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# **IT Industry in Bangalore: Some Economic Implications**

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## **Abstract**

IT industry has shown phenomenal growth in the city of Bangalore which has changed the very nature of the city. Large migration to the city also has created several environmental problems. Because of growth of this industry in selected pockets income inequality in the state is also on the rise which have many adverse social implications. But the sector has been able to generate significant employment and this role needs to be highlighted as educated unemployment can create many adverse economic and social problems as well. Further the rise of the industry has enhanced income of the state of Karnataka and export from this sector helps country to improve India's balance of payment scenario. This paper examines the status and impact of IT industry in Bangalore and compares the city with other major locations within India.

Key words: IT Industry, Relative Comparative Advantage, Balance of Payment, other business services.

## **Introduction**

Services sector has shown enormous potential as a growth driver for many developing countries and India is prominent amongst them. Contributions of the services sector can be visualized from two dimensions; one is its contribution towards income and other is its role in trade. Income no doubt is an important economic component that is supposed to have direct linkage to well being. Due to this consideration it is an important component of Human Development Index. If we consider the sectoral

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\* This paper has benefited from my earlier work done with B P Vani. I and grateful for her support.

income measured through GDP at All India level we observe that during 1950-51 agriculture and related sectors contributed 55% of GDP and that of manufacturing and services sector were 10% and 35% respectively. Over time importance of primary sector however declined considerably and its share reduced to 19% during 2006-07 while manufacturing sector has enhanced its share to 20% and services sector to 62%.

From the national level we next come down to regional level and **in particular to Bangalore**, which has significant contribution in production of an important service viz., information technology (IT). Our analysis of most recent district level data in Karnataka reveals that the contribution of the services sector to the state economy is 54%, which is lower than the national average ; however, the same for Bangalore urban district is 62% , which is at par with the national level. Other districts such as Udupi also has high share of services in the district income. In general all districts of Karnataka have above 45% share of services sector income in the respective district income. Traditional services such as trading, banking, transportation play major role in all the districts.

From the income dimension when we turn to the trade aspect we observe that with the development of IT technology, trade in services was born again in an entirely new '*Avatar*'. The traditional definition of services as something non-storable, non-tradable and intangible appears to be too limited today. Within the general services sector, role of information and communication technology has been significant. With the development of information and communication technology (ICT), service delivery mechanism has changed radically. Consequently, services that can be handled using computers and telecom networks have come to play a significant role in the Indian economy. Recognizing the significance and growing role of services in the world and national economy, the Uruguay Round broadened the scope of multilateral trade negotiations to include services for the first time in the history of trade negotiations. The result of these negotiations was the General Agreement on Trade in Services or GATS, which came into force on 1st January 1995.

It is well recognized in the literature that there is a dearth of hard data on the IT-ITES sectors of the Indian economy. For example, on the ITES segment there exists a number of estimates on market size and they differ from each other. Further, the estimation procedures are also not clearly delineated. In this respect the Balance of

Payments Statistics (BoP) yearbook published by the International Monetary Fund (IMF) can be considered an authentic source, which is also comparable across countries. But it is difficult to clearly separate out statistics for the IT-ITES sector from the BoP data. According to the IMF manual<sup>1</sup> the category viz., ‘*other business services*’, includes management fees, professional, technical and consultancy services, legal services, market research agencies and R & D. Exports and Imports under this category and the ‘*computer and information services*’ category would together include a large part of IT and ITES.

If we examine the *share of other business plus computer and information services* in the total imports of OECD countries under these two heads, we observe that more than 80% of trade in other business services are confined within the OECD countries only . India’s share was only about 2% and China’s share was around 1%. The shares of certain selected countries are presented in the Table 1.

Table 1: Country-wise share of other business and computer and information services exports in OECD’s imports of these services

Countries	1990	2002
Australia	1.22	0.76
Canada	6.09	3.41
China	0.73	3.40
<b>India</b>	<b>1.57</b>	<b>5.73</b>
Indonesia	0.21	0.00
Ireland	0.61	4.74
Malaysia	0.71	0.72
Mexico	0.32	0.08
Netherlands	7.25	6.62
Philippines	1.73	0.08
Singapore	4.59	4.01
Thailand	0.50	1.11

Source: Compiled from the Balance of Payments Statistics Year Book, IMF.

From Table1 we observe that after 1990, the export share changes considerably for India as it raises its share to 6% in the global market in 2002. Ireland and China’s shares too increased to 5% and 3% respectively from about 1%. The share of the Philippines on the other hand has fallen and become almost negligible. Comparison of

<sup>1</sup> Balance of Payments Statistics, IMF, Part 2 and 3, Year Book 2003, pp 296,410,443

India's relative comparative advantage (RCA) of IT and ITES sector with the above countries also clearly reveal its comparative advantage in this area (Table 2).

