VI. INDIA

A. INTRODUCTION

In terms of information technology, India is a country of extremes. On one hand is the booming Indian software industry, which brings millions of dollars to the Indian economy. On the other hand is the underdeveloped and unreliable Indian telecommunications infrastructure. Between these two extremes, Indian officials are trying to develop a robust e-commerce business.

Overall, the Indian economy is performing relatively well.[62] The GDP in 1999 was US$470 billion and is expected to grow 6.5 percent in 2000. Since 1991, economic reforms, including liberalization of the trade, investment and financial sectors, have led to stronger economic growth, moderate inflation, higher rates of investment and increased trade. The present government has pledged to continue economic reforms, moving India from a planned to a market-based economy.

Economic growth has been hampered, however, by high interest rates, a large fiscal deficit, inadequate infrastructure and political uncertainty, stemming in part from disputes with Pakistan and international sanctions imposed as a result of nuclear testing. Over the past two years in particular, industrial growth and the rate of exports have slowed and total foreign investment has declined. In part, the trade deficit grew due to sanctions imposed following nuclear testing in May 1998, which, *inter alia*, restricted sales of high technology exports to India. In addition, non-economic factors including a largely unreformed bureaucracy and social tensions inherent in such a diverse and populous nation have continued to impact economic growth.

B. TELECOMMUNICATIONS IN INDIA

India is in the midst of revamping the regulatory, technical, and operational aspects of its basic infrastructure in order to improve its telecommunications sector. While the country has made a great deal of progress, there is still a substantial amount of work to be done to ensure the success of India's e-commerce market.

Currently, India's telecommunications network is one of the largest in Asia and is the country's fastest growing infrastructure sector. As of November 1998, the fixed-line network comprised more than 23,000 exchanges with a capacity of nearly 20 million lines and 19 million working connections. In addition, in 1999, there were 1.57 million cell phone subscribers and 37 million cable subscribers. The Indian government's Department of Telecommunications (DoT) plans to provide 18.5 million new telephone lines by 2002, while private operators are expected to provide 5.2 million lines.

[62] OECD Country Study, India 2000.

1. Regulatory Factors

Regulatory Authority

The Ministry of Communications governs India's state-run telecommunications sector. Within the Ministry is the DoT, which handles policy and licensing telecommunications issues, and the Department of Telecom Services (DTS), which provides telecommunications services. DTS was recently created when the Indian government separated its policy and licensing functions from its service functions as a precursor to eventual complete privatization scheduled for the year 2001.[63] Some value-added services, such as paging and cellular, have already been privatized.[64] The privatization of international telephony services "will be reviewed by the year 2004."[65]

Realizing that an independent regulator "is becoming increasingly critical to the sustained, balanced, and regulated growth of the telecom sector,"[66] the Indian government created the Telecom Regulatory Authority of India (TRAI) in 1997. The role of the TRAI is to notify providers of telecommunications service rates, recommend new service providers, recommend the granting and revocation of service provider licenses, ensure technical compatibility, settle disputes between service providers and ensure compliance with universal service requirements.[67]

However, despite the Indian government's statement that it is "committed to a strong and independent regulator with comprehensive powers and clear authority to effectively perform its functions,"[68] the extent of the TRAI's capacity to formulate policy independent of the central government and the influence of the state-run DTS is unclear. For example, while the government is obligated to seek the TRAI's recommendations, if the government concludes that "such recommendation cannot be accepted or needs modifications, it shall refer the recommendations back to" the TRAI. After receiving further recommendations by the TRAI,

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[63] Department of Telecommunications / Department of Telecom Services, "New Telecom Policy, 1999-2000," accessed 1 June 2000 at http://www.dotindia.com/flash/NewTelPo_Details.htm.

[64] Department of Telecommunications / Department of Telecom Services, "New Telecom Policy, 1999-2000," Section 1, accessed 1 June 2000 at http://www.dotindia.com/flash/NewTelPo_Details.htm.

[65] Department of Telecommunications / Department of Telecom Services, "New Telecom Policy, 1999-2000," Section 3.6, accessed 1 June 2000 at http://www.dotindia.com/flash/NewTelPo_Details.htm.

[66] Telecom Regulatory Authority of India, "Telecom Regulatory Authority of India," printed 5 June 2000 at http://www.dotindia.com/investment/trai.htm.

[67] Telecom Regulatory Authority of India & Ministry of Law and Justice, "The Telecom Regulatory Authority of India Act, 1997," The Gazette of India, Part II – Section 1, dated 29 March 1997, accessed 5 June 2000 at http://www.trai.gov.in/gazette.htm and Ministry of Law and Justice, "The Telecom Regulatory Authority of India (Amendment) Ordinance, 2000," The Gazette of India, Part II – Section 1, dated 24 January 2000, accessed 5 June 2000 at http://ww.trai.gov.in/ord_00.html. Note: Section 13 of the Act states that "The Authority may, for the discharge of its functions under sub-section (1) of section 11, issue such directions from time to time to the service providers, as it may consider necessary," and Section 14 states "If a dispute arises, in respect of matters referred to in sub-section (2), among service providers or between service providers and a group of consumers, such disputes shall be adjudicated by a bench constituted by the Chairperson and such bench shall consist of two members."

[68] Telecom Regulatory Authority of India, "Telecom Regulatory Authority of India," printed 5 June 2000 at http://www.dotindia.com/investment/trai.htm.

"the Central Government shall make a final decision."[69] Furthermore, licensor and policy-maker functions will continue to be discharged by government "in its sovereign capacity."[70]

First promulgated in March 1999, the government's *New Telecom Policy, 1999-2000* (a publication by the Ministry of Communications that describes the objectives and policies of DoT and DTS) is designed to achieve a modern, world-class telecommunications infrastructure and increase competition.

