrastructure will not have high e-commerce figures if banks do not offer support and fulfillment services to e-commerce transactions. In countries that have significant e-commerce figures, a positive feedback loop reinforces each of these factors.<sup>22</sup>

### How is the Internet relevant to e-commerce?

The Internet allows people from all over the world to get connected inexpensively and reliably. As a technical infrastructure, it is a global collection of networks, connected to share information using a common set of protocols.<sup>23</sup> Also, as a vast network of people and information,<sup>24</sup> the Internet is an enabler for e-commerce as it allows businesses to showcase and sell their products and services online and gives potential







customers, prospects, and business partners access to information about these businesses and their products and services that would lead to purchase.

Before the Internet was utilized for commercial purposes, companies used private networks-such as the EDI or Electronic Data Interchange-to transact business with each other. That was the early form of e-commerce. However, installing and maintaining private networks was very expensive. With the Internet, e-commerce spread rapidly because of the lower costs involved and because the Internet is based on open standards.<sup>25</sup>

### **How important is an intranet for a business engaging in e-commerce?**

An intranet aids in the management of internal corporate information that may be interconnected with a company's e-commerce transactions (or transactions conducted outside the intranet). Inasmuch as the intranet allows for the instantaneous flow of internal information, vital information is simultaneously processed and matched with data flowing from external e-commerce transactions, allowing for the efficient and effective integration of the corporation's organizational processes. In this context, corporate functions, decisions and processes involving e-commerce activities are more coherent and organized.

The proliferation of intranets has caused a shift from a hierarchical command-and-control organization to an information-based organization. This shift has implications for managerial responsibilities, communication and information flows, and workgroup structures.

### **Aside from reducing the cost of doing business, what are the advantages of e-commerce for businesses?**

**E-commerce serves as an "equalizer"**. It enables start-up and small- and medium-sized enterprises to reach the global market.

#### **Box 4. Leveling the Playing Field through E-commerce: The Case of Amazon.com**

Amazon.com is a virtual bookstore. It does not have a single square foot of bricks and mortar retail floor space. Nonetheless, Amazon.com is posting an annual sales rate of approximately \$1.2 billion, equal to about 235 Barnes & Noble (B&N) superstores. Due to the efficiencies of selling over the Web, Amazon has spent only \$56 million on fixed assets, while B&N has spent about \$118 million for 235 superstores. (To be fair, Amazon has yet to turn a profit, but this does not obviate the point that in many industries doing business through e-commerce is cheaper than conducting business in a traditional brick-and-mortar company.)

However, this does not discount the point that without a good e-business strategy, e-commerce may in some cases discriminate against SMEs because it reveals propri-

etary pricing information. A sound e-business plan does not totally disregard old economy values. The dot-com bust is proof of this.

#### Box 5. Lessons from the Dot Com Frenzy

According to Webmergers.com statistics, about 862 dot-com companies have failed since the height of the dot-com bust in January 2000. Majority of these were e-commerce and content companies. The shutdown of these companies was followed by the folding up of Internet-content providers, infrastructure companies, Internet service providers, and other providers of dial-up and broadband Internet-access services.<sup>26</sup>

From the perspective of the investment banks, the dot-com frenzy can be likened to a gamble where the big money players were the venture capitalists and those laying their bets on the table were the small investors. The bust was primarily caused by the players' unfamiliarity with the sector, coupled with failure to cope with the speed of the Internet revolution and the amount of capital in circulation.<sup>27</sup>

Internet entrepreneurs set the prices of their goods and services at very low levels to gain market share and attract venture capitalists to infuse funding. The crash began when investors started demanding hard earnings for sky-high valuations. The Internet companies also spent too much on overhead before even gaining a market share.<sup>28</sup>

**E-commerce makes “mass customization” possible.** E-commerce applications in this area include easy-to-use ordering systems that allow customers to choose and order products according to their personal and unique specifications. For instance, a car manufacturing company with an e-commerce strategy allowing for online orders can have new cars built within a few days (instead of the several weeks it currently takes to build a new vehicle) based on customer's specifications. This can work more effectively if a company's manufacturing process is advanced and integrated into the ordering system.

**E-commerce allows “network production.”** This refers to the parceling out of the production process to contractors who are geographically dispersed but who are connected to each other via computer networks. The benefits of network production include: reduction in costs, more strategic target marketing, and the facilitation of selling add-on products, services, and new systems when they are needed. With network production, a company can assign tasks within its non-core competencies to factories all over the world that specialize in such tasks (e.g., the assembly of specific components).

#### How is e-commerce helpful to the consumer?

In C2B transactions, customers/consumers are given more influence over what and how products are made and how services are delivered, thereby broadening consumer choices. E-commerce allows for a faster and more open process, with customers having greater control.



E-commerce makes information on products and the market as a whole readily available and accessible, and increases price transparency, which enable customers to make more appropriate purchasing decisions.

### **How are business relationships transformed through e-commerce?**

E-commerce transforms old economy relationships (vertical/linear relationships) to new economy relationships characterized by end-to-end relationship management solutions (integrated or extended relationships).

### **How does e-commerce link customers, workers, suppliers, distributors and competitors?**

E-commerce facilitates organization networks, wherein small firms depend on “partner” firms for supplies and product distribution to address customer demands more effectively.

To manage the chain of networks linking customers, workers, suppliers, distributors, and even competitors, an integrated or extended supply chain management solution is needed. **Supply chain management (SCM)** is defined as the supervision of materials, information, and finances as they move from supplier to manufacturer to wholesaler to retailer to consumer. It involves the coordination and integration of these flows both within and among companies. The goal of any effective supply chain management system is timely provision of goods or services to the next link in the chain (and ultimately, the reduction of inventory within each link).<sup>29</sup>

There are three main flows in SCM, namely:

- The product flow, which includes the movement of goods from a supplier to a customer, as well as any customer returns or service needs;
- The information flow, which involves the transmission of orders and the update of the status of delivery; and
- The finances flow, which consists of credit terms, payment schedules, and consignment and title ownership arrangements.