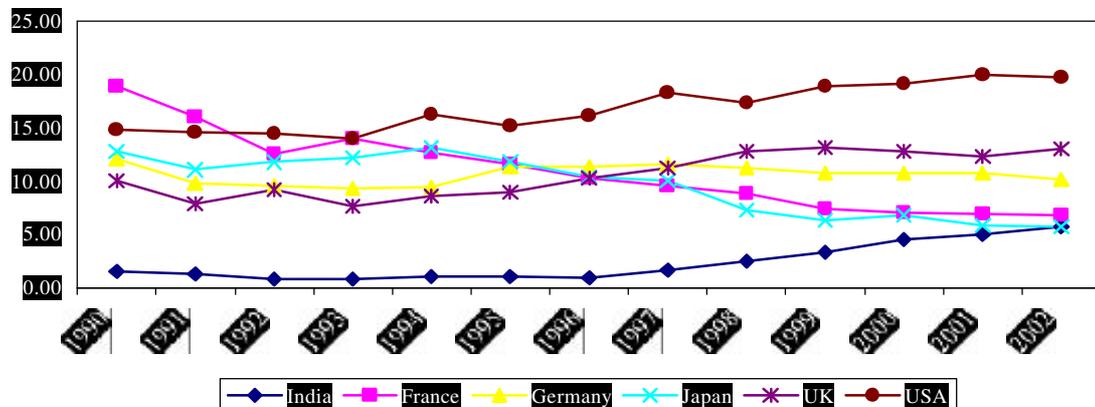
Table 2: RCA (of computer & information and other business services) of India vis-a-vis other selected nations

Year	India	Mexico	Philippines	Singapore	Canada	Ireland	China	Australia
1990	3.1	0.4	4.8	3.3	2.9	1.6	1.1	1.1
2000	4.6	0.3	0.7	2.7	2.2	3.4	1.8	0.8
2001	5.1	0.2	0.5	3.0	2.2	4.0	1.9	0.9
2002	5.5	0.1	0.6	3.2	2.2	4.0	2.0	1.1

Source: Computed by authors using BoP Statistics, IMF.

If we now compare India with the developed nations *over the years* we observe that though India began at a much lower share, of late India's share is comparable of late to Japan and France. The United States has the highest share followed by UK (Fig. 1).

Fig.1: (Country-wise) Trends in share of other business plus computer and information services exports to the imports of OECD countries (of the same services)



Source: Compiled from Balance of Payments Statistics, IMF

Thus we observe that India has been able to show prominence in the trade of IT services. In the international trade of these newly developed services the role of Bangalore is indeed prominent.

## IT Industry in Bangalore

There are a number of IT hubs today in India and Table 3 provides a list of such hubs. A careful look at the information shows that Bangalore is indeed the major IT location in India.

Table 3: Major IT hubs in India

<ul style="list-style-type: none"><li>✦ <b>NCR - Delhi</b></li><li>✦ Total STPI registered units by 2006-07: 1,400 (150 added in 2006-07)</li><li>✦ IT/ITeS majors: IBM, Genpact, Oracle, Am Ex, Convergys, HP, General Motors</li></ul>
<ul style="list-style-type: none"><li>✦ <b>Kolkata</b></li><li>✦ Total STPI registered units by 2006-07: 166 (28 added in 2006-07)</li><li>✦ IT/ITeS majors: IBM, Cognizant, TCS, Infosys, Wipro</li></ul>
<ul style="list-style-type: none"><li>✦ <b>Mumbai</b></li><li>✦ Total STPI registered units by 2006-07: 630 (40 added in 2006-07)</li><li>✦ IT/ITeS majors: TCS, Infosys, Wipro, Siemens, Accenture</li></ul>
<ul style="list-style-type: none"><li>✦ <b>Hyderabad</b></li><li>✦ Total STPI registered units by 2006-07: 1,060 (130 added in 2006-07)</li><li>✦ IT/ITeS majors: HP, Amazon, Verizon, Convergys, EXL, Infosys, TCS</li></ul>
<ul style="list-style-type: none"><li>✦ <b>Pune</b></li><li>✦ Total STPI registered units by 2006-07: 635 (108 added in 2006-07)</li><li>✦ IT/ITeS majors: Cognizant, Convergys, EXL, KPIT, Msource</li></ul>
<ul style="list-style-type: none"><li>✦ <b>Chennai</b></li><li>✦ Total STPI registered units by 2006-07: 900 (131 added in 2006-07)</li><li>✦ IT/ITeS majors: Infosys, Wipro, Accenture, Cognizant</li></ul>
<ul style="list-style-type: none"><li>✦ <b>Bangalore</b></li><li>✦ Total STPI registered units by 2006-07: 1,700 (201 added in 2006-07)</li><li>✦ IT/ITeS Majors: Infosys, Wipro, TCS, HP, Siemens, HSBC, Compaq</li><li>✦ <b>Cumulative software exports from Bangalore are estimated at US\$ 11 billion, positioning it as the leading IT hub of India</b></li></ul>

