CHAPTER XIII

PROBLEMS AND ISSUES

After completing the discussions on the growth and structure of India's software industry, its performance, determinants of export, and the critical resource of manpower, it is now required to throw light on the various issues and problems confronting the sector. This forms the coverage of the present Chapter. These issues mainly arise from the characteristics of the industry as it exists in India or the indigenous and international environment surrounding it or some limitations/handicaps related to areas like manpower, infrastructure, etc.

No Due Recognition of Software

During the initial days, a veritable problem for the software sector was their lack of recognition as a distinct industry, indigenously. Studies have pointed out that the general practice was to select some hardware, strike a deal on the price, and then ask for all the software free of cost. The problem still persists, albeit with a difference of degree. Software is just taken for granted. Moreover, hardware companies are confronting a 'buyers-market' in India. In their eagerness to fulfil their sales target, they offer all sorts of packages free. This is making the user all the more unappreciative of the efforts behind developing a package. Systems support still remains a necessary evil with the computer manufacturer. (Dataquest, Sept., 1991; Tandon A., 1990; Ghosh, D., 1988; Malhotra. A., 1985).

Manpower Shortage and Related Issues

Manpower shortage and job-hopping is the bane of this industry, slowing down its pace (ref. Chapter XII). Finding the requisite skilled manpower is a problem, and retaining them even more difficult. The tremendous increase in the demand for software personnel over the years has further aggravated the problem of shortage. The employees of export-oriented firms are quite often lured away by foreign companies. Indigenously also, there is considerable movement of personnel from domestic market-oriented firms to export-oriented firms or foreign subsidiaries. A survey of the software industry had shown that 45.6% of the professionals were recruited by software firms from other
companies. The steady rise in the salary of software personnel evidence their growing shortage. As a result, several top Indian IT companies are now on the lookout to outsource their jobs from cheaper places like Shanghai in China. Further, while there has been a steady stream of high-tech returnees to China from abroad, this has been only a trickle in the case of India. Even Government sources admit that for every 1000 professionals who leave the country each year, just one or two return. As rightly pointed out by Tandon, the Indian software industry may never live up to its promising future until some drastic measures are taken to solve the manpower problem. Also, there must be effective measures for boosting productivity. (Rajeswari, A.R., 1995; Tandon, A., 1990; Mizuno, Y., 1983; Dataquest, March 15, 2001; Rani & Varma, 2001; Economic Times, Aug. 19, 2000; Financial Express, June 4, 1999).

**Infrastructure**

Infrastructure support is one of the weakest links in India's software development. Availability of clean area with reliable and economical power supply is essential for the industry. Lack of these currently handicaps the units, especially small firms. As already mentioned, a major pillar of infrastructure support is telecommunication, especially for software export. This would substantially enhance the cost-competitiveness of Indian software services, enable providers to move up the technological ladder and enter into higher value added services. No wonder, telecommunication has been termed as the hand-maiden of computer revolution. In a panel discussion, India's IT Minister had rightly remarked that along with an IT body, I need a telecom soul. You cannot do IT without a telecom soul. Availability of cost-effective communication link-ups would enable Indian software companies to utilize their clients' hardware resources through machine-to-machine connectivity, particularly of USA whose time difference with India is around 12 hours. It will also be possible to provide quick maintenance and support services to packages installed abroad. Low cost and high performance telecom infrastructure has been a major contributory factor to the software export success of nations such as Ireland.

However, a major constraint currently facing software exports from India is the absence of efficient and inexpensive international data links. The telecom sector is far behind the international standards in respect of all the three measures of performance,

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viz., quantity, quality, and price. India’s teledensity is 3.5, as against the ITU recommended world average of 10. In respect of quality, India’s telecom facilities are under-rated as noisy and unreliable, thus distorting the data being transmitted. The speed of data transmission is far below international requirements and not compatible with the hardware overseas. The calling rates are also amongst the highest in the world. There are reports indicating that software exporters have faced severe communication problems, with foreign clients having issued digital-link-or-no-contract ultimatums. The needs of clients abroad are immediate. Globally, software maintenance and support is rated as the fastest growing segment of the software market. However, despite all its software advantages, India is yet to establish any foothold in this area, mainly because of inadequate telecommunication facilities. In this Net age, remote logging has become a pre-requisite for software maintenance; customers insist on the control that is achieved by on-line access.

