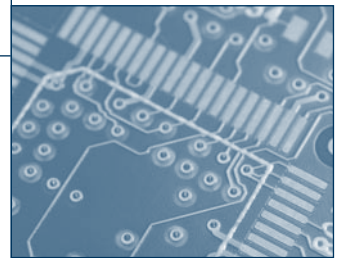


Vietnam: The Next Frontier for Trade in Asia

Key Issues for the Information and Communication Technology Sector



Executive Summary

In recent years, Vietnam has captured the attention of the information and communication technology (ICT) industry, demonstrating solid growth and future potential. It has evolved rapidly into one of the fastest-growing technology export markets in Asia for the United States. Not surprisingly, it has also become a target for high-tech investment from U.S. firms.

Yet Vietnam faces a number of complex challenges that hamper ICT growth. Those issues could become serious obstacles for U.S. companies doing business in Vietnam's ICT sector. Sharing best practices across both government and industry can enable Vietnam to navigate those issues. Key areas include:

- Infrastructure development—taking strong measures to promote competition and other regulatory reforms
- Network security—raising business awareness and skills to combat cybercrime
- Skills and training—building the labor pool of internationally certified software engineers
- Software piracy—enforcing its new intellectual property rights framework

- Electronic commerce—boosting consumer confidence by adhering to internationally recognized principles for data privacy

- Government procurement—welcoming foreign technology and know-how that supports deployment of e-government services

Before joining the World Trade Organization (WTO) in January 2007, Vietnam laid the legal and regulatory groundwork for a modern economy. Now it must make sure that its new laws are enforced in a way that cultivates a supportive trade environment. This atmosphere is particularly important for the ICT sector, which underpins the globally networked economy. Such an environment will create a virtuous cycle: by attracting investment, skills, and technology from overseas, Vietnam can stimulate growth in its ICT sector, which, in turn, generates more trade and investment.

Bilateral engagement on the key issues outlined in this paper is a win-win situation. Increasing trade in ICT products and services with the United States can enhance Vietnam's society and economy. At the same time, a Vietnam that is more open to trade, technologically advanced, and legally consistent with international practice will be a strong and trustworthy trade partner.

September 2007

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INTERNATIONAL
TRADE
ADMINISTRATION

Introduction

Vietnam has taken the spotlight from its Asian neighbors as a new frontier for information and communications technology (ICT) trade. In 2006, Vietnam was second only to China for its economic growth rate in the region. Eager to reap the benefits of integration with the global economy, Vietnam made commitments to further open its markets as part of its WTO accession in January 2007. High-profile and large-scale ICT investments from the United States and from neighboring Asian countries have brought Vietnam out from under the radar. But is Vietnam really ready to become the next Malaysia or to challenge the mammoth ICT industries of China or India?

Many promising signs are pointing U.S. firms in Vietnam's direction. The U.S.-Vietnam trade relationship has steadily grown since a bilateral trade agreement entered into force in 2001. Tariffs on ICT products are reaching their lowest point ever, while the favorable investment climate in certain industrial parks has encouraged the U.S. semiconductor and electronic component sector to establish packaging and testing facilities in Vietnam. As Vietnam's economy grows and as Vietnamese consumers start to enjoy advanced ICT services and technologies, U.S. companies are positioned to satisfy the increased demand.

What can be done to create a stronger foundation for ICT trade between the United States and Vietnam? The key issues outlined in this paper reflect the long-term concerns of the U.S. industry regarding policy decisions by the Government of Vietnam that affect ICT growth and, therefore, ICT trade. In areas ranging from telecom regulation to government procurement, progress is urgently needed to foster an environment that attracts the investment, skills, and technology that Vietnam has recognized as essential.

A New Dynamism Emerging

Snapshot of U.S.-Vietnam Trade in ICT

There is ample evidence of the deepening trade ties between the United States and Vietnam. Total trade increased from \$1.5 billion in 2001 to nearly

Figure 1. Compound Annual Growth in U.S. Exports to Asia, 2001–06

Source: U.S. Census Bureau.

