CHAPTER VII
DOMESTIC SOFTWARE

India's software industry as a whole has been analysed in the previous two Chapters. The endeavour in the present Chapter is to look exclusively into the dimensions of India's domestic software sector. While a strong and self-reliant indigenous base is imperative for software success, the domestic software segment in India is yet to acquire significance vis-à-vis its export dimension. This need for and neglect of domestic software form the coverage of part 1 of the Chapter. Part 2 discusses its size and growth along with related aspects. The structure of the domestic software sector constitutes part 3, and part 4 concludes the Chapter with a note on the future outlook.

7.1.1 Need for Domestic Software Industry

It is generally held that a self-reliant and healthy software industry is congruent with a competitive domestic software industry. All instances of global industrial success have been matched by a robust and vibrant domestic base. In the history of economic development, there is no instance of an economy that has turned out to be outstanding internationally, in the absence of a corresponding indigenous dimension. For a large country like India, a strong and dynamic domestic software industry is an imperative to emerge as a global player in this sector.

A developed domestic software industry is a pre-requisite for promoting software exports. This is especially so when the nation has a large domestic market. All the present leading export nations had developed their domestic markets first or at least concurrently. According to NASSCOM, a strong domestic base is highly essential to project the national image internationally. This is particularly so in the Indian context where the industry is dotted with numerous small software houses. In fact, the two market components are so interrelated, that one cannot do without the other. This position was emphasised by the Computer Policy of 1984, and reiterated by the Software Policy of 1986. There is now a consensus view that export-led growth would
not be sustainable without a developed domestic market, especially in respect of skill and manpower-intensive items like software. Successful globalisation also necessitates a domestic base. An illustrative instance is the US leadership in software development. A wide and homogenous market, giving economies of scale in abundance, has been one of the major competitive advantages of the American software industry. In software production, a large market is particularly desirable because of the low marginal costs involved in expanded production.

The developmental impact that could be brought in by the software industry needs to be kept in view. It can critically enable in computerising and boosting productivity in various sectors of the economy. In the absence of a domestic market for IT, the information revolution would remain as only ‘virtual’ rather than ‘real’. As rightly observed by Heeks, R., the domestic orientation for software brings greater returns to the national economy, even in terms of foreign exchange, than exports. This is since the net earnings from exports are relatively low and much of the software produced enables the foreign competitors to export more efficiently to India. On the other hand, domestic software can enhance the competitiveness and resultant export capabilities of Indian firms. Moreover, an internationally competitive software industry calls for an equally competitive (and expanding) indigenous base for learning and competency development. A developed domestic base provides an alternative source of trained and experienced manpower. Otherwise, manpower shortages can push up their costs and erode the country's international competitiveness.

Studies have brought out that without a sizeable domestic software industry, a country cannot create the necessary capabilities and build momentum in innovation, design methodologies and techniques, quality, reliability, and credibility – the basic requirements for success in exporting software and services. The domestic front is also essential from the perspective of spreading overheads and absorbing fluctuations in export markets. According to Schware, the lesson to be drawn from the Indian experience is to take steps to broaden and deepen the domestic market to pay off in terms of added economic return as well as providing training and experience that will expand and upgrade software exports. This calls for a concerted effort to adopt, to quote Schware, a "strategy of walking on two legs". No wonder, NACT had requested the

7.1.2 Neglect of Domestic Software in India

It is generally felt that in India the domestic software market has been neglected in favour of exports. There is some merit in the argument that India is endeavouring to solve the IT problems of developed economies without addressing its own problems. During 1998-99, none of the top ten producers earned more than 27 percent of their software revenue from the domestic market. Their average realization from the domestic market has been less than 10 percent. According to earlier studies, roughly one-third of India's software export earnings came from firms which had no domestic market base for software services and sales. The position is corroborated by the findings of NASSCOM. The perceived contrast in prospects between the domestic and export markets, was a major factor motivating firms into the export business. For them, exports held out the potential for making quick and high returns. They chose onsite services rather than offshore work or export of packages because of low risk, low barriers to entry, low investment, and quick returns. Also, government policies, either intentionally or otherwise, seemed to promote software exports at the cost of its domestic development. (Joseph & Harilal, 2001a; Narasimhan, R., 1996, ps.2074-5; NASSCOM, 2000).