Some SCM applications are based on open data models that support the sharing of data both inside and outside the enterprise, called the extended enterprise, and includes key suppliers, manufacturers, and end customers of a specific company. Shared data resides in diverse database systems, or data warehouses, at several different sites and companies. Sharing this data “upstream” (with a company’s suppliers) and “downstream” (with a company’s clients) allows SCM applications to improve the time-to-market of products and reduce costs. It also allows all parties in the supply chain to better manage current resources and plan for future needs.<sup>30</sup>

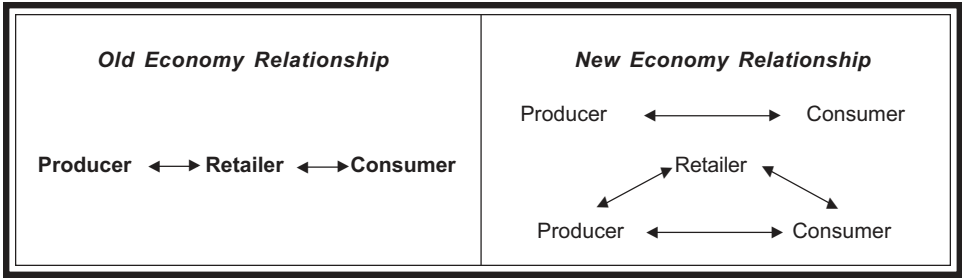


Figure 3. Old Economy Relationships vs. New Economy Relationships

**What are the relevant components of an e-business model?**

An e-business model must have:<sup>31</sup>

- 1. A **shared digital business infrastructure**, including digital production and distribution technologies (broadband/wireless networks, content creation technologies and information management systems), which will allow business participants to create and utilize network economies of scale<sup>32</sup> and scope<sup>33</sup>;
- 2. A **sophisticated model for operations**, including integrated value chains-both supply chains<sup>34</sup> and buy chains<sup>35</sup>;
- 3. An **e-business management model**, consisting of business teams and/or partnerships; and
- 4. **Policy, regulatory and social systems**-i.e., business policies consistent with e-commerce laws, teleworking/virtual work, distance learning, incentive schemes, among others.

**Box 6. Dawson’s Antiques and Sotheby’s:  
A Case of Creative Positioning of an E-Business Strategy**

Dawson’s Antiques is a 23-year-old small antique business. With the emergence of online auction sites, the owner, Linda Dawson, foresaw the need not only to accommodate the Internet in their business strategy but also to take advantage of it in order to survive as a business. This came with the recognition that many of her clients were exposed to a wide range of antiques from competitors at online auction sites at prices lower than she was charging.

Meanwhile, Sotheby’s, then a growing online auction site (and now one of the largest online auction sites), realized the merit of increasing its auction inventory to attract a bigger audience on the Internet. It revised its Internet strategy by opening its Web site, sothebys.com, to smaller dealers and auction sites instead of competing directly with its competitors in the online auction business. With this approach, Sotheby experienced an exponential growth in its inventory, which attracted a bigger market.

Dawson’s enlistment in Sotheby’s was instrumental in expanding its client base. To make things easier, Sotheby’s not only provided the Web site for its members (Dawson’s included)



but also arranged to handle all billing and collection. Under the new strategy, Sotheby's enlisted 4,660 members, which translated to an expansion of its auction inventory by five times the previous average stock or about 5,000 lots per week. For Dawson, e-business sales accounted for 25% of total sales in mid-2000 and 50% in January 2001.

## II. E-COMMERCE APPLICATIONS: ISSUES AND PROSPECTS

Various applications of e-commerce are continually affecting trends and prospects for business over the Internet, including e-banking, e-tailing and online publishing/online retailing.

A more developed and mature e-banking environment plays an important role in e-commerce by encouraging a shift from traditional modes of payment (i.e., cash, checks or any form of paper-based legal tender) to electronic alternatives (such as e-payment systems), thereby closing the e-commerce loop.

### What are the existing practices in developing countries with respect to buying and paying online?

In most developing countries, the payment schemes available for online transactions are the following:

#### A. Traditional Payment Methods

- **Cash-on-delivery.** Many online transactions only involve submitting purchase orders online. Payment is by cash upon the delivery of the physical goods.
- **Bank payments.** After ordering goods online, payment is made by depositing cash into the bank account of the company from which the goods were ordered. Delivery is likewise done the conventional way.

#### B. Electronic Payment Methods

- **Innovations affecting consumers**, include credit and debit cards, automated teller machines (ATMs), stored value cards, and e-banking.
- **Innovations enabling online commerce** are e-cash, e-checks, smart cards, and encrypted credit cards. These payment methods are not too popular in developing countries. They are employed by a few large companies in specific secured channels on a transaction basis.
- **Innovations affecting companies** pertain to payment mechanisms that banks provide their clients, including inter-bank transfers through automated clearing houses allowing payment by direct deposit.

### **What is an electronic payment system? Why is it important?**

An electronic payment system (EPS) is a system of financial exchange between buyers and sellers in the online environment that is facilitated by a digital financial instrument (such as encrypted credit card numbers, electronic checks, or digital cash) backed by a bank, an intermediary, or by legal tender.

EPS plays an important role in e-commerce because it closes the e-commerce loop. In developing countries, the underdeveloped electronic payments system is a serious impediment to the growth of e-commerce. In these countries, entrepreneurs are not able to accept credit card payments over the Internet due to legal and business concerns. The primary issue is transaction security.

The absence or inadequacy of legal infrastructures governing the operation of e-payments is also a concern. Hence, banks with e-banking operations employ service agreements between themselves and their clients.

The relatively undeveloped credit card industry in many developing countries is also a barrier to e-commerce. Only a small segment of the population can buy goods and services over the Internet due to the small credit card market base. There is also the problem of the requirement of “explicit consent” (i.e., a signature) by a card owner before a transaction is considered valid—a requirement that does not exist in the U.S. and in other developed countries.

#### *What is the confidence level of consumers in the use of an EPS?*

Many developing countries are still cash-based economies. Cash is the preferred mode of payment not only on account of security but also because of anonymity, which is useful for tax evasion purposes or keeping secret what one's money is being spent on. For other countries, security concerns have a lot to do with a lack of a legal framework for adjudicating fraud and the uncertainty of the legal limit on the liability associated with a lost or stolen credit card.

In sum, among the relevant issues that need to be resolved with respect to EPS are: consumer protection from fraud through efficiency in record-keeping; transaction privacy and safety, competitive payment services to ensure equal access to all consumers, and the right to choice of institutions and payment methods. Legal frameworks in developing countries should also begin to recognize electronic transactions and payment schemes.

### **What is e-banking?**

E-banking includes familiar and relatively mature electronically-based products in developing markets, such as telephone banking, credit cards, ATMs, and direct deposit. It also includes electronic bill payments and products mostly in the developing stage, including stored-value cards (e.g., smart cards/smart money) and Internet-based stored value products.



### Box 7. Payment Methods and Security Concerns: The Case of China

In China, while banks issue credit cards and while many use debit cards to draw directly from their respective bank accounts, very few people use their credit cards for online payment. Cash-on-delivery is still the most popular mode of e-commerce payment. Nonetheless, online payment is gaining popularity because of the emergence of Chinapay and Cyber Beijing, which offer a city-wide online payment system.

#### *What is the status of e-banking in developing countries?*

E-banking in developing countries is in the early stages of development. Most banking in developing countries is still done the conventional way. However, there is an increasing growth of online banking, indicating a promising future for online banking in these countries. Below is a broad picture of e-banking in three ASEAN countries.

