2.1 INTRODUCTION

When the world economy faced a major financial setback during the year 2009, most countries in the world were affected. The sector which remains highly affected in the debacle was software industry. Software industry in India was also affected in the debacle as in other countries. India was able to recover from it fast, because of its highly equipped manpower in the field. Even though India’s recovery after the setback in software industry has been speedy, its share in the global software market is comparatively very low. Even then, India enjoys an advantage over other nations in software marketing and as the outcome it has attained an economic growth of 7.2 per cent during the year 2009-2010 from 6.7 per cent during the year 2008-2009

The present chapter explains various theoretical dimensions of the growth of software marketing in India. Secondary data collected from books, journals, newspapers, various websites have been used for the preparation of the chapter.

2.2 COMPUTER

Computer is an electronic device equipped with a machine which accepts the inputs of users and processes the same to make it as in the required format. Alternatively, it is a machine, which can be programmed for computing. Since computer is considered as a speedy calculating machine, today nearly 80 per cent of the non

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1 www.mit.gov.in, p. 7.
mathematical and numerical works are performed by computers. Through the use of computers wastage of human brain power are saved and diverted for other scientific developments. Computer is familiarly known as ‘system’ which comprises of “Hardware” and “Software”. All the visible devices comprising mechanical and electronic equipments seen on a computer are referred as Hardware. The physical devices used for doing various functions like data input, storage, processing, control and output in shaped form are the elements of hardware. Some of the commonly used hardware are keyboard, monitor, central processing unit, and printer.

Software is the brain of the computer which operates the computer.

2.2.1 Historical development of computer

The history of automatic data processing begins with Charles Babbage. In 1830 Charles Babbage attempted to build an automatic mechanical calculator at Cambridge, England. In 1930’s punched cards were widely used in large business, and by the time various types of punched card handling machines were available. In 1937, Howard Aiken, at Harvard, submitted a proposal to International Business Machines Company (IBM) that a machine could be constructed which would automatically sequence the operations and
calculations performed. Following this several other researches were conducted and at the end computer was invented.

The first generation electrical computers employed vacuum tubes. These computers were large in size and required air conditioning. However, the most popular IBM-650 first generation computer was introduced in 1950 with magnetic drum memory. IBM 1401 was the most popular second-generation computer. The third generation computers are much cheaper and more reliable than the second-generation computers. The third generation computers are used for both scientific and business applications. They also permit the use of high level languages such as FORTRAN and COBOL. Fourth generation machines appeared in 1970’s utilizing still newer electronic technology which is even smaller and faster than those of the third generation. Computers of today have the attributes of fifth generation computers.

A supercomputer developed by the Tata Group’s Pune-based Computational Research Laboratories (CRL), is capable of performing at a speed of 117.9 trillion floating operations per second. It is capable of performing operations even at a higher speed of 170.9 teraflops.

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Hence it is clear that over a span of time the speed of functioning of the computer have increased manifold.\textsuperscript{4}

2.3 SOFTWARE - A REVIEW

Software is a set of instructions called programs fed to the computer to solve a problem. Programs are the set of instructions fed to the computer which is written on a specified language understandable only to the computer. A Computer cannot do any work without installing software. The way which is used for making the computer to understand the instructions is known as programming. The collections of the programs are commonly referred as software in computer. Broadly, software is divided into two types: They are

1. System software
2. Application software

2.3.1 System software

System software is a collection of programs written to serve other programs. The packages of programs installed in the computers used to operate and control the system are system software. System software does not solve any specific problem; instead it helps to run other software and peripheral devices attached to the system. It makes system into operation.

\textsuperscript{4} The Hindu, Madurai, 14-11-07, p. 13.
System software offers various advantages to application programmers and computer users. System software permits the application software (another type of software used for performing a task) to perform various works. Without the system software, application software cannot run on the computer system. The system software are developed by leading software developers at the global level and distributed through hardware manufacturers and other distributors. They are indispensable.

System software is subdivided into:

a) Operating system
b) Compilers
c) Interpreters

2.3.1.1 Operating system

An operating system is a set of routine programs used for operating the computer. It controls and coordinates the operation of the computer. The user communicates with the operating system loaded in the computer and supplies the application programs and data in a language and format acceptable to the operating system and receives output from the computer. The popular operating systems are Windows, DOS, UNIX, LINUX, MACHINTOSH. Besides these there are several other operating system. Most of the operating systems perform the following functions
controls the input/output operations i.e. display screen, keyboard, and printers.
- Controls the movement of data storage.
- Saves files in the secondary storage devices.
- Facilitates easy communication between the computer system and the computer operator (user).

There are three types of operating system. They are:

i) Single-tasking operating system
ii) Multi-tasking operating system
iii) Multi-user operating system

2.3.1.1.1 Single-tasking operating system

The single-tasking operating system is the earliest operating system which allows only one program to run on the computer at a time. A single-tasking operating system cannot handle more programs at the same time.

2.3.1.1.2 Multi-tasking operating system

Multi-tasking operating system or concurrent processing operating system allows the system to operate more than one program at a time. With the help of multi-tasking operating system one can run more than one program at a time and switch back and forth between the programs.

2.3.1.1.3 Multi-user operating system

Multi-operating system facilitates sharing of a single CPU among different users. Multi-user operating system connects a
number of computers, called workstations, to a central computer so that the central computer’s CPU is shared by all of the workstations. The individual workstations can either be microcomputers or dumb terminals. Dumb terminals do not have their own central processing units and when disconnected from the central computer, they are nothing more than large paperweights. Microcomputers, however, act as dumb terminals when connected to the central computer. When disconnected from it, they can be used to run their own software.

Another way of classifying operating systems is to categorize into two types of programs, viz., control – oriented programs and process-oriented programs.

(a) Control-oriented programs

Control-oriented programs are the master program, known as the supervisor program which is located principally in primary storage. It controls the entire operating system and calls upon other operating system programs located in secondary storage devices when they are needed. The functions of the control-oriented programs are:

a. Batch processing- running of user programs one after another.
b. Multi-programming- scheduling of multiple jobs.
c. Multi-processing- concurrent execution of multiple programs.
d. Virtual storage- storage of a very large program in both primary storage and disk storage.
(b) Process-oriented programs

Process-oriented programs simplify the processing operations and reduce the time and cost of program preparation. Three of the most widely used types of processing programs are:

a. Language translators
b. Utility programs
c. Library programs

2.3.1.2 Compiler

A compiler is a translating program that translates the instructions given to computer in a high level language into machine language, which can be used by the computer.

2.3.1.3 Interpreter

An interpreter is another type of translator used for translating high level language into a machine instruction.

2.3.2 Application software

Application software is a collection of application programs, developed for solving a particular task. E.g. Software used for ticket reservation, inventory control, and payroll accounting. It is developed by application programmers. The application programmers develop this type of software exclusively for meeting the requirements of the institutions in Banking, Insurance, Hospital, Science and Engineering sectors. Different types of application software are:
2.3.2.1 Real time software

It is a program that monitors or analyses or controls the real things that are happening. Real time software gathers data from external environment and an analysis it and transforms the data as required for application. Real time software gives the result within the strict time constraints.

2.3.2.2 Business software

The software which is used for exclusive business solutions are known as business software. Business information processing is an application area where the software has a wide application. Management Information System (MIS) software accesses one or large data bases containing business information. The business information may be related to pay roll, accounts receivable, accounts payable, inventory and the like. The business software serves as a tool of management decision. Restructuring of the existing data to suit the business requirements helps the business people to arrive at more meaningful and useful decisions.

2.3.2.3 Engineering and scientific software

Engineering and Scientific software are characterized as “number crunching” algorithms. Applications of software in engineering and science range from Astronomy to Volcanology, from Automotive Stress Analysis to Space Shuttle Orbital Dynamic, and from Molecular Biology to Automated manufacturing. Computer-Aided
Design, System Simulation, and other interactive applications have started taking on real-time. The software which are used in scientific applications are large in number.

