

High Growth Businesses and Low Growth Environment in Bangalore: A Study of Firm Level Data for 1998-2003*

K. Kumar

N S Raghavan Center for Entrepreneurial Learning, Indian Institute of Management Bangalore

Abstract

This paper focuses on the emergence of high growth IT businesses in Bangalore. Prior research had identified factors that held back Bangalore businesses and inhibited their growth. An analysis of new firm formation and employment growth in Bangalore over a five year period between 1998 and 2003, indicate that the IT sector employment grew through expansion and growth of existing firms. This paper highlights the mitigating influences that helped Bangalore's IT businesses overcome the barriers to growth. The significant contributions of this paper are the inferences drawn from extensive firm level data in addition to assembling of the data itself.

Key words: Entrepreneurship, firm growth, job creation, IT sector

1. Introduction

Bangalore, a metropolitan city in the southern part of India, has been a location of interest internationally due to the rapid strides it has made over the last two decades in terms of its growth, fuelled to a great extent by the burgeoning Information Technology (IT) industry. Bangalore's IT industry has been a focus of attention of researchers (Saxenian 2001). Available evidence seems

to suggest that the businesses in Bangalore start small and remain small and formidable barriers to growth exist for Bangalore businesses (Bhide 2004). However, the IT businesses in Bangalore appeared to have overcome the barriers that held back the growth of Bangalore's businesses. Very little is known about the comprehensive entrepreneurial landscape of Bangalore, and the local context in which the IT industry has achieved its growth.

Acknowledgement: *This paper is based on a research project conducted by a team based at the Indian Institute of Management, Bangalore, funded by the Wadhvani Foundation. The author is grateful to Prof. Amar Bhide for co-leading the project, Laura Parkin, the Executive Director of the Wadhvani Foundation for the funding and encouragement, Mr. Sanjiv Kumar, Labour Commissioner, Government of Karnataka, and Mr. B. V. Naidu, Director, STPI, Bangalore for making available much of the data, Triyakshana Venkataraman, Urmilla Chatterjee, Divya Manghat and Dhanya Manghat for the research assistance.*

* An earlier version of this paper titled "An Analysis of Differences in New Firm Formation and Employment Growth Between the IT and non-IT Sectors in Bangalore" was presented at the 2nd European Conference on Entrepreneurship and Innovation (ECEI 2007), Utrecht, The Netherlands, 8-9 November 2007.

The extent and quality of entrepreneurial activity in any region or a nation is impacted by the entrepreneurial framework conditions that prevail in that nation or region, as explained in the Global Entrepreneurship Monitor (GEM) model for understanding the linkages between entrepreneurship and economic growth (Figure 1). As per this model, the level of entrepreneurial activity influences a country's economic growth and job creation. The level of entrepreneurial activity is determined by the perception of entrepreneurial opportunities and the entrepreneurial potential -the motivation and capacity- both of which are influenced by the entrepreneurial framework conditions. In addition, the general national framework conditions are seen to impact the entrepreneurial framework conditions as well as the entrepreneurial activity. Both the general national framework conditions and the entrepreneurial framework conditions are in turn shaped by the social, cultural and political context of the nation (Reynolds et al 2005, Sternberg and Wennekers 2005, Manimala 2002).



Figure 1 The GEM Conceptual Model
(Source: Manimala 2002)

India was seen to be lagging behind the average for the 32 countries that participated in the GEM study in 2002, in all but four of the fourteen Entrepreneurial Framework conditions that were measured by the study (Manimala 2002). Further, these weak framework conditions prevailing at the national level were found to be corroborated through a study that focused on Bangalore as a region. A study that was based on in depth interviews with a hundred high growth firms in Bangalore, revealed that the Bangalore firms started small and remained small, and were faced with formidable barriers to growth (Bhide, 2004). Many of the barriers to growth identified in this study – the indirect tax regime, labour laws and regulations, absence of property rights, poor infrastructure, propensity to own land, and common beliefs surrounding business strategies and practices - mapped onto one or more of the entrepreneurial

framework conditions identified in the GEM study (Table 1). To illustrate, the indirect tax laws and labour laws that discouraged growth and acquisition of larger scale and size, related to the government policy. Similarly, the weak enforcement of property rights and commercial contracts that forced entrepreneurs and firms to own land and lock up capital, was a reflection on the commercial and legal infrastructure. The locking up of capital also increased the financial needs, thus having implications on the financial support available. While the role of infrastructure as a framework condition was straight forward, the common beliefs of entrepreneurs about business strategy and practices that proved to be growth barriers were actually an influence of one or other of the framework conditions on the entrepreneurs. Widespread beliefs that made entrepreneurs favour diversification over attainment of scale, making over buying, providing credit over offering lower prices, and offering redundant employment over efficiency wages were all an influence of one or other of the framework conditions.