#### **The Philippine Experience**

In the Philippines, Citibank, Bank of the Philippine Islands (BPI), Philippine National Bank, and other large banks pioneered e-banking in the early 1980s. Interbank networks in the country like Megalink, Bancnet, and BPI Expressnet were among the earliest and biggest starters of ATM (Automated Teller Machines) technology.

BPI launched its BPI Express Online in January 2000. The most common online financial services include deposits, fund transfers, applications for new accounts, Stop Payment on issued checks, housing and auto loans, credit cards, and remittances.

#### **The Singapore Experience**

In Singapore, more than 28% of Internet users visited e-banking sites in May 2001.<sup>36</sup> Research by NetValue (an Internet measurement company) shows that while the number of people engaging in online banking in Singapore has increased, the average time spent at sites decreased by approximately four minutes from March 2001 to May 2001. This decline can be attributed to the fact that more visitors spend time completing transactions, which take less time than browsing different sites. According to the survey, two out of three visitors make a transaction.

All major banks in Singapore have an Internet presence. They offer a wide range of products directly to consumers through proprietary Internet sites. These banks have shifted from an initial focus on retail-banking to SME and corporate banking products and services.

Among the products offered are:

- Fund transfer and payment systems;
- Integrated B2B e-commerce product, involving product selection, purchase order, invoice generation and payment;
- Securities placement and underwriting and capital market activities;



- Securities trading; and
- Retail banking.

### The Malaysian Experience

E-banking in Malaysia emerged in 1981 with the introduction of ATMs. This was followed by tele-banking in the early 1990s where telecommunications devices were connected to an automated system through the use of Automated Voice Response (AVR) technology. Then came PC banking or desktop banking using proprietary software, which was more popular among corporate customers than retail customers.

On June 1, 2000, the Malaysian Bank formally allowed local commercial banks to offer Internet banking services. On June 15, 2000, Maybank ([www.maybank2U.com](http://www.maybank2U.com)), one of the largest banks in Malaysia, launched the country's first Internet banking services. The bank employs 128-bit encryption technology to secure its transactions. Other local banks in Malaysia offering e-banking services are Southern Bank, Hong Leong Bank, HSBC Bank, Multi-Purpose Bank, Phileo Allied Bank and RHB Bank. Banks that offer WAP or Mobile banking are OCBC Bank, Phileo Allied Bank and United Overseas Bank.

The most common e-banking services include banking inquiry functions, bill payments, credit card payments, fund transfers, share investing, insurance, travel, electronic shopping, and other basic banking services.<sup>37</sup>

*What market factors, obstacles, problems and issues are affecting the growth of e-banking in developing countries?*

Human tellers and automated teller machines continue to be the banking channels of choice in developing countries. Only a small number of banks employ Internet banking. Among the middle- and high-income people in Asia questioned in a McKinsey survey, only 2.6% reported banking over the Internet in 2000. In India, Indonesia, and Thailand, the figure was as low as 1%; in Singapore and South Korea, it ranged from 5% to 6%. In general, Internet banking accounted for less than 0.1% of these customers' banking transactions, as it did in 1999. The Internet is more commonly used for opening new accounts but the numbers are negligible as less than 0.3% of respondents used it for that purpose, except in China and the Philippines where the figures climbed to 0.7 and 1.0%, respectively.

This slow uptake cannot be attributed to limited access to the Internet since 42% of respondents said they had access to computers and 7% said they had access to the Internet. The chief obstacle in Asia and throughout emerging markets is security. This is the main reason for not opening online banking or investment accounts. Apparently, there is also a preference for personal contact with banks.

Access to high-quality products is also a concern. Most Asian banks are in the early stages of Internet banking services, and many of the services are very basic.





*What are the trends and prospects for e-banking in these countries?*

There is a potential for increased uptake of e-banking in Asia. Respondents of the McKinsey survey gave the following indications:

1. **Lead users:** 38% of respondents indicated their intention to open an online account in the near future. These lead users undertake one-third more transactions a month than do other users, and they tend to employ all banking channels more often.
2. **Followers:** An additional 20% showed an inclination to eventually open an online account, if their primary institution were to offer it and if there would be no additional bank charges.
3. **Rejecters:** 42% (compared to the aggregate figure of 58% for lead users and followers) indicated no interest in or an aversion to Internet banking. It is important to note that these respondents also preferred consolidation and simplicity, i.e., owning fewer banking products and dealing with fewer financial institutions.

Less than 13% of the lead users and followers indicated some interest in conducting complex activities over the Internet, such as trading securities or applying for insurance, credit cards, and loans. About a third of lead users and followers showed an inclination to undertake only the basic banking functions, like ascertaining account balances and transferring money between accounts, over the Internet. <sup>38</sup>

### **What is e-tailing?**<sup>39</sup>

**E-tailing** (or electronic retailing) is the selling of retail goods on the Internet. It is the most common form of business-to-consumer (B2C) transaction.

#### **Box 8. E-Tailing: Pioneering Trends in ECommerce**

The year 1997 is considered the first big year for e-tailing. This was when Dell Computer recorded multimillion dollar orders taken at its Web site. Also, the success of Amazon.com (which opened its virtual doors in 1996) encouraged Barnes & Noble to open an e-tail site. Security concerns over taking purchase orders over the Internet gradually receded. In the same year, Auto-by-Tel sold its millionth car over the Web, and CommerceNet/Nielsen Media recorded that 10 million people had made purchases on the Web.

*What are the trends and prospects for e-tailing?*

Jupiter projects that e-tailing will grow to \$37 billion by 2002. Another estimate is that the online market will grow 45% in 2001, reaching \$65 billion. Profitability will vary sharply between Web-based, catalog-based and store-based retailers. There was also a marked reduction in customer acquisition costs for all online retailers from an average of \$38 in 1999 to \$29 in 2000.

An e-retail study conducted by Retail Forward showed that eight of its top 10 e-retailers<sup>40</sup> were multi-channel-that is, they do not rely on online selling alone. Figure 4 shows the top 10 e-tailers by revenues generated online for the year 2001.

