CHAPTER - 5

IT DIFFUSION TO OTHER CITIES IN KARNATAKA
5.1 Introduction:

This chapter investigates the diffusion of information technology in four cities, namely Bangalore, Mangalore/Manipal, and Mysore of Karnataka state and identifies how successful have these cities been in using the new information technology to promote software exports? What market structure characteristics are conducive to rapid diffusion? Why do the channels of diffusion responsible for it vary from city to city?

Karnataka has always been a proactive state, which has today made it into the sought after IT destination in the world. In Karnataka as well in India, Bangalore takes the lead.

5.2 Position of IT Industry in Bangalore:

Bangalore, the fourth largest technology hub in the world is continued to attract more IT companies. Around 198 software-exporting companies have registered with STPI (Software Technology Park India)
Bangalore during the year 2004-05, total comes to 1520 companies as on 2005.

a. **Bangalore poses many advantages for locating IT companies:**

   Bangalore poses many advantages for locating many IT companies due to large pool of skill labours coming out of 100 of engineering colleges established in the city.

   Bangalore is called air condition city due to pleasant and comfortable climatic conditions prevailing throughout the year. Temperature will not comedown to 10°Celsius or goes above 40°Celsius.

   Bangalore city is a hub for many Indians coming from north, east, west and more from south Indian sates. It has a cosmopolitan environment accommodating people speaking Hindi, Tamil, Telgu, Malayalam, English, Gujarat etc.

b. **The Evolution of the IT Industry in Bangalore:**

   IT industry in Bangalore started from the establishment of Texas Instruments centers for offshore development in 1984. Further the
Government of India, department of electronics announced a software policy in 1986. The real beginning of software development started in 1991 when STPI was established. An exclusive satellite gateway for export industry was setup in 1992. Government of Karnataka also announced first IT policy in the state in 1997.

By 1998 the number of IT companies (software) under STPI grew to 253 with the total project worth US $ 840 million. Further government of Karnataka established Karnataka IT venture fund and Indian Institute Information technology - Bangalore (iiit-b). As a result there is continuous growth of number of companies, STPI and total amount of projects worth us billion dollars. For example in 2000 there were 782 companies with the total projects worth US$ 1.1 billion and increased to 1154 with total project worth US$ 2.67 as on 2003. The number of BPO and IT companies have emerged has successful companies over a period of time.
5.3 Software Technology Parks of India – Bangalore:

STPI – Bangalore is started with 2.5 crores investment by the ministry of Information Technology. STPI – Bangalore was the first center where Internet was brought up, the city has the distinction of being the first city communication services in the country.

The bandwidth operated from STPI – Bangalore was about 28 mbps and it increased to about 48 mbps. They have 18 carries to multiple countries across the world.

A unique thing about STPI – Bangalore is the presence of a large Earth Station facility and VSAT Hub of ERNET. This VSAT network is connecting 125 education and research institution across the country. This is the only facility in the country which has an international connectivity co-located with the international gateway.

Industry Composition:

Below is a break up of the number of IT companies under STPI in Bangalore classified by type of activity (as of May 2002).
- Integrated circuit design (IC) - 46
- Communication software - 108
- Systems software - 166
- Application software - 293
- Service companies - 303

The IT industry's composition in Bangalore (2002) shown in the below figure - 5.1 indicates that a large percentage of the companies are involved in high technology software development.

The general software firms are 33 percent of the total where as application software and system software firms are 17 percent each, followed by IC design firms are 13 percent and IT enabled service & communication software firms are 10 percent. Though IT enabled service are 10 percent in number, their employing is very high due to nature of work.
Figure -5.1

IT industry composition in Bangalore:

- General Software: 13%
- Application Software: 17%
- IC Design: 10%
- System Software: 10%
- IT Enabled Services: 17%
- Communication Software: 33%
Below table - 5.1 is an overview of the industry's composition during the years 1999-2002 in terms of their value in US dollars. In the year 1999-2000 the number of companies above US$ 200M was nil and the number of companies less than US$ 0.5M were 277. In the year 2000-01 the number of companies above US$ 200M increased from 0 to 2, but number of companies less than US$ 0.5M decreased from 277 to 212. While in the year 2001-02 number of companies above US$ 200M remains the same. Whereas number of companies less than US$ 0.5 increased to 326.

