CHAPTER I

Introduction
1.1 Significance of Electronics & Information Technology (IT) Industry

ELECTRONICS:-

Electronics in ordinary sense bring to our mind variety of things from 'chips' and computers to television and transistors. Electronics, in the strictest sense, is the science and technology of the motion of charges in gas, vacuum or semiconductor. The nature of the discipline 'electronic' comprising of four c's - communication, computation, control and component. Electronics industry fit one or more of the groups – Components, communication, control & computation. Initially, component companies came into existence as electronics industry to produce the various types of electron devices as well as passive circuit elements (resistors, capacitors, inductors, transformers etc.)

ELECTRONICS INDUSTRY:-

Electronics industry is the business of creating, designing, producing, and selling devices such as radios, televisions, stereos,
computers, semiconductors, transistors, and integrated circuits. As sales of electronic products in the United States grew from some $200 million in 1927 to over $266 billion in 1990, the electronics industry transformed factories, offices, and homes, emerging as a key economic sector that rivaled the chemical, steel, and auto industries in size.

The industry traces its origins to the invention of the two-element electron tube (1904) by John Ambrose Flemming, and the three-element tube (1906) by Lee De Forest. These inventions led to the development of commercial radio in the 1920s, which boosted radio sales to $300 million by the end of the decade. In 1947, the electronics industry made another important advance when John Bardeen, Walter Brattain, and William Shockley invented the transistor. Smaller, lighter, and more durable than the vacuum tubes that had been used in radios, transistors touched off a period of progressive miniaturization of electronic devices. Integrated circuits, which were developed in the 1950s, allowed the integration of several circuits into one circuit, and the introduction of analog devices in the 1960s vastly increased the amount of information that could be stored on a single silicon chip.

Other important sectors that have made great advances since the 1970s include laser and optical electronics, digital electronics, and microwave electronics. Advances in the field of electronics have
also played a key role in the development of space technology and satellite communications; inaugurated a revolution in the computer industry that led to the introduction of the personal computer; resulted in the introduction of computer-guided robots in factories; produced systems for storing and transmitting data electronically; greatly expanded the market for popular music and culture; and, in the process, transformed life at home, the office, and the factory. Many of these innovations, such as the transistor, had their origins in military research, which needed increasingly complex electronic devices for modern high-tech warfare.

In the 1960s, the U.S. consumer electronics industry went into decline as manufacturers were unable to compete with the quality and pricing of foreign products, especially the electronic goods produced by Japanese companies such as Sony and Hitachi. By the 1980s, however, U.S. manufacturers became the world leaders in semiconductor development and assembly. In the 1990s semiconductors were essential components of personal computers and most other electronic items (including cellular telephones, televisions, medical equipment, and "smart" appliances). While U.S. companies are still a major presence in the semiconductor industry (representing about 40% of world sales in 1998), the
consumer items themselves are mostly made overseas. Worldwide electronic sales were nearly $700 billion in 1997.¹

IT AND IT INDUSTRY:-

In the nineteenth century, the industrial revolution was accompanied by the emergence of a new wave of Information Technologies. IT is the system that enables its users to collect, process and distribute information. It is generally application of computer to storage, retrieval processing and dissemination of data, particularly in the field of commerce. IT for business is identified by ‘Business Review’ as –

   a. Technique for processing large amount of information rapidly.
   b. The application of statistical and mathematical method to decision making problems, and
   c. Simulation of high order thinking through computer program.²

The purpose of using IT in business helps in reducing cost, improving communication, better overall management, administrative processes and better relationship with suppliers and customers.

¹ Internet
² Students guide to Information Technology, Page No-6
"Electronic and information technology" is a term used in the 1998 amendments to Section 508 of the Rehabilitation Act. The term is used to define the scope of products covered under Section 508. Section 508 requires that electronic and information technology that is developed, procured, maintained, or used by the federal government be accessible.

Electronic and information technology includes computer hardware and software, operating systems, web-based information, and applications, telephones and other telecommunications products, video equipment and multimedia products, information kiosks, and office products such as photocopiers and fax machines.