2.3.2.4 Embedded software

Nowadays consumer and industrial market are dumped with products having artificial Intelligence. Such automatised products are guided by the softwares loaded on them. Embedded software resides in read only memory of the product and is used to control the functioning of the product. Embedded software performs very limited and esoteric function (e.g., key pad control for a microwave oven) or provide significant function and control capacity (e.g., Digital function in an automobile such as fuel control, dashboard displays systems, and the like)

2.3.2.5 Personal computer software

Wide usage of personal computers in modern days has made the need for software. Word processing, Spreadsheets, Computer Graphics, Multimedia, Entertainment, Database Management, Personal and Business Financial Applications, and External Network and Database Access are only a few of the hundreds of applications, where personal computer are used.
2.3.2.6 Artificial Intelligence (AI) Software

It makes use of non-numerical algorithms to solve complex problems that are not amenable to computation or straightforward analysis. An active AI area is expert systems, also called knowledge-based systems. However, other application areas for AI software are pattern recognition (image and voice), theorem providing, and game playing. In recent years, a new branch of AI software, called artificial neural networks, has evolved. A neural network simulates the structure of brain processes (the functions of the biological neuron) and may ultimately lead to a new class of software that can recognize complex patterns and learn from past experience.

2.4 GROWTH OF SOFTWARE IN INDIA

Software development in India is closely linked with the growth of Indian hardware industry especially in the period 1950s to 1970. In the mid of 1960s, only Multinational companies from abroad like IBM and ICL provided hardware services in India. The software required for functioning of the computer was produced outside of India. During 1960s, computer industries and suppliers used to supply software at free of cost with hardware. But the IBM realized in the late 1960’s that it could earn huge revenue by selling software separately. It is the birth for software industry. After that software is considered as a product with potential market and continued to grow with hardware. During 1970’s Government and academic users started to import
computers from foreign developers in large volume. It makes huge outflow of foreign exchange to the country. It leads to the development of commercial organization in India. But in the latter years, Indigenous hardware manufacturers began to develop the operating system, compilers and application packages.

2.4.1 Growth in 1970-1980

The grown firms started to export software to other countries. TCS is the first firm to export software in 1974. It is the year for the birth of Indian software export. Subsequently many other companies started to export software. TCS and TBL (Now Tata Unisys Ltd) are still remaining the largest software export companies in India. By the same time, data processing under BPO scheme started to gain momentum in India. It has given impetus to the growth of small scale units.

2.4.2 Growth in 1980-1990

From 1980 to 1990 Indian software industry witnessed a robust growth. Market potential for software in foreign market, awareness on export, free availability of skills, growth of small and medium sized domestic companies in India has fostered the export to its high. During this period, MNCs recognized India as a major software development hub. Indian software products had a good market potential at the global level. In the end of 1990s many hardware companies were forced to produce and export software.
2.4.3 Growth in 1990-2000

In the period between 1990 and 2000 the Government policies were oriented towards self-reliance. Thus the Government was encouraging domestic software and hardware industries through special assistances during the period. During the period software became a thrust area. The post-liberalization programs initiated after 1991 gave importance for software industry. During the period import duties for software and hardware were reduced. In 1998, the Prime Minister formed a National Taskforce on Information Technology and Software Development to formulate a long term IT policy for the country.

2.4.4 Trend in between 2000’s to 2010’s

During this period, India had a wide development in computer software and Information Technology. In the period after 2000 Information Technology (IT) and Information Technology Enabled Services (ITES) including Business Process Outsourcing (BPO)/Knowledge Process Outsourcing services (KPO) have made a remarkable growth. Further during this period, IT and ITES in India became competitive to the world software industry. Now India has been widely recognized as hub for software in the world.

Today the world recognizes India as a source of high quality IT manpower. Further Indian companies are highly competitive to other
companies in the world. Out of the total 379 Capability Maturity Model (CMM) level certified companies 151 companies are Indian\textsuperscript{5}.

2.4.5 Indian Share in the Global Software Market

Global market for software has been tremendously growing over years. It is especially true after 2000. In the post globalization era there has been a stiff competition among nations to capture a major portion in the global market. India being a lead nation with all capabilities leads the others in this regard. In the growing trend of software market and India’s share in the global market are presented in Table 2.1.

\begin{table}
\centering
\caption{Global software and services market and India’s share}
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline
 & World (US$ bil) & India (US$ bil) & India’s share (%) \\
\hline
\hline
IT Services* & 138 & 730 & 2.0 & 44 & 1.4 & 6 \\
\hline
Software Products & 124 & 1100 & 0.7 & 23 & 0.6 & 2.1 \\
\hline
IT-enables Services & 10 & 200 & 0.6 & 36 & 0.6 & 18.0 \\
\hline
Total & 272 & 2,030 & 3.3 & 103 & 1.2 & 5.1 \\
\hline
\end{tabular}
\end{table}

\*Includes application development and integration, software maintenance, consulting and training and education.


\textsuperscript{5} http://escindia.com p. 2.
The table 2.1 represents the position of global market and India’s market share. During 1998, the global market position of IT services was 138 billion dollars and it has grown upto 730 billion dollars in the year 2010. By the time, Indians share in global market was 2 billion dollars and 44 billion dollars respectively. The market share of India has increased from 1.4 per cent in 1998 to 6 per cent in 2010.

Likewise, the market for software products in global level in 2009 was 1100 billion dollars. The share of India was 23 billion dollars and its market share in global level was 2.1 percent. Regarding the market for ITes, in the global level, in 1998 it was 10 billion dollars and the same has become 200 billion dollars in 2010. The share of India in ITes was 0.6 billion dollars in 1998 and was 36 billion dollars in 2010. Overall market share of India in ITes is 18 per cent. It shows a considerable growth in terms ITes. In total, India’s market share in global level is 5.1 per cent in 2010, which was 1.2 per cent in 1998. Thus there had been a growth of 3.9 per cent in the Indian share in the global market.

2.5 PERFORMANCE OF SOFTWARE INDUSTRY IN INDIA

Indian software industry is growing at a rapid speed to compete with the global MNC’s in the field. The software industry’s contribution to GDP is 5.5 percent in 2007-2008 and had an increase up to 5.8 percent in 2008-2009. The total number of IT and ITES-
BPO professionals employed in India has grown from 284,000 in 1999-2000 to 2.01 million in 2007-08. The total IT software and services employment had an increase to 2.23 million in 2008-09, a growth of 10.9 percent. The achievements made by Indian software companies in terms of production and export. The performance of the industry in India is discussed below.

2.5.1 Growth of IT production

The unwarranted financial crisis cast its shadow over Indian economy also in 2008. Because of it, the growth of Indian economy came down to 6.7 per cent as compared to 9.0 per cent in the fiscal year 2007-08. In spite of this global weakness, Indian Information Technology, Business Process Outsourcing (IT-BPO) had a sustainable growth in the fiscal year 2008-09.

The IT-BPO industry in India is a highly supporting contributor for the growth of Indian economy through exports, and employment. The GDP of India is having a sustainable growth because of IT-BPO. The key factors driving this sector’s strong performance are more diversified geographic market exposure, continued expansion of the service offering portfolio and steady growth in scale by Indian-origin service providers. The production and growth trend of Indian IT-ITes Industry since 1999-2000 is follows.

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6 DIT: Indian Electronic and IT industry, p. 2.
7 DIT: Indian Electronic and IT industry, p. 2.
Table: 2.2  
Software production during 1999-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (Rs in crores)</th>
<th>Growth (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>24,350</td>
<td>-</td>
</tr>
<tr>
<td>2000-2001</td>
<td>37,750</td>
<td>55.03</td>
</tr>
<tr>
<td>2001-2002</td>
<td>47,374</td>
<td>25.50</td>
</tr>
<tr>
<td>2002-2003</td>
<td>59,500</td>
<td>25.60</td>
</tr>
<tr>
<td>2003-2004</td>
<td>74,490</td>
<td>25.19</td>
</tr>
<tr>
<td>2004-2005</td>
<td>1,01,920</td>
<td>36.82</td>
</tr>
<tr>
<td>2005-2006</td>
<td>1,33,700</td>
<td>31.18</td>
</tr>
<tr>
<td>2006-2007</td>
<td>1,78,000</td>
<td>33.13</td>
</tr>
<tr>
<td>2007-2008</td>
<td>2,11,410</td>
<td>18.77</td>
</tr>
<tr>
<td>2008-2009</td>
<td>2,75,190</td>
<td>30.17</td>
</tr>
<tr>
<td>2009-2010</td>
<td>3,01,280</td>
<td>09.48</td>
</tr>
<tr>
<td><strong>CGR</strong></td>
<td><strong>29.95(%)</strong></td>
<td></td>
</tr>
</tbody>
</table>


The software production in India has been steadily increasing over years from 1999 to 2010. The industry in India faced a slight set back during the period of 2001-02, 2007-08 and 2009-10. But when the actual production is compared, there is a sizable growth and in no year there had been downfall in production. Even in the period of global economic crisis (2007-08), India registered a reasonable growth to the tune of Rs.33,410 crores and it has witnessed a sudden raise of Rs.63,780 crores during 2008-09. But the rate of growth during 2007-
08, and 2009-10 is 18.77 percent and 09.48 percent respectively. It is evidenced through table 2.2 that the software production for the 10 years at a compound growth rate of 29.95 per cent.