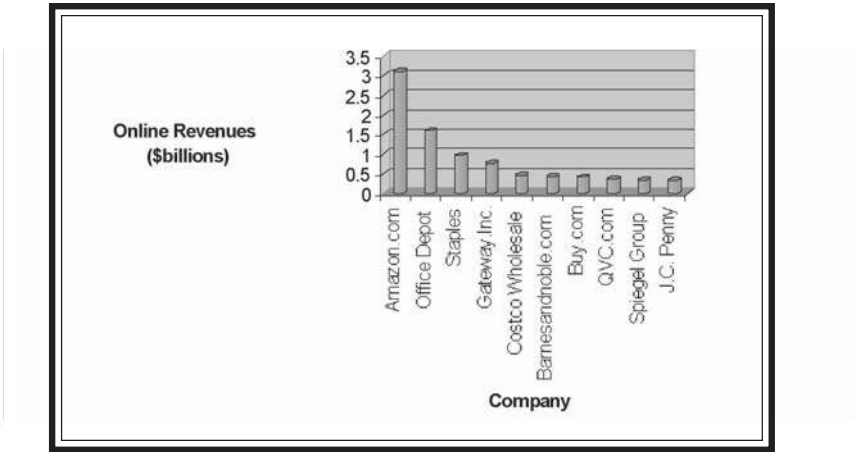


Figure 4. Top 10 E-Retailers, 2001<sup>41</sup>

In addition, a study by the Boston Consulting Group and Shop.org revealed that the multi-channel retail market in the U.S. expanded by 72% from 1999 to 2002, vis-à-vis a compounded annual growth rate of 67.8% for the total online market for the years 1999-2002.

**What is online publishing? What are its most common applications?**

Online publishing is the process of using computer and specific types of software to combine text and graphics to produce Web-based documents such as newsletters, online magazines and databases, brochures and other promotional materials, books, and the like, with the Internet as a medium for publication.

*What are the benefits and advantages of online publishing to business?*

Among the benefits of using online media are low-cost universal access, the independence of time and place, and ease of distribution. These are the reasons why the Internet is regarded as an effective marketing outreach medium and is often used to enhance information service.

*What are the problems and issues in online publishing?*

The problems in online publishing can be grouped into two categories: management challenges and public policy issues.



There are two major management issues:

- The **profit question**, which seeks to address how an online presence can be turned into a profitable one and what kind of business model would result in the most revenue; and
- The **measurement issue**, which pertains to the effectiveness of a Web site and the fairness of charges to advertisers.

The most common public policy issues have to do with copyright protection and censorship. Many publishers are prevented from publishing online because of inadequate copyright protection. An important question to be addressed is: How can existing copyright protections in the print environment be mapped onto the online environment? Most of the solutions are technological rather than legal. The more common technological solutions include encryption for paid subscribers, and information usage meters on add-in circuit boards and sophisticated document headers that monitor the frequency and manner by which text is viewed and used.

In online marketing, there is the problem of unsolicited commercial e-mail or “spam mail.” Junk e-mail is not just annoying; it is also costly. Aside from displacing normal and useful e-mail, the major reason why spam mail is a big issue in online marketing is that significant costs are shifted from the sender of such mail to the recipient. Sending bulk junk e-mail is a lot cheaper compared to receiving the same. Junk e-mail consumes bandwidth (which an ISP purchases), making Internet access clients slower and thereby increasing the cost of Internet use.<sup>42</sup>

### III. E-COMMERCE IN DEVELOPING COUNTRIES

#### How important is e-commerce to SMEs in developing countries? How big is the SME e-business market?

For SMEs in developing countries e-commerce poses the advantages of reduced information search costs and transactions costs (i.e., improving efficiency of operations-reducing time for payment, credit processing, and the like). Surveys show that information on the following is most valuable to SMEs: customers and markets, product design, process technology, and financing source and terms. The Internet and other ICTs facilitate access to this information.<sup>43</sup> In addition, the Internet allows automatic packaging and distribution of information (including customized information) to specific target groups.

However, there is doubt regarding whether there is enough information on the Web that is relevant and valuable for the average SME in a developing country that would make investment in Internet access feasible. Underlying this is the fact that most SMEs in developing countries cater to local markets and therefore rely heavily on local content and information. For this reason, there is a need to substantially increase the amount and quality of local content (including local language content) on the Internet to make it useful especially to low-income entrepreneurs.<sup>44</sup>

**Box. 9. ICT-4-BUS: Helping SMEs Conquer the E-Business Challenge<sup>45</sup>**

The Information and Communication Technology Innovation Program for E-business and SME Development, otherwise known as the ICT-4-BUS, is an initiative by the Multilateral Investment Fund and the Information Technology for Development Division of the Inter-American Development Bank (IDB) to enhance the competitiveness, productivity and efficiency of micro-entrepreneurs and SMEs in Latin America and the Caribbean through the provision of increased access to ICT solutions. This is in line with the regional and worldwide effort to achieve a viable “information society.” Programs and projects under this initiative include the dissemination of region-wide best practices, computer literacy and training programs, and coordination efforts to facilitate critical access to credit and financing for the successful implementation of e-business solutions. The initiative serves as a strategic tool and a vehicle for maximizing the strong SME e-business market potential in Latin America manifested in the \$23.51 billion e-business revenues reached among Latin American SMEs.<sup>46</sup>

eMarketer estimates that SME e-business revenues will increase: from \$6.53 billion to \$28.53 billion in Eastern Europe, Africa and the Middle East combined; \$127.25 billion in 2003 to \$502.69 billion by 2005 in the Asia-Pacific region; \$23.51 billion in 2003 to \$89.81 billion by 2005 in Latin America; from \$340.41 billion in 2003 to \$971.47 billion by 2005 in Western Europe; and from \$384.36 billion in 2003 to \$1.18 trillion by 2005 in Northern America.

*How is e-commerce useful to developing country entrepreneurs?*

There are at least five ways by which the Internet and e-commerce are useful for developing country entrepreneurs:

- 1. It facilitates the access of artisans<sup>47</sup> and SMEs to world markets.
- 2. It facilitates the promotion and development of tourism of developing countries in a global scale.
- 3. It facilitates the marketing of agricultural and tropical products in the global market.

**Box 10. IFAT: Empowering the Agricultural Sector through B2C E-Commerce**

The International Federation for Alternative Trade (IFAT) is a collective effort to empower the agricultural sector of developing countries. It is composed of 100 organizations (including 70 organizations in developing countries) in 42 countries. Members of the organization collectively market about \$200-400 million annually in handicrafts and agricultural products from lower income countries. In addition, IFAT provides assistance to developing country producers in terms of logistical support, quality control, packing and export.

- 4. It provides avenues for firms in poorer countries to enter into B2B and B2G supply chains.
- 5. It assists service-providing enterprises in developing countries by allowing them to operate more efficiently and directly provide specific services to customers globally.



### Box 11. Offshore Data Processing Centers: E-commerce at Work in the Service Sector

Offshore data processing centers, which provide data transcription and “back office” functions to service enterprises such as insurance companies, airlines, credit card companies and banks, among others, are prevalent in developing countries and even in low-wage developed countries. In fact, customer support call centers of dot-coms and other ICT/e-commerce companies are considered one of the fastest growing components of offshore services in these countries.

India and the Philippines pride themselves in being the major locations of offshore data entry and computer programming in Asia, with India having established a sophisticated software development capability with highly skilled personnel to support it.<sup>48</sup>

Developing country SMEs in the services sector have expanded their market with the increased ability to transact directly with overseas or international customers and to advertise their services. This is especially true for small operators of tourism-related services. Tourism boards lend assistance in compiling lists of service providers by category in their Web sites.