Source: STPI

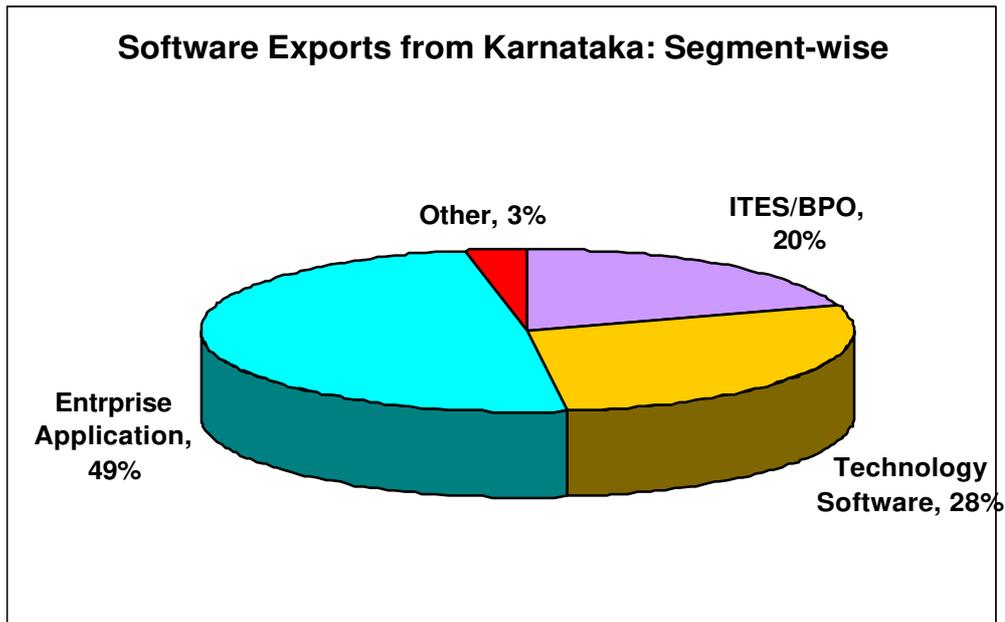
IT industry has three major components present in Bangalore<sup>2</sup>. They include software, IT-enabled business process outsourcing (BPO) services (see fig. 3) and hardware. Software companies form about 20% share of all India total number of companies (Fig.2), and continue to grow at an impressive rate. Exports from software industry

<sup>2</sup> See also NASSCOM Strategic Review and Bhide , Rajeev and Vani (2006), Rajeev and Vani (2007, 08 , 09).

grow at 23% rate while national growth rate is 21% (see Fig 4). Thus even during the time of global recession the sector in Bangalore shows resilience<sup>3</sup>. As far as Hardware is concerned India is not a leading player, however, Bangalore has an impressive share of above 40% in this segment<sup>4</sup>.

In ITES-BPO segment also Bangalore is the leading player.

Fig. 2:

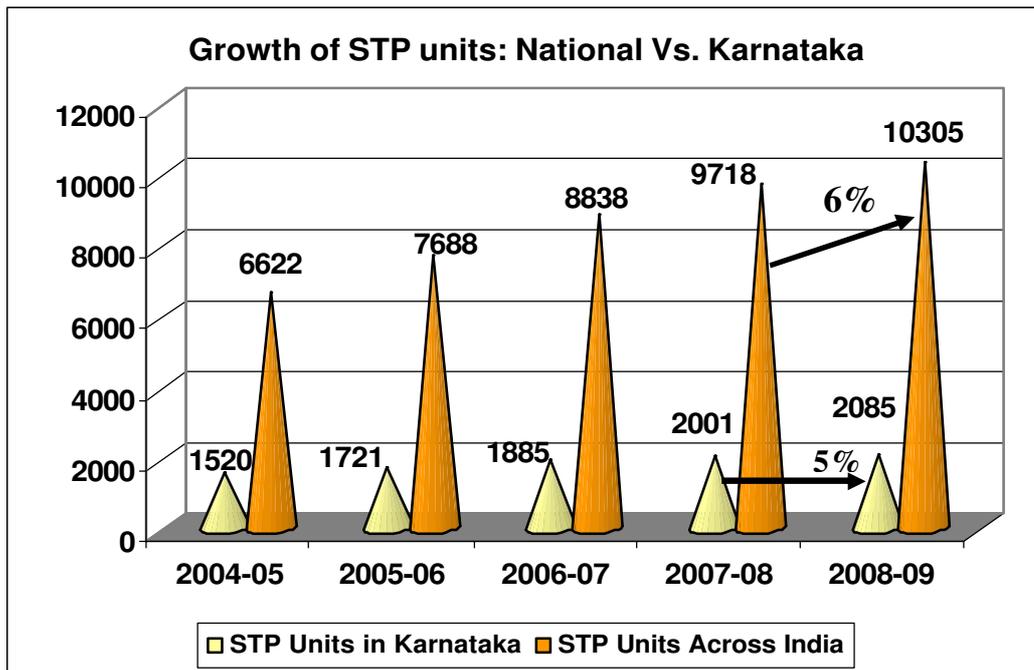


Source: Software Technology Park Bangalore, Dept. of IT, Ministry of Communication & IT, Govt. of India.