Informally, all of these devices are commonly referred to simply as "information technology," or "IT." However, from a legal standpoint, there was a need to expand upon an existing federal definition of information technology, while maintaining consistency with that early definition.

The federal agency charged with establishing this definition was the Architectural and Transportation Barriers Compliance Board (Access Board). Here is the formal definition of both "electronic and information technology" and "information technology" published in the Access Board's Electronic and Information Technology Accessibility Standards:
Electronic and information technology:- Includes information technology and any equipment or interconnected system or subsystem of equipment, that is used in the creation, conversion, or duplication of data or information. The term electronic and information technology includes, but is not limited to, telecommunications products (such as telephones), information kiosks and transaction machines, World Wide Web sites, multimedia, and office equipment such as copiers and fax machines. The term does not include any equipment that contains embedded information technology that is used as an integral part of the product, but the principal function of which is not the acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. For example, HVAC (heating, ventilation, and air conditioning) equipment such as thermostats or temperature control devices, and medical equipment where information technology is integral to its operation, is not information technology.

Information technology:- Any equipment or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. The term 'information
technology' includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources.\(^3\)

1.2 **Position of Electronics Industry in India**

a) **Development**

The Indian electronics industry began at the early stage of 1960s and at that time the electronics industry concentrated only on developing and maintaining fundamental communication systems, such as radio-broadcasting, telephonic and telegraphic communication, and aimed at enhancing defense capabilities. Later, at the end of the 1980s, the electronics industry experienced rapid growth, as a result of outstanding economic changes. The latter were due to the liberalization and globalization efforts of the Indian government in order to trigger off economic growth and to promote the creation of an export-oriented electronics industry. By 1991, foreign and domestic private investments were encouraged. Foreign investment norms were eased, 100 % foreign equity was allowed, custom tariffs were reduced and many consumer electronic products delicensed. These initiatives attracted a large amount of foreign investment and collaborations.

\(^3\) Goggle search, What is Electronics and IT Industry
The latest step for supporting the opening of the electronics sector for global players was the signature of the information technology agreement (ITA-1) of the WTO, which came into force in April 2005. Since then the “Zero Customs Duty” principle applies for all electronic components. This represents a great opportunity as well as a challenge to domestic and foreign manufacturers.

At present Electronics and Information Technology is the fast growing segment of Indian Industry in terms of Production and Export. Several States of India have now developed Electronics Industries very inspiringly in its deferent sectors like consumer electronics, electronics components, communication and broadcasting, strategic electronics and electronics export. The following Tables (Table 1.1 & 1.2) shows the year wise break up of production & export of deferent sectors of electronics goods in India.
Table 1.1
ELECTRONICS PRODUCTION (RS. CRORE)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.Consumer Electronics</td>
<td>11,950</td>
<td>12,700</td>
<td>13,800</td>
<td>15,200</td>
<td>16,800</td>
<td>18,000</td>
<td>20,000</td>
</tr>
<tr>
<td>2.Industrial Electronics</td>
<td>4,000</td>
<td>4,500</td>
<td>5,550</td>
<td>6,100</td>
<td>8,300</td>
<td>8,800</td>
<td>10,400</td>
</tr>
<tr>
<td>3.Computers</td>
<td>3,400</td>
<td>3,550</td>
<td>4,250</td>
<td>6,800</td>
<td>8,800</td>
<td>10,800</td>
<td>12,800</td>
</tr>
<tr>
<td>4.Communication &amp; Broadcast equipments</td>
<td>4,500</td>
<td>4,500</td>
<td>4,800</td>
<td>5,350</td>
<td>4,800</td>
<td>7,000</td>
<td>9,500</td>
</tr>
<tr>
<td>5.Strategic Electronics</td>
<td>1,750</td>
<td>1,800</td>
<td>2,500</td>
<td>2,750</td>
<td>3,000</td>
<td>3,200</td>
<td>4,500</td>
</tr>
<tr>
<td>6.Components</td>
<td>5,500</td>
<td>5,700</td>
<td>6,600</td>
<td>7,600</td>
<td>8,800</td>
<td>8,800</td>
<td>8,800</td>
</tr>
<tr>
<td>Sub Total</td>
<td>31,100</td>
<td>32,750</td>
<td>37,500</td>
<td>43,800</td>
<td>50,500</td>
<td>56,600</td>
<td>66,000</td>
</tr>
<tr>
<td>7.Software for Exports</td>
<td>28,850</td>
<td>36,500</td>
<td>46,100</td>
<td>58,240</td>
<td>80,180</td>
<td>1,04,10</td>
<td>1,41,80</td>
</tr>
<tr>
<td>8.Domestic Software</td>
<td>9,400</td>
<td>10,874</td>
<td>13,400</td>
<td>16,250</td>
<td>21,740</td>
<td>29,600</td>
<td>37,800</td>
</tr>
<tr>
<td>Total</td>
<td>68,850</td>
<td>80,124</td>
<td>97,000</td>
<td>1,18,29</td>
<td>1,52,42</td>
<td>1,90,30</td>
<td>2,45,60</td>
</tr>
</tbody>
</table>