In addition, for SMEs in developing countries the Internet is a quick, easy, reliable and inexpensive means for acquiring online technical support and software tools and applications, lodging technical inquiries, requesting repairs, and ordering replacement parts or new tooling.<sup>49</sup>

The Internet is also instrumental in enabling SMEs in developing countries to join discussion groups with their peers across the globe who are engaged in the same business, and thereby share information, experiences and even solutions to specific technical problems. This is valuable especially to entrepreneurs who are geographically isolated from peers in the same business.<sup>50</sup>

#### *What is the extent of ICT usage among SMEs in developing countries?*

Currently the Internet is most commonly used by SME firms in developing countries for communication and research; the Internet is least used for e-commerce. E-mail is considered an important means of communication. However, the extent of use is limited by the SMEs’ recognition of the importance of face-to-face interaction with their buyers and suppliers. The level of confidence of using e-mail for communication with both suppliers and buyers increases only after an initial face-to-face interaction. E-mail, therefore, becomes a means for maintaining a business relationship. It is typically the first step in e-commerce, as it allows a firm to access information and maintain communications with its suppliers and buyers. This can then lead to more advanced e-commerce activities.

ICT usage patterns among SMEs in developing countries show a progression from the use of the Internet for communication (primarily e-mail) to use of the Internet for research and information search, to the development of Web sites with static information about a firm’s goods or services, and finally to use of the Internet for e-commerce.

**Box 12. E-Mail and the Internet in Developing Countries**

To date, e-mail is the predominant and most important use of the Internet in developing countries. In Bangladesh, 82% of Internet use is attributed to e-mail, vis-à-vis 5% in the United States. The Web accounts for about 70% of Internet use in the U.S.<sup>51</sup> This is due to the relatively high Internet access costs in most developing countries. However, the Internet is considered an inexpensive, although imperfect, alternative to the telephone or facsimile machine-i.e., it is inexpensive due to the higher speed of information transmission, and imperfect because it does not provide two-way communication in real time unlike the telephone.<sup>52</sup>

Many firms use the Internet to communicate with suppliers and customers only as a channel for maintaining business relationships. Once firms develop a certain level of confidence on the benefits of e-mail in the conduct of business transactions and the potential of creating sales from its use, they usually consider the option of developing their own Web site.

Studies commissioned by The Asia Foundation on the extent of ICT use among SMEs in the Philippines, Thailand and Indonesia, show common use patterns, such as:

- 1. wide use of the Internet for e-mail because of the recognized cost and efficiency benefits;
- 2. use of Web sites more for promotion than for online sales or e-commerce, indicating that SMEs in these countries are still in the early stages of e-commerce;
- 3. common use of the Internet for basic research; and
- 4. inclination to engage more in offline transactions than in e-commerce because of security concerns.

SMEs go through different stages in adopting e-commerce. They start with creating a Web site primarily to advertise and promote the company and its products and services. When these firms begin generating traffic, inquiries and, eventually, sales through their Web sites, they are likely to engage in e-commerce.

**Box 13. Women and Global Web-Based Marketing:  
The Case of the Guyanan Weavers' Cooperative**

The Guyanan Weavers' Cooperative is an organization founded by 300 women from the Wapishana and Macushi tribes in Guyana, northern South America. The cooperative revived the ancient art of hammock weaving using 19th century accounts and illustrations of the hammocks made by European travelers and the cultivation of cotton on small family plots and hand-weaving. The organization then hired someone to create a Web site, which was instrumental in bringing their wares online. Not long after, in the mid-1990s, the group of weavers (the Rupununi Weavers Society) was able to sell hammocks to Queen Elizabeth, Prince Philip, the Smithsonian Institute, and the British Museum. Since 1998, they have sold about 20 hammocks through the Internet at \$1,000 per piece. This case also shows that SMEs have great potential to compete in markets for high-end, bespoke products despite the low sales volume.



In addition, many Web sites providing market and technical information, agronomic advice and risk management tools for SMEs (to coffee and tea farmers in developing countries, for example) have emerged.<sup>53</sup>

*What are the obstacles, problems and issues faced by SMEs in their use of ICT in business or in engaging in e-commerce?*

According to recent surveys conducted in select Southeast Asian countries, the perceived external barriers to e-commerce include the unfavorable economic environment, the high cost of ICT, and security concerns. The internal barriers are poor internal communications infrastructure within SME firms, lack of ICT awareness and knowledge as well as inadequacy of ICT-capable and literate managers and workers, insufficient financial resources, and the perceived lack of relevance or value-added of ICTs to their business.

In general, the main issues of concern that act as barriers to the increased uptake of information technology and e-commerce are the following:

- **Lack of awareness and understanding of the value of e-commerce.** Most SMEs in developing countries have not taken up e-commerce or use the Internet because they fail to see the value of e-commerce to their businesses. Many think e-commerce is suited only to big companies and that it is an additional cost that will not bring any major returns on investment.
- **Lack of ICT knowledge and skills.** People play a vital role in the development of e-commerce. However, technology literacy is still very limited in most developing countries. There is a shortage of skilled workers among SMEs, a key issue in moving forward with using information technology in business. There are also doubts about whether SMEs can indeed take advantage of the benefits of accessing the global market through the Internet, given their limited capabilities in design, distribution, marketing, and post-sale support. While the Internet can be useful in accessing international design expertise, SMEs are not confident that they can command a premium on the prices for their goods unless they offer product innovations. They can, however, capitalize on returns on the basis that they are the low cost providers.

Furthermore, more often than not, the premium in design has already been captured—for example, in the textile products industry—by the branded fashion houses. SMEs doubt whether Web presence will facilitate their own brand recognition on a global scale.<sup>54</sup>

- **Financial costs.** Cost is a crucial issue. The initial investment for the adoption of a new technology is proportionately heavier for small than for large firms. The high cost of computers and Internet access is a barrier to the uptake of e-commerce. Faced with budgetary constraints, SMEs consider the additional costs of ICT spending as too big an investment without immediate returns.



Many SMEs find marketing on the Internet expensive. Having a Web site is not equivalent to having a well-visited Web site. One reason is that there may be no critical mass of users. Another reason is the challenge of anonymity for SMEs. Because of the presence of numerous entrepreneurs in the Internet, it seems that brand recognition matters in order to be competitive. Moreover, it is not enough that a Web site is informative and user-friendly; it should also be updated frequently. Search engines must direct queries to the Web site, and news about the site must be broadly disseminated. Significantly, the experience of many OECD countries attests to the fact that the best e-marketing strategies are not better substitutes for the conventional form of media.<sup>55</sup> One solution may be to encourage several SMEs to aggregate their information on a common Web site, which in turn would have the responsibility of building recognition/branding by hyperlinking or updating, for example.

