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ENVIRONMENT AND POLICY FACTORS SHAPING E-COMMERCE DIFFUSION: A CROSS-COUNTRY COMPARISON

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Abstract

The growing use of the Internet and e-commerce for conducting business is being driven by global and national forces. Many firms are being driven toward greater adoption of e-commerce by global competitive pressures, which some suggest will lead to a global networked economy. On the other hand, firms are also being driven by national environmental and policy factors, which are both drivers and inhibitors of e-commerce diffusion. A key question is whether the continuing diffusion of e-commerce will lead to a single homogeneous global market or whether national market niches create special business opportunities and barriers that affect innovation outcomes.

This paper identifies and discusses major environmental and policy related factors that influence e-commerce diffusion across and within countries. It is based upon case studies in 10 countries representing both developed and developing countries in each of three major world regions. Although e-commerce is still in its infancy, this preliminary analysis indicates that diffusion is an uneven process across countries and industries. Certain countries and industries are driving the process while others lag behind. Digital divides are evident both between and within developed and developing countries. Moreover, local differences in e-commerce are evident between countries, suggesting that the diffusion process is strongly shaped by national environments and policy rather than following a universal trajectory.

Keywords: Globalization, national environment, national policy, e-commerce diffusion, cross-country study, diffusion determinants

1 INTRODUCTION

One of the most significant economic trends of the past decade is the growing use of the Internet for conducting business. Many firms are being driven toward greater adoption of electronic commerce by pressures of globalization, which is generally regarded as the rapidly increasing interconnectedness of the world through flows of information, capital, and people leading to economic

and social integration. The nature and impacts of globalization are highly contested: convergence theorists regard it as a universal process of homogenization in which countries tend toward a common way of producing and organizing economic life with resulting common social outcomes (Bell 1973; Ohmae 1990, 1995); divergence theorists argue that national diversity in the pursuit of differing social and economic outcomes will prevail and prevent convergence from taking place (Berger and Dore 1996; Boyer 1996; Hirst and Thompson 1996; Wade 1996).

The globalization debate is being intensified by the global spread of the Internet, linking businesses and individuals around the globe with little regard for national boundaries. There is great excitement about the Internet's potential for removing geographical obstacles to economic growth and for achieving global integration in developing as well as in industrialized countries. On the other hand, there is concern in many countries that the Internet will be a tool of American economic and cultural hegemony, a long-held fear of many opponents of globalization.

Consequently, we are interested in understanding the extent to which the Internet and e-commerce are diffusing among different countries, and the nature of their impacts. We expect e-commerce diffusion to take a different trajectory in different countries, as it is shaped by factors of national environment and policy. The result is that rather than a single homogeneous global market, there will be national market niches that create special business opportunities that affect innovation outcomes.

2 CONCEPTUAL FRAMEWORK

This paper examines the key environmental and policy factors that act as drivers and barriers to e-commerce. Our fundamental hypothesis is that rather than there being a global convergence as predicted by some scholars, there is national diversity in the diffusion of e-commerce use and impacts.

Our framework posits that the *adoption of e-commerce* is driven by forces in the *global environment* that are intermediated by *national environmental* and *national policy factors* (Figure 1). At the *global environment* level, processes such as globalization of production and markets, trade liberalization and global competition are driving all countries toward the adoption of e-commerce. At the national level, two types of factors influence e-commerce adoption. The first is the *national environment*, including a country's demographics, economic and financial resources, information infrastructure, industry structure, organizational environment, and consumer preferences. The second is *national policy*, including liberalization of telecommunications and IT markets, government promotion initiatives for e-commerce and IT in general, and e-commerce legislation.

This paper addresses two research questions: How do global forces affect the adoption of e-commerce across countries? How do national environment and policy influence the impact of these global forces on individual countries? Although at an early stage of e-commerce diffusion, we seek preliminary understanding of which factors might be having an impact.