Many of Indian software companies are small in size. They are unable to compete internationally because they cannot afford the cost of high-speed international communication. India’s telecommunication system is still voice-oriented, and datacom is out of the picture. Bandwidth is available in bits and pieces because there is hardly any continuous corridor of connectivity to cover the whole country. The National Internet Backbone (NTB) project of the Government which was intended to wire the country using optical fibre cables, is nowhere in sight. This lack of high-speed data communication facilities not only occasioned the preponderance of on-site software development in India’s software exports, but also gross under-utilization of talent. Since there was a restriction on the number of people who could be send out, Indian software engineers had to do not only systems analysis and design, but also the low-skilled work of writing the code which is seldom done by engineers. Consequently, according to P. Sen, although the average salary of an Indian software professional is only about 15 percent of an American counterpart, his productivity is probably no more than 30 percent. Therefore, the real cost advantage enjoyed by India is not that large once this under-utilization of talent is taken into account. (Planning Commission, 2001, ps. 49, 36; Economic Times, August 18, 2001 & May 14, 2002; Oberoi & Raghunathan, 1991, ps.604-5; Shah, A., 1997, ps.239-40; Hanna, N.K., 1994, ps.28, 74-75; Dataquest, May,

*Bandwidth:*

Bandwidth\(^{(49)}\) is now generally taken as the measure of a country’s progress in the net age. In the digital economy, bandwidth consumption per capita will be the prime indicator of economic development. India’s present bandwidth or gateway to the world is even less than what a U.S. or Singapore company uses, and almost ten times more expensive than in IT-developed countries. No wonder, in terms of bandwidth, India is considered to be still in the dark ages. Because of lack of bandwidth, Indian companies are hosting their websites in U.S.A. They pay US dollars for support, manpower, software, etc, which are key Indian strengths. Further, downtime varies from 3 to 10 percent against the global benchmark of less than 0.1 percent. Anticipating a 1000-fold increase in bandwidth demand over the next five years, NASSCOM has stated that India could lose business worth as much as US $22.5 billion if the bandwidth issues are not resolved. Currently, 390 Mbps of international Internet bandwidth is available in the country whereas the demand is for a total capacity of 5 Gbps. On the domestic front, 34 Mbps of Internet bandwidth is available, whereas the demand is for at least 2 Gbps. NASSCOM survey predicts a demand of 300 Gbps bandwidth by 2005. Governmental measures are under implementation for enhancing the bandwidth, giving expectations of its expanded availability. NASSCOM has also launched operation bandwidth for increasing the Internet bandwidth. (Economic Times, Aug. 5, 2000, & Jan.31, 2001; Rehshi, M.S., 2001; Dataquest, July 15, 2000; Malhotra, S., 2000; Lakshmi Narayan, 2000; Mehta, D., June, 2000; Kumar, N., 2000a, p.39).

*Fragmentation/ Poor Size, etc.*

The software sector in India has grown not through consolidation, but through fission. As a result, there is neither size nor specialisation, but lack of standards, software engineering tools, and quality. According to P.Sen, the problem is further aggravated by the absolute lack of strategic alliances and networking among Indian software companies to leverage their respective strengths. The low or lack of entry barriers in the software sector, especially the service component, let in all sorts of smaller bad firms. Having only marginal overheads, they are advantageously placed to
undercut their larger competitors. As rightly pointed out by Heeks, R., with many customers poorly attuned to notions of software quality but very well attuned to the 'bottom line', software production became overly competitive, forcing prices down below economic levels on some contracts and reducing returns (and, hence, capital for re-investment) for all software firms. This fragmentation of capacity is also the bane of hardware sector leading to high costs and non-viable production levels. There is also resultant low entrepreneurial motivation to invest in technological inputs that would improve the quality of products. (Rani, S., 2001; Sen, P., 1995; Heeks, R., 1995; Aggarwal, S.M., 1985).