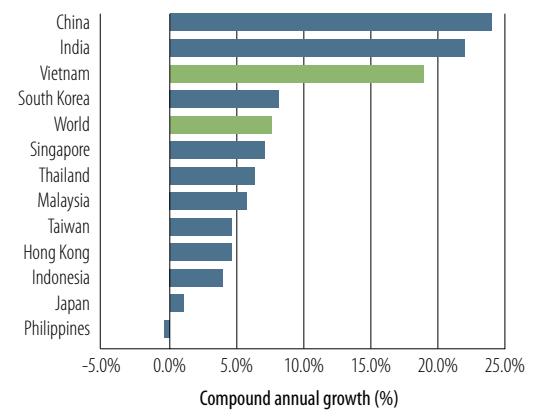
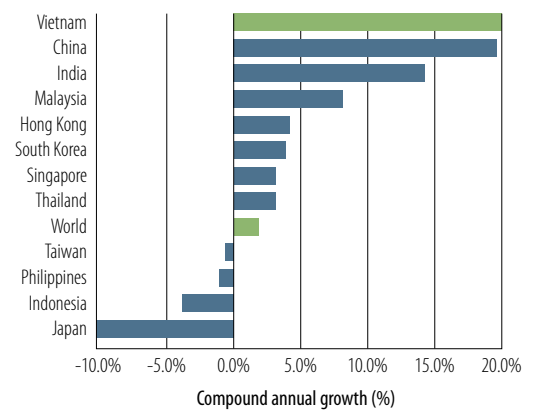


Figure 2. Compound Annual Growth in U.S. ICT Exports to Asia, 2001–06

Source: U.S. Census Bureau.



\$9.7 billion in 2006. Vietnam's ranking among U.S. trade partners climbed from 66 to 43 in the same time period. Among Asian trade partners, Vietnam ranked third behind China and India, with a compound annual growth of 19 percent in U.S. exports between 2001 and 2006 (Figure 1). Regarding the growth rate in U.S. exports of ICT products alone, Vietnam outpaced both India and China as the fastest-growing export market at 20 percent (Figure 2).

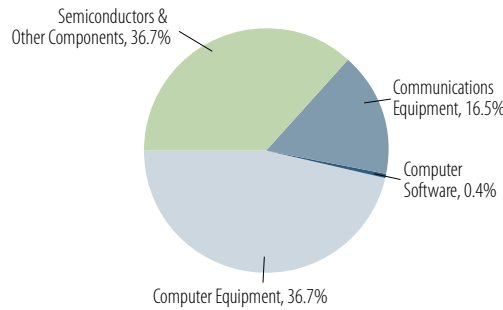
However, U.S. imports from Vietnam account for most of the increased trade, starting at \$1 billion in 2001 and rising to \$8.5 billion in 2006. ICT imports from Vietnam between 2001 and 2006 increased an average of 62 percent. Computer equipment accounted for \$208 million, or 90 percent of 2006 ICT imports from Vietnam. Those imports, which

are likely linked to Multinational ICT equipment assembly subsidiaries operations, are primarily inkjet printers.

A breakdown of the 2006 ICT exports to Vietnam reveals that the largest subcategory is computer equipment at 46 percent, with electronic components (including semiconductors) a close second at 37 percent (Figure 3). Packaged computer software was a small part of the total. However, U.S. export data represents only physical shipments across U.S. borders, not the packaged software duplicated from a master copy in the country or purchased and downloaded from the Internet. Most ICT export subcategories have seen steady and significant increases during the past five years (Figure 4).

According to U.S. Commercial Service estimates, U.S. telecommunications services firms are also steadily increasing their revenues from Vietnam, from \$56 million in 2005 to \$73 million in 2006. International traffic data collected by the Federal Communications Commission in 2005 indicated that revenues generated by private lines in Vietnam for all U.S. carriers amounted to more than \$11 million. If international settlement rates are factored in, U.S. carriers retained \$18 million in revenues for 289 million minutes.

Figure 3. ICT Exports to Vietnam, 2006
Source: U.S. Census Bureau.

