The Global Diffusion of the Internet Project

Asian Giants On-Line

The Global Information Technology Assessment Group

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Abstract

This report is the second in the Global Diffusion of the Internet Project series. It up-dates the framework for analysis presented in the initial study and applies the framework to the world's two most populous countries: India and China. The Internet is growing in both countries, much more rapidly although from a later start in China, while a long period of stagnation in India may be over. Government policies were key to the development of the Internet in both countries, although India has indicated an intention to turn future development over to market forces. The governments of both countries have emphasized the importance of the Internet to the development of an information (or information-based) economy (or society); however, neither has articulated a clear vision of what such an economy or society comprises, beyond a recognition of the potential importance of the Internet to future economic growth. Internet developments and prospects for the near term in both countries are analyzed, and a comparison is made between the determining factors that explain why the Internet has developed so differently in them

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Disclaimer

The Web page citations and their Internet addresses (URLs) listed in this report are accurate as of 1 September 1998. Due to the dynamic nature of the Internet, some Web pages may have been modified or removed and the URLs of othes changed since then.

Executive Summary

This is the second report in the Global Diffusion of the Internet Project series. It addresses the development, current status, and prospects for the future of the Internet in the Republic of India and People's Republic of China. This is the first assessment of the Internet in India; the China study is a follow-on to the report provided in the initial Global Diffusion study of March 1998. The framework for analysis developed in the initial report has been slightly modified based upon experience gained in working with the framework over the past year.

Although each country had its first experience with the Internet at about the same time, India made its first connection much earlier than did China. However, once connected, the Indian Internet suffered a long period of stagnation, due in large part to animosity on the part of the government telecommunications monopoly, disinterest elsewhere in government, and an inability of either the private or academic sectors to work around these problems. On the other hand, shortly after the first academic connection was made to the Internet from China, the government quickly reviewed its options and the network's potential, and decided to back the rapid development of a domestic IP network connected via government-controlled gateways to the Internet. The results are a relatively small and languishing Internet community in India, poorly served by an inadequate infrastructure, and a rapidly-growing community of more than one million subscribers in China supported by an equally dynamic Internet service provider (ISP) industry that is rapidly improving and expanding the Internet infrastructure.

KEY JUDGMENTS

India

- There are about 150,000 Internet subscribers in India. The estimated user population is about three times this number since there are multiple users per account due to the difficulty and costs involved. By the end of the year, the government's telecommunications monopolies, the Department of Telecommunications for domestic service and Videsh Sanchar Nigam Limited (VSNL) for international communications, will have about 53 access nodes on-line connected to the Internet via six international gateways. Units of the Department of Electronics and the National Informatics Centre also run IP-based networks, but for closed user communities.
- The Internet infrastructure in India is poor. Line quality is generally inadequate for high-speed data communications, the backbone infrastructure is inadequate in capacity and reach, and there are insufficient access lines. Although the user community is relatively small, it has already overwhelmed the network. It is commonly noted that "India's (Internet) backbone is in the United States," and any company with serious intentions of conducting Internet-based business places its servers overseas.
- The limited development that has been accomplished has been slow in coming. The decision to connect with the Internet was made in 1986, but the connection wasn't effected until three years later. For the next six years, proponents of the Internet had only little success in developing Internet links as they fought against the government telecommunications monopolies, which had no interest in facilitating the development of what they viewed as a hobbyists' toy at best and a potential threat to revenues at worst. VSNL finally decided to develop its own Internet infrastructure in 1995. Both infrastructure development and the

subscriber base grew more rapidly from then on, but still at the relatively slow pace dictated by the monopolies' investment and roll-out plans.

- The Indian government has endorsed private sector development of the Internet. Extensive bureaucratic hurdles have been cleared, and the licensing of private Internet service providers started in early November. It remains to be seen, however, whether the public telecommunications bureaucracy can really be kept from further interference. The public monopolies have yet to fully respond to market forces or develop business plans that could maintain their revenue streams in the face of competition. In this situation, there will be great temptation for them to let go only as quickly as they are forced to do so, probably by successive court decisions.
- There is no question but that the market for Internet services is huge, and that there exists adequate technical expertise in the country to rapidly develop the Internet infrastructure should government interference cease, or at least be reduced to manageable levels. There has been a chronic shortage of investment funds in the telecommunications sector, but this is largely due to government over-regulation and the attendant uncertainties. With the formation and reporting-out of the National Task Force on Information Technology and Software Development earlier this year, the government has formally committed itself to extensive reforms, including in the telecommunications sector and specifically with regard to Internet service provision. Developments over the next year will be critical to the future of the Internet in India.