**Problems in Export of Applications Software**

For producing useful and user-friendly applications software, the developers should have a thorough familiarity with the specific end-user requirements in the targeted market. As in most developing countries, in India also the software firms and personnel are really handicapped in this regard. To tackle this issue, as suggested by D.C.O’Connor, a developing country software firm may enter into joint venture with a computer TNC for the purpose of writing software for export. The US-based Burroughs Corporation, for example, has an export-oriented software joint venture with the Tata Group in India. Similarly, certain Japanese computer firms, which have faced considerable difficulty in penetrating export markets due to software and documentation inadequacies, have entered into contracts with Indian software companies to write English-language software and documentation for their machines. One possible disadvantage of such joint ventures is that there may occur a division of labour between the TNC parent and the joint venture whereby the former undertakes the more creative software design activities in its home base while the latter is assigned the routine programming tasks. (D.C.O’Connor, 1985).

**Packages Import**

There has been indiscriminate import of packages, especially after the liberalisation of tariffs and import policies. This has unduly raised the financial risk of developing new packages so that Indian software developers would get discouraged from attempting any kind of packages. As Nigam, D., has observed, when even the Government itself buys imported WordStar packages as against superior word
processing packages offered by the local developers, can anyone expect them to develop yet another package. These circumstances constrain the software houses to opt for trading. In fact, India’s whole computer industry exhibits more of a trading than manufacturing mind. (Nigam, D., 1987; Dedrick & Kraemer, 1993, p.490).

Low PC Density and Digital Readiness

In advanced countries, an indicator of IT development and even economic progress is the PC density, like the TV or tele-density. In fact, this is one factor, by pushing up the demand for software, that can enable the software segment to move towards maturity. It is quite low in India, as compared to many other countries. The current PC density of about 6 per 1000 is far below the world average of 26 per thousand. This is limiting the spread of IT industry and consequentially the growth of software industry. Naturally, the digital readiness which has been defined by A.J.Slywotzky as the number of PCs times the degree of PC literacy times the breadth of broadband access, remains low in India. (Dataquest, July15, 2000; Arora & Dadheech, 1996, p.500; Slywotzky, A.J., 2000).

PC Affordability

Another issue limiting the progress of software industry is the PC unaffordability. How can India envision to be a global IT leader when the number of its people who can afford a PC is too limited? For the IT revolution to sweep the country, PCs should be as widespread as TV sets. But the problem is price: at Rs. 30,000-50,000, PCs today cost at least thrice as much as a low-end colour TV set. However, signs of change are visible. Computer companies have developed a system by which the following can happen: a giant server somewhere can host the software that businesses, schools, or stock markets need. The server can also host the data. The end users need only some very small PCs, much thinner than the usual bulky boxes, through which they can access the particular data and software they need from the servers. These specific devices known as thin client systems have already hit the market. To begin with, the price was Rs.12000, but is expected to fall sharply. However, the spread and impact are still awaited. (Moorthy & Murthy, 1999; Businessworld, 2000).
IT Spending

This is another indicator of the IT maturity attained by a nation. National spending on computer hardware and software in India was estimated at 0.4 percent of GDP (1990) compared with software competitors – 0.6 for Mexico, 0.8 for Korea, 1.1 for Ireland, 1.3 for Singapore, and 1.4 for Israel. Nothing considerable has improved thereafter. IT spending on software and IT services as a proportion of GDP now ranges from 0.5 percent for India to 2.3 percent for U.S.A. (ref. Table XIII.1 below). While this difference may not appear large, the absolute values of IT spending are substantially different as the GDP in India is quite low compared with that in developed economies. Hence, our claim towards IT maturity is not borne out by the supporting statistics. (Hanna, N.K., 1994, p.13; Malhotra, S., 2000).

Table XIII.1: IT Spending as a Proportion of GDP, 1998 (%)

<table>
<thead>
<tr>
<th>Name of Country</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>USA</td>
<td>2.3</td>
</tr>
<tr>
<td>Sweden</td>
<td>1.9</td>
</tr>
<tr>
<td>UK</td>
<td>1.8</td>
</tr>
<tr>
<td>Australia</td>
<td>1.4</td>
</tr>
<tr>
<td>Israel</td>
<td>1.4</td>
</tr>
<tr>
<td>Singapore</td>
<td>1.2</td>
</tr>
<tr>
<td>Ireland</td>
<td>1</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1</td>
</tr>
<tr>
<td>Mexico</td>
<td>0.6</td>
</tr>
<tr>
<td>India</td>
<td>0.5</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.3</td>
</tr>
</tbody>
</table>


IT Diffusion, Computer Culture, Computerisation, etc.