- **Infrastructure.** The national network/physical infrastructure of many developing countries is characterized by relatively low teledensity, a major barrier to e-commerce. There are also relatively few main phone lines for business use among SMEs.
- **Security.** Ensuring security of payments and privacy of online transactions is key to the widespread acceptance and adoption of e-commerce. While the appropriate policies are in place to facilitate e-commerce, lack of trust is still a barrier to using the Internet to make online transactions. Moreover, credit card usage in many developing countries is still relatively low.<sup>56</sup>

Also, consumers are reluctant to use the Internet for conducting transactions with SMEs due to the uncertainty of the SMEs' return policy and use of data.

- Other privacy- and security-related issues.<sup>57</sup> While security is commonly used as the catch-all word for many different reasons why individuals and firms do not engage in extensive e-commerce and use of Internet-based technologies, there are other related reasons and unresolved issues, such as tax evasion, privacy and anonymity, fraud adjudication, and legal liability on credit cards. In many countries, cash is preferred not only for security reasons but also because of a desire for anonymity on the part of those engaged in tax evasion or those who simply do not want others to know where they are spending their money. Others worry that there is lack of legal protection against fraud (i.e., there is no provision for adjudicating fraud and there may be no legal limit on liability, say, for a lost or stolen credit card). It is necessary to distinguish these concerns from the general security concerns (i.e., transaction privacy, protection and security) since they may not be addressed by the employment of an effective encryption method (or other security measure).

### **Is e-commerce helpful to the women sector? How has it helped in empowering women?**

In general, the Internet and e-commerce have empowered sectors previously discriminated against. The Guyanan experience can attest to this.





Women have gained a foothold in many e-commerce areas. In B2C e-commerce, most success stories of women-empowered enterprises have to do with marketing unique products to consumers with disposable income. The consumers are found largely in developed countries, implying that there is a need for sufficient infrastructure for the delivery of products for the business to prosper and establish credibility. For example, if an enterprise can venture into producing digital goods such as music or software that can be transmitted electronically or if such goods can be distributed and/or delivered locally, then this is the option that is more feasible and practicable.

Aside from the Guyanan experience, there are many more successful cases of e-commerce ventures that the women sector can emulate. Some concrete examples are: Tortasperu.com (<http://www.tortasperu.com.pe>), a business involving the marketing cakes in Peru run by women in several Peruvian cities; Ethiogift (<http://ethiogift.com>), involving Ethiopians buying sheep and other gifts over the Internet to deliver to their families in other parts of the country, thereby dispensing with the physical delivery of goods abroad; and the Rural Women's Association of the Northern Province of South Africa, which uses the Web to advertise its chickens to rich clients in Pietersburg.<sup>58</sup>

While most of the examples involve B2C e-commerce, it must be noted that women are already engaged in wholesale distribution businesses in developing countries. Thus, they can begin to penetrate B2B or B2G markets.

**Box 14. Women Empowerment in Bangladesh:  
 The Case of the Grameen Village Phone Network**

The Grameen Village Phone Network is a classic example of women's empowerment in Bangladesh. Operators of the village phones are all poor women (who have been selected for their clean and strong credit record). These village phones are regularly visited by members of male-dominated villages. Notably, the women entrepreneurs (village operators) enjoy wider discretion in expending their profits from their phone services than with their household income.

**What is the role of government in the development of e-commerce in developing countries?**

While it is generally agreed that the private sector should take the lead role in the development and use of e-commerce, the government plays an instrumental role in encouraging e-commerce growth through concrete practicable measures such as:

1. Creating a favorable policy environment for e-commerce; and
2. Becoming a leading-edge user of e-commerce and its applications in its operations, and a provider to citizens of e-government services, to encourage its mass use.

### *What is a favorable policy environment for e-commerce?*

Among the public policy issues in electronic commerce that governments should take heed of are:

- “bridging the digital divide” or promoting access to inexpensive and easy access to information networks;
- legal recognition of e-commerce transactions;
- consumer protection from fraud;
- protection of consumers’ right to privacy;
- legal protection against cracking (or unauthorized access to computer systems); and
- protection of intellectual property.

Measures to address these issues must be included in any country’s policy and legal framework for e-commerce. It is important that government adopt policies, laws and incentives that focus on promoting trust and confidence among e-commerce participants and developing a national framework that is compatible with international norms on e-commerce (covering for instance, contract enforcement, consumer protection, liability assignment, privacy protection, intellectual property rights, cross-border trade, and improvement of delivery infrastructure, among others<sup>59</sup>).

### *How can government use e-commerce<sup>60</sup>?*

Government can use e-commerce in the following ways:

- **E-procurement.** Government agencies should be able to trade electronically with all suppliers using open standards-through ‘agency enablement’ programs, ‘supplier enablement’ programs, and e-procurement information systems.
- **Customs clearance.** With the computerization of customs processes and operations (i.e., electronic submission, processing and electronic payment; and automated systems for data entry to integrate customs tables, codes and pre-assessment), one can expect more predictable and more precise information on clearing time and delivery shipments, and increased legitimate revenues.
- **Tax administration.** This includes a system for electronic processing and transmission of tax return information, online issuances of tax clearances, permits, and licenses, and an electronic process registration of businesses and new taxpayers, among others.

More often than not, the e-commerce initiatives of government are a barometer indicating whether or not the infrastructure supports e-commerce use by private firms. This means that if government is unable to engage in e-procurement, secure records online, or have customs fees remitted electronically, then the private sector will also have difficulties in e-commerce uptake. Virtually, the benefits from e-commerce accrue to the government, as the experiences of some countries reflect.<sup>61</sup>



*Are existing legal systems sufficient to protect those engaged in e-commerce?*

Unfortunately, the existing legal systems in most developing countries are not sufficient to protect those engaged in e-commerce. For instance, with respect to contracts, existing laws were conceived at a time when the word “writing,” “document” and “signature” referred to things in paper form. On the other hand, in today’s electronic business transactions paper is not used for record-keeping or entering into contracts.

Another important and common legal issue faced by many developing countries is uncertainty regarding whether the courts will accept electronic contracts or documents and/or electronic signatures as evidence. One view is that the issue of admissibility of electronically generated evidence will not be resolved unless a law specifically referring to it is passed. This gap in existing legal systems has caused the emergence of at least two divergent views: one bordering on the conservative interpretation of the word “document” as to exclude non-paper-based ones; and the other involving a liberal construction, which allows electronic counterparts of documents.

In the ASEAN region, only three countries-Singapore (Singapore Electronic Transactions Act), Malaysia (Cyberlaws), and the Philippines (Philippine E-commerce Act)-have a legal framework for e-commerce. These frameworks provide for the legal recognition of electronic documents and signatures and penalize common crimes and offenses committed in cyberspace.