China

- Although China's population is about 27 percent larger than India's, there are eight times more Internet subscribers in the People's Republic. The number of accounts doubled to 1.2 million (as of mid-year 1998) in only nine months, and growth continues to be rapid. There are more than 200 ISPs—termed "Access Networks"—connected to the Internet via four Interconnecting Networks using a total of more than 70 Mbps of bandwidth over more than two dozen dedicated international circuits.
- Despite this apparent marketplace diversity, the Chinese government continues to attempt to maintain control over Internet use and information flows more generally. The Ministry of Public Security (MPS) taken a very public role and enlisted the ISPs' support in ensuring that the government's "acceptable use" policy is enforced. Actual enforcement is apparently less than ubiquitous and rather variable. It appears that the MPS relies on more traditional means for ferreting out miscreants, widely publicizing any Internet connections found mainly for the purpose of maintaining the appearance of wide-spread Net surveillance.
- This year witnessed a major shake-up of the Chinese government bureaucracies. In the telecommunications sector, the two main competitors in the Internet market, the Ministries of Electronic Industries (MEI) and Post and Telecommunications (MPT) were merged to form the Ministry of Information Industries (MII). The telecommunications sectors of several other state organizations were also merged into the MII. The creation of the MII certainly reduces the degree of competition at the policy-making level, especially since it appears that the new ministry is controlled by former MPT officials. Whether this is a harbinger of reduced competition throughout the Chinese Internet remains to be seen.
- Rather than being a threat to traditional Chinese society, it appears that the Internet has become a factor in improving the social and familial relationships that are the foundation of the Chinese

social structure. Despite fears from some quarters that the Internet will facilitate wide-spread access to inappropriate (by government or social standards) information, the Net is being more widely used for inter-personal communications, keeping extended families and friends in touch. Self-discipline is likely a greater factor in maintaining "security" on the Chinese Internet than are the efforts of the MPS.

Critical Differences

- The Internet is significantly more pervasive in China than in India, both in terms of users and hosts. The research and academic networks, which pioneered the Internet in both countries, account for almost half the users in China. The Internet is also more widely dispersed in China, with connectivity in at least the capital of every province, and both domestic and international connectivity are more robust than India's. The sophistication of Internet use is comparable, although China has made more headway in establishing a local language presence on the Net.
- A key differentiator of Internet development in these two countries is the respective governments' approaches to the network, because of the strong central control of the telecommunications sector in both countries. In India, the government monopolies were at least negative regarding the Internet's prospects and possibly fearful of the competition that it might bring. Thus, the organizations charged with telecommunications development did nothing themselves for many years and attempted to block the efforts of others, notably the academic and software development communities, to develop their own networks. In China, once the government took note of the Internet, the decision was quickly reached to endorse and invest in it, but second it to the government's purpose: economic growth without political destablization.
- Differences in national wealth also played a role in the divergence between the Indian and Chinese Internets. While both are classified as "low income" (countries with GNPs of US$765 per capita or less, according to the World Bank), China is significantly wealthier than India, and this relatively greater wealth is reflected in such Internet determinant factors as literacy, education levels, and telecommunications infrastructure investment. Due to its form, the Chinese government is arguably better able to mobilize resources to support its own programs than is the hyper-bureaucratized and litigious Indian public sector.
- Contrasts in the decision making processes in India and China lead to different forms of uncertainty in predicting future policies and their impact on Internet development. In India, an open and vocal society, one knows what has been recommended, but the fulfillment of the recommendations is uncertain. In China, decisions are made in secret and revealed only to the extent necessary after the fact, but they are likely to be fully and quickly implemented.
- Key questions for the future: What is a knowledge-based economy or society? Both countries are seeking this Holy Grail of the Information Age, apparently without a clear idea of what it is. How will they know whether they are on the right track or when they have arrived? Both bear watching and further analysis.

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