2.5.2 Growth of software export

In the global IT export market major share is possessed by U.S and the U.K. They two hold the top two positions by exporting 60 per cent and 19 per cent respectively of the total export of electronic and software products. India’s contribution to global technology intellectual property creation is growing steadily.\(^8\)

The economic recession in the U.S and Europe, has an adverse impact on the financial performance of Indian IT companies. Countries like Vietnam, Philippines, Malaysia, China and Central and Eastern European countries offer IT-BPO service at competitive rates. Such countries are progressively promoting IT-BPO business by offering various incentives and tax benefits. Hence these countries have become a competitor to Indian companies in the global level. In spite of the growing competition from other countries India is able to withstand in the global market because of its strength. The growth of the software export in India is tabulated in Table 2.3.

\(^8\) The Hindu, Madurai, 01-05-2010, p. 15.
Table: 2.3

Software export during 1999-2000

<table>
<thead>
<tr>
<th>Year</th>
<th>Export (Rs in crores)</th>
<th>Growth %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>17,150</td>
<td>-</td>
</tr>
<tr>
<td>2000-2001</td>
<td>28,350</td>
<td>65.30</td>
</tr>
<tr>
<td>2001-2002</td>
<td>36,500</td>
<td>28.75</td>
</tr>
<tr>
<td>2002-2003</td>
<td>46,100</td>
<td>26.30</td>
</tr>
<tr>
<td>2003-2004</td>
<td>58,240</td>
<td>26.33</td>
</tr>
<tr>
<td>2004-2005</td>
<td>80,180</td>
<td>37.67</td>
</tr>
<tr>
<td>2005-2006</td>
<td>1,04,100</td>
<td>29.83</td>
</tr>
<tr>
<td>2006-2007</td>
<td>1,41,000</td>
<td>35.45</td>
</tr>
<tr>
<td>2007-2008</td>
<td>1,64,400</td>
<td>16.60</td>
</tr>
<tr>
<td>2008-2009</td>
<td>2,16,190</td>
<td>31.50</td>
</tr>
<tr>
<td>2009-2010</td>
<td>2,35,080</td>
<td>08.74</td>
</tr>
<tr>
<td><strong>CGR</strong></td>
<td><strong>29.69(%)</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Department of IT, Government of India, 2009-10.

The total value of software export has grown to Rs. 2, 35,080 crores in 2009-10 as compared to Rs. 2, 16,190 crores in 2008-09, It has increase by 8.74 percent. When the export of 2009-10 is compared to 1999-2000, the rate of increase is 13.70 percent. Within a period of ten years, Indian software industry has achieved an unimaginable competitive growth. The boom period for Indian software exports is 2008-09. During the period the sector witnessed an increase of 51,790 crores as compared to Rs. 23,400 crores in the previous year 2007-08. The increase is more than 2.2 times increase.
At the same time, in the year 2009-10, India faced a huge setback in export. It might be due to economic crisis of the importing countries.

During the year Indian IT industries have suffered a loss to the tune of Rs. 45,000 crores because of the economic crisis in U.S.A. Even then the growth of export still continues. It is evidenced through table 2.3 that the software exports for the 10 years at a compound growth rate of 29.69 per cent.

2.6 GOVERNMENT AND SOFTWARE DEVELOPMENT

The government plays a vital role in the development of software industry. In 1986, Indian Government announced a new software policy which was designed to serve as a catalyst for the software industry. In 1988, to assist software industry, Software Technology Parks of India, a separate corporation exclusively for the promotion of software industry was inaugurated. Subsequently NASSCOM was established in India. The then president of NASSCOM Mr.Mittal opined that “With the IT sector tipped to grow four times in scale over the next decade, National Association of Software and Service Companies (Nasscom) will plump for ear-marking more Special Economic Zone (SEZ) space for small and medium IT players. Further he said that the association had initiated state level talks of framing broad guidelines to address the space requirements of small and

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9 Dina malar, Tirunelveli, 10-10-08, p. 3.
medium enterprises (SME) that would facilitate formation of ecosystem in Tier II and Tier III cities”.\textsuperscript{10}

\subsection*{2.6.1 Software Technology Park of India (STPI)}

The Government of India formed Software Technology Parks during 1988 with a view of focusing software exports, development and training. Moreover, the government has tried to identify the hindrances for the growth of software industry in order to encourage and enhance software export from the country. The framework of STPI has been developed with an aim of facilitating the software export industry, particularly small and medium enterprises. Accordingly, the infrastructure facilities including high speed data communication links were provided to small and medium enterprises.

\subsection*{2.6.2 Software Export by STPI}

Several Software Technology Parks have been established by STPI. In the Parks software units function as an independent units and export software. The increasing trend of software export by registered units functioning in STPI is given in the table 2.4.

\textsuperscript{10} The Hindu, Madurai, 01-05-2010, p. 15.
Table 2.4

Software exports by registered units through STPI

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of the state</th>
<th>2004-05</th>
<th>2005-06</th>
<th>2006-07</th>
<th>2007-08</th>
<th>2008-09</th>
<th>CGR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Andhra Pradesh</td>
<td>8270.00</td>
<td>12500.00</td>
<td>18582.00</td>
<td>26122.00</td>
<td>31039.00</td>
<td>40.3</td>
</tr>
<tr>
<td>2</td>
<td>Chandigarh</td>
<td>225.00</td>
<td>294.00</td>
<td>345.00</td>
<td>455.11</td>
<td>539.00</td>
<td>24.5</td>
</tr>
<tr>
<td>3</td>
<td>Chattisgarh</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>0.22</td>
<td>1.83</td>
<td>3.10</td>
</tr>
<tr>
<td>4</td>
<td>Delhi</td>
<td>2453.00</td>
<td>3520.00</td>
<td>4146.00</td>
<td>5264.00</td>
<td>1762.00</td>
<td>-1.5</td>
</tr>
<tr>
<td>5</td>
<td>Gujarat</td>
<td>187.00</td>
<td>247.00</td>
<td>564.00</td>
<td>681.00</td>
<td>1268.13</td>
<td>62.2</td>
</tr>
<tr>
<td>6</td>
<td>Haryana</td>
<td>5953.00</td>
<td>8358.00</td>
<td>9287.00</td>
<td>10960.00</td>
<td>12410.00</td>
<td>19</td>
</tr>
<tr>
<td>7</td>
<td>Himachal Pradesh</td>
<td>0.60</td>
<td>1.00</td>
<td>1.00</td>
<td>1.10</td>
<td>0.75</td>
<td>-30.8</td>
</tr>
<tr>
<td>8</td>
<td>Jammu Kashmir</td>
<td>1.00</td>
<td>1.00</td>
<td>2.00</td>
<td>1.28</td>
<td>1.74</td>
<td>14.5</td>
</tr>
<tr>
<td>9</td>
<td>Karnataka</td>
<td>27600.00</td>
<td>37000.00</td>
<td>48700.00</td>
<td>55000.00</td>
<td>70375.00</td>
<td>25.42</td>
</tr>
<tr>
<td>10</td>
<td>Kerala</td>
<td>270.00</td>
<td>452.00</td>
<td>750.00</td>
<td>1201.00</td>
<td>1803.00</td>
<td>61.2</td>
</tr>
<tr>
<td>11</td>
<td>Madhya Pradesh</td>
<td>140.00</td>
<td>189.00</td>
<td>220.00</td>
<td>185.22</td>
<td>198.00</td>
<td>7</td>
</tr>
<tr>
<td>12</td>
<td>Maharashtra</td>
<td>11542.00</td>
<td>13960.00</td>
<td>27625.00</td>
<td>35374.00</td>
<td>42360.88</td>
<td>42.4</td>
</tr>
<tr>
<td>13</td>
<td>Orissa</td>
<td>400.00</td>
<td>465.00</td>
<td>732.00</td>
<td>844.00</td>
<td>1162.00</td>
<td>31.4</td>
</tr>
<tr>
<td>14</td>
<td>Pondicherry</td>
<td>30.00</td>
<td>40.00</td>
<td>44.00</td>
<td>64.00</td>
<td>78.65</td>
<td>27.11</td>
</tr>
<tr>
<td>15</td>
<td>Punjab</td>
<td>125.00</td>
<td>182.00</td>
<td>195.00</td>
<td>227.56</td>
<td>230.00</td>
<td>15.5</td>
</tr>
<tr>
<td>16</td>
<td>Rajasthan</td>
<td>200.00</td>
<td>271.00</td>
<td>312.00</td>
<td>275.30</td>
<td>358.00</td>
<td>41.7</td>
</tr>
<tr>
<td>17</td>
<td>Tamilnadu</td>
<td>10790.00</td>
<td>15500.00</td>
<td>20745.00</td>
<td>28295.00</td>
<td>28355.58</td>
<td>28.9</td>
</tr>
<tr>
<td>18</td>
<td>Uttarpradesh</td>
<td>3825.20</td>
<td>5476.00</td>
<td>8453.00</td>
<td>10695.21</td>
<td>10264.36</td>
<td>30.3</td>
</tr>
<tr>
<td>19</td>
<td>Uttrenchal</td>
<td>6.20</td>
<td>8.00</td>
<td>9.00</td>
<td>9.31</td>
<td>21.00</td>
<td>29.6</td>
</tr>
<tr>
<td>20</td>
<td>West Bengal</td>
<td>2000.00</td>
<td>2500.00</td>
<td>3500.00</td>
<td>4500.00</td>
<td>5129.00</td>
<td>28</td>
</tr>
</tbody>
</table>