*What other relevant policy issues should be addressed?*

Other policy issues concern basic prerequisites of infrastructure for successful e-commerce, as follows:

## 1. Telecoms pricing and performance

One of the aims of telecommunications policy and legislation should be to ensure that the public has access to basic telecommunications services at a reasonable cost. The goal should ultimately be **universal access** or widespread access to reliable information and communication services at a reasonable cost and its availability at a reasonable distance.

To enhance the quality of telecommunications services, policies should encourage:

- **open access**, which refers to the absence of non-competitive practices by network providers;
- **open architecture**, which pertains to the design of a system that facilitates interconnection among different systems and services currently and as they develop over time; and
- **flexible access**, which pertains to interconnected and interoperable networks of telecommunications, broadcasting, and electronic publishing, where the format will be digital and the bandwidth will be adjusted according to the demands of the user and the character of communications.<sup>62</sup>

## 2. Quality and speed of distribution logistics (i.e., roads and bridges)

Roads and bridges, especially in developing countries, still form part of the e-commerce infrastructure. Very few goods are delivered over the information infrastructure or the Internet (the exceptions are music and software). Most of the goods purchased over the Internet are still delivered the conventional way (i.e., physical delivery). Hence, poor roads and bridges, inefficient transport systems, coupled with the high cost of international parcel services and bureaucratic customs clearance processes, are major obstacles in the uptake of e-commerce in developing countries.<sup>63</sup> Government should therefore create a policy environment that will:

- encourage investments in the national physical and transport infrastructure; and
- provide for electronic customs clearance processing to streamline the bureaucracy and allow for more transparent, predictable and efficient customs operations.

Both of these will contribute to the reduction of distribution and logistics costs.

*How can government intervene in the promotion and development of e-commerce among SMEs?*

The following are the more relevant areas for government intervention with respect to SME uptake of e-commerce:<sup>64</sup>

**E-SME Development.** The market ultimately drives e-commerce development, but it is the private sector that fuels it. Government can provide incentives to encourage widespread e-commerce use by SMEs. An “e-SME development program” in which various sectors can provide technical assistance to SMEs to promote e-commerce uptake, can also be developed. Banks, financial lending and training institutions, and corporations should be encouraged to develop “SME desks” that will address the specific needs of SMEs. In particular, steps should be taken to:

- provide incentives to individuals to become entrepreneurs by lowering borrowing rates;
- provide incentives to SMEs that intend to use e-commerce in their business operations;
- broaden credit extension facilities to SMEs in order for them to use ICT and e-commerce; and
- offer discounts on business solution software packages and software licenses.

Moreover, big businesses and corporations should be encouraged to transfer technology to SMEs by offering them free training in ICT and e-commerce.

**Awareness Campaign.** Evidence suggests that SMEs have insufficient knowledge of information technology and e-commerce. Many SMEs have identified their lack of knowledge of technology as one of the main barriers to using e-commerce. Government and private sector partnerships can engage in a campaign to disseminate information to SMEs about e-commerce policies, best practices, success stories, and



opportunities and obstacles relating to the use of ICTs and e-commerce. These awareness campaigns could include free training courses and workshops on e-commerce, security and privacy, awards programs, and information centers to assist SMEs. Ultimately, this information campaign should come in the form of an overall e-commerce development strategy for the economy, focusing on its various innovative applications for SMEs.

**E-Government.** Government should be the lead-user of e-commerce if various business and private-sector related activities are to be prompted to move online. In effect, government becomes a positive influence. E-government can take the form of various online transactions such as company registration, taxation, applications for a variety of employee- and business-related requirements, and the like.

**Network Infrastructure and Localization of Content.** A developed national information infrastructure is a necessary, though not a sufficient, condition for e-commerce uptake of SMEs. Without reliable and inexpensive telecommunications and other information services, SMEs will not be able to go online. An important strategy in this regard is the construction of “telecenters” or electronic community centers that would serve as a community-shared access and connectivity platform especially in the rural areas (e.g., an electronic agri-information center which provides market information to farmers in rural areas). These telecenters can also be a venue for capacity building, skills enhancement, training, communications and content development.<sup>65</sup> Government can also adopt agglomerative approaches to Internet use to reduce costs (e.g., export aggregators, such as B2B or B2C portals/exchanges for SMEs, which will facilitate trading with fellow SMEs and with other companies in the international market).

**Strengthening Consumer Protection.** Among the more common trust-related issues that SMEs take note of in considering whether to engage in e-commerce are: where and how payment takes place (whether real or virtual); when settlement takes place (before, during or after the transaction); who settles; whether the transaction is B2B or B2C; and whether settlement can be traced. Generally, however, among e-commerce users in developing countries, including SMEs, there is very low willingness to provide sensitive financial information over the Internet.<sup>66</sup> On the other hand, consumers have reservations about transacting with SMEs through the Internet due to the lack of a clear policy on returns and use of data. To address this concern, government can encourage companies/ SMEs to make their privacy policy explicit in their Web sites.

A more comprehensive measure that government can undertake to ensure security in e-commerce transactions is the establishment of a Certification Authority, which verifies seller and buyer identities, examines transactions and security procedures, and issues digital certificates to those who are able to meet the set security standards. A good example of this government effort is Singapore’s Certification Authority, Netrust. This suggestion does not discount the importance of private-driven security solutions such as Web sites like Hypermart, which host and build storefronts for SMEs while providing them a common system for secure payments.<sup>68</sup>

**Box. 15. Data Protection and Transaction Security**

Transaction security pertains to three important components and related issues, namely:

- Transaction Privacy, which means that transactions must be held private and intact, with unauthorized users unable to understand the message content;
- Transaction Confidentiality, implying that traces of transactions must be dislodged from the public network and that absolutely no intermediary is permitted to hold copies of the transaction unless authorized to do so; and
- Transaction Integrity, which pertains to the importance of protecting transactions from unlawful interference-i.e., transactions must be kept unaltered and unmodified.

In an open network like the Internet, it seems difficult to ensure these. There are, however, technological solutions that seek to address these security concerns. These solutions usually come in the form of authorization schemes, i.e., programs that make sure that only authorized users can gain access to information resources such as user accounts, files, and databases. Typical examples of authorization schemes are: password protection, encrypted smart cards, biometrics (e.g., fingerprinting, iris-scanning), and firewalls.<sup>67</sup> A firewall is a system of cryptographic methods supported by perimeter guards to ensure the safe arrival and storage of information and its protection from internal and external threats. The most common data and transaction and data security scheme is encryption, which involves a set of secret codes that defends sensitive information crossing over online public channels. It makes information indecipherable except to those with a decryption/decoding key.