The *New Telecom Policy, 1999-2000* addresses several regulatory issues, such as interconnection, local competition and universal service. While the Indian government is clearly working towards creating a transparent and competitive telecommunications sector, its policies in these areas are not yet as open as they could be.

Licensing

Under the *New Telecom Policy, 1999-2000*, the government will retain the power to grant licenses and make policy. License fees will be replaced by revenue sharing for new licensees, while current basic and cellular licensees will continue operations under existing licenses. New licenses will be granted for vacant districts with firms paying a one-time entry fee and a revenue-sharing arrangement determined by the TRAI. All operators will pay a universal access levy and spectrum usage fee.

Accounting Systems

The Indian government "is committed" to bringing basic telecommunications services to underserved areas. To achieve universal access, a universal service tax, in the form of a percentage of the revenue earned by all the operators under various licenses, will be applied and resulting funds will be used to create a universal service fund. Also, provisions for establishing rural communications will be mandatory for all fixed service providers.[71] While this approach has merit, it makes no mention of exactly how much the tax will be nor how it will be applied. Consequently, the success of the universal service fund remains to be seen.

Local Competition

Prior to the *New Telecom Policy, 1999-2000*, competition was limited. Only one private operator (selected via a bidding process) was permitted per service area to operate basic telecommunications services. Under the *New Telecom Policy*, market forces will determine the number of basic telephone service operators. However, during the transition to a fully privatized industry, the Indian government argues that the number of entrants must be controlled to eliminate non-serious players and allow the previously selected private operators time to establish themselves. Therefore, for a period of 5 years, multiple operators shall be permitted

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[69] The Telecom Regulatory Authority of India (Amendment) Ordinance, 2000, 24 January, 2000. Section 9. This document amends The Telecom Regulatory Authority of India Act, 1997, 29 March 1997.

[70] Department of Telecommunications / Department of Telecom Services, "New Telecom Policy, 1999-2000," accessed 1 June 2000 at http://www.dotindia.com/flash/NewTelPo_Details.htm.

[71] Department of Telecommunications / Department of Telecom Services, "New Telecom Policy, 1999-2000," Sections 2 and 6, accessed 1 June 2000 at http://www.dotindia.com/flash/NewTelPo_Details.htm.

only in those service areas where no licenses were issued during the initial bidding process.[72] Despite the government's expressed aim of a creating a competitive telecommunications environment, this goal would seem to be a few years away.

With regard to interconnection, the Indian government divided the country into 21 service areas.[73] Within each service area, service providers[74] are allowed to seek direct interconnectivity with any other service provider. Thus, interconnectivity within a service area seems to be have virtually no barriers and can be achieved easily. However, interconnectivity between service providers in different service areas must be reviewed by the TRAI, as such interconnectivity is considered long distance and thus subject to long distance regulations.[75]

Available Services
Research did not uncover any information.

Foreign Competition and Ownership
Research did not uncover any information.

2. Technical and Operational Factors

Spectrum Efficiency and Management
Overall, India's telecommunications infrastructure is neither well-developed nor dependable. The country's 20 million telephone network lines, while large for the region and growing steadily, must serve a population of one billion people. Erratic service and long waits for new users are the norm.[76] Indian authorities are striving to improve this situation by various methods, including improved spectrum management and transparent technological standards.

Standardization is governed by the Telecommunications Engineering Center (TEC), which is a nodal agency of DoT. Some of its primary responsibilities include setting standards and specifications for telecommunications equipment and services, carrying out evaluations of equipment and services, and conducting field trials.[77]

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[72] Department of Telecommunications / Department of Telecom Services, "New Telecom Policy, 1999-2000," accessed 1 June 2000 at http://www.dotindia.com/flash/NewTelPo_Details.htm.

[73] Department of Telecommunications Services, "Telecom Services Sector," accessed 5 June 2000 at http://www.dotindia.com/investment/telecom_services_sector.htm.

[74] The New Telecom Policy specifically mentions cellular, fixed, cable, radio paging, and public mobile radio trunking service providers. Satellite and long distance service providers are subject to different interconnection and local competition stipulations.

[75] See Department of Telecommunications / Department of Telecom Services, "New Telecom Policy, 1999-2000," Section 3, accessed 1 June 2000 at http://www.dotindia.com/flash/NewTelPo_Details.htm. The TRAI provided its recommendations to the Indian government in regards to opening-up national long distance services to competition with effect from 1 January 2000 (see "Recommendations on Introduction of Competition in National Long Distance Communications," dated December 1999 at http://www.trai.gov.in/covpg.htm). However, it is unclear whether DoT has adopted these recommendations.

[76] Agence France Presse International, "India Has Long Way to go to Take Full Advantage of E-Commerce Bill: Intel CEO," dated 25 May 2000, accessed 2 June 2000 at http://www.gobalarchive.ft.com/search-components/index.jsp.

[77] Telecommunications Engineering Center, "Aims and Objectives," accessed 1 June 2000 at http://wwwdel.vsnl.net.in/tec/tech-aim.html.

According to the *New Telecom Policy, 1999-2000*, the proliferation of new technologies has placed an increased demand on spectrum, creating the need for a transparent process of allocation of spectrum that is effective and efficient.[78] Towards this end, the Ministry of Communications created the draft National Frequency Allocation Plan (NFAP-2000). The plan was published for the purpose of soliciting public comments by August 1999. The Ministry of Communications was then scheduled to review the comments, and modify the NFAP where appropriate.[79] Currently, the status of the review process is uncertain, as is the date by which the Ministry of Communications is set to finalize the NFAP.