7.2.1 Size and Growth

Domestic software sector had reached the size of Rs.88000 million during the year 2000. This is remarkable, compared to Rs.500 million in 1988, Rs. 2500 million in 1991, and Rs.15500 million in 1995. Corresponding to this, the growth rates of the segment have also been significant. (ref. Table I of Appendix, & Table V.1). During the whole period of 1988-2000, the rate of growth was 52.32 percent, and for the periods 1988-1991 and 1991-2000 these were 73.70 percent and 46.33 percent, respectively. The higher growth rate of 73.70 percent during the period of 1988-91 should be taken with caution, since this has been reckoned against a relatively lower
base, and got dissipated during the later period. This position is clear from the average values recorded by the segment during the respective periods. The overall growth rate of domestic software is lower than that of software export or software sector as a whole. So, India’s software boom is mainly contributed by exports. However, the growth of domestic software has been far ahead of all other categories of the electronics industry. In view of this, there appears to be two facets of the domestic sector vis-à-vis that of export—a high growth rate of the domestic segment relative to that of other activities is a positive indication which should partly dilute any negative impression which a much higher growth of software export tends to create. But this should not deny the need for a positive thrust to accelerate the development of domestic sector.

The growth in computers and computerisation in the country must have really helped the growth of domestic software industry. As regards the share of domestic software in the total software output, during the initial year (1988) of this period of analysis, it was 33.11 percent. Thereafter there has been sharp increase for two years, 38.91 percent in 1989 and 50 percent during 1990. Subsequent to this, there has been steady decline to 39.73 percent (1995), 30.43 percent (1999) and 24.58 percent in 2000. (ref. Table V.3A). This has not been caused by any drop in the absolute growth of domestic software, but owing to the relatively faster growth in software export. These movements in the shares of domestic software are further confirmed by the average values of its share during the periods of 1988-91, 1991-2000, and 1988-2000.

7.2.2 Reasons for the Weak Domestic Sector

The size of the domestic market is not big enough to attract software developers to invest for indigenous purposes of products above a certain level of complexity and cost. This small size of the indigenous market was one of the reasons that contributed to the over-reliance on customised software. Since the development of domestic products and packages has not been up to the requisite extent, imports and piracy became the means for meeting even our meagre requirements. This has occasioned the observation that Indians develop excellent quality software abroad but India itself imports software. Now, the question is what are the reasons for this weak domestic market. The installed base of PCs in India is too small to support a thriving indigenous packaged software industry. The market is dampened by rampant piracy. The usual entry barriers in
software product development, along with poor performance with regard to aesthetics and ergonomics in respect of software packages, raise further obstacles. It has also been commented that the market in India seems to be developer-driven rather than market-driven. The users are yet to reveal the requisite trust and confidence in the India-made products and packages. Various requirements for a successful software package, as already mentioned under packaged software in Chapter V, still remain as weak links in India. All these pull down the prospects for domestic software products. The general obstacles disabling the growth of software industry in the country like low rate of computer literacy, and inadequate telecom infrastructure are equally responsible for the weak domestic base in software.

A few other factors brought out by N.K.Hanna in the context of Information Technology, which are relevant for the weak domestic software base, are mentioned below:

-- Indian hardware and software suppliers invest little in educating users, in providing professional advice, and in marketing.

-- Government procurement policies and information management practices are poor. Government practices seem to underprice the software and support services, under-invest in complementary inputs, and discourage the development of a competitive domestic market for information goods and services. Hence, the potential externalities from their procurement activities are still awaited, despite their demand being a major portion of the domestic market for IT goods and services.