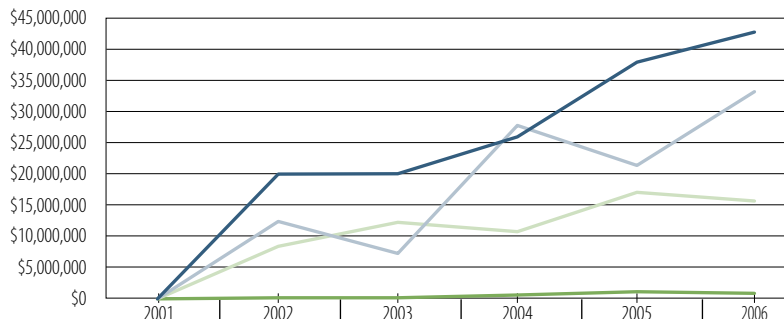


Although data on U.S. firms' share of the information technology (IT) services market in Vietnam is not available, such services (including custom software, planning and design, implementation, and support services) are sure to account for an increasing share of the overall total of trade in services as Vietnam further develops its IT market. Vietnamese expenditures for IT services in general grew from \$36 million in 2002 to \$125 million in 2006, a compound annual growth of 36 percent according to International Data Corporation (IDC).

Business Environment

The ICT industry in Vietnam is centered in industrial parks, which are located near major cities, such as Hanoi and Ho Chi Minh City, where the best-educated Vietnamese can be found (literacy

Figure 4. ICT Exports to Vietnam, 2001–06
Source: U.S. Census Bureau.



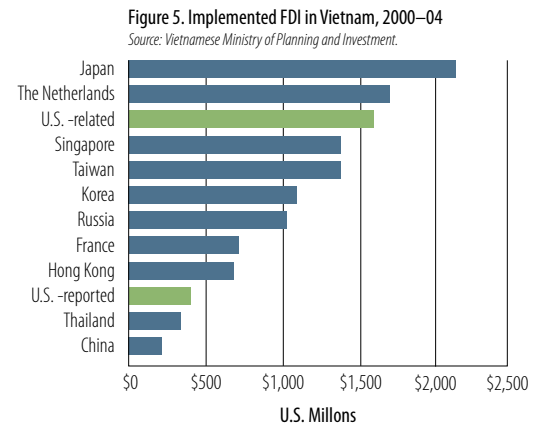
Year	Computer Equipment	Semiconductors and Other Components	Communications Equipment	Computer Software
2001	18,162	13,083	5,802	0
2002	20,023,681	12,031,863	8,718,605	0
2003	20,316,201	7,265,103	11,190,443	0
2004	26,669,040	27,666,828	10,860,847	108,923
2005	37,566,001	21,182,807	17,211,210	567,378
2006	42,924,156	34,017,996	15,325,306	415,787

in Vietnam is above 90 percent). Infrastructure outside the parks and city centers is often limited or non-existent. Like industrial parks in other countries, Vietnam's parks offer tax and other government incentives to companies using them. U.S. firms report that the infrastructure in certain Vietnamese industrial parks can be very good; they do not have the power outages sometimes witnessed even in developed parts of China. Often the industrial parks have on-site customs agents, some of whom have reportedly been cooperative and flexible toward handling electronic components and parts to facilitate the movement of goods.

Three major factors are encouraging U.S. ICT manufacturing firms to do business in Vietnam: low tariffs, a positive investment climate, and an improving standards regime.

Tariffs: Building on the already strong trade relationship, market access for ICT products will continue to improve for U.S. companies. Vietnam's tariff commitments in the WTO agreement include membership in the Information Technology Agreement (ITA) that eliminates tariffs on a wide range of ICT products, such as computers, electronic components (including semiconductors), telecommunications equipment, and computer software. Tariff reductions are scheduled to begin in 2008 and reach duty-free status by 2014.

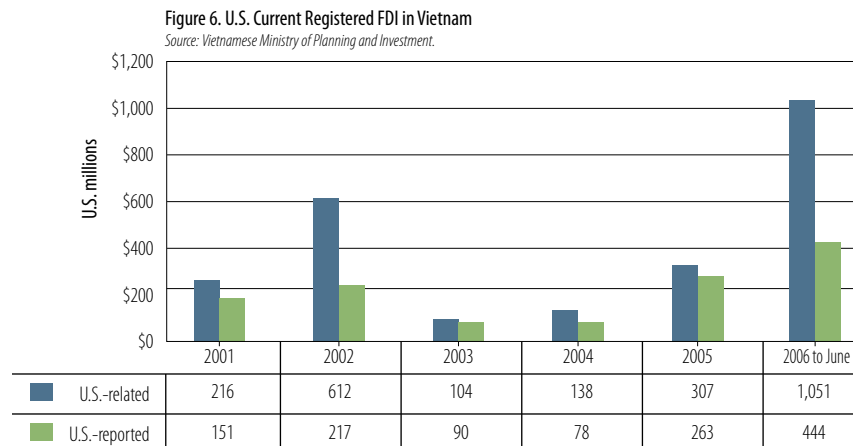
About 45 percent of Vietnam's ITA products are already duty-free, and another 45 percent have



tariffs ranging between 5 percent and 10 percent. The remaining 10 percent have tariff rates as high as 30 percent, and those products include some unrecorded and recorded media products and selected video displays.