The IT diffusion in India is lower than that of even several developing countries. The major factors responsible for this are low IT spending in the country, inadequate IT education and training, lack of high quality telecommunications, lack of awareness of the potential benefits of IT, and absence of a common agenda and thrust by the
Government, IT industry and users. The organisations’ capacity to absorb a new technology such as IT also matters, which is yet to reach any requisite extent in the country. Perhaps a major bottleneck is the absence of a computer culture. Computers are rarely used as management tools. They are mainly meant for routine work like accounting, and word-processing. The low level of computerisation along with software piracy obstructs the promotion of software, by restricting its volume production and possible price reduction. Also, the introduction of up-to-date technologies whose viable use essentially depends on large-scale production, gets constrained. (Moorthy & Murthy, 1999, p.563; Hanna, N.K., 1991, p.50; Singhal & Rogers, 1989, p. 201; Lakha, S., 1994, ps. 399-404).

**Inadequate Project Management Skills**

Project management skills are in short supply in India. This explains the differential approach of foreign clients. Whereas they are eager to induct Indian software professionals as part of their project team, but hesitate to award complete projects to Indian software companies. This lack of credibility is too detrimental in respect of software packages. Here, the target group are the consumers directly and not the corporate users who may have a better notion about Indian capabilities. Some of the steps, suggested by the EXIM Bank that could bridge this gap, are: Most large projects in India are floated by public sector companies and Government agencies. These contracts should also be awarded to capable private sector units so that they gain experience. Similarly, those companies having large exports to India should be persuaded to award their software projects to Indian software houses, through counter trade strategy. Marketing handouts and well-prepared attractive profiles with specific case studies of successful Indian software companies should be widely circulated. Efforts of S.D.A. in arranging delegations and seminars went a long way to create an awareness of India’s potential as a software exporter. Similar efforts should be greatly encouraged. Software exporters should be encouraged to participate regularly in international fairs like the CEBIT Fair (Munich) and Utrecht Subcontracting Fair (Utrecht). Several Southeast Asian countries have emerged as markets for software exports. Delegations could be sent to these countries and seminars arranged to boost up awareness about our capabilities. Alongside, infrastructure especially communications,
must be improved so that foreign clients visiting India carry a good image with them which can be further supplemented through promotional efforts. (EXIM Bank, 1992, ps.30, 35).

**Low Quality**

Marketing decides survival, whereas quality decides a product's acceptance in the international market. Indian software has still a long way to go before it can match the finesse of imported software. It is generally felt that despite the availability of qualified personnel, firms in developing countries are not accustomed to applying stringent quality standards. Also, the domestic market has not reached that stage to insist on high quality and performance standards. In these circumstances, the internationalisation of products developed for domestic markets may not be easy. India is better known for the quality of its software professionals than the software packages they will develop. Even as more packaged products come into the market, there are certain lacunae in the software engineering expertise at Indian companies. This is especially so in areas like planning and designing, keeping end-user requirements in mind, using the right development tools, testing, independent software validation, maintaining compatibility with multiple versions of operating systems and any applications the product depends on. According to Dipankar Das, the hallmark of Indian software industry is quantity rather than quality. For instance, while a medium-sized software development organisation in U.S.A. talks of tens of programmers, its Indian counterpart talks of hundreds and thousands. (Tandon, A., 1990; Correa, C.M., 1995, ps. 173-4; Das, D., 2000).

**Increasing Competition from Other Countries**

So far, competition from other countries was not a threat for the Indian software industry. India enjoyed the first mover advantage in software outsourcing. However, in future, increasing competition is to be anticipated in all types of jobs. Whereas in high-end jobs our competitors may be Israel, Ireland, Singapore, and East European nations, for low-end jobs it may be Philippines, China, Malaysia and other South Asian countries. The unfolding scenario critically necessitates strengthening of the country’s international competitiveness through measures such as improving productivity and quality of service, establishment of long-term relationships with important clients,
strengthening marketing and after-sales service, and moving to the high end of value chain. Otherwise, the constant flow of new entrants into the global software industry may pull down profits for Indian industry from the sale of traditional services, and revenue growth would depend only on growth in the number of software workers. (Kumar, N., 2000a, pp 32-33; Chakraborty & Jayachandran, 2001).