-- Whereas informatics professionals lack business orientation, business organisations invest little to understand and popularise IT.

-- Links are weak between local suppliers and users of IT. Domestic users are not organised to share experience, exert pressure on suppliers for quality and fair play, or to learn along with suppliers.

-- Potential users are unaware of or unwilling to undertake the technological options and adopt the best practices to realize the benefits such as the need to adopt new managerial practices and business processes, to plan information systems, to undertake complementary investments in relevant training and support services, and to identify and pilot strategic applications.
One factor pointed out by several researchers for the limited growth and development of domestic software industry in the past, had been the Government policy to give CMC, a state enterprise, legal monopoly to service computer systems not manufactured in India. The same Government outfit was entrusted software development and service projects for public sector agencies within the country. This policy, which was in effect for nearly 15 years since 1975, prevented the private sector companies from availing opportunities in the public sector and thus gaining experience in large-scale system projects. (Correa, C.M., 1995, p.173; Dataquest, 1986; EXIM Bank, 1992, p.9; Polavarapu, Aug., 1989, ps. 65-68; Planning Commission, 2001, p.26; Hanna, N.K., 1994, ps.15, 17; Schware, R., 1992).

7.3 STRUCTURE OF THE DOMESTIC SOFTWARE INDUSTRY

As regards the categorisation of domestic software into services and packages, initially the share of services was quite high at 80.39 percent (1989-90). (ref. Table VII.1 below).

Table VII.1: Domestic Software – Structural Break-up (in %)

<table>
<thead>
<tr>
<th>Year</th>
<th>System Software</th>
<th>Application Software</th>
<th>Total Packaged Software</th>
<th>Custom Software</th>
<th>Turnkey Projects/Services</th>
<th>Consultancy Services</th>
<th>Total Services</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989-90</td>
<td>19.61</td>
<td>40.44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>80.39</td>
<td>100</td>
</tr>
<tr>
<td>1990-91</td>
<td>28.14</td>
<td>34.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>55.29</td>
<td>100</td>
</tr>
<tr>
<td>1991-92</td>
<td>21.24</td>
<td>31.79</td>
<td></td>
<td>16.82</td>
<td></td>
<td></td>
<td>57.85</td>
<td>100</td>
</tr>
<tr>
<td>1992-93</td>
<td>27.09</td>
<td>40.24</td>
<td></td>
<td>18.08</td>
<td></td>
<td></td>
<td>58.32</td>
<td>100</td>
</tr>
<tr>
<td>1993-94</td>
<td>27.33</td>
<td>15.39</td>
<td></td>
<td>18.37</td>
<td></td>
<td></td>
<td>24.03</td>
<td>100</td>
</tr>
<tr>
<td>1994-95</td>
<td>29.96</td>
<td>15.65</td>
<td></td>
<td>19.20</td>
<td></td>
<td></td>
<td>20.01</td>
<td>100</td>
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<td>1995-96</td>
<td>29.96</td>
<td>15.65</td>
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<td>19.20</td>
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<td>20.01</td>
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<td>1996-97</td>
<td>20.81</td>
<td>14.38</td>
<td></td>
<td>16.18</td>
<td></td>
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<td>24.03</td>
<td>100</td>
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<tr>
<td>1997-98</td>
<td>39.95</td>
<td>14.38</td>
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<td>16.18</td>
<td></td>
<td></td>
<td>24.03</td>
<td>100</td>
</tr>
<tr>
<td>1998-99</td>
<td>32.91</td>
<td>18.45</td>
<td></td>
<td>21.11</td>
<td></td>
<td></td>
<td>49.76</td>
<td>100</td>
</tr>
<tr>
<td>1999-2000</td>
<td>-</td>
<td>-</td>
<td>35.47</td>
<td>25.07</td>
<td></td>
<td></td>
<td>11.98</td>
<td>64.53</td>
</tr>
<tr>
<td>2000-01</td>
<td>-</td>
<td>-</td>
<td>32.83</td>
<td>27.07</td>
<td></td>
<td></td>
<td>12.24</td>
<td>67.17</td>
</tr>
</tbody>
</table>