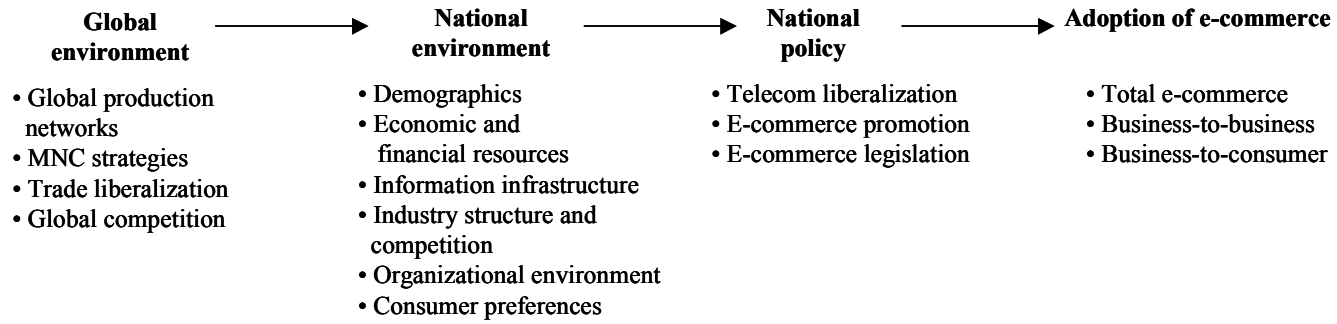

Figure 1. Conceptual Framework

3 METHODOLOGY

We define e-commerce as use of the Internet to buy, sell, or support products and services. Our definition is not limited to financial transactions (buying and selling) but includes other activities such as information exchange, marketing, and pre- and post-sales support. Also, it is limited to Internet-based electronic commerce; it does not extend to non-Internet forms of electronic data interchange (EDI).

This paper is part of a study of the globalization of e-commerce in 10 countries. It is based on systematic comparison of secondary data and of detailed case studies of the key environmental and policy factors impacting diffusion. We commissioned experts in each country to prepare the case studies using a common research protocol and outline. (Six of these cases will appear in *The Information Society* (19:1, 2003) and the others can be found at www.crito.uci.edu.) The 10 countries were selected to include major regions of the world and different levels of development (developing: Brazil, China, Mexico; newly industrialized: Singapore, Taiwan; developed: Denmark, France, Germany, Japan, United States).

4 DETERMINANTS OF E-COMMERCE DIFFUSION

We examine the key drivers and barriers of e-commerce within and across the 10 countries in order to generate richer insight into and understanding of the conditions shaping e-commerce across countries. Determinants of e-commerce are divided into the main categories shown in Figure 1.

We start from the premise that gross domestic product (GDP) per capita (wealth) is a key determinant of e-commerce diffusion rates across countries. It is generally the case that new technologies are adopted first and most intensively by richer countries, which have the financial resources to invest in these technologies, the human resources and infrastructure to support their use, and higher wage rates that make it worthwhile to introduce labor-saving technologies (Caselli and Coleman 2001; Shih et al. 2002).

This premise is supported for e-commerce by data from 33 countries (IDC 2002; ITU 2001), which shows that GDP per capita is highly correlated with e-commerce sales as percent of GDP ($r = .77$, $p < .01$) and explains 58 percent of the variance in e-commerce sales (Figure 2). The United States and Japan, as advanced industrial nations, stand out as leaders in both e-commerce and GDP per capita. The developing countries of China, Brazil, and Mexico are lagging behind, while the other five countries fall somewhere in the middle. Furthermore, some countries such as Singapore, Taiwan, the United States, and Japan fall above the line, meaning that their e-commerce sales are higher than would be expected based on GDP alone (Figure 2). Other countries, namely, Denmark and France, fall below the line, meaning that their e-commerce sales are lower than would be predicted by the country's wealth. Although not shown here, the same pattern is evident for business-to-business (B2B) and business-to-commerce (B2C) e-commerce specifically.