Predominance of Low-value Activities

The Indian software industry is still stuck in the lowest rung of the software value chain, viz., labour-intensive software services. Entry into the area of software products is too insignificant. Accordingly, Dipankar Das has termed Indians as software coolies of the world. A deeper analysis reveals that even within services, Indian companies focus on low-skilled areas like coding and implement jobs as sub-contractors for other companies from the West. Thus, they find themselves closer to the ‘support function’ paradigm which puts them at the bottom rung of the value ladder. Climbing up the value chain is not just about upgrading technology and getting smarter programmers. One of the main impediments is ‘domain knowledge’, i.e., knowledge about the clients’ business, its customers, vendors and financial details. A major plank of the strategy to get past these problems is to acquire credibility which often comes through large size, instanced by Microsoft. Therefore, it is essential to attain a critical minimum size for Indian companies. (Das, D., 2000).

Piracy

A major disincentive for the development of packaged software for the Indian market is the rampant piracy. It was around 60% during the year 2000-01. The grey market PC vendors are prepared to load in the PC any software desired by the customer, free of cost. This limits growth in the sector to custom or applications software. Globally also, one of the major problems that successful software companies are facing is the problem of piracy. Though international protection to software is provided under the Universal Copyright Convention (1971) and the Berne Convention for the Protection of Literacy and Artistic Works (1971), a high level of piracy exists in this industry. Piracy has forced some software companies out of India’s domestic packaged software market. The magnitude of the problem is illustrated by an estimate from the Lotus Development Corporation, that out of 150000 copies of Lotus 1-2-3 in India,
140000 were pirated. Companies that developed microcomputer based products for word-processing, database management, and accounting that were more or less functional equivalents to dBase, WordStar, and Lotus, found selling their products in India practically impossible since these internationally popular programmes were available for the cost of a package of diskettes. The practice is so rampant that it attracted the wrath of U.S.A. who placed India on a priority watch list under the Special 301 provisions of the US Omnibus Trade and Competitiveness Act of 1988. As part of remedial measures, the Copyrights Act was amended in 1994 to give it the requisite teeth against piracy. In addition, there are co-operative efforts by the Government and industry to curb this menace. NASSCOM has set up an anti-piracy hotline. (Planning Commission, 2001, p.30; Business India, 1988, p.151; EXIM Bank, 1992, p.13; Parpia, M., 1990).

Marketing

Marketing is critical for software development, particularly for export. High marketing costs coupled with lack of marketing expertise raise high entry barriers before developing countries to undertake software development, especially when the local firms would be confronting the multinationals. It is because of poor marketing that the share of developing countries like India in world software production and trade remains extremely low. They fail to match their technical capability with marketing strength. India’s software exporters traditionally depended upon direct marketing to end-users. Many of them rely on ‘word of mouth’ for exporting. Software firms, especially smaller developers, are handicapped on information about the global market. Bodies such as NASSCOM should address this issue. Of course, of late, overseas offices in various countries, and, now Internet are serving as marketing channels, but not to any requisite extent.

According to an industrial source, Indian software has good potential, but lacks marketing strength. Packages like Wordlord Super can compete with word processors like WordPerfect, MS Word, etc. But these fail to make any dent in the overseas market because of inadequate marketing. An aggressive advertising campaign backed up by huge investments, are indispensable for any product to achieve success in the US market. The experience of Wipro Systems is a case in point. They were able to achieve
an extent of success in the US project management software market only after more than US $ one million were spent during the launch of their product 'Instaplan'.

For successful marketing, a network of outlets with wide geographic reach is essential. This is at present the privilege of only a few large software houses. For the majority of small enterprises, it poses a major problem and stifles their growth by restricting the operation. Another issue in marketing is the low quality of Indian software. Software standards are yet to come up, as a result of low volumes. Also, a critical fact is that name sells, and preference is for well-established names rather than a newcomer or one who operates on a smaller scale. For this, advertising really matters, but involves huge incurrence. Specialised marketing institutions and software publishers are yet to appear on the Indian software scene. In the circumstances, firms should benefit from support institutions that would carry out regular and systematic market surveys, workshops, and promotion -- and recruit foreign partners with strength in marketing.