Network Architecture
Research did not uncover any information.

Infrastructure and Rights-of-Way
An important operational factor for a successful telecommunications sector is availability of rights-of-way for the creation of the telecommunications architecture. The Indian government recognizes this, as evidenced by its statement that "expeditious approvals for right-of-way clearances to all service providers are critical for timely implementation of telecom networks." However, the government does not readily supply information regarding its plans to ensure this access. It merely states that federal, state and local governments, along with the Ministry of Surface Transport, "shall take necessary steps to facilitate the same."[80]

C. THE INTERNET IN INDIA

Currently, India's Internet usage is low. There are approximately 4.5 million PCs in India and Internet users are estimated to be less than one million.[81] At present only a small minority, comprised mainly of middle- and upper-class Indians, has Internet access. In May 1999, the number of Indian Internet subscribers was estimated at only 280,000. If shared users and cyber-café patrons are included, the total rises to about 1.4 million. This still represents a small market for e-commerce businesses, most of whom have yet to break even in their Indian operations.

Realizing that e-commerce depends on Internet services, Indian officials are hoping to encourage Internet growth by instituting transparent Internet regulations and policies, providing financial incentives for ISPs, and leveraging the technical resources and know-how associated with the country's booming software industry.

In November 1998, the Indian government announced measures to boost the IT sector and provide quality Internet service nationwide at an affordable price. These measures include an unlimited number of 15-year licenses for private internet service providers ISPs with a nominal

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78 Department of Telecommunications / Department of Telecom Services, "New Telecom Policy, 1999-2000," Section 5, accessed 1 June 2000 at http://www.dotindia.com/flash/NewTelPo_Details.htm.

79 "Draft National Frequency Allocation Plan (NFAP 2000)," accessed 1 June 2000 at http://www.nic.in/nfap-2000/

80 Department of Telecommunications / Department of Telecom Services, "New Telecom Policy, 1999-2000," Section 8.8, accessed 1 June 2000 at http://www.dotindia.com/flash/NewTelPo_Details.htm.

81 Dewang Dispatch, Financial Express, "India's IT Bill Arrests FBI's Attention," dated 27 May 2000, accessed 2 June 2000 at http://www.globalarchive.ft.com/search-components/index.jsp.

license fee, foreign equity investment up to 49 percent; ISP use of government- and privately-owned satellite capacity, international connections through government-owned gateways, and establishment of gateways by private ISPs subject to government approval. Access charges were further reduced following tariff re-balancing measures on May 1, 1999.

1. Regulatory Factors

Regulatory Authority

The Indian government understands the need for a comprehensive plan to handle India's projected explosion of Internet usage and e-commerce. Unlike the Chinese government, the Indian government has been generally liberal towards the development of the Internet. For example, the Securities & Exchange Board of India (SEBI) on January 25, 2000, approved Internet-based trading in the country. Brokers would have complete responsibility for the trades and the existing norms relating to the margin system will be applicable in this type of trading.

The Indian government defines the Internet as a conglomeration of computer networks and computers that spans the globe and facilitates, among other things, e-mail, file transfer, home pages, the world wide web, information retrieval, games and retail sales. The government regulates ISPs by granting licenses via DoT. The government is itself also an ISP, advertising Internet services and prices on its DTS web page.[82]

Indian ISP licenses are easier to obtain than the licensing regulations for basic service providers. Any registered Indian company (regardless of whether the proposed start-up is devoid of telecommunications and IT experience) is allowed to apply for an ISP license, and foreign equity is permitted up to 49 percent. Separate licenses are granted for different service areas. These service areas are comprised of three categories – Category A consists of the entire country, Category B of major telecommunication areas (such as in and around Delhi and Calcutta) and Category C constitutes any secondary switching area. An ISP can hold an unlimited number of licenses in an area. ISPs are free to fix their own tariffs, which will thus be decided by market forces. However, the TRAI may review and fix a tariff at any time. The government has also waived the License Fee for ISPs until October 31, 2003.

With the new government measures in place, more ISPs have begun operations. The first ISP license was issued in November 1998. By March 1999, 77 licenses had been issued for providing Internet services. By January 2000, nearly 200 ISPs had been licensed and 50 had launched their services. In 14 months, the number of Internet connections rose from 250,000 to almost 600,000. The environment for ISPs and portals is extremely competitive with companies entering the market almost on a daily basis.

Moreover, direct interconnectivity is permitted between two separately licensed ISPs through access to international gateways but requires special approval from the government.[83] Until

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82 See Department of Telecommunications, " Guidelines and General Information for Internet Service Provider (ISP)," accessed 1 June 2000 at http://wwwdel.vsnl.net.in/tec/guidline.html

83 Department of Telecommunications, " Guidelines and General Information for Internet Service Provider (ISP)," accessed 1 June 2000 at http://wwwdel.vsnl.net.in/tec/guidline.html and Department of Telecommunications, "Internet," accessed 5 June 2000 at http://www.dotindia.com/services/internet.htm.

recently, this government approval had never been issued due to security concerns, allowing VSNL to maintain its monopoly over the international gateway. In an effort to expedite the approval process, the government established a standing committee to process applications within 30 days of submission. The committee is comprised of representatives from the DoT, the DTS, the Wireless Planning Commission (WPC) and the IT Ministry and is chaired by the Department of Space (DoS). Four approvals were issued in the first quarter of 2000, breaking VSNL's monopoly and promising a more competitive environment and lower costs for the provisions of data services.