These data suggest that wealth alone does not provide a complete explanation of national differences in e-commerce adoption. Rather, other factors of the global, national, and policy environment might play an important role. Indeed, the findings from the country case studies indicate that these other factors *do* influence e-commerce adoption, most likely in a causal manner. We assume causality because these environmental factors predate e-commerce in time and change very slowly. However, it is also likely that e-commerce is interactive with some of these variables. For example, the existence of global production networks and firm competition in a country is an important driver for the use of e-commerce, but it is expected that e-commerce might make a country more conducive to such networks and also increase competition. The following sections indicate the relationships hypothesized between these global, national, and policy factors and e-commerce diffusion based on the case studies.

4.1 Global Environment

4.1.1 Global Production Networks

Participation in global production networks is an important determinant of e-commerce diffusion. As the case studies show, countries' roles in such chains differ such that some act as intermediaries between domestic IT manufacturers and international buyers (e.g, Taiwan) or as bases for many multinational corporation (MNC) subsidiaries (e.g., Singapore), while others are global leaders (e.g., the United States and Japan). Although the roles differ, the integration of countries into such global production networks involves adopting B2B e-commerce and is driven by the pressure for businesses in these countries to be competitive in a global market.

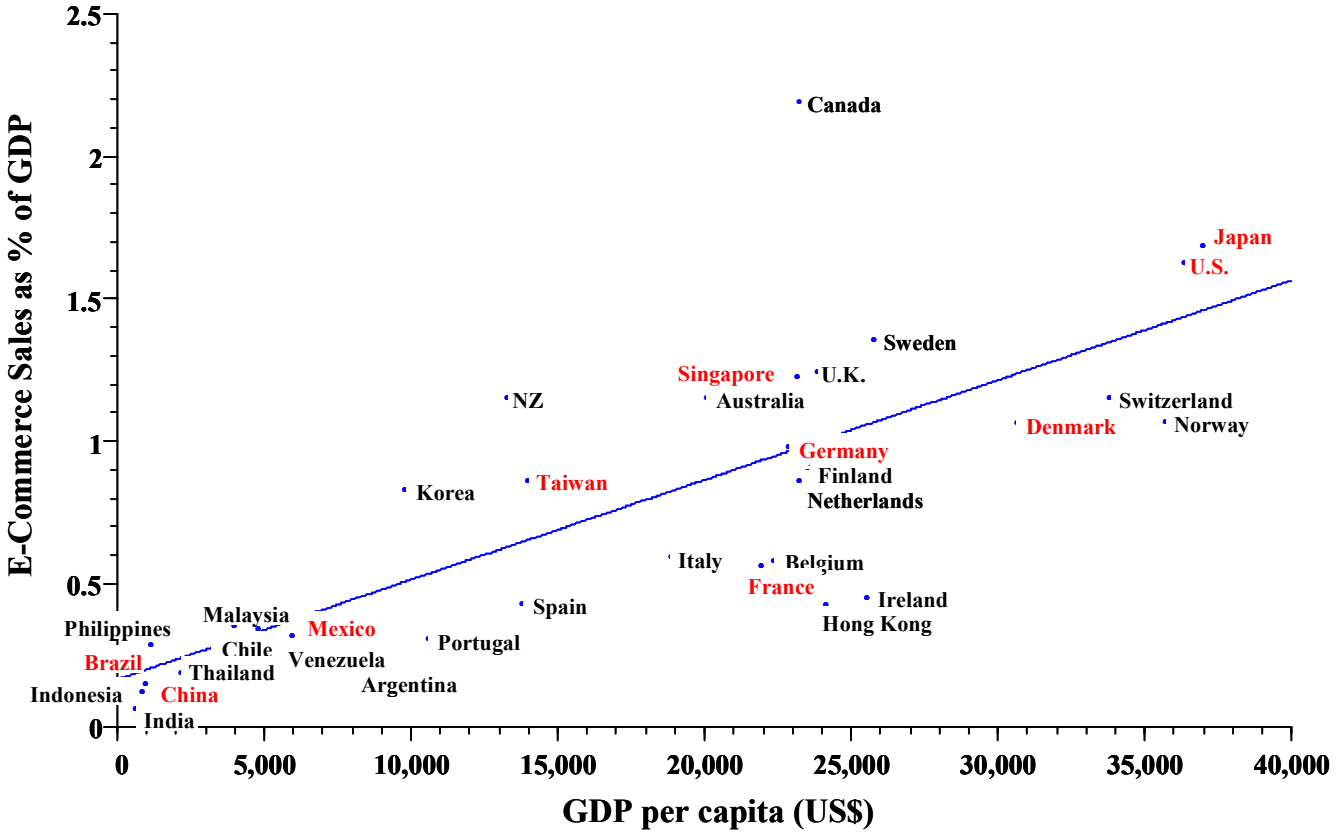

Figure 2. E-Commerce Sales as Percent GDP with GDP per Capita, 2000
(Source: IDC 2002; ITU 2001)

4.1.2 Presence of MNCs

Multinational corporations as well as large domestic firms drive the process of e-commerce diffusion across global supply chains. According to the country cases, MNCs are common drivers in all of the countries except Denmark, as they provide global competition and increased competition with local players, as well as technology transfer to equip local firms for conducting e-commerce. Large domestic firms can also be e-commerce drivers as they possess the IT resources (technology, financial, and human) needed for e-commerce and can leverage e-commerce investments over a large revenue base.

4.1.3 Trade Liberalization