<sup>3</sup> See also Bhagawati et al (2004)

<sup>4</sup> Even though the above data are for Karnataka, the shares of other locations within the state are rather small. These data therefore depicts the scenario in Bangalore.

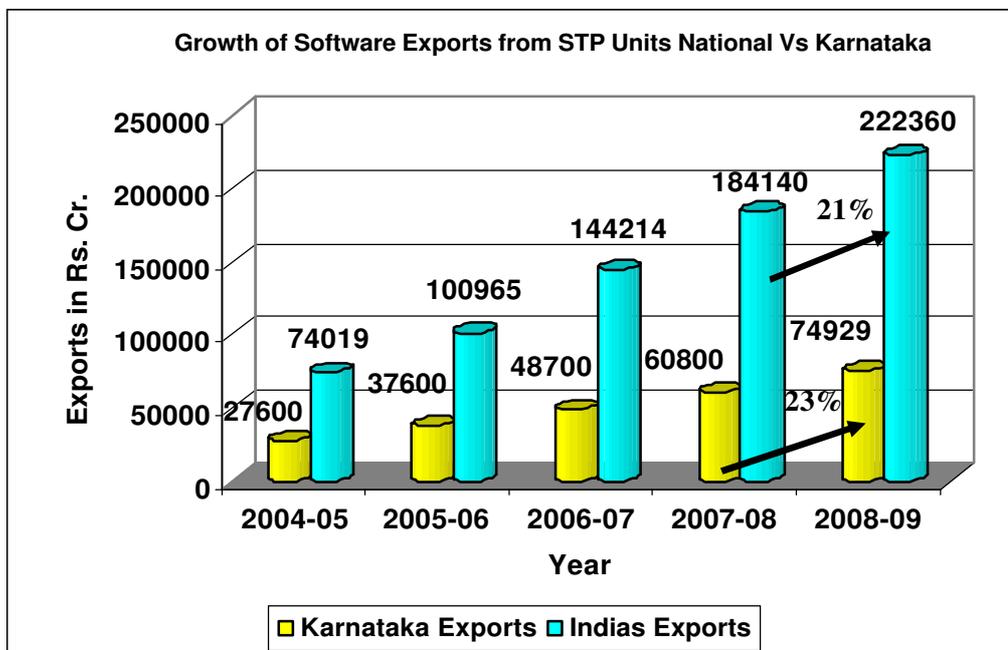
Fig. 3:



**84 New STP were approved during F.Y. 2008-09**

Source: Software Technology Park of India (Bangalore), Dept. of IT, Ministry of Communication & IT, Govt. of India.

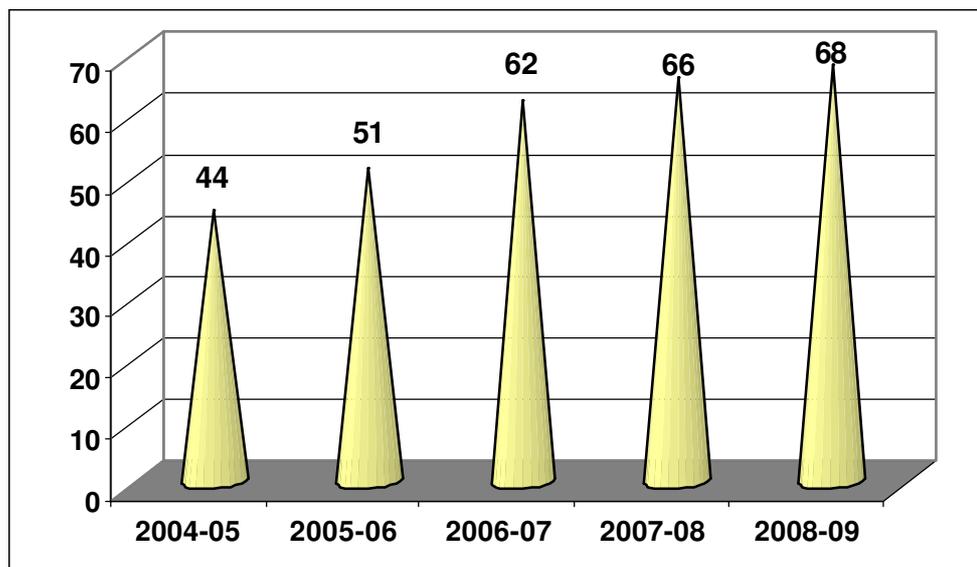
Fig. 5:



**Karnataka Contributed to 34% of National Exports in FY 2008-09**

Source: Software Technology Park of India (Bangalore), Dept. of IT, Ministry of Communication & IT, Govt. of India.