Cost of Access

The high cost of Internet access has been the result of several factors. First, the price of Internet connection is simply too high for the average Indian. For example, 500 hours of TCP/IP dial-up services costs 8,500 Indian rupees (around US$190).[84] At such prices, only a select few can take advantage of Internet services. Second, relative to the average household income in India, PCs are expensive. Only about 3.2 million PCs were in use in March 1999 of which only 1.8 million were sufficiently powerful to be able to access the Internet. Third, until last year, in order to maintain VSNL's monopoly over Internet access, the government delayed provision of fixed lines for Internet connection to competing ISPs which kept competition to a minimum and access charges artificially high.

Solutions to these problems are being implemented. Progressive cuts in import duties on computer hardware are expected to drive PC prices down by 15-20 percent a year, making PCs increasingly more affordable.

As a result of this competition among ISPs, the cost of access is expected to decline steadily over the new few years. Ajit Balakrishnan, CEO of Rediff-on-the-Net, India's oldest and best-known horizontal portal, expects Internet access to become free by the end of 2000. He believes that competition among ISPs will force access charges down to zero, and basic telecommunications service operators that are poised to start operations will agree to pay ISPs for the extra telephone traffic that free access will bring. Already ISPs have been slicing connection charges and are discussing the pros and cons of offering their services free.

Meanwhile, Indian companies, both New Economy and old, have ambitious plans to expand access via cyber-cafes, Internet kiosks and cable-based Internet services. Adoption of alternative Internet access devices such as palm-tops and mobile phones has hastened the growth in the number of Internet users much more quickly than previously envisioned.

As a result of these improvements in policy and access costs, Internet access is becoming easier and more affordable. Whereas the penetration curve for Internet users in developed countries will tend to flatten out, in India the increase is expected to be much steeper. It is estimated that

[84] Department of Telecommunications, " Guidelines and General Information for Internet Service Provider (ISP)," accessed 1 June 2000 at http://wwwdel.vsnl.net.in/tec/guidline.html

the number of connections in India will increase to 1 million by the end of 2000 and reach 6 million Internet connections and 16 million users by 2003.[85]

Labor and Immigration Policies
Research did not uncover any information.

Government Incentive Programs
Indian leaders see the burgeoning IT industry as "a glorious opportunity" to further the economic development of their country. As Pramod Mahajan (former political adviser to Indian Prime Minister Atal Behari Vajpayee and head of the new Department of Information Technology) aptly stated, IT is something, "other than the Taj Mahal," which can lead to economic growth for India.[86]

Therefore, the Indian government is pushing hard to further develop Indian IT expertise. For example, the Department of Telecommunications has created 44 Telecommunication Training Centers to provide training for technical, managerial, traffic, science and financial aspects of the telecom industry. The government has also created Software Technology Parks (STPI) to attract IT companies and encourage IT growth in India. These parks offer incentives such as 100 percent foreign equity, 100 percent duty-free imports and a 10-year income tax holiday.[87]

The IT industry is taking advantage of these perks. For example, Intel Corporation will invest US$100 million in venture capital in India this year. Most of this investment will go to building high bandwidth Internet infrastructure.[88]

Content Control/Censorship
India has no shortage of local content providers and that number is rising steadily. A wide range of portals offers everything from news and entertainment to online shopping and auctions. Indian content sites tend to cater to local tastes and needs. On the whole, foreign content providers have stayed away from the market because of the extremely strong presence of domestic players. The needs of the Indian population are disparate and given the enormous regional diversity on the sub-continent, foreign firms tend to address more of the technological issues relating to e-commerce.

The government has so far adopted a very liberal policy toward controlling content. It has been actively promoting the use of the Internet and surprisingly, given its traditionally conservative nature, has begun to introduce its use in government offices to improve efficiency.

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85 Nasscom, "Internet & E-Commerce Scenario in India," accessed 5 June 2000 at http://www.nasscom.org/template/inetec.htm. Other estimates are even more optimistic. Goldman Sachs Investment Research's latest report, Asia Internet: Outlook and Issues, estimates the user base at 70 million by 2003, assuming annual growth of 130 percent.

86 David Gardner, Financial Times, "Delhi Finally Wakes Up to its Booming Computer Age," dated 1 May 2000, accessed 2 June 2000 at wysiwyg://68/http://www.globalarchive.ft.com/search-components/index.jsp.

87 The Department of Telecommunications, "Software Industry in India," accessed 5 June 2000 at http://www.dotindia.com/investments/software_industry.htm.

88 K.C. Krishnadas, EE Times, "Intel Places US$100M Bet on Internet in India," dated 51 May 2000, accessed 2 June 2000 at http://www.eet.com:80/story/OEG20000531S0027.

The Indian government does, however, forbid "the flow of obscene, objectionable, unauthorized, or any other content infringing copy-rights, intellectual property rights, and international and domestic cyber laws in any form." ISPs themselves are left with the task of detecting such material.[89] Unfortunately, such a blanket statement does not define "obscene," objectionable," or "unauthorized," leaving these phrases open to interpretation.

2. Technical and Operational Factors

Low bandwidth availability is also a constraint in the development of Internet usage. It makes Internet access painfully slow and thus discourages consumers from using e-tailing and other services. Internet access was given a boost when state-held VSNL, in an effort to decongest its Internet network following increases in the number of subscribers, increased bandwidth available to its Internet service arm. VSNL increased its bandwidth capacity from 156 Mbps to 540 Mbps at the end of 1999. In addition, approvals from the TC, obtained in consultation with the DoS and the IT Ministry now allow ISPs to obtain bandwidth from foreign satellites. The DoT's Licensing Group (Licensing and Regulation Cell) is the contact agency involved in clearing proposals for obtaining bandwidths from these foreign satellites.