A country's trade openness has been found to have a positive impact on computer adoption (Caselli and Coleman 2001) and on IT investment (Shih et al. 2002). External openness is argued to enable IT diffusion because foreign direct investment (FDI) provides financial resources for investment, MNCs use IT-based business practices and IT systems, and greater international competition drives local firms to invest in IT in order to stay competitive (Shih et al. 2002). International pressures to liberalize or deregulate national markets are driven by international organizations and agreements and such as the World Trade Organization (WTO) and General Agreement on Trades and Tariffs(GATT), as well as regional associations such as the European Union (EU), North American Free Trade Agreement (NAFTA), and Organisation for Economic Co-Operation and Development(OECD). Our case studies indicate that countries with a greater degree of trade openness and liberalization, such as Singapore and the United States, are characterized by greater e-commerce diffusion.

A country's integration in global production networks, the presence of foreign and domestic MNCs, and the extent of trade liberalization are all factors that increase the level of global competitive pressure for countries to adopt e-commerce. Indeed, global competition appears to be the most significant force driving e-commerce development across countries.

4.2 National Environment

The national environment is one of the key features of the selection environment that constrains or enhances innovation outcomes (Downs and Mohr 1976; Nelson 1993; Nelson and Winter 1975; Perry and Kraemer 1979) and is composed of a country's demographics, economic and financial resources, information infrastructure, industry structure, organizational environment, and consumer preferences.

4.2.1 Demographic Factors

Country demographics are likely to act as enabling or constraining conditions for e-commerce development, but mainly do so indirectly. Our case studies show that densely populated and wealthier nations such as Singapore and Germany enjoy strong information and communication technology (ICT) infrastructures, whereas large countries with low population density and lower wealth per capita, such as China and Brazil, suffer from underdeveloped infrastructures, distribution and delivery problems. Urban density may enable wired cities; however, high density may also lead to strong traditional retail networks that compete with online purchasing, as in the case of France and Taiwan, which both have efficient, convenient, and affordable retail channels that reduce the need for online shopping.

Population size may also act as either an enabler or an inhibitor of e-commerce. Large markets such as the United States, Germany, and France have a strong consumer base for enabling local content and applications, whereas small markets such as those of Singapore and Denmark hamper the ability to produce local content and applications. Large populations may be a barrier to the spread of e-commerce in countries with low GDP per capita such as China, Brazil, and Mexico, however. Overall, the cases indicate that highly populated and wealthy countries such as Germany and Japan seem to be most favorable to both e-commerce supply and demand.