Source-Internet
The State of Maharashtra, Karnataka, Tamilnadu, Andhra Pradesh and West Bengal are the pioneer in the field of Electronics Industry in India.
The following table shows the production of Electronics goods by these states and their status in the country.

**Table 1.3**

**ELECTRONICS PRODUCTION - STATE WISE - 2003 (Rs.Crore)**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>State</th>
<th>Consumer</th>
<th>CIIE</th>
<th>Computer</th>
<th>Telecom</th>
<th>Strategic</th>
<th>Component</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Andhra Pradesh</td>
<td>317</td>
<td>621</td>
<td>420</td>
<td>355</td>
<td>378</td>
<td>185</td>
<td>2276</td>
</tr>
<tr>
<td>2</td>
<td>Assam</td>
<td>21</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>3</td>
<td>Bihar</td>
<td>10</td>
<td>5</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>Chandigarh</td>
<td>25</td>
<td>25</td>
<td>1</td>
<td>1</td>
<td>13</td>
<td></td>
<td>65</td>
</tr>
<tr>
<td>5</td>
<td>Chattisgarh</td>
<td>10</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>6</td>
<td>Dadra Nagar Haveli</td>
<td>3</td>
<td>6</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
<td>139</td>
</tr>
<tr>
<td>7</td>
<td>Daman</td>
<td>2</td>
<td>54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>8</td>
<td>Delhi</td>
<td>1936</td>
<td>205</td>
<td>760</td>
<td>614</td>
<td>5</td>
<td>1735</td>
<td>5300</td>
</tr>
<tr>
<td>9</td>
<td>Goa</td>
<td>152</td>
<td>7</td>
<td>437</td>
<td>26</td>
<td></td>
<td></td>
<td>623</td>
</tr>
<tr>
<td>10</td>
<td>Gujrat</td>
<td>654</td>
<td>185</td>
<td>16</td>
<td>162</td>
<td></td>
<td>670</td>
<td>1687</td>
</tr>
<tr>
<td>11</td>
<td>Hariyana</td>
<td>470</td>
<td>202</td>
<td>60</td>
<td>115</td>
<td>1</td>
<td>78</td>
<td>1926</td>
</tr>
<tr>
<td>12</td>
<td>Himachal Pradesh</td>
<td>68</td>
<td>50</td>
<td>125</td>
<td></td>
<td></td>
<td>39</td>
<td>282</td>
</tr>
<tr>
<td>13</td>
<td>J &amp; K</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
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<td>4</td>
</tr>
<tr>
<td>14</td>
<td>Jharkhand</td>
<td>2</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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</tr>
<tr>
<td></td>
<td>State</td>
<td>12</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
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<td>20</td>
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</tr>
<tr>
<td>15</td>
<td>Karnataka</td>
<td>1165</td>
<td>2040</td>
<td>1000</td>
<td>750</td>
<td>1450</td>
<td>1410</td>
<td>7815</td>
</tr>
<tr>
<td>16</td>
<td>Kerala</td>
<td>286</td>
<td>140</td>
<td>143</td>
<td>304</td>
<td>10</td>
<td>263</td>
<td>1146</td>
</tr>
<tr>
<td>17</td>
<td>Madhya Pradesh</td>
<td>52</td>
<td>160</td>
<td>95</td>
<td>550</td>
<td>857</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Maharastra</td>
<td>4052</td>
<td>1320</td>
<td>1705</td>
<td>114</td>
<td>50</td>
<td>950</td>
<td>8191</td>
</tr>
<tr>
<td>19</td>
<td>Meghalaya</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Orissa</td>
<td>25</td>
<td>1</td>
<td>2</td>
<td>22</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Pondichery</td>
<td>5</td>
<td>760</td>
<td>106</td>
<td>1</td>
<td>872</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Panjab</td>
<td>187</td>
<td>16</td>
<td>30</td>
<td>182</td>
<td>45</td>
<td>460</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Rajasthan</td>
<td>85</td>
<td>202</td>
<td>38</td>
<td>88</td>
<td>142</td>
<td>555</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Tamilnadu</td>
<td>522</td>
<td>350</td>
<td>264</td>
<td>294</td>
<td>72</td>
<td>200</td>
<td>1703</td>
</tr>
<tr>
<td>25</td>
<td>Uttar Pradesh</td>
<td>4430</td>
<td>390</td>
<td>770</td>
<td>707</td>
<td>617</td>
<td>1448</td>
<td>8362</td>
</tr>
<tr>
<td>26</td>
<td>Uttarakhal</td>
<td>10</td>
<td>15</td>
<td>1</td>
<td>28</td>
<td>86</td>
<td>14</td>
<td>152</td>
</tr>
<tr>
<td>27</td>
<td>West Bengal</td>
<td>397</td>
<td>70</td>
<td>9</td>
<td>70</td>
<td>90</td>
<td>636</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>14880</td>
<td>6100</td>
<td>6600</td>
<td>5150</td>
<td>2670</td>
<td>7860</td>
<td>43260</td>
</tr>
</tbody>
</table>