Protocol Standards and Development

In terms of technical requirements, the Indian government appears to be hands-off. An ISP must use the Internet Protocol and meet the technical requirements of the carrier to which it is connected. Last mile linkages are freely permitted within a local area by fiber optic or radio communication, provided that there is no frequency interference with another service provider.[90]

In addition, the ISP Guidelines specifically state that access to the Internet through authorized cable operators is permitted without any additional licensing subject to applicable cable laws. This provision reflects the government's belief that cable TV networks (fast multiplying in India) will be used to provide expansion of the Internet to individual residences.[91] Apparently, Indian officials are planning to leapfrog over traditional telephone line technology to cable, which will enable faster Internet service at higher bandwidths.

Language Barriers

Although there are numerous local linguistic dialects in India, English is widely used. Therefore, India possesses very little linguistic resistance to the Internet. One must remember, however, that India suffers from significant poverty and the national literacy rate is estimated at only 52 percent.

Skilled Labor Force

The existing software industry in India is mature and formidable. This industry provides India with a technologically savvy work force, technological equipment and greater funding than other

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89 Department of Telecommunications, " Guidelines and General Information for Internet Service Provider (ISP)," accessed 1 June 2000 at http://wwwdel.vsnl.net.in/tec/guidline.html.

90 Department of Telecommunications, " Guidelines and General Information for Internet Service Provider (ISP)," accessed 1 June 2000 at http://wwwdel.vsnl.net.in/tec/guidline.html.

91 The Indian Express, "LS Finally Passes E-Commerce Bill," dated 17 May 2000, accessed 5 June 2000 at http://www.itspace.com/Itspace/Alpha/News/infocus/ITBill/03.asp.

developing countries. Indeed, India's IT industry enjoyed a compound annual growth rate of over 50 percent in the 1990s.[92] The National Association of Software and Service Companies (NASSCOM) stated that the Indian domestic software industry is projected to earn US$5.7 billion in the year 2000, an increase from US$3.9 billion during 1999.[93] The Bangalore-based software firm, Infosys Technologies, became the first Indian company to list on the NASDAQ, raising US$70 million, and securing a 22 percent premium on its offer price. Other software companies are seeking to follow suit.

D. E-COMMERCE IN INDIA

In addition to basic telecommunications and Internet requisite factors, a healthy e-commerce environment requires favorable policies in areas such as taxation, security, and dispute resolution. The Indian government has adopted a remarkably open attitude and is working to establish an e-commerce-friendly legal and regulatory environment.

Prior to 1999, the Indian government took a hands-off approach to the information technology industry in general. While this approach may have enabled the IT market to prosper, [94] the lack of a policy framework for dealing with such issues as cyber crime and digital signatures has harmed rapid industry development. Many companies were reluctant to support e-commerce start-ups in India in the absence of more regulatory guidance and legal certainty regarding electronic transactions.[95] In short, a legal and regulatory framework was needed to boost business and consumer confidence.

On June 19, 2000, the President signed into law the Information Technology Act 2000 ("The IT Act") which deals with many aspects of the Internet and e-commerce. Trade and industry groups hailed the passage of the IT Act as a "great achievement" and a "remarkable step ahead" by the Indian government for the technology community.[96]

With the passage of the IT Act,[97] the Indian government has adopted a more assertive attitude to setting Internet standards. The IT Act is designed to facilitate the development of a secure

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92 David Gardner, Financial Times, "Delhi Finally Wakes Up to its Booming Computer Age," dated 1 May 2000, accessed 2 June 2000 at wysiwyg://68/http://www.globalarchive.ft.com/search-components/index.jsp.

93 Agence France Presse International, "India Has Long Way to go to Take Full Advantage of E-Commerce: Intel CEO," dated 25 May 2000, accessed 2 June 2000 at http://www.globalarchive.ft.com/search-components/index.jsp.

94 David Gardner, Financial Times, "Delhi Finally Wakes Up to its Booming Computer Age," dated 1 May 2000, accessed 2 June 2000 at wysiwyg://68/http://www.globalarchive.ft.com/search-components/index.jsp.

95 Financial Express, "IT Bill 2000 – Yet to Secure all Bases," dated 20 May 2000, accessed 2 June 2000 at http://www.globalarchive.ft.com/search-components/index.jsp.

96 Deccan Herald News Service, "LS Passes IT Bill Shorn of Harsh Provisions," dated 15 May 2000, accessed 5 June 2000 at http://www.deccanherald.com/deccanherald/may17/bill.htm.
Indiatimes.com, "Narayanan okays 13 Bills," dated 24 May 2000, accessed 5 June 2000 at http://www.timesofindia.com/today/24indi7.htm.

97 India Votes, Free Press Journal, "President's Nod to IT, Constitution Amendment Bills ,," dated 20 June 2000, accessed 20 June 2000 at http://www.indiavotes.com/elections/news/y2k0620pg2-1.html. The final IT Bill was actually two bills combined into one – the Electronic Commerce Bill, written by the Ministry of Commerce, and the Information Technology Bill, written by the Indian government's Department of Electronic. These bills were based on the U.S., E.U., and Japanese

regulatory environment for e-commerce by providing a legal framework to protect the security and integrity of electronic transactions. In particular, the IT Act addresses issues of electronic contracting, including the form in which an offer and an acceptance may be expressed and legal recognition of contracts formed in an electronic medium. With regard to content, the IT Act specifies that network service providers are not liable for information transmitted over their systems when they act merely as intermediaries and can demonstrate lack of knowledge of violations or due diligence in preventing violations. By creating a judicial framework for digital signatures and certificates, the IT Act provides legal validity to electronic records for commercial purposes and as evidence in a court of law.[98] The IT Act also defines various cyber crimes and declares them a penal offence punishable by imprisonment and/or fines.[99]