The presence of an IT labor force emerges from the case studies as another enabling condition for e-commerce, in that it provides needed skills for IT production and use. For example, China has a large domestic IT workforce. Other countries rely heavily on importation of IT skills through foreign workers. Singapore has a high percentage of IT professionals from India and China; so does Germany due to its green card system to attract foreign high-tech workers. Taiwan and Denmark lack an adequate IT workforce and both restrict immigration that might help supplement their small domestic IT skill bases.

IT literacy among the population is an important precondition enabling access to both B2C and B2B e-commerce, and this is influenced by demographic factors such as income, education, age, and gender. The cases show that IT literacy is higher among the highly educated across countries, and it is highest among the younger generation.

Evidence from the case studies indicates that income distribution is one of the strongest dividers of IT usage. In Brazil and Mexico, where income is unevenly distributed, a large percentage of the population is cut off from PC and Internet access due to their inability to afford such technologies. A more equal distribution of wealth, such as in Japan, Germany, France, and Taiwan, is conducive to e-commerce in that a greater proportion of the population is able to participate in e-commerce through access to ICTs. While the ratio of the richest 20 percent to the poorest 20 percent of the population is about 5 to 1 in these countries, in Brazil the richest 20 percent have 25 times the wealth of the poorest 20 percent and in Mexico the ratio is 16 to 1. The United States and China have similar distribution of wealth with a ratio of about 8 to 1 (Table 1).

4.2.2 Economic and Financial Resources

Whereas demographic factors have an indirect effect in shaping e-commerce diffusion, economic and financial resources appear to play a direct role as drivers of e-commerce. Wealth has already been shown to be the strongest individual factor driving e-commerce sales. The case studies show that the rate of economic growth is another key indicator of e-commerce diffusion. All of the countries have been affected recently by the global economic slowdowns and regional recessions: e-commerce sales in the United States and Mexico have been hampered by the dot.com meltdown, Brazil has been recovering from high inflation and international debt for two decades, the Asian countries have been affected by the Asian financial crisis in the late 1990s as well as Japan's decade-long recession, France was hit by its own recession in the mid-1990s, and Germany has been covering costs of a decade of reunification.

Table 1. Income Distribution: Ratio of Richest 20% to Poorest 20%

Country	Ratio Top/Bottom 20%*
Brazil	25.5
Mexico	16.2
United States	8.9
China	7.9
France	5.6
Taiwan	5.5
Germany	4.7
Denmark	3.6
Japan	3.4
Singapore	N/A

Source: UNDP 2000.

The availability of financial resources such as venture capital to support online businesses and start-ups is another key driver of e-commerce across countries. Such support through venture capital is available in Denmark, Germany, Singapore, Taiwan, and Brazil.

The availability of online payment methods is another financial factor driving e-commerce. Debit cards seem to be the most popular method, especially in Europe. In Asian countries, stored-value cards are used as well as wireless payment, money orders, bank transfers, and cash-on-delivery (COD). In Taiwan and Japan, hybrid methods are popular, such as ordering goods online and picking them up and paying for them through convenience stores. At this point, the prevailing payment methods for online purchase are *not* online, except in the United States

4.2.3 Information Infrastructure

A widely available and affordable information infrastructure is an important enabler of e-commerce diffusion. Availability includes both the extent of coverage and the range of technologies. High penetration of multiple technologies enables e-commerce in that more channels are available for conducting it. The United States, Denmark, and Germany are high on penetration of all ICTs, while China, Brazil, and Mexico are low (Tables 2 and 3; ITU 2001). Availability of ICTs tends to be higher in wealthy, small and densely populated countries that are easier to wire such as Japan, Denmark, France, Germany, Singapore, and Taiwan (the United States is a notable exception here.) High availability thus seems to be a combination of small market size and a relatively high degree of wealth.

The cost of Internet access can be a big barrier to e-commerce diffusion. High costs of Internet access limit the amount of time users have to surf the Web for information or to make purchases. Countries with metered access such as France, Germany, Denmark, and Japan have had higher costs of access than countries in which users are not charged by the minute but pay a monthly fee for unlimited access. High access costs in these countries have, however, been reduced over the past few years. In 2000, costs for both peak and off-peak access show a leveling out to more uniform rates.