**Total**: 74019.00 100965.00 144214.00 180155.31 207357.92 30.26

**Source**: STPI Annual Report 2006-07, 2008-09.

Table 2.4 makes it clear that the state of Karnataka maintains in first place in software export through STPI. During 2008-09 it has increased its exports to Rs. 70,375 crores. Maharashtra captured
second place with Rs. 42,436.88 crores. Third place of export has been occupied by Andrapradesh with Rs. 31,039 crores. Tamilnadu has taken only fourth place with Rs.28, 355.58”. Till 2007-08, Tamilnadu had been maintaining its third position. After 2008-09, Tamilnadu lost its third place to Andrapradesh. The states which are far behind in export are Himachal Pradesh, Jammu Kashmir, and Chattisgarh. It is evidenced through table 2.6 that the software export through STPI for the 10 years at a high growth in the states of Andhra Pradesh, Chandigarh, Gujarat, Karnataka, Kerala, Maharas-tra, Orissa, Pondicherry, Rajasthan, Tamil Nadu, Uttarprad-esh, Uttaranchal, West Bengal at a compound growth rate of 40.3, 24.5, 62.2, 25.42, 61.2, 42.4, 31.4, 27.11, 41.7, 28.9, 30.6, 29.6, 28 per cent respectively and a negative growth rate in the states of Delhi and Himachal Pradesh at a compound growth rate of -1.5, and -30.8 per cent respectively.

2.6.3 Growth of domestic software market

Domestic software market is also equally important as export market. The revenue earned by software companies from the domestic IT market is around Rs. 66,200 crores in the year 2009-10. The domestic market has witnessed noticeable growth over the past few years and continues to be the fastest growing segment. The domestic BPO revenue during the year 2008-09 was Rs. 8,900 crores and it has grown to Rs. 10,800 crores in the year 2009-2010. It shows
a 18.6 per cent growth. The government spent huge amount in several e-governance initiatives and enhanced connectivity. The spending of huge money in IT by the Government creates the domestic market lucrative today. The details of growth of software production for domestic market are presented in Table 2.5.

### Table 2.5

**Domestic production of software**

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (Rs.crores)</th>
<th>Growth %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>7,200</td>
<td></td>
</tr>
<tr>
<td>2000-2001</td>
<td>9,400</td>
<td>30</td>
</tr>
<tr>
<td>2001-2002</td>
<td>10,874</td>
<td>15.68</td>
</tr>
<tr>
<td>2002-2003</td>
<td>13,400</td>
<td>23.23</td>
</tr>
<tr>
<td>2003-2004</td>
<td>16,250</td>
<td>21.27</td>
</tr>
<tr>
<td>2004-2005</td>
<td>21,740</td>
<td>33.78</td>
</tr>
<tr>
<td>2005-2006</td>
<td>29,600</td>
<td>36.15</td>
</tr>
<tr>
<td>2006-2007</td>
<td>37,000</td>
<td>25</td>
</tr>
<tr>
<td>2007-2008</td>
<td>47,010</td>
<td>27.05</td>
</tr>
<tr>
<td>2008-2009</td>
<td>59,000</td>
<td>25.51</td>
</tr>
<tr>
<td>2009-2010</td>
<td>66,200</td>
<td>12.20</td>
</tr>
<tr>
<td><strong>CGR</strong></td>
<td><strong>26.06(%)</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** DIT Annual Report 2004-2005 and 2009-2010

Domestic demand for software is increasing year to year. It is mainly because of the computerization in small, medium and large scale industrial units in India. Since invariably all types of industries use software and hardware in a massive scale, the demand for
software goes on increasing. Except 2009-10 in all other financial years Indian domestic market witnessed an increasing trend over the previous years. It is evidenced through table 2.5 that the domestic production of software for the 10 years at a compound growth rate of 26.06 per cent.

2.7 SOFTWARE PRODUCTION AND MARKETING IN TAMIL NADU

Tamil Nadu is a forerunner in production and marketing of software in India. The other states in the forefront in India are Karnataka, Maharashtra, Andhra Pradesh, Haryana, and Uttar Pradesh. The Tamil Nadu Government has thoroughly revised and updated its IT policy in the year 2008. As the outcome, software companies have grown in number, volume and value.

Tamil Nadu Government formed separate campuses to develop software industry. There are several IT parks started in Tamil Nadu under the guidance of STPI in various cities and towns like Chennai, Coimbatore, Tiruchi, Tirunelveli and Madurai. With the exception of the areas falling under Chennai (Metropolitan city) Tiruvallur and Kanchipuram districts, all other locations in the state of Tamil Nadu are established in Tier II and Tier III locations also.11

2.7.1 Capital subsidy and electricity tax exemption

The Government of Tamil Nadu has announced the capital subsidy and electricity tax exemption for the IT-ITES units who have

generated employment in software industry. The details of concession granted in Tamil Nadu are presented in table 2.6.

Table: 2.6
Incentive scheme for IT/ITES

<table>
<thead>
<tr>
<th>S.No</th>
<th>Investment (Rs. in Crores)</th>
<th>Strength of workers</th>
<th>Benefit of capital subsidy (in Rs.)</th>
<th>Period of exemption for tax on electricity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>5-50</td>
<td>More than 100</td>
<td>30 lakhs</td>
<td>2 years</td>
</tr>
<tr>
<td>2.</td>
<td>50-100</td>
<td>More than 200</td>
<td>60 lakhs</td>
<td>3 years</td>
</tr>
<tr>
<td>3.</td>
<td>100-200</td>
<td>More than 300</td>
<td>100 lakhs</td>
<td>4 years</td>
</tr>
<tr>
<td>4.</td>
<td>200-400</td>
<td>More than 400</td>
<td>1.5 crores</td>
<td>5 years</td>
</tr>
</tbody>
</table>

Source: http://www.elcot.in

In Tamil Nadu companies which invest Rs. 5 crores with a minimum 100 direct workers are granted Rs. 30 lakhs subsidy and electricity tax exemption for two years. If the investment ranges from Rs. 50 crores to 100 crores with more than 200 direct workers, they are granted a subsidy of Rs. 60 lakhs in addition to 3 years electricity tax exemption.

For those companies having more than Rs. 100 crores to Rs. 200 crores of investments are given a subsidy of Rs. 100 lakhs and 4 years electricity tax exemption. Similarly, the companies which are investing more than Rs. 200 crores are granted Rs. 1.5 crores as subsidy and electricity tax exemption up to 5 years. A special exemption of an additional 50 per cent subsidy on capital will be given for those units located in the specified Special Economic Zone (SEZ).
In addition to that 50 per cent of stamp duty is exempted for the purchase of land for IT-ITES Industries. But for this, three years conditional certification should be obtained from ELCOT.

### 2.7.2 Export performance in Tamil Nadu

STPI has evaluated the performance of software exports in Tamil Nadu. The details of export of software in Tamil Nadu through STPI is presented in Table 2.7.