Internationally, trend of the industry has been for sales and marketing costs to shoot up over the years. During the late 1980s, these were little more than R&D expenses. But according to Datamonitor, an industry consultancy, these have lately risen to about 40 percent with a likelihood of reaching 50 percent, of big software companies' annual revenues, while R&D still remains around 14 percent. For example, when Microsoft launched Windows 2000, the launch budget was $ one billion. Today, no Indian IT company is capable of spending that order of money just for marketing a product. Now-a-days, the cost of writing a programme is much lower as compared to that of marketing and supporting the product. There are estimates suggesting that 70 to 80 percent of the final price of a software package is accounted for by marketing costs. (Schware, R., 1987, p.1258; Hanna, N.K., 1994, ps. 46, 118-9; Correa, C.M., 1995, ps. 173-4; NASSCOM, 2000, ps.24-25; Economist, Jan., 1994; Economic Times, June 5, 2001).

**Finance**

*Role of finance:*

Flexibility of capital markets was essential for the start-up of many software firms. Entering the software product business requires high order of investments and the
ability to take on some risks. In USA, this is largely handled through venture capital (VC). The presence of VC markets, and banks that understand how software companies work will be particularly important as software development methods become more capital-intensive since marketing and R&D costs escalate. Investment funds have been the major problem of software companies in India, most of which have been started by professionals without a strong financial backing. (Schware, R., 1992, p.160; Ghosh, D., 1988).

Peculiar problems of software industry:

The software industry is characterised by small enterprises, fast growth, intangible assets and products, technology and product obsolescence, skill intensity, and innovation and entrepreneurship. These characteristics mean substantial expansion risks, high ratios of working capital, high upfront development costs, short product life cycles, large marketing expenditures, substantial learning costs, and fast response times. All these factors make this industry distinctive in its financial requirements, even though aggregate capital requirements are relatively small. Indian financial institutions, unappreciative of the peculiarities and problems of the industry, have no reliable guidelines to finance them. Their lendings are based mainly on traditional manufacturing, where the means of production and outputs are tangible and the markets and technologies less volatile. They insist on a collateral instead of hypothecation of the equipment, apparently due to high rates of computer obsolescence. Also, Indian manufacturers are required to compete with global companies who get borrowing at a much lower rate – 3 percent (Japan), 5 to 6 percent (France, Germany, USA), as against 14 to 16 percent in India. (Hanna, N.K., 1994, p.47; Kumar, N., 2000. p.19; Hindustan Times, Feb.20, 2001).

Venture Capital:

The aforesaid peculiar problems pertaining to the software industry makes VC as its ideal source of finance. In fact, this is the engine, which is financing the growth of knowledge-based industries worldwide. It is principally because of the easy availability of VC that USA has virtual dominance in software. Israel is another good example. However, in India, the VC concept is still new and not widespread. It represents less than 1 percent of the sources of funding for software companies compared with over 30
percent in USA. To emerge as a leader in the IT revolution, India must build up an extremely strong and vibrant VC sector. The Small Industries Development Bank of India (SIDBI) has started a national venture fund with a corpus of Rs. 1000 million contributed by SIDBI, IDBI, and DIT. In addition, private and foreign VC entities have been allowed to operate in the country by providing an enabling policy framework. As a result, a number of private VC funds operated by NRIs (for example, TIE, Infinity Venture Capital) and Western MNEs (such as Insight Capital, Intel) have begun to invest in India’s IT start-ups. The State Governments of Andhra Pradesh, Karnataka, Delhi, Kerala, Gujarat, and Tamil Nadu have also set up VC funds for their IT sector in partnership with local state financial institutions and SIDBI. Still, the availability is far below the requirements.

Since VC funds take the highest form of risk, investments by them must be made the most attractive. Industry sources observe that in India, however, the rules favour VC funds even less than mutual funds. Worldwide, VC funds are treated as pass through vehicle. The profits and losses from investments made by a VC fund flow straight into the hands of the investors in the funds (as if the investments were made by them directly) who are taxed based on their personal status. By levying a 20 percent tax on the VC funds itself, the government has destroyed this principle. (Singhal & Rogers, 1989, ps. 151-2, 169-71; Mandel, M.J., 2000; Economic Times, April 4, 1999; Bajpai & Radjou, 2000, p.460; Kumar, N., 2000a, p.40; Planning Commission, 2001, p.31).