4.2.4 Industry Structure

A country's industry structure is likely to have implications for adoption of e-commerce as some of a country's industries are likely to be leaders, while others lag behind. Comparison of key industries in the cases reveals commonalities across countries, as well as unique country-specific conditions (Table 4). Key industries common across countries (mentioned by at least half) are finance/banking, distribution (wholesale and retail), ICT, electronics manufacturing, and automotive manufacturing. Other key industries are those in which the individual country has a competitive advantage, such as health care, agriculture, and shipping in Denmark, or freight forwarding and publishing in Singapore. Overall, industries driving e-commerce tend to be in sectors that are information-intensive and internationally competitive.

Table 2. Telecommunications Infrastructure Trends, 1995-2000

	Telephone Mainlines per 1,000 People*			Mobile Subscribers Per 1,000 People*		
	1995	**2000**	**% Growth**	**1995**	**2000**	**% Growth**
United States	607	700	15	128	398	210
France	560	580	4	23	494	2,094
Denmark	612	753	23	158	610	287
Germany	513	601	17	46	586	1,187
Japan	496	585	18	93	526	464
Singapore	412	484	18	88	684	675
Taiwan	430	568	32	36	803	2,121
China	33	111	236	3	66	2,131
Brazil	85	182	114	8	136	1,552
Mexico	94	125	33	7	142	1,839

Source: ITU 2001.

Table 3. Information Infrastructure Trends, 1995-2000

	Internet Users Per 1,000 People*			PCs Per 1,000 People*		
	1995	**2000**	**% Growth**	**1995**	**2000**	**% Growth**
United States	76	347	356	328	585	78
France	16	145	780	135	305	126
Denmark	38	366	854	271	432	59
Germany	18	292	1,493	178	336	88
Japan	16	371	2,229	120	315	162
Singapore	29	299	936	202	483	139
Taiwan	12	281	2,302	98	225	128
China	0	17	34,640	2	16	600
Brazil	1	29	2,596	17	44	154
Mexico	1	27	2,643	26	51	98

Source: ITU 2001.

Whereas large firms are often the dominant players in online transactions, in many countries such large firms make up a small percentage of the labor force. The dominance of small and medium sized enterprises (SMEs) poses a structural barrier to e-commerce, since such firms often lack the financial and human resources for IT. In certain cases, SMEs may have advantages such as being more flexible and innovative and able to adapt to organizational changes required by e-commerce than large firms (mentioned in the Germany and Brazil cases). However, for the most part, SMEs were found to be a barrier to the spread of e-commerce due to their lack of technological expertise and lack of funds to implement IT solutions needed for e-commerce.

All of the foregoing factors seem to affect e-commerce generally without regard for whether it is B2B or B2C, whereas the next two factors are specific to B2B or B2C.

Table 4. Industry Drivers

	United States	France	Denmark	Germany	Brazil	Mexico	Japan	China	Singapore	Taiwan
Finance	X	X	X	X	X	X				X
Wholesale/Retail	X	X	X	X	X	X	X			X
ICT	X		X	X		X	X	X		X
Electronics Manufacturing	X			X		X	X	X	X	X
Automotive Manufacturing	X	X		X	X	X	X			
Health Care			X							
Agriculture			X							
Transportation	X		X						X	
Publishing									X	
Public Services					X	X		X	X	

X = Industry is a major driver of e-commerce in this country.

4.2.5 Organizational Environment

The organizational environment is a key factor impacting B2B e-commerce. The case studies reveal that corporate culture is often a source of resistance to e-commerce and IT more broadly. In Asian countries such as Taiwan, personal relationships are important in doing business, for example, in the negotiation of commission, and anonymous online relationships threaten to undermine these established interpersonal networks. In highly unionized countries such as Denmark, e-procurement and automation of public services is perceived as a threat to job security by government workers. In most countries organizational readiness for e-commerce is still restricted by high perceived costs of IT, security concerns, and lack of integration of information systems with business partners. Local competition and industry pressure is a potential key driver of e-commerce adoption related to the organizational environment, although such competitive pressure remains low at this early stage of e-commerce development.