Investment: Another important indicator of the thriving bilateral relationship is the increasing amount of U.S. investment in Vietnam. In 2006, Vietnam attracted around \$10 billion in total foreign direct investment (FDI), and it appears on track to double that number in 2007. Although more than 70 percent of the FDI in Vietnam is from Asian countries, a certain amount of the total can be attributed to investments by overseas subsidiaries of U.S. firms that are not reported as FDI from U.S. sources (Figures 5 and 6).

Vietnam recognizes that FDI contributes to domestic economic development, education, and



training, and it is a boost to employment and exports. Vietnam has made an effort in recent years to attract greater FDI in Vietnamese electronics industries. The government approved a master plan in 2007 that sets a target of doubling electronics sector revenues and increasing exports by \$2 billion in three years. It is planning to enact new policies to raise skill levels and encourage investment, including tax incentives to attract assembly and production operations.

Improved investor protection would also entice more investment in Vietnam. In some ICT subsectors, U.S. investors already enjoy the benefits of national treatment and most-favored-nation provisions for some ICT subsectors under the 2001 bilateral trade agreement. Vietnam is also obligated to refrain from imposing requirements to transfer technology as a condition for the establishment or operation of an investment. In current practice, however, Vietnam is still a difficult investment environment, and some aspects of its legal and financial systems remain unpredictable.

Despite concerns, an increasing number of electronics companies are looking for low-cost manufacturing and assembly sites in Vietnam. This trend suggests that the country can continue to grow quickly as an emerging manufacturing base in Southeast Asia if guidelines for its legal and policy environment are enforced. Noteworthy among the investments in 2006 was Intel's widely publicized announcement of a \$1 billion investment for a semiconductor packaging and testing facility. Intel's investment reflects the development of the highly automated, small staff, low-end packaging industry in Vietnam, following in the footsteps of Malaysia, Singapore, and the Philippines. There is very little manufacturing (known as "fabrication") of semiconductors in Southeast Asia; instead, most semiconductor exports are only packaged, and sometimes tested, in Southeast Asian countries. Approximately 90 percent of U.S. exports of semiconductors to Malaysia and the Philippines are unpackaged wafers and dice for packaging in those countries, and they are later exported or integrated into ICT equipment assembled domestically.

Standards: Clarity and transparency of domestic product standards also have a significant influence on trade flows. Vietnam has taken steps to transition the traditional state-directed economy toward a more market-oriented one by updating in 2006 its standardization law as part of a series of reforms required for WTO accession. Before this revision, Vietnam's standards system was often criticized as being non-transparent and confusing. Furthermore, only approximately a quarter of its standards were consistent with international ones. The new law is serving to create a regulatory, standards, and conformance framework that is more open, transparent, and aligned with WTO commitments. Those fundamental changes will reduce the likelihood of non-tariff barriers for ICT products and could also help accelerate the development of Vietnam's ICT infrastructure.

Recognizing the potential benefits of providing technical assistance in this area, the U.S. private and public sectors have been strengthening their relationships with Vietnam for several years, particularly leading up to the country's WTO accession. Since 2004, various U.S. government agencies, including the International Trade Administration and the National Institute of Standards and Technology, as well as the U.S. private sector, have supported a number of programs with Vietnam on standards-related themes. The American National Standards Institute has been collaborating with the Directorate for Standards and Quality (STAMEQ) since 2006. In addition, in 2007, the U.S. Trade and Development Agency announced that it would fund the U.S.-Vietnam Standards Program. This program will provide funding for training focused on helping the STAMEQ to further implement an open, transparent, consensus-based standards system that incorporates good regulatory practices.

Meanwhile, on the international and regional levels, Vietnam has increased its participation in standards and conformance activities. For example, Vietnam is a participating member of the International Organization for Standardization (ISO) and the International Electrotechnical Commission. It also actively participates in the Asia

Pacific Economic Cooperation's Sub-Committee on Standards and Conformance, the Pacific Area Standards Congress, and the Pacific Accreditation Cooperation.