Government can also provide guidelines for SMEs in the development of a system of collaborative ratings, which these entrepreneurs can display on their Web sites not only to inform but also to assure their consumers of security. For instance, in electronic exchanges, customers should be able to rate suppliers in terms of quality of product or service and speed of delivery, among others. To minimize fraud, certain safeguards should be built into the rating system like imposing the requirement of presenting evidence of purchase before one’s rating can count, with ratings of regular customers having more weight. Trends in ratings and comments should be made readily available to all users. SMEs should also be encouraged through appropriate government incentive schemes to participate in internationally accredited Web-based online rating schemes.<sup>69</sup>

Government can also design and establish a legal and judiciary framework that provides for minimum standards of and requirements for transparency, impartiality and timeliness. While in many developing countries this may be a very ambitious goal, in the medium term SMEs may use self-regulated codes of conduct covering, for example, return policy, data protection, and acceptable forms of content, that are applicable within associations, cooperatives or their respective groups of peers and e-entrepreneurs.<sup>70</sup> It is important to have not only a rating system but also an enforcement regime that people trust.

**Human Resources Development.** The government can initiate pilot projects and programs for capability-building, training and e-commerce support services, such as Web design. In Kenya, for instance, the youth from Nairobi’s slums are being trained in Web design skills.

In general, government initiatives should be in line with current efforts in the foregoing areas of concern. Coordination with development cooperation agencies is important to avoid any duplication of initiatives and efforts.





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- <sup>30</sup> Ibid.
- <sup>31</sup> Lynda M. Applegate, excerpts form the *E-business Handbook* (The St. Lucie Press, 2002); available from [http://hbswk.hbs.edu/tools/print\\_item.jhtml?id=3007&t=ecommerce](http://hbswk.hbs.edu/tools/print_item.jhtml?id=3007&t=ecommerce); accessed 26 September 2002.

- <sup>32</sup> Network economies of scale are attained when an aggregate of firms or organizations share a common infrastructure, capabilities and client base for faster, better and more cost-efficient production and distribution of products and services.
- <sup>33</sup> Network economies of scope allow firms and/or organizations within the same network/ virtual community to share the infrastructure for the production and distribution of new products and services and for creating and/or entering new markets or launching new businesses more effectively and efficiently than competitors.
- <sup>34</sup> Integrated supply chains enable distributors to link their suppliers with their business clients/customers.
- <sup>35</sup> Integrated buy chains enable distributors to link producers to consumers.
- <sup>36</sup> NetValue Research
- <sup>37</sup> Suganthi, Balachandher and Balachandran, "Internet Banking Patronage: An Empirical Investigation of Malaysia;" available from [http://www.arraydev.com/commerce/jibc/0103\\_01.htm](http://www.arraydev.com/commerce/jibc/0103_01.htm); accessed 26 September 2002.
- <sup>38</sup> McKinsey survey.
- <sup>39</sup> This section is best read in relation to the discussion on B2C.
- <sup>40</sup> To be included in Retail Forward's Top e-retailers, the company should have generated at least 50% of its sales from direct-to-consumer (DTC) retail.
- <sup>41</sup> Cf. <http://www.emarketer.com/news/article.php?1001447&ref=ed>

Company	Online Revenues (in billions of dollars)
Amazon.com	3.12
Office Depot	1.60
Staples	0.95
Gateway.Inc.	0.76
Costco Wholesale	0.45
Barnesandnoble.com	0.41
Buy.com	0.4
QVC.com	0.35
Spiegel Group	0.33
J.C. Penny	0.32

- <sup>42</sup> CAUCE (Coalition Against Unsolicited Commercial E-mail); available from <http://www.cauce.org/about/problem.shtml>. Accessed 26 September 2002.
- <sup>43</sup> Andrea Goldstein and David O'Connor, E-commerce for Development: Prospects and Policy Issues, (OECD Development Centre, September 2000); available from <http://www.oecd.org/dev/publication/tp1a.htm>; accessed 26 September 2002.
- <sup>44</sup> Ibid.
- <sup>45</sup> Noah Elkin, "Developing Countries Meeting e-business Challenge," February 5, 2003.
- <sup>46</sup> According to 2003 figures of AML-Partners, a research group on small enterprise market.
- <sup>47</sup> Most artisans are women living in very remote villages. Their being isolated may be why their crafts have survived.
- <sup>48</sup> Goldstein and O'Conner.
- <sup>49</sup> Ibid
- <sup>50</sup> Ibid.
- <sup>51</sup> ITU, 1999.
- <sup>52</sup> Goldstein and O'Conner.
- <sup>53</sup> Ibid.
- <sup>54</sup> Ibid.
- <sup>55</sup> Ibid.



<sup>56</sup> Emmanuel Lallana, Patricia J. Pascual, and Zorayda Ruth Andam, SMEs and E-commerce: The Philippine Case; Cf. SMEs and E-commerce: The Case of Indonesia, prepared for The Asia Foundation by Castle Asia

<sup>57</sup> Adapted from the inputs and comments on this primer by Dr. Catherine Mann.

<sup>58</sup> Nancy Hafkin and Nancy Taggart, "Gender, Information Technology, and Developing Countries: An Analytical Study," June 2001.

<sup>59</sup> Ibid.

<sup>60</sup> For an extensive discussion of e-government initiatives, please refer to the primer on "E-Government" by Patricia J. Pascual.

<sup>61</sup> Adapted from the inputs and comments on this primer by Dr. Catherine Mann. For more information, refer to "Benchmarking e-Government: A Global Perspective" by UN-DPEPA and ASPA and "E-Government in the Philippines: Benchmarking Against Global Best Practices" by Emmanuel C. Lallana, Patricia J. Pascual and Edwin S. Soriano.

<sup>62</sup> Department of Trade and Communications. "An Infocomms Policy for the Information Economy: A Consultative Paper," December 2000.

<sup>63</sup> Lallana, Quimbo and Andam, 14.

<sup>64</sup> Lallana, Pascual and Andam; Cf. SMEs and E-commerce: The Case of Indonesia.

<sup>65</sup> Ibid.

<sup>66</sup> Goldstein and O'Conner.

<sup>67</sup> Firewalls act as a filter between a corporate network and the Internet, keeping the corporate network secure from intruders but allowing authenticated corporate users uninhibited access to the Internet (Source: Kalakota and Whinston).

<sup>68</sup> Ibid., Cf. ITC, 2000.

<sup>69</sup> Ibid.

<sup>70</sup> Ibid.

ABOUT THE AUTHOR

Zorayda Ruth B. Andam is an incoming 5th year (senior) law student of the University of the Philippines. She has a bachelor’s degree in Business Economics, also from the University of the Philippines. She is co-author of *e-primer: An Introduction to Electronic Commerce* (2000) and *SMEs and e-Commerce in Three Philippine Cities* (April 2003). Ms. Adam was part of the USAID team that provided technical assistance to the Philippine Government in the development and passage of the country’s e-Commerce Law.



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