Another aspect of organizational environment driving B2B e-commerce is an entrepreneurial business culture. The organizational and legal environment in the United States and Taiwan, for example, encourages entrepreneurship by making bankruptcy financially survivable so failed entrepreneurs can try again without being stigmatized by failure. Cultural factors also come into play, such as the oft-mentioned Chinese preference to be the "head of a chicken rather than the tail of an ox" (Dedrick and Kraemer 1998), contrasted with the social pressure for conformity rather than individual initiative expressed through the Japanese proverb "the tallest nail gets hit the hardest." The lack of entrepreneurship is evident in Japan, Singapore, and Germany.

4.2.6 Consumer Preferences

B2C e-commerce adoption is influenced by consumer attitudes and preferences. "Internet fever" has caught on internationally and has generated high hopes and expectations for positive economic and social impacts. The hype surrounding the Internet may drive Internet use, but consumers have significant reservations about purchasing online. Consumer reluctance stems from lack of trust and privacy/security concerns in giving out credit card numbers and other personal information, resistance to using credit cards, shopping habits and preferences for in-store shopping and inspection of products. These concerns are particularly acute in countries such as China where no legal consumer protection exists and buyers and sellers have no recourse for faulty products or negligent payment. Language barriers also play a role among non-English speaking consumers due to the prevalence of English content on the Web. Beyond language, preferences for local content are evident across countries.

4.3 National Policy

National policy is the second key feature of the selection environment that shapes technological diffusion. Key policy factors include liberalization of telecommunications, government promotion of e-commerce and IT more broadly, and specific legislation passed on e-commerce and IT.

4.3.1 Telecommunications Liberalization

General market liberalization drives e-commerce by opening up markets to competition which leads to higher quality products and services for lower prices. Firms in competitive markets are motivated to adopt e-commerce in order to enhance productivity and service. Telecom liberalization, in particular, encourages ICT diffusion by making rates more affordable and giving consumers a wider selection of services and options. Liberalization is taking place across all of the countries examined here, although different countries have liberalized in different ways and to different degrees.

4.3.2 E-Commerce Promotion

Government promotion is an enabler of e-commerce, but it does not appear to have a strong direct effect as does economic or telecom liberalization. Government promotion takes various forms from country to country, but the most common areas are promotion of IT and e-commerce in businesses, especially SMEs, by providing them with technical support, training, and funding for IT use. Initiatives to promote government use of e-commerce for e-procurement and e-government have also been established in a number of countries.

4.3.3 E-Commerce Legislation

At this point, none of the 10 countries have developed comprehensive legislation regarding e-commerce. Different countries have focused on different issues, and the key areas of focus have been legislation on digital signatures, privacy, consumer protection, copyright and intellectual property, and content regulation (Table 5). Of these areas, all countries except China have passed laws regarding recognition of digital signatures as legally binding. Country-specific legislation tends to reflect cultural values. For example, France and Germany have passed privacy and consumer protection laws, reflecting an emphasis on individual rights. China and Singapore, on the other hand, have focused on content regulation, reflecting a value on social control. The practical import of e-commerce legislation other than the tax-free Internet remains to be seen. For example, despite the implementation of legislation in the United States recognizing electronic signatures nearly two years ago, e-signatures are not yet catching on (Wolverton 2002). Other countries reported that e-commerce was occurring without specific legislation.

Table 5. E-Commerce Legislation (Laws/amendments)

	United States	France	Denmark	Germany	Brazil	Mexico	China	Japan	Singapore	Taiwan
Digital Signatures	X	X	X	X*	X	X		X	X	X
Privacy		X		X*						X
Consumer protection	X	X		X*		X				
Copyright	X			X*					X	X
Content regulation	X**			X*			X		X	
Taxation	X								X	

*EU legislation
**Overturned by courts
X = Country has *passed* legislation.