However, the firms in the IT sector in Bangalore did not seem to conform to these observed patterns. There appeared to be considerable growth in the number of firms and employment accounted for by them. Reports in the popular press, too numerous to recount here, also captured multiple dimensions of intense entrepreneurial activity in the IT sector in the form of new start ups, venture funding and prolific hiring to meet the needs of growth. These developments in the IT sector raised some very interesting and important questions that this paper sets out to answer. How different was the IT sector from the non-IT sector in Bangalore on the dimension of entrepreneurship? Were patterns of new firm formation and their employment growth different in Bangalore's IT sector from its non-IT counterparts? What enabled the IT sector firms to achieve growth in an environment not very conducive for firm growth and characterized by the weak framework conditions? The answers to these questions could provide insights to policy makers seeking to promote entrepreneurship and employment growth in a region endowed with not so favourable entrepreneurial framework conditions, given that improving the entrepreneurial framework conditions would be a time consuming task even with the best of efforts.

Entrepreneurial Framework Conditions - India	Barriers to Growth – Bangalore
<p>Better than the average Commercial, legal and professional infrastructure Opportunities for new venture creation</p> <p>About the same as average Financial support to new firms Skills for managing new & growing ventures</p> <p>Worse than the average Government policy on new firms Government program for new firms Education and training support Research and development transfer Market openness and ease of entry Adequacy of physical infrastructure Cultural facilitation of entrepreneurship Social support for entrepreneurship Intellectual Property Rights law and enforcement Facilitation of women’s entrepreneurship</p>	<p>Property rights and enforcement</p> <p>Indirect tax laws Labour laws and regulations Inadequate infrastructure Propensity to own land and lock up capital Common beliefs about business strategy and practices</p>
Source: Adapted from (Manimala 2002) and (Bhide 2004)	

Table 1 Entrepreneurial Framework Conditions in India and Barriers to Growth of Firms in Bangalore

2. Data Sources and Collection Procedure

It is pertinent to note that databases that track the growth in employment of individual companies over time such as the Census Bureau’s Business Information Tracking Systems (BITS) database in the U.S are not available in India. Several entities have at least some data on individual firms: these include telephone companies, distributors of electricity and water, industry associations, government agencies that promote small scale enterprises, some of these databases were too ‘broad’ because the records covered individual consumers as well as businesses and did not have tags to distinguish between the two. In other cases the coverage was too ‘narrow’ – the data included only some types of businesses.

The Labour department of the Government of Karnataka State, of which Bangalore is the capital city, mandates that all businesses register themselves with the government under the provisions of two acts (statutes) – the Shops and Establishment Act in the case of service businesses, and the Factories Act in the case of manufacturing businesses. The registrations under these two Acts, taken together, were determined to be

mutually exclusive and collectively exhaustive for the purpose of studying new firm formation and employment growth in the non-IT sector. Businesses can supplement their normal workforce with ‘contract’ employees who perform occasional or peripheral functions under conditions specified by the Contracts Act, but the registrations under the Contracts Act were found to contain too many omissions to reflect a true picture. However, since the scope of the Contracts Act was to cover jobs of a temporary nature, it was decided to focus on the legitimate ongoing businesses that were registered under the Factories act and the Shops and Establishment Act.

The discussions with officials of the labour department and the verification in the field did point to the possibility of underreporting and omissions (Bhide 2004). Notwithstanding that, the data presented here was seen to be the most reliable and thus was taken as the basis of the analysis presented in the paper.