Table - 5.1

Industry's Composition During the Years 1999-2002

<table>
<thead>
<tr>
<th>Value Companies in US $ Million</th>
<th>of</th>
<th>1999-2000 No. of Companies</th>
<th>2000-01 No. of Companies</th>
<th>2001-02 No. of Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above US $200M</td>
<td>Nil</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Between US $20M-200M</td>
<td>6</td>
<td>13</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Between US $2M-20M</td>
<td>51</td>
<td>66</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>Less than US $2M</td>
<td>100</td>
<td>189</td>
<td>246</td>
<td></td>
</tr>
<tr>
<td>Less than US $0.5M</td>
<td>277</td>
<td>212</td>
<td>326</td>
<td></td>
</tr>
</tbody>
</table>

Source: computed from www.bangaloreit.com
The figure 5.2 shows the growth of software exports from Bangalore in comparison with other cities in India during the year 2000-01. The growth of software exports from Bangalore during 2000-01 indicates high potential for Bangalore STPI. The total exports were 7475 crores compared to 4,350 crores from Noida, 2956 crores from Chennai, 1990 crores from Hyderabad, 1610 crores from Navi Mumbai.
Figure 5.2
The growth of software exports from Bangalore in comparison with other cities in India during the year 2000-01.
The following figures 5.3 & 5.4 indicate the software exports for each segment in the IT industry during the year 2001-02 to 2002-03. Software exports from application software, embedded software, IT enabled/BPO and IC design segments are increased by 37 to 39 percent, 7 to 9 percent, 5 to 8 percent and 6 to 7 percent respectively.

Whereas the software exports of system software segment remains the same 17 percent. But the telecom and others declined from 18 to 14 percent and 10 to 6 percent.

The contribution of application software to the software exports indicates high performances during the year 2002-03.
Figure 5.3:
The software exports for each segment in the IT industry, classified by type of activity, during the year 2001-02.
Figure 5.4

The software exports for each segment in the IT industry, classified by type of activity, during the year 2002-03.
5.4 Software Exports from Bangalore:

Below table – 5.2 and figure 5.5 indicate that in the year 2000-01 saw a growth rate of 69.99 percent in software exports and the year 2001-02 experienced a growth rates of 33 percents. The year 2002-03 saw a growth of 25 percent. The software exports has grown from a mere Rs. 18100 in 2003-04 to Rs. 27600 in 2004-05 from Bangalore.

<table>
<thead>
<tr>
<th>Year</th>
<th>Software Exports (Rs. In Crores)</th>
<th>Growth Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>7475</td>
<td>69.99</td>
</tr>
<tr>
<td>2001-02</td>
<td>9903</td>
<td>33</td>
</tr>
<tr>
<td>2002-03</td>
<td>12350</td>
<td>25</td>
</tr>
<tr>
<td>2003-04</td>
<td>18100</td>
<td>46</td>
</tr>
<tr>
<td>2004-05</td>
<td>27600</td>
<td>52</td>
</tr>
</tbody>
</table>

Source: computed from www.bangaloreit.com
Figure – 5.5
Software Exports from Bangalore

'04-05
5.5 Growth of STP Registered Companies in Bangalore:

Below table 5.3 and figure 5.6 depicts that in the year 2002-03 about 116 new software companies and during 2003-04 about 168 companies were established. During 2004-05 about 198 new units have been established.

Table 5.3
Growth of STP Registered Companies in Bangalore

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Registered Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>928</td>
</tr>
<tr>
<td>2001-02</td>
<td>1038</td>
</tr>
<tr>
<td>2002-03</td>
<td>154</td>
</tr>
<tr>
<td>2003-04</td>
<td>1322</td>
</tr>
<tr>
<td>2004-05</td>
<td>1520</td>
</tr>
</tbody>
</table>

Source: computed from www.bangaloreit.com
Figure 5.6
Growth of STP Registered Companies in Bangalore
When competition has largely dented billing rates of software service and appreciation of rupee against dollar, the export growth rate of 52 percent to touch Rs. 27600 crores in phenomenal and once again Bangalore has maintained its leadership position in the country.

However, due to lack of infrastructure facilities viz, roads, power etc, and increase in taxes rate on IT companies from the state government many companies shifting from Karnataka to Tamil Nadu and Andhra Pradesh. Hence there is a need for the state government to examine the situation once again because one cannot neglect the IT sector which has given plenty of job opportunities to youth and given a great contribution to state economy.

5.6 Intercity Comparison of the IT Performance in Karnataka:

While making intercity comparison of the IT performance in Karnataka we deliberately excluded the Bangalore city due to its predominant position, besides other cites are sub-center of Bangalore city.
Map 5.1
STPI-B Sub Centers
Hence the following comparisons confined to selected variable to other than the Bangalore city.