#### Table: 2.7

Software export in Tamil Nadu during 1993-2009

<table>
<thead>
<tr>
<th>Fiscal year</th>
<th>Exports (Rs. in crores)</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>1994-95</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>1995-96</td>
<td>37</td>
<td>34</td>
</tr>
<tr>
<td>1996-97</td>
<td>161</td>
<td>69</td>
</tr>
<tr>
<td>1997-98</td>
<td>393</td>
<td>108</td>
</tr>
<tr>
<td>1998-99</td>
<td>1246</td>
<td>166</td>
</tr>
<tr>
<td>1999-00</td>
<td>1914</td>
<td>596</td>
</tr>
<tr>
<td>2000-01</td>
<td>3116</td>
<td>766</td>
</tr>
<tr>
<td>2001-02</td>
<td>5223</td>
<td>866</td>
</tr>
<tr>
<td>2002-03</td>
<td>6316</td>
<td>936</td>
</tr>
<tr>
<td>2003-04</td>
<td>7621</td>
<td>866</td>
</tr>
<tr>
<td>2004-05</td>
<td>10790</td>
<td>1266</td>
</tr>
<tr>
<td>2005-06</td>
<td>15500</td>
<td>1427</td>
</tr>
<tr>
<td>2006-07</td>
<td>20745</td>
<td>1437</td>
</tr>
<tr>
<td>2007-08</td>
<td>28295</td>
<td>1576</td>
</tr>
<tr>
<td>2008-09</td>
<td>28355</td>
<td>1683</td>
</tr>
<tr>
<td>CGR</td>
<td>194.6(%)</td>
<td>39.67(%)</td>
</tr>
</tbody>
</table>

*Source: www.tn.gov.in & www.chennaistpi.in*
In 1993-94, only 10 units have registered with STPI. During 2008-09 in Tamil Nadu, the growth of software industry in number is not in consonance with the growth of export as compared to the previous year. It is evidenced through table 2.7 that the software exports in Tamil Nadu for the 16 years has grown at a compound growth rate of 194.6 per cent and software units in Tamil Nadu for the 16 years has grown at a compound growth rate of 39.67 per cent.

2.8 POPULAR SOFTWARES IN TAMIL NADU

There are thousands of software used for different purposes. Some of the software are user friendly while the others need technical knowhow. Software popularly used in Tamil Nadu fall under eight heads. They are

(i) Operating System
(ii) Entertainment Software
(iii) Special Application
(iv) Office Automation
(v) General Purpose
(vi) Browsing
(vii) Communication
(viii) System Maintenance

2.8.1 Operating systems

Various software are meant for different purposes. In that sense, to operate the system these are essential even to open and do various works.
2.8.1.1 Windows XP

Windows XP is an operating system produced by Microsoft Corporation, U.S.A, for use on personal computers, including home and business desktops, laptops, and media centers. It was first released in August 2001, and is currently one of the most popular version of Windows. The name “XP” is short for “experience”. Windows XP was the successor to both Windows 2000 and Windows Me, and is the first consumer-oriented operating system produced by Microsoft. It was succeeded by Windows Vista, which was released to volume license customers on November 8, 2006 and worldwide to the general public on January 30, 2007. Direct OEM and retail sales of Windows XP ceased on June 30, 2008.

The most common editions of the operating system are Windows XP Home Edition, which is targeted at home users, and Windows XP professional, which offers additional features such a support for windows server domains and two physical processors, and is targeted at power users, business and enterprise clients.\(^{12}\)

2.8.1.2 Windows 95

Windows 95 is a consumer-oriented graphical user interface-based operating system. It was released on August, 24, 1995 by Microsoft, and was a significant progression from the company's previous Windows products. Windows 95 integrated Microsoft’s

formerly separate MS-DOS and Windows Products. It features significant improvements over its predecessor, Window 3.1, most notably in the graphical user interface (GUI) and in its simplified “plug-n-play” features.

In the marketplace, Windows 95 was a major success, and within a year or two of its release, it has become the most successful operating system ever produced. It also had the effect of driving other major players in the DOS-compatible operating system market out of business. Three years after the introduction, Windows 95 was succeeded by windows 98.13

2.8.1.3 Windows 98

Windows 98 (code named Memphis) is a graphical operating system by Microsoft. It is the second major release in the windows 9X line of operating systems. It was released to manufacturing on May 15, 1998 and to retail on June 25, 1998. Windows 98 is the successor to Windows 95. Like its predecessor, it is a hybrid 16-bit/32-bit monolithic product with an MS-DOS based boot loader. Windows 98 was succeeded by windows Me on September 14, 2000. Microsoft support for windows 98 ended on July 11, 2006.14

13 http://en.wikipedia.org/wiki/windows_95, 10-03-2010
14 http://en.wikipedia.org/wiki/windows_98, 10-03-2010
2.8.1.4 Windows 2000

Windows 2000 is a line of operating systems produced by Microsoft for use on personal computers, business desktops, laptops, and servers. Released on 17 February 2000, it was the successor to “Windows NT” designation. It was succeeded by Windows XP for desktop systems in October 2001 and Windows server 2003 for server in April 2003. Windows Me was released seven months after Windows 2000 and one year before Windows XP, but Windows Me was not intended to be, nor did it serve as the successor to Windows 2000. Windows Me was designed for home use, while Windows 2000 was designed for business\textsuperscript{15}.

2.8.1.5 Windows Server 2003


2.8.1.6 Windows Vista

Windows Vista is an operating system released in several variations developed by Microsoft for use on personal computers, including home and business desktops, laptops, tablet personal computers and media center personal computers. On January 30, 2007, it was released worldwide, and was made available for purchase and download from Microsoft’s website. The release of Windows Vista came more than five years after the introduction of its predecessor, Windows XP. Windows Vista contains many changes and new features, including an updated graphical user interface and visual style dubbed Aero, a redesigned search function, multimedia tools including Windows DVD Maker, and redesigned networking, audio, print, and display sub-systems. Windows Vista includes version 3.0 of the .NET Framework, allowing software developers to write applications without traditional Windows APIs.\(^{17}\)

2.8.1.7 Mac OS

Mac OS is the trademark protected name for a series of graphical user interface-based operating systems developed by Apple Inc. (formerly Apple Computer, Inc.) for their Macintosh line of computer systems. The updates were provided free of charge by Apple dealers on floppy disk. Early versions of the Mac OS were compatible only with Motorola 68000-based Macintoshes. Mac OS X, which has

superseded the “classic” Mac OS, is compatible with both power PC and Intel processors through version 10.5 (“Leopard”). Version 10.6 (“Snow Leopard”) supports only Intel processors.

2.8.1.8 UNIX

UNIX (officially trademarked as UNIX, sometimes also written as unix with small caps) is a computer operating system originally developed in 1969 by a group of AT &T employees at Bell Labs, including Ken Thompson, Dennis Ritchie, Brian Kernighan, Douglas McIlroy, and Joe Ossanna. During the late 1970s and early 1980s, the influence of UNIX in academic circles led to large-scale adoption of UNIX by commercial startups, the most notable of which are Solaris, HP-UX and AIX. Today, in addition to certified Unix systems, Unix-like operating systems such as Linux and BSD descendants (Free BSD, Net BSD, and Open BSD) are commonly encountered.

Both UNIX and C programming language were developed by AT&T and distributed to government and academic institutions. Under UNIX, the “Operating system” consists of many of these utilities along with the master control program, the kernel\(^{18}\).

2.8.1.9 MS-DOS

MS-DOS (Microsoft Disk Operating System) is an operating system for X86-based personal computers. It was the main operating

system for IBM PC compatible personal computers during the 1980s to the mid 1990s, until it was gradually superseded by operating systems offering a graphical user interface (GUI). Microsoft bought the right to QDOS (Quick and Dirty Operating System), also known as 86-DOS, from Seattle Computer Products, and began work on modifying it to meet IBM’s Specification. The first edition, MS-DOS 1.0, was launched in 1982. The version shipped with IBM’s PC’s was called PC DOS. Although MS-DOS and PC-DOS were initially developed in parallel by Microsoft and IBM, the two products eventually went their separate ways. During its life, several competing products were released for the X86 platforms, and MS-DOS itself would go through eight versions, until development ceased in 2000.

2.8.1.10 Linux

Linux is a computer operating system and its kernel. It is one of the most prominent examples of free software and of open-source development. All of its underlying source code is available to the public and anyone can freely use, modify, and redistribute it. In the narrowest sense, the term Linux refers to the Linux kernel. Most broadly, a Linux distribution bundles large quantities of application software with the core system, and provides more user-friendly installation and upgrades. Linux has gained the support of major corporations such as IBM, Sun Microsystems, Hewlett-Packard, and

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Novell for use in servers and is gaining popularity in the desktop market. Linux was originally developed for Intel 386 microprocessors and now supports all popular computer architectures. It is deployed in applications ranging from embedded systems (such as mobile phones and personal video recorders) to personal computers to supercomputers\textsuperscript{20}.