Moving Forward in Key Areas

Although Vietnam is a strong contender as another regional ICT hot spot, the prospects for long-term growth in telecommunications and IT products and services are mixed. Continued investment could hinge on how the government approaches several challenging policy areas that affect the conditions for ICT business. From the U.S. perspective, the most important issues are infrastructure development, network security, cultivation of a talented and internationally oriented labor pool, software piracy, consumer confidence in electronic commerce, and government ICT procurement policies. Addressing these issues proactively would send a signal to the United States and to the world that Vietnam is serious about taking a strategic position in the global networked economy.

Infrastructure Development

There are many encouraging signs that Vietnam is catching up to its Asian neighbors and developing the telecommunications infrastructure necessary to support continuing economic growth and foreign investment. For example, according to International Telecommunication Union (ITU) statistics, Vietnam's main line density increased 42 percent between 2000 and 2005. Vietnam has also seen a very rapid increase in mobile phone users, who now account for nearly 75 percent of total phone subscribers (Table 1). This number may not reflect that many individuals have multiple or inactive accounts, a characteristic of Vietnam's market. Competition between several state-owned enterprises has helped stimulate lower rates for mobile phones.

Moreover, among Asian nations, Vietnam ranks sixth for number of Internet users (Figure 7), although the number of subscribers is significantly lower and broadband subscriptions have not reached a million. A variety of wireline and wireless technologies are available, with digital subscriber

lines being the most popular broadband service. Voice-over Internet Protocol (VoIP) is widely used, and the wireline carriers are upgrading to Internet Protocol-based Next-Generation Networking (NGN). The Ministry of Information and Communications (MIC, formerly the Ministry of Posts and Telematics) has issued several licenses for WiMAX (Worldwide Interoperability for Microwave Access) pilot projects. Clearly, Vietnam is working toward building an advanced infrastructure that will be attractive to multinational firms.

Yet many U.S. firms have noted the lack of fast, affordable Internet access as an impediment to doing business in Vietnam. Furthermore, such statistics mask uneven deployment—72 percent of the country's Internet infrastructure is concentrated in Hanoi and Ho Chi Minh City. The Economist Intelligence Unit (EIU), while acknowledging Vietnam as a "rising star," still ranked it 61 out of 64 countries in its 2007 IT industry competitiveness index. Among the six factors evaluated, EIU gave Vietnam average scores for its business environment and its support for IT industry development, but extremely low marks for its IT infrastructure, which accounts for 20 percent of the overall score in this ranking.

Table 1. Overview of Vietnam ICT Indicators

Internet users (July 2007)	16.7 million, 20% penetration
Internet subscribers (July 2007)	4.67 million
Broadband subscribers (July 2007)	876,056
Personal computer penetration (2006)	2.2 per 100 inhabitants
Telephone subscribers (June 2007)	45.2 per 100 inhabitants
Main telephone lines (June 2007)	11.5 per 100 inhabitants
Mobile phone subscribers (June 2007)	28.5 million 33.7 per 100 inhabitants 74.6% of total telephone subscribers

Sources: Vietnam Network Information Center, Vietnamese Ministry of Information and Communication, Economist Intelligence Unit.

Vietnam’s accession to the WTO provides a timely opportunity to tackle regulatory issues that impede infrastructure development. A report released in May 2006 by the United Nations Development Programme and the Ministry of Planning and Investment indicated that much work still remains to be done to implement the WTO reference paper on telecommunications. In particular, the MIC needs to improve transparency in rulemaking and licensing, to enforce interconnection, and to continue its work to establish a competitive-neutral universal service fund. The report also urged greater regulatory independence and warned that cross-subsidies do more harm than good.