Source: Electronics information and planning: June–September, 2004

b) **Present Situation**

Today, the electronics industry as a whole, with the exception of aerospace and defence electronics, has been fully delicensed. Fiscal, investment and trade policies for the electronics sector have also been liberalized. All components, raw materials and capital goods are freely importable. Sector specific schemes have been
introduced to attract foreign investment and provide a duty free
environment for export of electronic hardware and software under
the export oriented schemes. As India has become more open to
foreign trade and investment, it has also emerged as a mass market
for consumer electronics and telecom.

In 2003-04 the total electronic components production amounted to
Rs. 76 billion, of which 60% was accounted for by the television
industry and 10% by the audio industry. The balance of 30%
corresponded to the requirement of the professional electronic
sector, namely, the telecommunication and industrial sector. This
trend has remained stable during the last few years. Moreover, the
demand of surface mount components, display devices, micro-
electronic, optoelectronic, semiconductor devices, etc. continued to
be met by imports due to the limited or nonexistent manufacturing
base in the country.

Consumer electronics is the largest sector of Electronics Hardware
industry and accounts for almost 35 per cent of the total electronics
hardware production. The Colour TV segment contributes over 60
per cent of the turnover of the Consumer electronics industry with
other products being audio products, DVD units and microwave
ovens. During the year 2003-04, production of computers was
worth Rs. 68 billion. The total PC population in India in April
2004 was estimated to be over 8.0 million. The penetration of
computers in commercial and domestic segments in the country is

\[ T \geq 80 \]
approximately in the ratio of 80:20 respectively. With 3.7 million connections, the Internet penetration is currently at a mere 0.37% of the population. In control instrumentation and industrial electronics, ultrasound equipment and uninterrupted power supply are major export items. In industrial electronic products group, mixed performance was observed. The domestic production in this sector is estimated to be around Rs. 61 billion for the year 2003-2004.