2.8.2 Entertainment

At present the children from India, especially from Tamil Nadu are much interested in playing Video games. Others are interested in watching cinema, playing games and listening to audio songs even when they are working on the computer.

2.8.2.1 Video and Audio software

Much software are available for video and audio. Maximum software are freely downloadable. Those who have internet connection could download various software through the popular search engines. Different browsers give maximum support for it. The recommended Program which is capable of playing both vorbis audio and Theora Video. Most Windows users would already have Windows Media Player installed on their computer. Those who don’t have windows Media player can use different player. They are Windows Media Player, Winamp, Winamp 5, Media Player Classic, Core Media Player, VLC media Player, and Real Player.

\textsuperscript{20} http://en.wikipedia.org/wiki/linux, 10-03-2010
2.8.2.2 Video game

A video game is an electronic game that involves interaction with a user interface to generate visual feedback on a video device. The electronic systems used to play video games are known as platforms; examples of these are personal computers and video game consoles. These platforms range from large mainframe computers to small handheld devices. Audio is almost universal, using sound reproduction devices, such as speakers and headphones. Other feedback may come via haptic peripherals, such as vibration or force feedback, with vibration sometimes used to simulate force feedback21.

2.8.3 Special application

For operating the system, many software are installed at the time of purchase. After that, certain software meant for special purpose can also be installed. Without the support of such software, the special programs cannot be entertained. Such purpose oriented software which are commonly used in the study area are listed and explained.

2.8.3.1 SPSS

SPSS is a computer program used for statistical analysis. SPSS (Statistical Package for the Social Sciences) was released in its first version in 1968 after being developed by Normal H.Nie and C. Hadlai

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Hull. SPSS is among the most widely used programs for statistical analysis in social science. It is used by market researchers, health researchers, survey companies, government, education researchers, marketing organizations and others. The original SPSS manual has been described as one of “sociology’s most influential books”. In addition to statistical analysis, data management (case selection, file reshaping creating derived data) and data documentation (a metadata dictionary is stored in the data file) are features of the base software.

2.8.3.2 Auto CAD

Auto CAD is a CAD (Computer Aided Design or Computer Aided Drafting) software application for 2D and 3D design and drafting. First released in December 1982, Auto CAD was one of the first CAD programs to run on personal computers, notably the IBM PC. At that time, most other CAD programs ran on mainframe computers or mini-computers which were connected to a graphics computer terminal for each user. Auto CAD latest release is version 19.0 (2010 Oct).

2.8.3.3 3D Computer graphics Software

3D computer graphics software refers to programs used to create 3D computer-generated imagery. This article only covers some of the software used.

3D modelers are used in a wide variety of industries. The medical industry uses them to create detailed models of organs. The movie industry uses them to create and manipulate characters and objects for animated and real-life motion pictures. The video game industry uses them to create assets for video games. The science sector uses them to create highly detailed models of chemical compounds. The architecture industry uses them to create models of proposed buildings and landscapes. The engineering community uses them to design new devices, vehicles and structures as well as a host of other uses.

2.8.3.4 Scala Inc

Scala Inc is a producer of multimedia software. Founded in 1987, its headquarters are based near Philadelphia. In 1987 a young Norwegian entrepreneur, Jon Bohmer founded the company “Digital Visjon” in Brumunddal, Norway to create multimedia software on the Commandore Amiga computer platform. In 1990, they redesigned the program with a new graphical user interface. They renamed the company and the software “scala” and released a number of successful multimedia applications. The scala family of programs became widely considered as a professional video titler by various TV broadcast companies worldwide. The flexibility of the scala software enabled a wide range of uses, from information channels in cable TV,
hotels and public spaces, a video titling application and a complete multimedia authorizing suit, and is used for interactive video TV, presentations, digital signage, and streaming TV into large LAN and WAN, such as information monitor installations and video walls in airports or stations. Scala software provides a complete suit for corporate television and is currently being used by Ericsson in the UK. Today scala is the world’s largest provider of software for digital sign networks worldwide.25

2.8.3.5 Adobe flash

Adobe flash (formerly Macromedia Flash) is a multimedia platform used to add animation, video, and interactivity to Web pages. Flash is frequently used for advertisements and games. More recently, it has been positioned as a tool for “Rich Internet Applications” (“RIAs”).

Flash manipulates vector and raster graphics to provide animation of text, drawings, and still images. It supports bidirectional streaming of audio and video, and it can capture user input via mouse, keyboard, microphone, and camera. Flash contains an object-oriented language called Action Script.

Originally acquired by Macromedia, Flash was introduced in 1996, and is currently developed and distributed by Adobe systems.

The product was offered to Adobe and used by Microsoft in its early work with the Internet (MSN). In 1996, Future Splash was acquired by Macromedia and released as Flash, Contracting “Future” and “Splash”.26

2.8.3.6 Adobe dreamweaver

Adobe dreamweaver (formerly Macromedia Dreamweaver) is a web development application originally created by Macromedia, and is now developed by Adobe systems, which acquired Macromedia in 2005. Dreamweaver is available for both Mac and Windows operating systems. Recent versions have incorporated support for web technologies such as CSS, Java Script, and various server-side scripting languages and frameworks including ASP, ColdFusion, and PHP.

Dreamweaver allows users to preview websites in locally installed web browsers. It provides transfer and synchronization features, the ability to find and replace line of text or code by search terms and regular expressions across the entire site, and a templating feature that allows single-source update of shared code and layout across entire sites without server-side includes or scripting27.

2.8.3.7 Adobe Photoshop

Adobe Photoshop is a graphics editing program developed and published by Adobe Systems Incorporated. Adobe’s 2003 “Creative Suite” rebranding led to Adobe Photoshop 8’s renaming to Adobe Photoshop CS. Thus, Adobe Photoshop CS5 is the 12th major release of Adobe Photoshop. There are two version of Photoshop: Basic and Extended, with Extended having extra features available. Adobe Photoshop Extended is included in Adobe’s entire Creative Suit offerings except Design Standard, which has the Basic version. Photoshop has ties with other Adobe software for media editing, animation, and authoring.28

2.8.4 Office Automation

It is also special purpose oriented software. It is common for each and every officer; to do his job fast and for this office automation is necessary. For that certain special software are installed. Such common softwares used in office are noted here.

2.8.4.1 Microsoft Office

Microsoft Office is an office suit of interrelated desktop applications, servers and services for the Microsoft windows and Mac Os X operating systems, introduced by Microsoft in 1989. Over the years, Office applications have grown substantially closer with shared features such as a common spell checker.

Consequently, Microsoft has made available, free of charge, and add-on known as the Microsoft Office Compatibility pack to all Office 2000-2003 for Windows and Office 2004 for Mac edition to open, edit, and save documents created under the new formats for Office 2007.

According to Forrester Research, as of June 2009, some version of Microsoft Office is used in 80% of enterprises, and 64% of enterprises have the 2007 Office version used. Microsoft Office 14.0(2010) is the latest Version. The main features of Office 2010 include the backstage file menu, new collaboration tools, a customizable ribbon, protected view and a navigation pane 29.

2.8.4.2 Star Office

Oracle Open Office- known before 2010 as Star Office is Oracle’s proprietary office suite software package. It was originally developed by Star Division and acquired by Sun Microsystems in August 1999. The source code of the suit was released in July 2000, creating a free, open source office suit called Open Office. Org.

The German company Star Division in Luneburg (founded by 16-year-old Marco Borries in 1984) wrote the original components of Star Office. Star Division developed the first version of Star Writer for the Zilog Z80 home-computer system. Later the integration of the other individual programs followed as the development progressed to

an Office Suite for DOS, IBM’s OS/2 Warp, and for the Microsoft Windows Operating-System. The other versions are Star Office 1.0, Star Office 3.0, Star Office 4.0, Star Office 5, Star Office 6, Star Office 7 and Star Office 8. Star Office 9, released in November 2008, and added support for version 1.2 of the Open Document Standard and Microsoft Office 2007 files and a number of other improvements. It is based on open Office org 3.030.