Fig. 6:



**Total across India # 180 units**

Source: Software Technology Park of India (Bangalore), Dept. of IT, Ministry of Communication & IT, Govt. of India.

### **Employment Generation**

India produces a large number of graduates every year and it is well known that a large proportion of them do not find meaningful employment in the economy. The role of the growing IT and BPO sector is commendable in this respect; more importantly the BPO sector has been able to provide employment opportunities even to simple graduates(see Rajeev and Vani 2009). The state of Karnataka itself produces a large number of technical and non technical graduates which IT industry in Bangalore absorbs. In addition Bangalore today attracts professionals from all over India. Massive migration has also changed the cultural contours of the city.

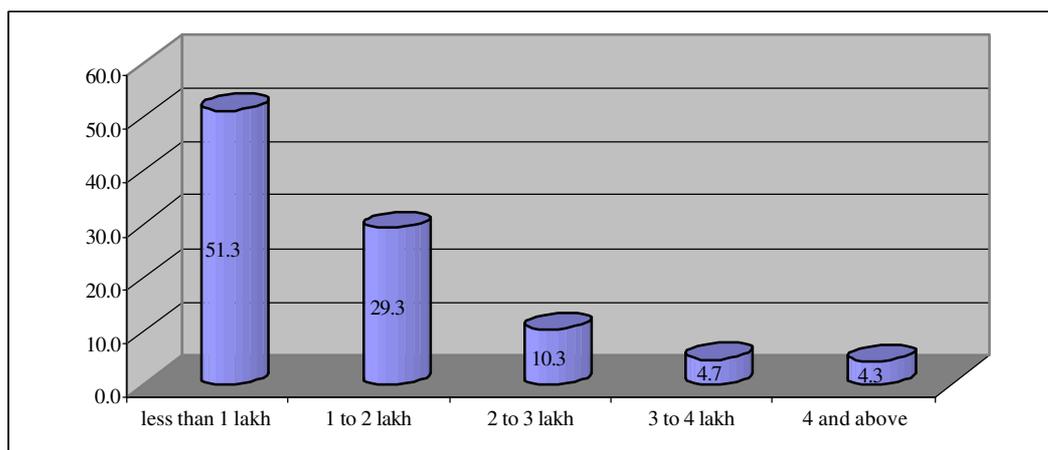
Another important observation about IT employment is worth noting here. Our analysis of most recent data from Udyog Mitra, Government of Karnataka reveals that IT/ITES sector is expected to generate employment for 25 persons (on an average) per crore rupee of investment; On the other hand Iron and steel or energy production generates employment for one person only, for that level of investment. While importance of the manufacturing sector cannot be undermined, this employment

generation capability of the IT/ITES sector needs to be kept in mind in formulating policies for the sector.

As mentioned above, in the IT sector, employment is provided mainly for the highly skilled workers and from middle income category. ITES sector provides employment to the simple graduates as well and income category is not as high within the middle income group. Of late there are several reports on the BPO employments in the media. In order to understand the ground reality about the nature of employment in the BPO industry we have carried out a survey of BPO employees at an all India level. Some of the results from the survey in Bangalore are reported here.

From our field survey it is observed that as far as the economic background of the employees are concerned, highest percentage of current BPO employees (aged between 22 to 25 years) paid school fees<sup>5</sup> less than Rs 5000. Thus they come from *moderately* expensive private schools. Further, the average annual family income (parents' income) of the respondents ranges from Rs 1 lakh to 3 lakhs (85.4% of the employees fall within this range of family income, Fig.7). In fact, more than 50% of the employees come from family income below Rs 1lakh category. Thus they do not belong to the relatively rich class.