Though domestic demand for electronic products is increasing in India, it is necessary to mention that the electronic equipment sector owes its augmenting production output to a robust export performance, according to IEEMA, the Indian Electrical & Electronics Manufacturers Association.⁴

Following two fig 1.1(a) & 1.1(b) shows the position of Electronics production from the Year 2000 to 2004 and 2006-07

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⁴ Goggle search, Indian Electronics Industry
Fig 1.1(a)

Electronics Production (Calendar Year)

Fig 1.1(b)

Indian Electronic Industry (2006-07)
Total $16.1* Billion

Source: Internet
1.3 **Position of Electronics Industry in Assam**

In Assam, Electronics Industry began with the establishment of Assam Electronics Development Corporation Ltd. (AMTRON), a public sector undertaking in the year 1984. Initially, AMTRON produced consumer electronics items ranging from Voltage stabilizers to B/W and Coloured TV sets. But after expiry sales tax relaxation period of 5 years and with the entry of some national and global players in this segment increase the intensity of competition for which AMTRON now stops its TV Production.

The Share of Assam in the growth of Electronics Industry is very insignificant in spite of the Following potentialities & incentives for its growth in the State.

1. The dust and pollution free atmosphere of Assam is considered as a promising land for Electronics Industry.
2. Sales Tax exemption.
3. Transport Subsidy.
5. The State also being a backward State, Financial help from both the government of India and the State Government are available.
6. Sufficient qualified and unskilled Worker.
7. Wide market for Electronics Products.
Table 1.4  
STATEMENT SHOWING THE POSITION OF ELECTRONICS  
INDUSTRY OF ASSAM IN COMPARISON TO INDIA  

<table>
<thead>
<tr>
<th></th>
<th>All India</th>
<th>Assam</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2001</td>
<td>2003</td>
</tr>
<tr>
<td>1. Production (in Rs. Crore)</td>
<td>32,150</td>
<td>43,260</td>
</tr>
<tr>
<td>2. No. of Units-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Organized Sector</td>
<td>551</td>
<td>540</td>
</tr>
<tr>
<td>b) Small Scale</td>
<td>2,483</td>
<td>2383</td>
</tr>
<tr>
<td>3. Employment (in Electronics)</td>
<td>3,85,000</td>
<td>3,95,000</td>
</tr>
<tr>
<td>4. Central Public Sector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plants</td>
<td>29</td>
<td>28</td>
</tr>
<tr>
<td>5. State Public Sector Plant</td>
<td>71</td>
<td>51</td>
</tr>
</tbody>
</table>

The Share of Assam is .02% in 2001 & .05% in 2003 and rank were 25th in 2001 and 23rd in 2005.

1.4 **OBJECTIVES OF THE STUDY**

The objectives are as follows:-

1. To study the Scope & Development of Electronics Industry in Assam
2. To Study the Role of AMTRON in popularizing Electronics & Informatics based Industries & Services in Assam
3. To appraise & evaluate the performance of AMTRON
4. To suggest measures for the future development of Electronics Industry.

1.5 **RESEARCH QUESTION**

1. Whether the AMTRON has failed measurably in attaining its objectives.
2. Whether the AMTRON has helped the Entrepreneurs of Electronics & IT Industry by providing, technical knowledge, training, preparation of projects and financial Assitances etc?
3. Whether the AMTRON has succeeded in generating employment & income for the people of Assam.

1.6 **REVIEW OF LITERATURE**

Several books and articles have been published in the journals relating to Electronics and IT industries since long.
a) **The Electronics Industry of India**

M. Pecht, R. Sharma, D. Bansal and P. Srinivasan (CALCE EPSC, University of Maryland).

This book covers important aspects of the Indian electronics industry. It discusses the historical background of its development; outlines tax structure, market strategies and economic policies; tracks the growth of telecommunications, consumer electronics, computer hardware and software, and medical electronic systems; describes problems facing the industries pertaining to power, transportation, communication networks and other environmental considerations; and presents directions and strategies for radical industrial growth in the future. An extensive list of India's electronics industry companies and their contact information is also provided.

b) **Information Technology & Economic Growth**

R.G. Desai, Rawat Publication

The book highlighted the position of Information Technology in the different states of India, including the investment in IT sector and productivity in cross country level, growth of IT in the country since 1991, interrelation between hardware, software and
IT enabled services in India. On the basis of the empirical data from Karnataka state, e- governance is discussed in details. Role played by Software Technology Park, employment in It sector is widely discussed in this book. Problems relating to IT sector are included in this book and policy measures are also suggested.

c) Information society in Global Age

Feroz Khan, A P H Publishing Corporation, New Delhi.