2.8.4.3 Adobe Page maker

Page maker is one of the first desktop publishing programs, introduced in 1985 by Aldus Corporation, initially for the then new Apple Macintosh and in 1987 for PC’s running the then new Windows 1.0. Version 1.2 (1986), Windows 1.0.3 (1987), Version 7.0 (2001). The windows version supports windows XP, but according to adobe, “Page Maker 7.x does not install or run on windows Vista.” However, PageMaker 6.5 will install and run on Windows Vista. In 2004, Adobe announced that development for Adobe Page Maker had ceased but that Adobe would continue to sell and support it.31

2.8.4.4 CorelDRAW

CorelDRAW is a vector graphics editor developed and marketed by Corel Corporation of Ottawa, Canada. It is also the name of Corel’s Graphics suite. Its latest version, named X5 (actually version 15), was released in February 2010.

The inclusion of True Type in Windows 3.1 transformed CorelDRAW into a serious illustration program capable of using system-installed outline fonts without requiring third party software such as Adobe Type Manager; paired with a photo editing program (Photo Paint), a font manager and several other pieces of software, it was also part of the first all-in-one graphics suite. Version X5 (2010) is the latest.32

2.8.4.5 Tally Solutions

Tally solutions Ltd is a Bangalore based financial accounting software company that currently sells in 88 countries beyond its native India, including the United Kingdom, Bangladesh and the Middle East. Tally’s software is mainly used for vouchers, financial statements, and taxation in many industries, and has specialized packages for retail businesses. More advanced capabilities are found in its ERP package.

Business was set up in 1986 by S.S Goenka, who founded a small company called Peutronics Pvt. Ltd with the aim of using computers to simplify the tedious job of keeping accounts. His son Bharat was responsible for the development of the commercial

software product which led to Peutronics Pvt. Ltd., becoming Tally solutions.\textsuperscript{33}

2.8.4.6 Nero Burning ROM

Nero Burning ROM, commonly called just Nero, is an optical disc authoring program for Microsoft Windows by Nero AG (formerly Ahead Software) which is located in Germany. As of version 6, the program has been a part of Nero software suit. Nero Linux offers the support for Linux. Nero Burning ROM supports the creation of: Bootable discs, Audio CD discs, Video DVD discs, Video DVD content.

It also contains a player for DVD discs, video files, and audio files, and image viewer, and software to assist production of DVD discs and other multimedia content. Nero Burning ROM10 is the newly introduced version.\textsuperscript{34}

2.8.4.7 Adobe Acrobat or Adobe Reader

Adobe Acrobat is a family of application software developed by Adobe Systems to view, create, manipulate, print and manage files in Portable Document Format (PDF). All members of the family, except Adobe Reader (formerly Acrobat Reader), are commercial software; Adobe Reader however, is available as a freeware and can be downloaded from Adobe’s web site. Adobe Reader enables users to view and print of PDF creation capabilities. Acrobat and Reader are

\textsuperscript{33} http://en.wikipedia.org/wiki/Tally_Solutions, 10-03-2010.
\textsuperscript{34} http://en.wikipedia.org/wiki/Nero_Burning_ROM, 10-03-2010.
widely used as a way to present information with a fixed layout similar to a paper publication. Version 1.0, to Version 9.0 (2008) there are various versions. Since the early 1990’s the Acrobat product has had several competitors, some of which used their own document formats.35

2.8.4.8 Microsoft Outlook

Microsoft office Outlook, formerly Microsoft Outlook, is a personal information manager from Microsoft, available both as a separate application as well as a part of the Microsoft Office suite. The Current Version is Microsoft Outlook 2010 for Windows. Although often used mainly as an e-mail application, it also includes a Calendar, Task Manager, Contact Manager, note taking, a journal and web browsing. There are third-party add-on applications that integrate outlook with devices such as BlackBerry mobile phones and with other software like Office and Skype internet communication. Developers can also create their own custom software that works with outlook and Office components using Microsoft Visual Studio. Outlook 2010 is the new version.36

2.8.5 General purpose

Apart from specific and office purposes there are some general purpose software. To improve the knowledge, these types of software are installed.

2.8.5.1 Google Earth

Google Earth is a virtual globe, map and geographic information program that was originally called Earth Viewer 3D, and was created by keyhole, Inc, a company acquired by Google in 2004. It maps the Earth by the superimposition of images obtained from satellite imagery, aerial photography and GIS 3D globe. It was available under three different licenses, 2 currently: Google Earth, a free version with limited functionality; Google Earth plus which included additional features; and Google Earth pro which is intended for commercial use.

The release of Google Earth in June 2005 to the public caused a more than tenfold increase in media coverage on virtual globes between 2005 and 2006 driving public interest in geospatial technologies and applications.\(^{37}\)

2.8.5.2 Spreadsheet

A Spreadsheet is a computer application that simulates a paper, accounting worksheet. It displays multiple cells that together make up grid consisting of rows and columns, each cell containing alphanumeric text, numeric values or formulas. A formula defines how the content of that cell is to be calculated from the contents of any other cell (or combination of cells) each time any cell is updated. Spreadsheets are frequently used for financial information because of their ability to re-calculate the entire sheet automatically after a change to a single cell is made.

Visicale is usually considered the first electronic spreadsheet. Lotus 1-2-3 was the leading spreadsheet when DOS was the dominant operating system. Excel now has the largest market share on the Windows and Macintosh platforms.\(^{38}\)

### 2.8.5.3 Word Web

Word web is an international English dictionary and thesaurus program for Microsoft Windows and iphone. Available for download online, the program is partly based on the Word Net database. The program is activated by holding down CTRL and right-clicking on a word in almost any program. This opens the word web main window, with definitions and other help.

The word “spreadsheet” came from “spread” in its sense of a newspaper or magazine item (text and/or graphics) that covers two facing pages, extending across the center fold and treating the two pages as one large one. The compound word “spread-sheet” came to mean the format used to present book-keeping ledgers.\(^{39}\)

### 2.8.6 Browsing

Almost all computer users are having very good knowledge about browsing. Maximum personal computer holders have internet connection. In the study area, the maximum preferable web browsers are given as following.

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2.8.6.1 Internet Explorer

Windows Internet Explorer (formerly Microsoft Internet Explorer; commonly abbreviated to IE), is a series of graphical web browsers developed by Microsoft and included as part of the Microsoft Windows line of Operating systems starting in 1995. Internet Explorer has been the most widely used web browser since 1999, attaining a peak of about 95% usage share during 2002 and 2003 with IE5 and IE6. Since its peak of popularity, its usage share has declined in the face of renewed competitions from other web browsers to 55% and is slowly trending download. But due to the major security hole described above that was exploited in Internet Explorer, it is not much used.\(^{40}\)

2.8.6.2 Opera software

Opera software ASA is a Norwegian software company, primarily known for its Opera family of web browsers. Opera software was founded as an independent company on August 30, 1995 by Jon Stephenson Von Tetzchner and Geir Ivarsoy. The company was created to continue what was originally a research project at Telenor, the largest Norwegian telecommunications company. Opera software’s first product, the Opera web browser version 2.1 for windows, was released in 1997.\(^{41}\)

2.8.6.3 Google Chrome OS

Google chrome OS is an upcoming Linux - based, open source operating system designed by Google to work exclusively with web applications. Announced on July 7, 2009, Chrome OS is set to have a publicly available stable release in the late fall of 2010. Chrome OS will not be available as download to run and install. Instead, the operating system will only ship on specific hardware from Google’s manufacturing partners. Because the only application on the device will be a browser incorporating a media player, Google chrome OS is aimed at user who spend most of their time of the Internet\textsuperscript{42}.

2.8.6.4 Mozilla Firefox

Mozilla Firefox is a free and open source web browser descended from the Mozilla Application Suit and managed by Mozilla Corporation. As of August 2010, Firefox was the second most widely used browser, with 22.93% of worldwide usage share of web browsers, according to Net Applications. Other Sources put Firefox’s usage share between 20% and 32%. The latest Firefox features include tabbed browsing, spell checking, incremental find, live bookmarking, a download manager, private browsing, location-aware browsing based exclusively on a Google service and an integrated search system that uses Google by default in most localization. Functions can be added through extensions, created by third-party developers, of operating

\textsuperscript{42} http://en.wikipedia.org/wiki/Google_Chrome_OS, 10-03-2010.
system, windows, Mac OS X, Linux, BSD, Solaris, Opensolaris, GNU, AmigaOS4, available in 75 languages.\textsuperscript{43}

2.8.6.5 BitTorrent

BitTorrent is a peer-to-peer file sharing protocol used for distributing large amounts of data. BitTorrent is one of the most common protocols for transferring large files, and it has been estimated that it accounted for roughly 27-55\% of all Internet traffic (depending on geographical location) as of February 2009.