1. Infrastructure
2. Number of firms registered
3. Software exports

5.7 Position of IT Industry in Mangalore/Manipal:

Mangalore/Manipal scores advantages for the IT because of the presence of strong banking and financial industry, prospect, of better airport, very good telecom and data-communication infrastructure in place. Added to this the region has quality education, very high literacy rate, good English speaking population, reputed health care industries and good transport facility.

Facilities available at STPI – Mangalore/ Manipal Incubation Centre:

- Six fully furnished and air-conditioned office modules with a floor area of 220 sq.ft. each
- Five workstations in each office with Pentium powered PCs.
- Switched Local Area Network with connectivity to High Speed Internet Gateway.
- Power supply with D.G. backup.
➢ UPS facility with 1:1 redundancy

➢ EPABX, phone, fax, CD Writer, Scanner, Printer and Photocopying facilities.

➢ Conference hall of 24-seater capacity.

➢ Discussion rooms.

➢ 24/7 Technical support from Network Operations Centre

➢ Fire Alarm and Access Control

➢ Facility maintenance

➢ 24 Hrs. security

➢ Cafeteria

Data Communication Facility at Mangalore/Manipal:

➢ High-speed data communication services

➢ Quality Internet Services

➢ Bandwidths Multiples of 64kbps, 2mbps to 45 mbps or higher.

➢ End to end Network management

➢ 24/7 customer support

➢ EXIM Services

➢ Incubation Services
5.8 Position of IT Industry in Mysore:

Mysore today is next best (after Bangalore) city, attracting IT companies and showing signs of being able to handle all changes that take place in a big city. It is well connected with Bangalore just about 137 km away. The cost of living including land and housing is relatively low. The city has an abundance of technical manpower and its moderate climate makes it an attractive destination. The table 5.4 reveals the comparative picture between Mysore and Bangalore in terms of special advantages.

<table>
<thead>
<tr>
<th>Table-5.4</th>
<th>Comparative Picture Between Mysore and Bangalore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software exports</td>
<td>Mysore 309</td>
</tr>
<tr>
<td>Graduates in 2005</td>
<td>5,000</td>
</tr>
<tr>
<td>Engineers in 2005</td>
<td>2,000</td>
</tr>
<tr>
<td>Avg Commuting time</td>
<td>20 mins</td>
</tr>
<tr>
<td>Population</td>
<td>10 Lakh</td>
</tr>
<tr>
<td>Land Rates (Rs per sq ft)</td>
<td>300</td>
</tr>
<tr>
<td>Vehicles on road</td>
<td>3 Lakh</td>
</tr>
<tr>
<td>Pollution (Sulphur-di-oxide)</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Source: Sid Mookerji’s Presentation at Bangalore IT.in 2005
STPI – Mysore gateway started on 1999. STPI-Mysore was started with the aim of promoting Software exports from Secondary cities. This move is expected to go a long way in tapping the global potential in the Software market. The biggest gain will be the positive impact it will have on the economic and social development in the secondary city. This gateway provides Internet services as well as international private leased lines. The setting up of communication services at STPI- Mysore has brought about a tremendous growth in the number of industries operating successfully here.

Major development areas in Mysore include software testing, software maintenance, and IT Enabled services such as medical transcription etc. Many educational institutions are also using STPI services for meeting internal communication requirements. A forty meters microwave tower system delivers access to all parts of the city.
STPI Mysore Industry Segmentation

Mysore Software Industry has a diverse skill set like:

- Telecom Software
- Banking and Financial Services Software
- E-Commerce applications
- Web Enabled services
- General Software Services
- IT Enabled Services

STPI Mysore – Services:

STPI-Mysore has its own Satellite based Gateways operating on multiple Satellites for providing vital Data Communication services to the IT Industry in and around the city of Mysore.

The services offered are:

Soft Point:

International Private Leased Circuits connecting customers in Mysore to any part of the globe.
SoftLink

Global Internet service ranging from 64Kbps to 45Mbps with a 100% redundancy using Fiber connectivity to STPI-Bangalore multi-homed Gateway.