This book contains the authoritative information on diverse aspects of information technology, such as Computer mediated economy, Internet economy, Electronic journals, Information communication technologies and rural development etc.

d) Managing IT Personnel in Corporate Environment

Pradeep Ahlawat

This book provides logic-based text on social, economic, cultural effects and health hazards with the introduction of Information Technology. At the same time it exploring managerial and employment related issues of IT people and their general image in corporate sector.
e) **Students’ Guide to Information Technology**
Sushila Madan

This book provides the fundamental concepts of IT, concept concerning computer based information system, computer technology, e-commerce and major points in cyber laws under IT Act, 2000. This book also covers office productivity tools including word processing, accounting package (Tally, Excel) and computer assisted auditing techniques.

f) **IT Encyclopedia. Com** (12 volume set)
Prof. Parag Dewan, Dr. R.K.Suri and others

This book covers the different aspects of IT under its 12 volume set. Each volume highlighted one aspect of IT. First volume provides the fundamentals of Information Technology. Second volume covers the introduction part of Computer and technology. Third volume is for Information system management. Software engineering aspect is covered in the forth volume. Fifth volume is for Computer network and E-commerce. Multimedia systems, Graphical User Interface are covered in the sixth and seventh volume respectively. Eighth volume contains Enterprise Resource planning. E-commerce is elaborately discussed in the ninth
volume. Tenth volume is for Information technology laws and detail about the cyber crime is explained in the eleventh volume. Different IT terms are explained in the twelfth volume as ‘Dictionary of IT terms’.

g) **Electronics Information & Planning**
Monthly published journal by Information, Planning & Analysis Group (IPAG) of Department of Information Technology

This journal publishing different articles relating to Electronics and IT Industry and publishes the reports on the analysis of Electronics & IT industries in India from time to time. This journal also highlighted the annual Electronics and IT production of the different states of India.

i) **Electronics industry in India**

Dr. Mazumdar elaborately analyzed the position of Electronics Industry in India from its inception. But there is a great difference in the position of Electronics Industry at that time (1980) and position of Electronics Industry at present. At that time the
development of Electronics and IT was in initial stage in all over world in comparison to present status.

All the books and journals relating to Electronics and IT reviewed above, were basically highlighted the general concepts of Electronics & IT, explained the different aspects of Electronics & IT industry in National and International level. Most of the books provide the Academic and Technical Knowledge about the Electronics and IT and its role & effects in the society. Similarly the different journals of Electronics & IT published from time to time provide the information regarding latest development of this sector in national and international level.

On the other hand in this researcher work, the researcher has analyzed the Electronics and IT from the angle of its role and impact in the economic development of the nation and the state of Assam. The role played by Assam Electronics Development Corporation Ltd. in popularizing this sector in the state is explained and evaluated after going through detail analysis and survey. The performance of this organization is also analysis with the similar organization of the state of West Bengal.

Thus, from the above it has been clear that this research work is a pioneer and torch bearing work in its field.
1.7 METHODOLOGY OF THE RESEARCH PROGRAMME
As denoted by very title of the thesis the main source of information have been the annual reports and other documents prepared by AMTRON.