Source: Dataquest, various issues.
Thereafter, it declined to 55.29 percent in 1990-91, again looked up to 58.32 percent in 1992-93, and then repeatedly declined and reached 41.07 percent in 1995-96, and 39.23 percent in 1996-97. After this there were sharp increases and it reached 67.17 percent in 2000-01. A corresponding inverse movement happened for packages. Its share was low at 19.61 percent in 1989-90, but sharply went up to 44.71 percent in the next year itself, and remained in the forties with ups and downs till 1994-95. Again, there was a sharp increase to 58.93 percent in 1995-96 and 60 percent in 1996-97. However, thereafter there were considerable declines and came down to 32.83 percent in 2000-01.

As regards the break-up within packages, applications packages always remained as predominant, almost double of system software. Within the services category, customs software was initially the dominant portion of about 50 percent of total services. It also was 40.44 percent of the total domestic software sector. The component experienced fluctuations and sharply declined to 15.39 percent in 1993-94, and to 11.96 percent in 1995-96. But, thereafter there was pick-up and finally reached 27.07 percent in 2000-01. Turnkey projects/services appeared on the software scene in 1991-92 with a significant share of 16.82 percent. Except for the decline to 14.30 percent in 1995-96, the share of this component always looked up and became 27.86 percent in 2000-01. This may be taken as a trend or structural transformation of the domestic software sector. Consultancy services made their entry in 1993-94 with a share of 24.03 percent, but could subsequently register only declines till its share reached 8.22 percent, in 1996-97. Thereafter there were increases but not substantially and reached 12.24 percent in 2000-01.

On the whole, the analysis reveals no serious trend to indicate structural transformation in the domestic software industry over the time frame which has been considered, except for the component of turnkey projects/services. In terms of predominance, customs software, application packages, and turnkey projects/services remained as significant. During the years 1995-96 to 1998-99, the packaged software was in majority, but the component could not maintain this majority beyond this. Most of the demand for software comes from the business segment. In some respects, the domestic and export segments contrast. Whereas in software export, software services, especially custom software dominates, in domestic software packages are also
important. Turnkey projects/services is significant in both the segments, but is relatively higher in the domestic category.

7.4 FUTURE OUTLOOK

There is enormous potential for computerisation in various sectors of the national economy like banking and finance, insurance, and stock markets. According to trade and industry sources, e-governance and e-banking are the key areas of growth in the domestic software market. Currently, not even 10 percent of all bank branches are computerised. The market is really big. In the backdrop of the present low levels of IT usage in the country and the thrust placed on increasing it in the government policy as a part of the IT Action Plan, it is expected that the domestic demand for software and related services may experience expansion at a higher rate. All these may accelerate the future growth of domestic software industry. Here, it may be kept in view that the real benefits from computerisation are realized fully with their networking, going by the international experience. Therefore, if intra-country connectivity at reasonable cost and quality is made available, the spread of IT will receive considerable boost. As opined by P.Sen, this in turn will first push up the domestic demand for software, and in the course of that enable Indian software companies to establish their credibility and track record for addressing the international markets. According to NASSCOM, there are a number of growth-catalysing opportunities emerging in the domestic market. These include the Energy sector, Insurance, Financial and Banking services, E-governance, and the Manufacturing segments. They are hopeful that increased penetration of computers, strict implementation of the Copyright Act and control of piracy may further strengthen software demands in these segments. (Economic Times, Dec.7, 2000, & Jan.18, 2001; Hindu, July 13, 2000; Sen, P., 1994; NASSCOM, 2002, ps. 13, 23).