Table – 5.5
Inter city comparison of software exports performance (2000-01 to 2004-05)

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Mangalore/</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Manipal</td>
<td>167.14</td>
<td>242.52</td>
<td>330</td>
<td>456</td>
<td>567</td>
</tr>
<tr>
<td>Mysore</td>
<td>30</td>
<td>39</td>
<td>65</td>
<td>180</td>
<td>309</td>
</tr>
</tbody>
</table>

(Rs. In Crores)

Source: Computed from www.soft.net
Figure 5.7
Software Exports Performance of Mysore and Mangalore/Manipal

Rs. in Crores

<table>
<thead>
<tr>
<th>Year</th>
<th>Mysore</th>
<th>Mangalore</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>167.14</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>2001-02</td>
<td>39</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>2002-03</td>
<td>65</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>2003-04</td>
<td>180</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>2004-05</td>
<td>309</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>
Mangalore/Manipal has achieved Rs.567 crores of software exports as against to Rs.309 crores of software exports from Mysore for the year 2004-05. Mangalore/Manipal software exports is the second highest in the state after Bangalore.

**Table -5.6**

Intercity comparison of Number of Companies Registered (2000-01 to 2004-05)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Mangalore/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manipal</td>
<td>12</td>
<td>13</td>
<td>15</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>Mysore</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>31</td>
<td>33</td>
</tr>
</tbody>
</table>

Source: Computed from www.soft.net
Figure 5.8
Number of Companies Registered

![Bar chart showing the number of companies registered from 2001 to 2005.](chart.png)

- Mergers/Mergers
- Acquisitions

Year:
- 2001: 12
- 2002: 13
- 2003: 15
- 2004: 18
- 2005: 19

- Total for 2006: 22
Though the number of companies registered at STPI- Mangalore/Manipal is less (19 companies during 2004-05) when compare to Mysore (33 companies during 2004-05), it has achieved Rs. 567 crores of software exports as against to Rs. 309 crores of software exports from Mysore for the year 2004-05. Mangalore/Manipal software exports is the second highest in the state after Bangalore.

5.9 Conclusion:

The state leads India in software exports and boasts of India’s largest pool of IT manpower. However, infrastructure is Karnataka’s Achilles heel. Power cuts (particularly in summer) are a fact of life. Public transportation is another problem area and Bangalore’s roads are in poor shape. Though the Karnataka government has made rapid strides in the last three years with ring roads, inner and outer, coming to relieve the pressure on Bangalore—flyover construction and laying of fibre using open trenching leave much to be desired. The last mile used to be a problem in telecommunications, that has now caught up with the road...
sector. While the ring roads are wide, they connect to narrow roads leading to traffic bottlenecks.

Cities like Chennai, Cochin and Mumbai are termination points for submarine cables. This gives them the edge in terms of cheaper connectivity with lower latency. Inland locations like Bangalore depend largely on satellites for overseas links. STPI’s efforts have resulted in development of secondary cities such as Mangalore and Mysore. Unless the power, transportation and bandwidth issues are sorted out—Karnataka will lose out to other states.

STPI Hubli has 1,20,000 square feet of area. The city’s IT and telecom infrastructure and HR base are good. Its power distribution is separated and closely associated with Maharashtra’s grid. Despite all these facilities the IT park in Hubli has not taken off as expected. STPI is attempting to position Hubli, a commercial centre located between Bangalore and Mumbai, as a Disaster Recovery (DR) hub. It hopes that the city will become a focal point for DR services for the state.
government’s e-governance projects like Bhoomi, Khajane and VAT as well as for private players like Reliance.

So far the larger cities have the benefit of better infrastructure and have a major role in software exports from the state. Smaller cities, which have the advantage of lower costs, can play a major role in this sector. Most STPs are not setting up communication infrastructure at secondary location because of commercial considerations. State may support software technology park centers at secondary locations, which will contribute to the exports of information technology services.

The smaller companies are unable to garner market share due to lack of market knowledge and ability to leverage their abilities to inherent skills in product development and management. Such a situation, if continued, could confine them to very low growth rates for future. Accordingly state has to plan for increase its focus as business promotion through increased participation in exhibitions, trade fairs and delegations etc.
Further it is observed that some cities are ahead and some lagging behind in adopting the IT due to lack of pro-active policy of the state government and inherent comparative disadvantages. This needs to be removed by the state government. The state role is more crucial when we examine the prospect of widening digital divide among the different cities within the state economy. Therefore the sustainable development of IT sector across the cities is to be the main task of the state.

Information Technology should be a tool, which should play a major role in converting the illiterate into literates, in converting normal governance to smart governance and to provide employment to millions of people through various IT & ITES Businesses. Thus, it can be concluded that if any industry will contribute the maximum to state's economy in next decade or so, it will undoubtedly be the IT industry. IT Industry has brought state on the threshold of a second tryst with destiny. Let state avail this opportunity and bring laurels to the state economy.