Universe of the study
The universe refers to any collection of specified group of human being or of non human entities. It contains finite number of individuals, members or units from which sample can be drawn for the purpose of research.
In this project the universe included all the managers and executives of the AMTRON, Aspiring professionals those who have completed the computer courses offered by AMTRON and the users of AMTRON products and services

Data Collection
Two means of data collection was in this research work as:-
1. Primary data: - The primary data have been collected by visiting AMTRON and its branches and contracting personally the customers.
2. Secondary data: - Secondary data have been collected from AMTRON reports books, related books, journals and news papers.
Sample Size
In case of AMTRON product & services the main user is the different department of Assam Government. Since, AMTRON is the nodal agency of Govt. of Assam. Hence, in this case census method will be applied as the number of variables is limited. However, in case of computer education & training programmes offered by AMTRON to aspiring professionals, sampling method is applied.

Presently AMTRON conducts training under DOEACC scheme at two different centers of Assam viz, Guwahati and Jorhat. Besides, the organization has organized its own training centers at various places of Assam known as DCC (District Computer Centre). Some courses are conducted by AMTRON through some Franchisees in all over Assam. Sampling has been drawn only from some selected DCC in which AMTRON it self run the courses.

The Researcher has divided the sample size in two Zones as
a) Lower Assam Zone.
b) Upper Assam Zone

Sampling Method
Researcher had taken 30 respondents covering both the zones on convenience basis for analysis. For collection of data mainly the questionnaire methods is selected. A questionnaire is prepared for
the aspiring professionals who have completed the computer courses offered by AMTRON.

**Research Instrument**

To carry out research, the researcher had prepared a questionnaire consisting 25 questions in which the respondents were required to give just thick mark or cross mark in all most all questions.

**Area covered**

The initial plan was to collect information from almost all DCC of both the Zones. But at the time of the survey Computer courses were not started in all DCC. Hence, the researcher took two DCC from each zone in which computer courses was running successfully.

**Data Analysis**

The data are analyzed by preparing tables and shown the figures in one bar diagram and one Pie chart.

The researcher selected the five criteria to know about the satisfaction and dissatisfaction of the aspiring professionals with regard to computer courses offered by AMTRON and shown that in the bar diagram.
Researcher has selected four criteria to know the impact or benefits of the computer courses on the respondents and shown it in the Pie chart.

1.8 **Utility of the Research study:**

The findings of the proposed research study will show the role played by electronics and IT industry in the economic development of Assam. It also evaluates and appraises the performance of AMTRON with its stipulated aims and objectives. It may be helpful to AMTRON in managerial policy making, decision making and taking appropriate steps for the overall success in near future.

The study and analysis of the activities of AMTRON will also help the organization in taking proper steps and provides suggestions for the solution of financial and other problems.

The industrially backward state like ASSAM, where growth and development of industry is very much difficult, the findings of this study will definitely give some ways to overcome those problems and encourage entrepreneur in the field of Electronics industry set up for overall economic development of the nation.
1.9 **LIMITATION OF THE STUDY**

The study contained some unavoidable limitation. They are:

1. It will not be possible to cover entire aspects of AMTRON within a specified time period.
2. It is very difficult to incorporate up to date data of Electronics Industries due to frequent changing & development of Electronics & IT Industry
3. The sample size selected may not be representing the entire universe because the size of the sample is limited to 40 respondents

1.9 **Plan of Work**

The thesis divided into the following Chapters:-

**Chapter I - Introduction** - an overview of the Electronics & IT Industry - its present position in India and Assam - Objectives of the study - Research Questions - Methodology of the Programme - Utility of the study - Limitation of the study

**Chapter II** - potentialities of Electronics and IT industry in Assam - Characteristics of Electronics & IT
Industry – Prospective allied industries- Scope of Electronics & IT Industry in Assam

Chapter III - Organization Profile & Role of AMTRON in Popularizing Electronics and IT Industry in Assam – Organisational structure of AMTRON – Functions and Activities of AMTRON – In the development of Electronics Industry in Assam – In the development of IT Industry in Assam – Commitment & Achievement of AMTRON.


Chapter V – Analysis of Data collected from field survey – Introduction - An opinion survey among computer training holders of AMTRON was conducted through a questionnaire and their views towards
AMTRON and its computer course are presented in the fifth chapter.

Chapter VI- Findings & suggestions – Findings- Suggestions - Conclusions
AMTRON AT A GLANCE