Some provisions of the IT Act have been criticized as unenforceable. For example, the IT Act states that it will apply "to any offence or contravention committed outside India by any person irrespective of his nationality."[100] How this can be applied and enforced outside India is unclear.[101] Other provisions suffer from vagueness. In the clause that reads "where any security procedure has been applied to an electronic record, such record shall be deemed to be a secure electronic record", the term "security procedure" is nowhere defined in the IT Act. Critics fear that such vague language will create misunderstandings and hamper implementation of the law.[102]

Concerns also have been raised concerning the broad search and seizure provisions granted to law enforcement in the Act.[103] Supporters, such as Information Technology Minister Pramod Mahajan, point out that the Act requires the police to have reasonable grounds to investigate a cyber crime and that only high-ranking police are authorized to carry out such actions. Mahajan concedes that proper application of the Act will require retraining of law enforcement officers and the creation of a special police task force to handle cyber crimes. However, he maintains the "government could not delay a Bill just because of that reason."[104]

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e-commerce polices. Dr. A.K. Chakravarti, The government of India Cyberlaws Initiative, remarks made a the Enabling E-Commerce in India Conference, 15-16 June 1999 in India & Department of Commerce, "Background," accessed 7 June 2000 at http://commin.nic.in/doc/ecbgr.htm.

98 Financial Express, "IT Bill 2000 – Yet to Secure all Bases," dated 20 May 2000, accessed 2 June 2000 at http://www.global archive.ft.com/search-components/index.jsp.

99 Indiaexpress.com, "IT Bill Opens Up to India the Vast Possibilities of E-Commerce: CII," dated 4 June 2000, accessed 5 June 2000 at wysiwyg://143/http:/www.indiaepress.com/news/technoogy/20000604-0.html.

100 The Information Technology Act, 2000, Section 75, assented to 19 June 2000.

101 The Indian Express, "LS Finally Passes E-Commerce Bill," dated 17 May 2000, accessed 5 June 2000 at http://www.itspace.com/Itspace/Alpha/News/infocus/ITBill/03.asp.

102 Financial Express, "IT Bill 2000 – Yet to Secure all Bases," dated 20 May 2000, accessed 2 June 2000 at http://www.global archive.ft.com/search-components/index.jsp.

103 Under the Act, any police officer above the rank of Deputy Superintendent of Police, or any two offices authorized by the Central government, can enter into a public place and "search and arrest without warrant any person found therein who is reasonably suspected of having committed or of committing or of being about to commit any offence under this Act. "Public place" is defined as any public conveyance, any hotel, any shop, or any other place intended for use by, or accessible to, the public. The Information Technology Act, 2000, assented to 19 June 2000.

104 The Indian Express, "LS Finally Passes E-Commerce Bill," dated 17 May 2000, accessed 5 June 2000 at http://www.itspace.com/Itspace/Alpha/News/infocus/ITBill/03.asp.

India is striving to create a globally respected IT industry, building on a strong labor base known for its high level of technical skills. Indian officials are also encouraging IT growth by offering financial incentives to businesses in the sector, such as lower license fees and less restrictive regulation of venture capital investment. However, a few government actions, such as instances of enforcing current tax laws against e-commerce businesses, have caused concern for those hoping that regulation will allow for optimal growth of e-commerce.

In India, e-commerce is in the early stages of development and must overcome substantial hurdles to succeed. During 1998/99, according to an estimate by NASSCOM, India's e-commerce turnover was estimated at just US$3.5 million with a user base of one million. Internet penetration is poor, the telecommunications infrastructure is inadequate and PCs are too expensive for most households. Currently the lion's share of e-commerce is taking place in B2C rather than B2B transactions.

Despite these current conditions, many expect strong growth in India's e-commerce market. According to International Data Corporation, e-commerce in India will account for US$575 million by 2002, making India the fourth largest e-commerce market in Asia. Expanding ownership of PCs and increased penetration of cable television also will encourage Internet use (at present India has over 37 million cable TV subscribers). NASSCOM estimates e-commerce in India at US$2.5 billion by 2002 and 159.5 million by 2005. The B2B market is expected to increase following greater investment in the telecommunications infrastructure and the recent passage of the IT Act.

1. Regulatory Factors

Taxation

Concerned that it may lose tax revenues if it fails to regulate the growing Internet industry, the Indian government recently became one of the first to tax e-business by enforcing already-existing tax laws and regulations. It is focusing its enforcement efforts on credit card companies and has served notice that they must observe all relevant tax regulations.

Under Indian Law, all residents are taxed on their worldwide income. A company is considered resident if it is an Indian company or if the control and management of its affairs is situated wholly in India. Partnerships, associations of persons, and bodies of individuals are treated as residents of India even if only a fraction of their control and management lies in India. Most foreign companies fall under the non-resident category.

Non-residents are taxed on their Indian source income. Income that is derived directly or indirectly through or from any property in India, or business connection in India, or any asset or source of income in India, or transfer of a capital asset situated in India, is deemed to be Indian source income.

With regard to taxation, two key issues arise for e-businesses. The first is whether a web site or server could constitute a business connection or property in India through which income is derived, thus making the company a resident of India or making the income Indian source income. In either instance, the income would be taxable under current law. The second question that arises is whether the presence of a server or an ISP constitutes a permanent establishment. A

non-resident will be taxed on business profits in the country of source if the profits are attributable to a permanent establishment in that country.

At present, the Indian government is studying taxation of e-commerce to determine what sort of regime is desirable.[105] The Indian government plans to classify all e-commerce transactions under the purview of the Ministry of Commerce. This would bring all transactions under one roof and simplify any tax procedures which might be implemented.