Of the foregoing national policies, market and telecommunications liberalization seem to be the most significant because they promote competition, drive down costs of access and use, and increase infrastructure availability. Specific e-commerce legislation and promotion may be important in enhancing diffusion (no Internet taxation) or in eliminating barriers (financial protection), but do not appear to be sufficient in and of themselves.

5 CONCLUSIONS

We find support for the conceptual framework used in this study in the sense that it captured all of the factors identified as *major* influences in the case studies. Although not all factors were important in all countries, there does not appear to be a major factor that was left out. Thus, we have confirmation that the framework is a useful way of organizing the key factors influencing e-commerce diffusion. But it needs more empirical confirmation.

We find that the specific factors shaping B2B and B2C e-commerce vary considerably. For B2B e-commerce, competitive forces are the greatest driver of adoption. Global competition and participation in global production networks create strong pressure to adopt e-commerce. Global competitive pressure is driving greater convergence in business practices through global integration of production networks and supply chains. Countries that are more open to such forces, whether through international trade, trade liberalization, or foreign investment, tend toward higher e-commerce diffusion.

B2C diffusion seems to be more affected by variables specific to the national and local environment, such as consumer preferences, retail structure, local language, and cultural factors. We find that consumer preference for valuable content and concerns for security and privacy are the most significant factors. In addition, rather than converging around the world, country preferences differ significantly and shape e-commerce adoption. The existence of dense distribution networks, which can discourage on-line shopping but also can provide the infrastructure for creative B2C strategies, is another local factor. B2C models developed in the United States have been transplanted or imitated in many countries, but some of the biggest B2C success stories have been country-specific, such as Japan's i-mode and Korea's gaming businesses.

In short, B2B e-commerce seems to be driven by global forces whereas B2C seems to be more of a local phenomenon. A preliminary explanation for this difference is that B2B is driven by MNCs that "push" e-commerce to their global suppliers, their customers, and their own subsidiaries. This in turn creates pressures on local companies to adopt e-commerce to stay competitive. In the process, business practices become more standardized across borders. Business education and imitation of best practices reinforce this convergence; as new innovation occurs in theory or practice, firms adopt it rapidly in order to be competitive. It is this continual push of innovation and imitation that leads to global convergence in B2B.

In contrast, B2C is "pulled" by consumer markets, which are mainly local and therefore divergent. While all consumers desire convenience and low prices, consumer preferences and values, national culture, and distribution systems differ markedly across countries and define differences in local consumer markets.

This distinction between B2B e-commerce as a global phenomenon and B2C as a local phenomenon has important implications. Theoretically, it gives support to the transformation perspective, which sees globalization as involving elements of both convergence and divergence.

In practical terms, this conclusion suggests that the digital divide between countries may limit the potential value of B2B e-commerce more so than B2C. A country's position in the global economy is largely dependent on location, labor cost, or other endowments, so that the impacts of B2B e-commerce may be limited. Countries such as Singapore, Mexico, and Taiwan may enhance or protect their roles in global production networks by adopting B2B e-commerce, but e-commerce by itself will not likely enable outsiders to break into those networks. However, a country that currently lags in Internet and e-commerce use may still flourish in the area of B2C if it can find ways to provide its citizens with low-cost Internet access and encourage the development of local content. In that event, a digital divide may be turned into be a digital opportunity for local firms that understand local language, customs, and culture and that are close to the end users so they can discover and produce useful content and services.

In terms of policy, the case studies suggest that enabling policies such as trade and telecom liberalization are likely to have the biggest impact on e-commerce, by making ICTs and Internet access more affordable to firms and consumers, and increasing pressure on firms to adopt e-commerce to compete. Promotional efforts can also have an impact, especially if carried out in partnership with the private sector. Specific e-commerce legislation appears not to have as big an impact, although concerns in some countries about inadequate protection for both buyers and sellers suggests that mechanisms need to be developed to ensure greater confidence in doing business on-line.

6 ACKNOWLEDGMENTS

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