Programmer Bram Cohen designed the protocol in April 2001 and released a first implementation on July 2, 2001. It is now maintained by Cohens’s company BitTorrent, Inc. There are numerous BitTorrent clients available for a variety of computing platforms\textsuperscript{44}.

2.8.7 Communication

Now a days postal services are in decreasing trend. Only for record purpose postal services are going on. The important reason for such position is that anyone can have contact through various messenger services. The popular communication services through internet are explained here.
2.8.7.1 Yahoo Messenger

Yahoo Messenger is an advertisement supported instant messaging client and associated protocol provided by Yahoo! Yahoo! Messenger is provided free of charge and can be downloaded and used with a generic “Yahoo ID” which also allows access to other Yahoo! services, such as Yahoo! Mail, where users can be automatically notified when they receive new email. Yahoo! also offers PC-PC, PC-Phone and Phone to PC Services, file transfers, webcam hosting, text messaging service, and chat rooms in various categories. Yahoo! Messenger was originally launched under the name Yahoo! Pager on March 9, 1998.45

2.8.7.2 Skype

Skype is a software application that allows user to make voice calls over the Internet. Calls to other users within the Skype service are free, while calls to both traditional landline telephones and mobile phones can be made for a fee using a debit-based user account system. Skype has also become popular for its additional features which include instant messaging, file transfer, and video conferencing, the network is operated by a company called Skype Limited, headquartered in Luxembourg and partly owned by eBay.46

2.8.7.3 Google Talk

Google Talk (G talk) is a no-charge Windows web-based application for instant messaging and voice over internet protocol client offered by Google Inc. The first beta version of the program was released on August 24, 2005. The Google Talk client is only available for Microsoft Windows (2000, XP, Server 2003, Vista and Windows 7), but Google Chat (Voice and video chat) is now available for PCs and Intel-based Macs47.

2.8.7.4 Rediff

Rediff India is a news, information, entertainment, and shopping portal. It was founded in 1996 and is headquartered in Mumbai, India with offices in New Delhi and New York City, US.

According to Alexa, Rediff is the No. 9 Indian web portal. It is the only India-based website to appear in the first 100 websites. In April 2001, Rediff.com acquired and began offering India Abroad. Rediff mail is a Web based e-mail which has around 65 million registered usernames. It offers unlimited free storage space. Rediff recently launched an AJAX based mail interface. Rediff Mail also allows users to send and receive mails in many Indian languages on Microsoft Windows. Rediff mail is also available on mobile through the free mobile application. It also offers various other web based services such as a web search, shopping, classifieds, a matrimonial service,

social networking, blogging, a music-video sharing platform and community-driven knowledge base.\textsuperscript{48}

\textbf{2.8.7.5 MSN}

MSN (originally The Microsoft Network) is a collection of Internet sites and services provided by Microsoft. The Microsoft Network debuted as an online service provider on August 24, 1995, to coincide with the release of the Windows 95 operating system.

The range of services offered by MSN has changed since its initial release in 1995. MSN was once a simple online service for Windows 95, an early experiment at interactive multimedia content on the Internet service providers.

Microsoft used the MSN brand name to promote numerous popular web-based services in the late 1990’s most notably hotmail and Messenger, before reorganizing many of them in 2005 under another brand name, Windows Live. MSN’s Internet portal, MSN.com still offers a wealth of content and is currently the 9th most visited domain name on the internet.\textsuperscript{49}

\textsuperscript{49} http://en.wikipedia.org/wiki/MSN, 10-03-2010.
2.8.7.6 Oovoo

Oovoo is audio and video instant messaging client software developed by oovoo LLC. For Microsoft Windows and Mac OS X. It was released in 2007, and is similar to Apple’s ichat, and Skype. In June 2007, a PC version was launched to allow high quality video chat from anywhere. In February 2008, video call recording and phone calling were introduced. In May 2008, Oovoo for Mac was launched, creating cross-platform capabilities for video chat. In February 2009, Oovoo 2.0 launched, which included browser-based video chat rooms and video chat through a web link with no download required. In May 2009, the first air-to-ground three way video conversation was introduced. Oovoo 2.2 was launched in July 2009, and introduced business plans geared for multiple seats desktops sharing. New pay-as-you-go options and international phone calling was also introduced

2.8.8 System maintenance

Though the software in the world has got a vast development, it is being disturbed by the different type of viruses. To keep the system in perfect condition, they are to be protected. It is possible only through the antivirus software. Common antivirus software are piled out here.

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2.8.8.1 Panda security

Panda security SL, formerly panda software, is a computer security company founded in 1990 by Panda’s former CEO, Mikel Urizarbarrena, in the city of Bilbao, Spain. Initially centered on production of antivirus software, the company has expanded its line of applications to include firewall applications, spam and spyware detection applications, cybercrime prevention technology, and other system management and security tools for business and home users.

Panda’s product include security tools for home users and enterprises, including protection against cybercrime and kinds of malware that can damage IT systems, such as spam, hackers, spyware, dialers and undesirable web content, as well as detection of Wi-Fi instructions. In 2005, panda security was the 4th largest antivirus vendor worldwide, with 3.2% of the marketplace.51

2.8.8.2 Symantec corporation

Symantec corporation is the largest maker of security software for personal computers. The company is headquartered in Mountain view, California, and is a Fortune 500 company and a member of the S&P 500 stock market index.

Founded in 1982 by Gary Hendrix with National Science Foundation grant, Symantec was originally focused on artificial

intelligence related projects, including a database program. In 1984 Symantec was acquired by another, even smaller computer software startup company. The merged company retained the name Symantec, and Eubanks became its chief executive officer.\(^{52}\)

### 2.8.8.3 McAfee Antivirus Scan

McAfee Virus Scan is an antivirus program created and maintained by McAfee Inc. (formerly known as Network Associates). McAfee markets Virus Scan to home and home-office users; McAfee also develops virus scan Enterprise for use in corporate environments. The product is not available as a standalone package, but is included in the McAfee Virus Scan Plus package or as part of McAfee internet Security Suite. McAfee also produces a similar product for Mac OS X under the name of Virus Scan for Mac. Additionally, BSkyB and McAfee have produced a “Sky Broadband” branded version of Virus Scan, offered free to sky Digital customers upon broadband modem installation.

The 2010 edition of Virus Scan Plus integrates antivirus, firewall and anti-spyware capabilities. Virus scan Plus 2010 is compatible with Microsoft Windows 2000, Windows XP, windows Vista and Windows 7 only.\(^{53}\)

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53 http://en.wikipedia.org/wiki/McAfee_VirusScan, 10-03-2010.
2.8.8.4 Norton Anti virus

Norton Antivirus, developed and distributed by Symantec Corporation, provides malware prevention and removal during a subscription period. It uses signatures and heuristics to identify viruses. Other features include e-mail spam filtering and phishing protection. Norton Antivirus runs on Microsoft Windows and Mac OS X, version 17.5.0.127 is the latest Windows build. Windows 7 support is in development for versions 2006 through 2008. Version 2009 has windows 7 supported update already.\(^{54}\)

2.8.8.5 AVG

AVG is an umbrella term for a range of anti-virus and Internet Security software for the Microsoft Windows, Linux, Mac OS X, and FreeBSD computing platforms, developed by AVG Technologies, a privately held Czech company formerly known as Grisoft.

The brand name AVG comes from Grisoft’s first product, “Anti virus Guard” launched in the Czechoslovakia. In 1997, the first AVG licenses were sold in Germany and UK. AVG was introduced to the U.S. in 1998. For desktop protection of PCs running Windows, the AVG solution include: AVG Internet Security, AVG Identity Protection, AVG Anti-spyware, AVG Anti-Root kit, AVG, ADMIN, AVG Anti-Virus, and AVG Anti-Virus Free Edition.\(^{55}\)

2.9 SUMMARY

The literature, history and growth of software have been collected from the available websites, journals, past studies and newspapers. Since it is purely oriented with software consumption, the researcher has tried his maximum to collect secondary data from the above said sources. The available information and data from the said sources have been highlighted. The growths of software and related services from global to Tamil Nadu level have been presented in this chapter. Moreover, the history and development of various selected 47 software in this study area have also been presented here. In addition to that the literature of computers, and its Hardware and Software have also been presented with various generations to latest fast computers. From this chapter, the history and growth could be easily studied.