Privacy
In the sensitive and high-profile issue of privacy in Internet usage and e-commerce transactions, the IT Act includes penalties for, *inter alia*, breach of confidentiality or privacy, transmission of obscene materials and damage from unauthorized access and viruses.

Content
Research did not uncover any information.

Content - Intellectual Property Rights
India has no intellectual property law specifically protecting material on the Internet or in e-commerce. Despite membership in WIPO and the WTO,[106] India has not assented to the IPR agreements promulgated by these organizations. While passage of the IT Act may lead to additional legislation regarding IPR on the Internet and in e-commerce, general Indian IPR laws currently govern these transactions.

While India has struggled with IPR and copyright in the past, its national laws are now "almost at par" with international standards in these areas.[107] Current Indian IPR law covers patents, copyrights, trademarks and industrial designs.

As a party to the TRIPS Agreement on patents, India is implementing a three-phase plan to adopt a product-patent regime by January 2005. In the first phase, the Patent Act 1970 has been amended to accept patent applications with effect from January 1995. Under the Patent (Amendment) Act 1999, exclusive marketing rights (EMRs) must be granted to an applicant for five years in lieu of a patent until the amended patent law comes into effect. In the second phase, the patent term for all products will be increased to 20 years and the laws on infringement will be amended to shift the burden of proof away from the defendant. In the third phase, laws on biodiversity and plant life will be passed and product-patent introduced. Consistent with the TRIPS Agreement, the Patent (Amendment) Act, 1999 empowers the Indian government to withhold information relating to a patentable invention that it considers prejudicial to the security of India.

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[105] The IT Act does not address the issue of taxation. This omission was probably deliberate as the focus of the bill is on security as a facilitator for e-commerce. Financial Express, "IT Bill 2000 – Yet to Secure all Bases," dated 20 May 2000, accessed 2 June 2000 at http://www.global archive.ft.com/search-components/index.jsp.

[106] WIPO, "Member States," accessed 20 June 2000 at http;//www.wip.org/eng/infbroch/infbro99.htm & WTO, "Trade in Services, India Schedule of Specific Commitments," accessed 20 June 2000 at http://www.wto.org.

[107] P.D. Kaushik, The Developing Regime for IPR Protection in India, remarks made at the Enabling E-Commerce in India Conference, 15-16 July 1999, in India.

India is also a party to the Paris Convention for the Protection of Industrial Property and Patent Cooperation that extends reciprocal property arrangements to all countries party to the Convention. The Convention will make India eligible for the Trademark Law Treaty and the Madrid Agreement on Trademarks.

In May 1999, the government finalized new legislation amending the Trade and Merchandise Marks Act of 1958 ("the 1958 Act"). The new law is intended to broaden the definition of trademark and simplify administrative procedures involved in the administration of the 1958 Act. Major changes include the inclusion of 'service marks' in the definition of trademarks, a new provision for the registration of collective marks and prohibition of registration of certain marks that are mere reproductions or imitations of a well-known mark. The 1958 Act will also vest the final authority in the registrar for approving applications for registration of trademarks and harmonize penal provisions of the 1958 Act with the Copyright Act of 1957.

Copyright of published and unpublished literary, dramatic, musical, artistic and film works is protected under the Copyright Act of 1957. A 1992 amendment extended copyright protection to computer software and commercial art posters, drawings, designs and monograms. With prior central bank approval, Indian software makers may conclude agreements with overseas copyright holders to reproduce software on payment of a royalty. A second amendment, passed in May 1994, provides for improved protection of literary and artistic work and more efficient enforcement. The 1994 amendment also places computer programs, films and sound recordings under copyright. In 1996, the Indian Monopolies and Restrictive Trade Practices Commission held that copyrights are not possible on ideas, subject matter, themes or plots. The Copyright Act is due to be amended to incorporate protection of the latest international technologies including new digital-based processes and databases.

Security – Encryption and Authentication
Part III of the IT Act addresses the integrity and authentication of secure electronic records and secure electronic signatures. The existence of legally recognized secure electronic records and electronic signatures should encourage e-commerce transactions by assuring businesses and consumers that such electronic records and signatures will be assigned the same legal weight as traditional pen and ink documentation.

Security - Payment Mechanisms
Presently, traditional forms of payment (checks, drafts and cash on delivery) remain the most common in Indian e-commerce. However, several e-commerce sites, which use industry standard security systems and technology, offer the option of payment by credit card. In addition, in December 1999, Citibank introduced password-protected accounts that can be used for online shopping for subscribers to its Suvidha Internet banking service in Bangalore.

Another factor limiting the use of credit card payments is the relatively small number of cardholders (there were only about 3.4 million cardholders at the end of 1998). Many Internet users are younger consumers without credit cards (according to one estimate, only about 40 percent of Internet users have cards).

Participation in New International Standards Development
Research did not uncover any information.

2. Technical and Operational Factors

Protocol (Standards) Making Process
The IT Act makes no mention of technical standards for e-commerce. Any technical standards are likely to be developed by the TEC, the government entity charged with overseeing Internet protocol standards. However, the TEC has not yet set any technical standards for e-commerce.[108]

Interestingly, private industries are not waiting for the Indian government to announce technical standards before preparing their architecture for e-commerce. Upon passage of the IT Act, NASSCOM promised to launch a major campaign entitled "Operation Bandwidth" to increase India's bandwidth 80 times to 100 gb y 2003.[109] NASSCOM President Dewang Mehta stated India will lose heavily on e-commerce business unless bandwidth is increased.[110]

Product Restrictions
Research did not uncover any information.