Fig. 7: Annual family income of the employees



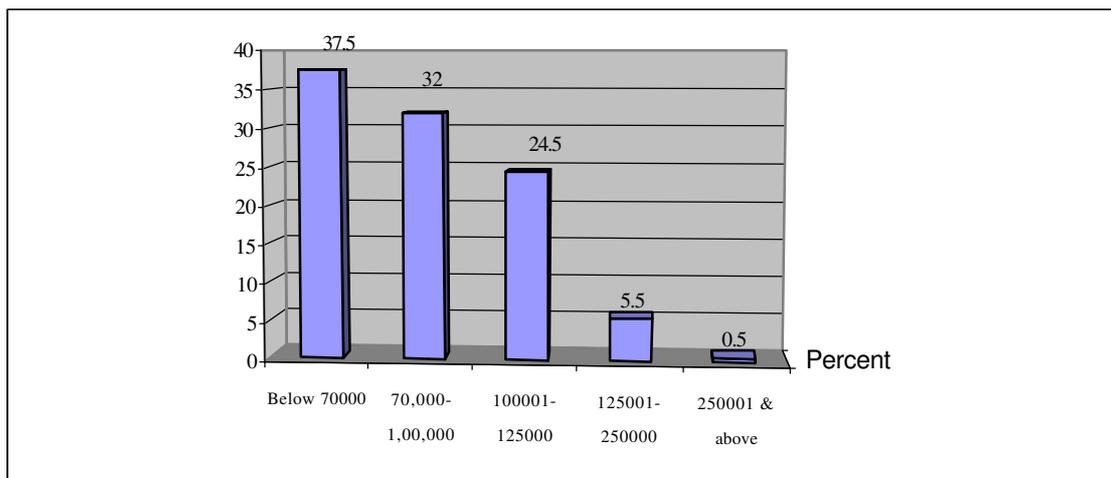
Source: Field Survey

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<sup>5</sup> In 12<sup>th</sup> Standard

Concentrating next on the incomes earned by employees of the BPO sector, we observe that the top managerial officials of the industry earn handsome salaries ranging from Rs10 lakhs to Rs 50 lakhs per annum. The salary levels of the next layer of employees comprising supervisors and executives ranges on an average from Rs 5 to Rs10 lakhs per annum. The distribution of agent-level employees according to income earned is depicted in Fig. 8.

Fig. 8: Income earned by the employees

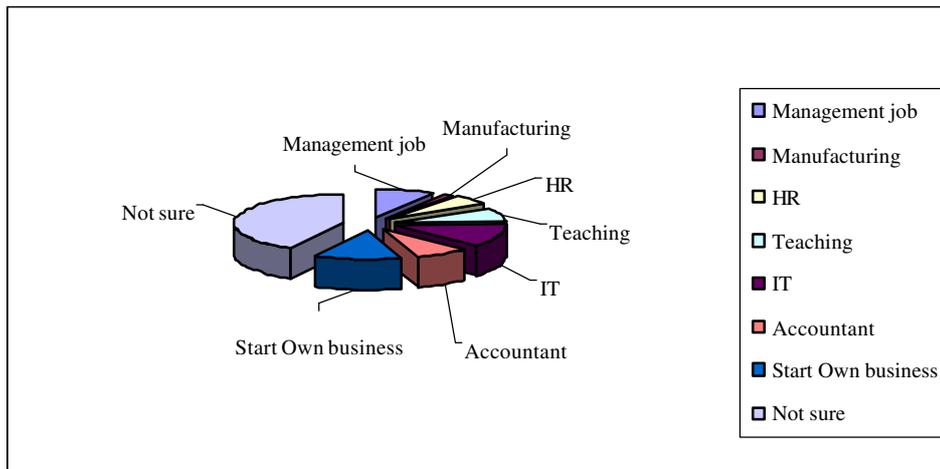


Source: Field Survey

Thus the sector seems to provide remunerative employment as compared to the manufacturing sector.

Even though there has been some discussion in media about the working conditions, stress and strain of the BPO employees, the important question that arises is, in the absence of the development of this sector what could have been the possible alternative employment opportunities for the employees? (Fig.9)

Fig. 9: Alternative employment possibilities



Source: Field Survey

Interestingly, 42% of the respondent employees have expressed that they are not sure whether they would have got *any* employment in the absence of development of this sector. Another 13% also revealed similar concerns and felt that they may have had to start some small business for survival. Thus, 55% of the respondent may not have gained meaningful employment in the absence of this sector. Interestingly, both graduates and post-graduate level degree holders have voiced similar concerns. While about 38% of the graduates that are currently working in the BPO sector feel that they may not get employment otherwise, 31% of the employees with post-graduate level degrees also feel the same. Thus, the industry has created remunerative employment opportunities for the semi-skilled and skilled workforce of Bangalore, which had earlier been experiencing stagnant growth rates. In addition to direct employment the sector has also created spill over effects in other sectors such as retailing, security etc and thereby generated employment in these sectors as well.