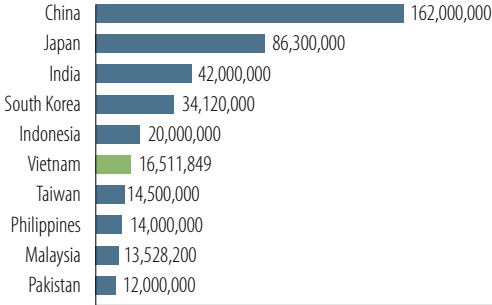
In addition to promoting competition, Vietnam needs to address other regulatory issues with a direct influence on trade while keeping on its path toward more advanced infrastructure. U.S. equipment manufacturers that are interested in Vietnam seek technology neutrality in spectrum licensing and more streamlined conformity assessment procedures. For services, although U.S. firms welcome having the option to pursue joint ventures instead of business cooperation contracts, they are still limited by restrictions on foreign ownership of facilities-based carriers.

Network Security

The ability to conduct safe electronic transactions and share sensitive data relies on the security of communication networks. When looking to invest, locate, and conduct business in a country, companies increasingly factor in the level of network security and associated risks. Vietnam is no exception in this regard.

The MIC recognized the need to further improve network security in 2002, when Vietnamese hackers penetrated some major national Internet service providers. On further examination, the ministry estimated that more than 80 percent of domestic companies’ Web sites had been penetrated and that viruses or spyware infected 95 percent of personal computers. By 2005, Vietnam had passed additional laws and regulations to shore up security for communications infrastructure, making it illegal to breach network security

Figure 7. Top 10 Asian Internet Populations, June 2007
Source: Internet World Stats.



intentionally, to exploit another’s private information, or to “create chaos on the Internet.”

However, a Ministry of Public Security official acknowledged in March 2007 that many security holes remain in Vietnam’s Web sites. He also noted that software developers in Vietnam are not paying attention to safeguarding network security, and organizations and enterprises do not spend enough on it. One other major reason for the relative lack of network security in Vietnam is the lack of trained personnel. More than 100 software development centers exist in Vietnam, but there appear to be only a handful of international standard networking and Internet training centers.

As Vietnam continues to develop its infrastructure and take advantage of foreign investment, a higher priority must be placed on enhancing network security and acquiring the necessary solutions and skills. Such efforts will raise the confidence of multinational companies that invest and do business in Vietnam, as well as support the needs of the Vietnamese government, business, and society.

IT Skills and Training

At first glance, Vietnam has several advantages that bode well for its software and services industry in the future. Roughly 60 percent of its 84 million people are under 30 years old, and its young workforce is hardworking and highly literate. The education system’s focus on rote learning, mathematics, and logic creates new raw talent for the ICT sector. Operating costs and wages are very low. For example, wages for project manag-

Table 2. Vietnam Compared with India and China: Wages, Attrition, and Skills

	Vietnam	India	China
Wages: Project Manager*	\$8,400	\$25,000	\$15,600
Wages: Programmer* (5 yrs experience)	\$6,000	\$16,000	\$10,800
Wages: Programmer* (entry level)	\$2,500	\$7,000	\$4,600
English Skills	Average and capability increasing	Good	Underaverage
Attrition Rate	Low (av. 5-7%)	High (Call center av. 50%; IT firms av. 30%, BPO av. 15%)	Variable (av. 10-30%)
ICT Training	Quantity is average and increasing with equal quality	Large quantity, but different training quality between institutes	Quantity is appropriated and increasing

* in US\$
 Source: Vietnamese Ministry of Posts and Teleomatics,

ers and programmers in Vietnam are equal to only one-third to one-half of those in India and China, respectively (Table 2). Attrition rates of 5 percent to 7 percent in Vietnamese IT firms are also much lower in comparison. Finally, Vietnam is beginning to benefit from a large number of expatriates, especially Vietnamese Americans, who return to Vietnam with entrepreneurial and IT skills.

Furthermore, Vietnam’s IT labor pool is growing. The country’s universities, junior colleges, and technical secondary schools are now producing 10,000 IT graduate students, 5,000 IT undergraduates, and 10,000 IT technical workers each year. However, those schools reportedly impart only basic knowledge and lack modern and practical programs to train professional software engineers. U.S. firms, such as Cisco, IBM, and Microsoft, are playing an active role in helping Vietnam deal with its IT skills deficiency by opening technical training centers and by partnering with schools and universities to offer courses and teacher training.