Delivery Infrastructure
The poor Indian infrastructure both limits and encourages e-commerce growth. On one hand, most e-commerce sites in India have been set up by technically-oriented entrepreneurs who have no experience of the logistics involved in delivering products to distant areas. This has not yet posed a serious problem since the volume of transactions is small and most buyers are local city residents. However, as the e-tailing market grows in size, high delivery costs and logistical bottlenecks as well as regulatory requirements will act as major barriers.

On the other hand, setting up brick-and-mortar retail outlets in India's major cities is costly because of high property prices and rentals. In comparison, it costs little to set up an e-tailing web site. Moreover, e-businesses can make do with a single warehouse. E-commerce offers Internet users in smaller cities and towns access to products they would otherwise have.
Availability of Payment Mechanisms
Research did not uncover any information.

General Business Law
Research did not uncover any information.

Public Attitude to E-Commerce
A number of cultural factors will affect the willingness of individuals to accept e-commerce as a way of life in India. A recent study entitled "Enabling E-Commerce in India" revealed a low public awareness of e-commerce.[111] While 58 percent of Indian CEO's rated e-commerce as

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108 See TEC's web site at http://delhi.vsnl.net.in/tec/.

109 Deccan Herald News Service, "LS Passes IT Bill Shorn of Harsh Provisions," dated 15 May 2000, accessed 5 June 2000 at http://www.deccanherald.com/deccanherald/may17/bill.htm.

110 Economic Times On Line, "LS Passes IT Bill, Nasscom to Step Up Bandwidth," dated 16 May 2000, accessed 2 June 2000 at http://www.economictimes.com/today/17/econ13.htm.

111 Study by the Global Information Infrastructure Commission (GIIC), Infrastructure Leasing and Financial Services, and the Confederation of Indian Industry.

crucial to their growth strategy, only 26 percent of households with PCs were even aware of e-commerce. Most shoppers were not comfortable buying items they were unable to see or touch. Lack of product standardization means product quality varies from place to place, and the majority indicated that they would prefer not to buy items online until quality and delivery could be assured.[112] Finally, Indians in general do not view shopping as a chore. This has to do both with cultural preferences as well as the fact that, to a degree, shopping is regarded as a recreational activity.

Business Attitude to E-Commerce
Research did not uncover any information.

Government Attitude to E-Commerce
In addition to encouraging e-commerce through passage of the IT Act, the Indian government is promoting e-commerce by offering financial incentives. E-commerce businesses will be allowed to operate by using the infrastructure provided by various access providers. Registration for specific services will be required, but no license fees will be charged.[113]

The government has also actively encouraged investment to help develop Indian software and Internet companies by relaxing some regulatory controls in the financial area. For example, IT companies wishing to make acquisitions abroad can now raise funds abroad to finance these acquisitions. They are also free to enter into stock swap deals worth up to US$100 million with foreign software or web-based firms.[114]

In contrast, government policies regarding the extent of foreign investment and ownership in e-commerce continue to inhibit optimal growth. Full direct foreign ownership is still prohibited and the extent of foreign equity is determined case-by-case through an often-protracted government approval process.

E. CONCLUSION

The Indian government has been quick to recognize the value of the Internet and e-commerce and has sought to establish a legal and regulatory framework to boost business and consumer confidence both at home and abroad. The IT 2000 Act, which provides such a framework, will facilitate the take-off of e-commerce in India. Through other measures including investment incentives and e-commerce and Internet-friendly licensing procedures, the Indian government has indicated its belief in the potential of the Internet and e-commerce to improve economic growth in India.

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112 Carol Charles, Assistant Director for the Global Information Infrastructure Commission, Enabling E-Commerce in India, organized by the Global Information Infrastructure Commission in conjunction with the Infrastructure Leasing and Financial Services and the Confederation of Indian Industry, November 1999, pages 7 and 13.

113 Department of Telecommunications / Department of Telecom Services, "New Telecom Policy, 1999-2000," Section 3, accessed 1 June 2000 at http://www.dotindia.com/flash/NewTelPo_Details.htm.

114 Business India Intelligence.

India already possesses some of the requisite factors to support a healthy e-commerce industry. As the ISP market grows increasingly competitive and new technologies become available, the cost of Internet access will come down and the number of Internet users will continue to expand rapidly. As Internet usage grows, the Indian e-tailing market will also expand. Business-to-business e-commerce is expected to increase with greater investment in telecommunications infrastructure and once IPR and legal protections for e-commerce are addressed. The country's software sector, with its available reservoir of technical talent and know-how, is also a positive factor in future e-commerce growth.

However, India does not possess some of the important basic telecommunications requisites - a completely liberalized service sector, an independent regulator, or strong market competition for telecommunications services. While India has made great strides in revamping its telecommunications regulations and policies, it can be argued that the basic telecommunications sector, with its reputation for red tape, power outages and poor infrastructure, is not ready to support a robust e-commerce business at this time. Neither are the other infrastructure sectors important to the growth of e-commerce including the delivery systems (roads, rail, ports and post), which have long been subject to logistical and bureaucratic inefficiencies.

Internet penetration is poor and PCs are too expensive for most households. Cost of access remains high for the average Indian. The general public's lack of knowledge of or desire for e-commerce services is also a negative factor. Though more and more people are adopting new advanced technologies, a critical mass required for the explosion of e-commerce in India has yet to be reached, in large part due to the widespread poverty in the country.

In short, Indian officials seem to believe e-commerce can be built on top of their existing IT industry, rather than from basic telecommunications services and the Internet. If, as most observers believe, successful e-commerce depends on strong telecommunications architecture, the Indian approach may be flawed at its inception. While e-commerce has huge potential in India, without significant growth and improvement in India's basic telecommunications services and the Internet within the next few years, it is doubtful India will experience the levels of e-commerce being achieved in other countries.