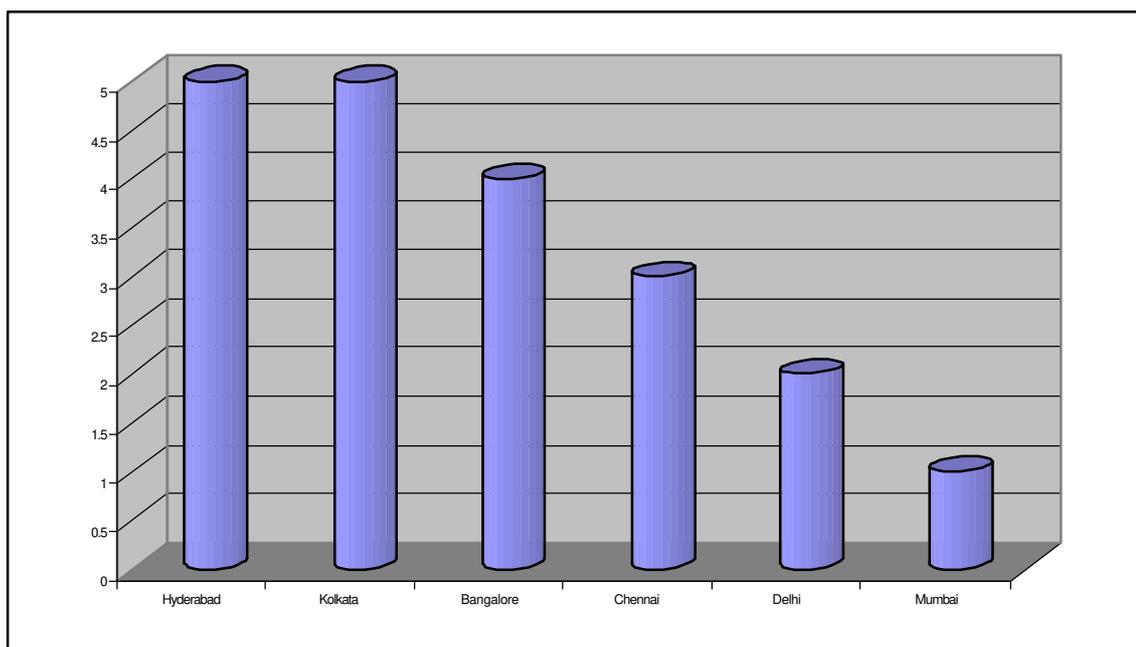
While employment and income generation and other benefits of this sector may be appreciated the important question that arises is whether Bangalore can retain its position as a top player in the IT industry? In this regard we present below some results from our all India level survey where the respondents are the management personals of these firms. In this exercise we tried to assess the attractiveness of major IT locations in India in terms of different indicators.

### Attractiveness of Major Locations

In this connection the respondent firms are requested to rank different cities in terms of selected indicators pertaining to the industry and the modal rank is selected to represent a location with respect to that particular indicator. Five metros are compared in this connection, viz., Hyderabad, Chennai, Bangalore, Mumbai Pune area and Delhi-Gurgaon area.

**Wages:** With respect to wages Hyderabad and Kolkata are ranked as the most attractive location followed by Bangalore (from a company's perspective). Wages in Delhi are comparatively higher than the other regions. This may be due to the fact that cost of living in Delhi is higher (Fig.10).

Fig. 10: Attractiveness of selected metros (for a BPO) with respect to wages\*

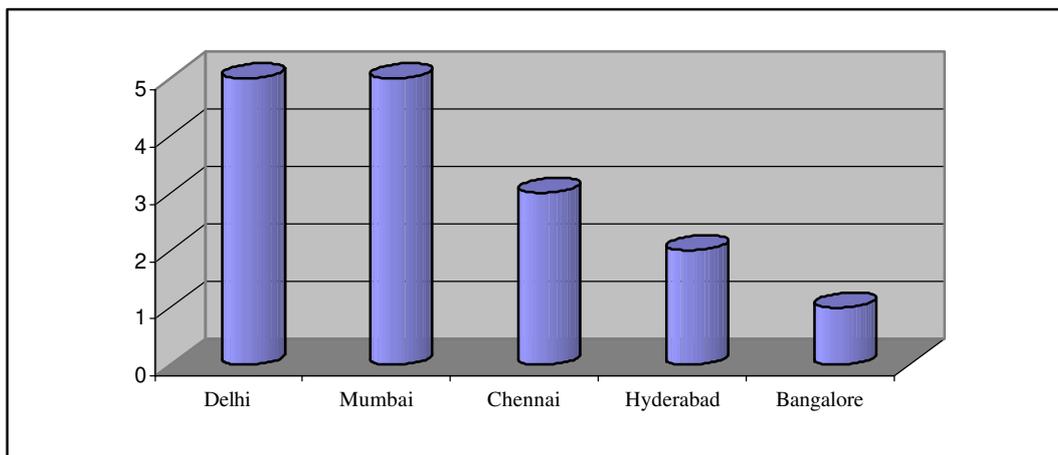


\* A taller bar represents comparatively more attractiveness

Source: Field Survey

**General City Infrastructure:** With respect to general city infrastructure, which mainly incorporates roads and traffic condition, Bangalore appears to be the least attractive city (Fig 11). Bangalore being the house of many renown firms, this revelation is rather disturbing.

Fig. 11: Attractiveness with respect to city infrastructure



Source: Field Survey

Thus we observe that with respect to two major indicators position of Bangalore is not encouraging. Indeed due to intense competition wages of Indian employees now have surpassed that of China which is not a good sign.