A sampling procedure was adopted that selected every 20th record in the database of firms registered under the Shops and Establishments Act and The Factories

Act. Some of the records were incomplete in the sense that they had either not renewed their registrations by paying the appropriate fee or they had not mentioned their number of employees. In the former case, all those registrants who had not renewed their registrations were presumed to have closed down their business – or presumed dead. In the latter case, wherever the renewal fees had been paid but the number of employees had not been mentioned, the same were calculated based on the fee schedule, which varied with the number of people employed. While the S&E sample did include some IT firms, care was taken to remove the small number of eleven records of IT firms so as to ensure that the sample represented only the non-IT businesses.

The primary source of data for the IT businesses was the Software Technology Parks of India (STPI). In order to promote the IT sector and direct the policy support of the government to the IT industry, the STPI was set up as a society in 1991 by the Government of India. The policy support provided included duty free import of capital goods in exchange for undertaking export obligations, approvals for bringing in foreign equity, provision of technical infrastructure and services like satellite connectivity, temporary office space etc. (Saxenian 2001, Parthasarathy 2004). In order to avail of all these concessions and support, a registration with the STPI was mandatory, and is the first activity a new IT firm undertook. Once registered, an STPI unit (as they are commonly referred to) is also obliged to submit to the STPI authorities a quarterly as well as an annual report on various aspects of its performance, such as export earnings, the amount of import duty concessions availed, the wage bill, the number of people employed etc. The STPI collated the data in these reports and presented its own annual report to the central government.

The annual report filed by the units with STPI, Bangalore was collected for six years from 1998 to 2003 from STPI. The information contained in these records was not complete and consistent in all respects. Many units had not reported the employment data - the column had been left blank. Data on wage bills, and the average wage increases across the industry during the corresponding period were used to estimate employment wherever the employment data was not reported.

3. The non-IT sector

3.1 New Firm Formation

The growth in number of units is presented in Table 2. While the number of S&E units had increased in 2003 from the 1998 levels, the number of factories had come down from the 1998 levels. Taken together, the number of registrants in the non-IT businesses had increased during the five year period. Since the number of registrants in the S&E category was far higher than the factories, the trends observed in S&E were dominating the trends in the non-IT businesses as a whole.

3.2 Employment growth

The growth in employment is presented in Table 2. The Shops and Establishments (S&E) had seen the overall increase in employment over the five year period, while the employment in factories had reduced over the same period. Taken together, the non-IT employment had increased only by 26.1% by the year 2003 from the 1998 levels. In absolute terms, there was a total increase of 111,120 in employment in the non-IT units between 1998 and 2003,

3.3 Distribution of firms by size of employment

The distribution of non-IT firms by size of employment in 1998 and 2003 is presented in Table 3. The distribution pattern of small and large units in the case of factories had seen only marginal changes during the five year period. The number of large units had increased, but the percentage share of employment accounted for by the large units had remained almost the same. But in the case of S&E units, while the percentage of small units had only marginally decreased, the percentage share of employment accounted for by them had decreased substantially. Likewise, the percentage share of large units had shown only a marginal increase, but the percentage of employment accounted for by the large units had changed substantially over the five years.

Thus, in the case of non-IT sector, both in the number of units and the employment accounted for by them, the share of smaller units showed an increasing trend, and the share of larger units showed a decreasing trend, during the

	Number of Units			Employment		
	S&E**	Factories**	Total***	S&E** (A)	Factories** (B)	Total Non-IT*** (A+B)
2003	35,940	2,660	38600	292640	243260	535900
2002	28,120	3100	31220	221520	286220	507740
2001	21,720	3320	25040	148920	316080	465000
2000	17,020	3720	20740	108780	346800	455580
1998	18,340	3500	21840	106740	318040	424780
Percentage increase (decrease) in 2003 over 1998	95.96	(24)	76.7	174	(23.5)	(26.1)
<p>Note:</p> <p>*: Units is the term used in the S&E & factories Acts. Since each physical location needed to be registered, a firm can register more than one unit. The data presented here is at the unit level.</p> <p>** : Equals sample multiplied by 20</p> <p>***: Total Non-IT is the sum of S&E and Factories numbers</p> <p>Source: Research team analysis of registration data collected from Department of Labour, Government of Karnataka</p>						

Table 2 Number of Units* and Employment in the non-IT sector during 1998-2003

period 1998-2003. In 2003, the smaller units still accounted for 89.7% of all units, but employed only one third of the people employed in the non-IT sector in 2003.