The most pressing problem for Vietnam—which wants to develop a software and services industry that can compete internationally, to increase its FDI, and to become the location of choice for outsourcing customers—is its low supply of professionals with internationally certified computer skills. Although 750 active software companies and 35,000 software programmers currently exist in Vietnam, only a few firms have more than 1,000 employees. Most of Vietnam’s software

companies are small (100 to 150 employees), lack management and marketing experience, have limited resources, and have inadequate English-language proficiency. Their ability to produce to international quality standards is limited as well. Only two firms have reached the Capability Maturity Model Integration (CMMI)-5 level, and only another 40 have lower levels of CMMI or ISO 9001 capabilities.

Software Piracy

Vietnam’s goal to become internationally competitive in the global software industry is undermined by the widespread violation of intellectual property rights (IPR). This situation is a major concern for U.S. software and IT firms doing business in Vietnam.

Vietnam has taken a number of positive steps to protect intellectual property as part of the process of joining the WTO. It issued a comprehensive IPR law in July 2006, and the following September, it set out implementing regulations to create a modern legal framework for IPR protection and enforcement. Those decrees included general provisions on legal remedies for the enforcement of IPR and other key provisions governing the determination of infringement acts, damages for compensation, procedures, and required legal documents. One decree set fines for software and other copyright violations up to five times the value of the infringing goods.

In 2007, the government increased its enforcement efforts by stepping up raids against Vietnamese computer companies and large enterprises under the new IPR law and by other such actions. In February 2007, a prime ministerial decree also required national, provincial, and local government agencies to come up with specific ways to protect software copyrights, to estimate the costs of buying licensed software in their annual budgets, and to remove unlicensed software in their offices.

However, Vietnam has a long way to go to remedy the problem. In 2006, the country's software piracy rate was 88 percent of all software in use—the highest in the Asia Pacific region and the fifth highest in the world, according to the Business Software Alliance (Figure 8). That rate, which was 92 percent in 2004, has fallen only through concentrated government efforts. Losses last year to copyright infringement of personal computer software in Vietnam are estimated at \$96 million. China, where the piracy rate was 82 percent, is still by far the worst offender in the region in terms of dollar value—losses were \$5.4 billion in 2006.

It is worthwhile for Vietnam to consider even stronger IPR enforcement to unravel a problem created by years of disregard for software copyrights and patents. IDC has estimated that the Vietnamese government could generate \$43 million more in taxes and the local software industry could gain up to \$726 million in profits and create more than 4,000 jobs if the rate of copyright infringement in Vietnam were reduced to 82 percent by 2009.

Electronic Commerce

The development and use of Web sites for online purchases by Vietnamese consumers is another avenue for promoting economic growth and trade. However, e-commerce in Vietnam is in a developmental stage, with uneven application across sectors. Some sectors, such as the burgeoning e-supermarket industry—whereby a single Web site offers access to a wide variety of products or services—are experiencing rapid growth in consumer online retail. Yet most Vietnamese companies with a Web site provide only information about the company itself (physical address, contact information, and so

forth) or product-related information (pricing) and have no system of online payment (Figure 9). Of those companies that do provide products or services, the percentage selling services far outpaces those selling goods—24.4 percent compared with 5.9 percent, respectively. Of the former, tourism and ICT (including software) and other value added services continue to lead the way.

The major impediment to growth in the online sale of both goods and services is the continued lack of consumer confidence. Although Vietnam completed its legal framework for electronic transactions in 2006, much remains to be done to develop its regulatory approach to data privacy. As such, the government has taken an increasingly active role in the Data Privacy Subgroup of the Asia Pacific Economic Cooperation (APEC) Electronic Commerce Steering Group. In 2004, Vietnam endorsed the APEC Privacy Framework, a set of nine guiding principles to assist APEC economies in developing approaches that maximize both privacy protection and the continuity of cross-border information flows, which thus

Figure 8. Top 10 Personal Computer Software Pirating Nations, 2006

Source: Business Software Alliance; International Data Corporation

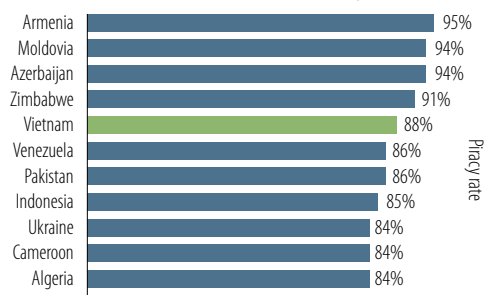


Figure 9. Percentage of Commercial Web Sites Providing Selected Services, 2004

Source: Vietnam Ministry of Trade.