In order to retain competitiveness one needs to improve infrastructure of Bangalore. However, to remain competitive in this area it is also necessary to develop other locations especially smaller towns in the state of Karnataka. That will take the load off from Bangalore and also help IT penetration in different parts of the state. Cost of services will also be much lower. This should be considered as an urgent need in the state.

While we have discussed about the importance of employment generation capabilities of this industry, the downside of the development is that this employment creation imposes a unique set of working conditions on employees, which includes stress, tension, night time work etc. whose implications are as yet not well understood.

### **Certain Social Implications**

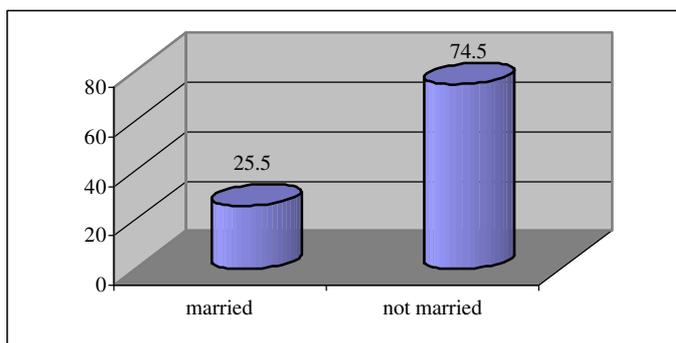
The industry has created employment largely for the younger age group. Especially in the BPO industry more than 90% of the employees are below 30 years of age. This feature has certain social implications. By eradicating unemployment at an early age it helps to reduce certain social tensions. However, the fact that employment is available at an early age may act as a deterrent to pursuing higher education. Further, owing to

larger purchasing power at an early age, expenditure pattern in Society may see a bias towards luxury goods.

Though these employees are usually not from the higher end of the economic strata, does constant contact with the western society have a cultural influence on them? Our interactions with the employees show that the unique work environment of this industry may have some influence on most of them. In this context, it is observed that the most of the employees are unmarried and live with their parents. However, they have been able to save only 20 to 25 % of their income even though their food, transport and other needs are usually taken care of by the company. Further inquiry into the matter reveals that some employees do hand out part of their income to their parents and the migrants spend on house rents. However, a large part goes for outing and jolly trips, eating out with friends and buying most modern electronic gadgets (sometime even for the family). Buying new outfits at frequent intervals also adds to their expenditure. Moreover, mobile phone and fuel charges constitute a large portion of their regular expenditure.

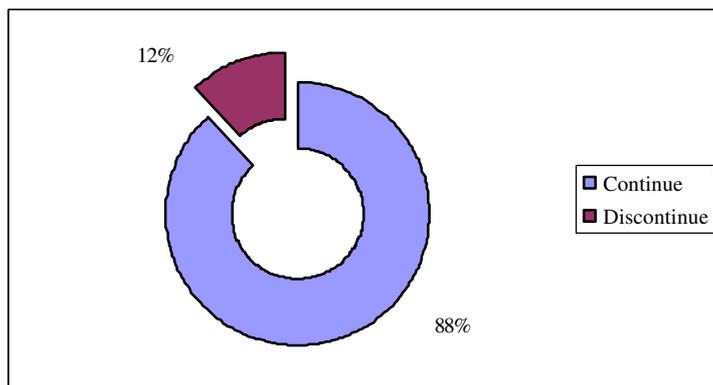
Industry like BPO has odd working hours. This phenomenon may have some impact on the married life of the employees. In this regard it is observed from our survey that currently in the industry about 75% of the employees are not married (Fig. 12).

Fig. 12: Marital status of the employees



Source: Field Survey

Fig. 13: Continuation of work in the sector after change in marital



*Marriage may not affect the industry but whether the industry would affect the marriages is yet to be seen.*

Source: Field Survey

Of the unmarried employees, 88% plan to continue working in this sector even after marriage, while only 12% (mostly women) reported that they may stop working. Thus, largely marriage of employees may not affect the industry but whether the industry would affect such marriages is yet to be seen.

## Conclusion

IT industry has shown phenomenal growth in the city of Bangalore which has changed the very nature of the city. Large migration to the city also has created several environmental problems. Because of growth of this industry in selected pockets income inequality in the state is also on the rise which have many adverse social implications.

But the sector has been able to generate significant employment and this role needs to be highlighted as educated unemployment can create many adverse economic and social problems as well. This has also enhanced income of the state of Karnataka. Export from this sector which helps country to earn foreign exchange, improves India's balance of payment scenario.

Given the economic implications of this sector it is today necessary to develop other locations of the state so that development can be uniform and inclusive. IT is a general purpose technology which can be used to achieve many developmental goals (see Cencchin et al, 2003). Government of Karnataka today should work towards this goal through various fiscal incentives and infrastructure development.

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