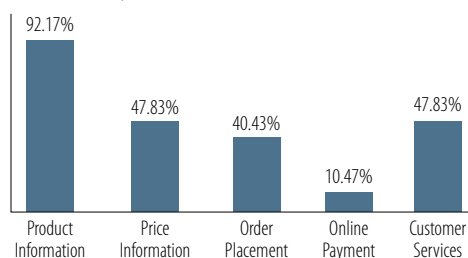


Table 3. Asian E-Government Readiness Rankings

Country	Index, 2005	Global rank, 2005
1. South Korea	0.8727	5
2. Singapore	0.8503	7
3. Japan	0.7801	14
4. Philippines	0.5721	41
5. Malaysia	0.5706	43
6. Thailand	0.5518	46
7. China	0.5078	57
8. Brunei Darussalam	0.4475	73
9. Mongolia	0.3962	93
10. Indonesia	0.3819	96
11. Vietnam	0.3640	105
12. Cambodia	0.2989	128

Source: United Nations Public Administration Network.

promote electronic commerce. The recognition of comparable data privacy practices and regulations of other participating economies (for example, through a voluntary trustmark system) will benefit Vietnam's online consumers and integrate them into the global economy.

Government Procurement of ICT Products and Services

As consumer usage of online services grows, Vietnamese citizens are also learning to harness the convenience of the Internet. As part of its October 2005 *Strategy for Development of Vietnam's Information and Communication Technology toward 2010*, Vietnam gave immediate priority to the development of e-government. Online government services increased in 2006, including license registration, customs applications, and certificates of origin.

However, compared with its Asian neighbors, Vietnam is lagging behind in providing online government services. In 2005, the United Nations ranked Vietnam 11th among Asian nations for "e-government readiness" (Table 3). Brown University's 2007 *Global E-Government Report*

ranked Vietnam 89th among 198 countries whose Web sites were evaluated for the study.

Vietnam recognizes the need to modernize its e-government infrastructure. However, it may not fully realize how proprietary software marketed by foreign companies contributes to finding appropriate solutions. In April 2007, the prime minister approved a master plan for software industry development that prioritized the use of open source software in Vietnamese IT projects. There is concern among some firms in the U.S. IT sector that this policy will be interpreted as a preference for open source software in tender submissions. The policy also appears to run counter to the APEC Technology Choice Principles, which Vietnam agreed to follow in October 2006. Those principles call for technology-neutral policies and regulations "that will allow flexibility in the choice of technologies in order to ensure competition, maximize benefits for governments, businesses, and consumers, and bridge the development gap."

Vietnam is also sending mixed signals regarding country of origin requirements for tender submissions. In July and October 2006, the government issued prime ministerial decrees that directed state agencies to "give priority" to domestic enterprises in purchasing software products. The decrees also mandated that IT projects eligible for international bidding give priority to joint ventures between Vietnamese and foreign contractors. The rules have been interpreted to mean that Vietnamese companies must produce a minimum of 25 percent of such projects.

Without further clarification of its IT procurement rules, Vietnam risks discouraging U.S. companies that can provide much-needed technology and know-how to upgrade the infrastructure that supports vital government services for Vietnamese citizens.

Conclusion

The ICT sector demands special attention because it underpins economic growth and global trade. By facilitating trade in ICT products and services, Vietnam will not only fulfill its responsibility as a

new WTO member, but also greatly enhance the benefits to its society and economy.

The key issues outlined each have an effect on the growth of Vietnam's ICT sector. They are also interrelated; therefore, the issues should not be addressed one at a time, but rather in tandem. For example, competition safeguards will encourage infrastructure development, but without greater attention to network security, such infrastructure would be considered unreliable. Respect for software copyrights will grow as Vietnam cultivates more software engineers, whose e-commerce applications will also benefit from having the appropriate legal framework for data privacy. Vietnam's

ability to foster internationally competitive network security and IT skills could suffer indirectly from an excessive priority placed on domestic products and services in government IT procurement.

Both Vietnam and the United States stand to gain from bilateral engagement on those issues. In addition to enhancing its participation in multilateral fora that address those issues, such as the ITU and APEC, Vietnam could increase its knowledge of U.S. and international "best practices." A Vietnam that is more open to trade, is technologically advanced, and is legally consistent with international practice will be a strong and trustworthy trading partner.

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