3.4 Employment changes due to the dynamics of firm births, expansion and deaths

Beyond the static distributions presented above, the underlying patterns of firm births, expansions,

contractions and closures provided an insight into the dynamics of this process. Table 4 presents the data about the births, deaths, expansions and contractions of units and the corresponding changes in employment during the period under discussion. A lot of turbulence was observed in the non-IT sector. The number of new S&E units that registered during the period was almost twice the number at the beginning of the period, but the

		S&E (A)		Factories (B)		Total-Non-IT (A+B)	
		1998	2003	1998	2003	1998	2003
Units Employing <20 persons	No. of units (% of total units)	96.6	95.6	1.7	9.0	81.4	89.7
	Employment (% of total Employment)	77.8	57.8	0.2	1.6	19.7	32.3
Units Employing >100 persons	No. of units (% of total units)	0.2	0.5	66.9	57.1	5.8	2.5
	Employment (% of total Employment)	5.9	23.6	73.7	73.4	56.7	46.2
Source: Research team analysis of registration data collected from Department of Labour, Government of Karnataka							

Table 3 Distribution of non-IT Units by Size of Employment

number which closed was also not trivial, amounting to almost half of the units that were in existence in the beginning of the period. In the case of factories also, the number of new units that registered were almost equal to those that were in existence at the beginning of the period, and those that closed were more than the number at the beginning of the period.

The corresponding changes in employment also revealed a high level of churn. Even though the new employment created by the factories – both through new units and expansions - amounted to nearly sixty percent of the employment that was there at the beginning of the

period, they lost as many jobs as there were at the beginning of the period due to contractions and closures, thus resulting in a net reduction of jobs. The S&E units created more than twice as many jobs as they had at the beginning of the period through new units and expansions, but lost less- roughly half as many jobs as they had at the beginning of the period due to contractions and closures- thus resulting in a net increase of almost the same number of jobs as there were at the beginning of the period. Thus, the S&E units gained enough jobs to more than offset those losses and achieve a net positive addition to the employment in the non-IT sector at the

Estimates for Bangalore population/STPI units		Non-IT		
		S&E * (A)	Factories* (B)	Total Non-IT (A+B)
Number of registrants/units and employment at the start of the period	Units	18260	3000	21260
	Employment	105940	278240	384180
Number of registrants/units and employment at the end of the period	Units	35780	1700	37480
	Employment	290480	162180	452660
Net change in number of registrants/units and employment over the period	Units	17520	-1300	16220
	Employment	184540	-116060	68480
New registrants/units and employment - "births"- during the period	Units	27360	2580	29940
	Employment	226720	160680	387400
Total "deceased" registrants/units who closed or presumed closed, and the employment lost during the period**	Units	7700	3840	11540
	Employment	49940	284840	334780
Number of registrants/units who expanded in the period and the employment added**	Units	1200	220	1420
	Employment	15340	11100	26440
Number of registrants/units who contracted in the period and the employment lost**	Units	820	40	860
	Employment	5020	3000	8020
*:Equals sample multiplied by 20				
**: Includes only those registrants who had registered before the start of the period and whose registrations were current at the end of the period for S&E and Factories. In case of IT units, includes units that were existing prior to 1999 and those that were opened in the period 1999-2003				
Source: Research team analysis of (i) registration data collected from Department of Labour, Government of Karnataka				

Table 4 Non-IT Units: Births, Expansions and Deaths and Employment Changes

end of the period. This churn meant that the non-IT units ended up creating six new jobs during the five year period to achieve one additional job at the end of the period.

The break-up of the new employment created by its source i.e. either through the birth of new units or the expansion of existing units presented an interesting picture. It is evident that in the case of non-IT businesses, the growth in gross employment was predominantly driven by the birth of new units and the expansion of existing businesses contributed only marginally to the increase in gross employment.

4. The IT Sector

4.1 New Firm Formation

The growth in number of units is presented in Table 5. In the case of IT businesses, the increase in number of new units had been much higher than the non-IT businesses in percentage terms. But in terms of absolute numbers, the IT units were much lower than the non-IT businesses.

Year	No. of units*	Employment
2003	569	109,076
2002	515	73,784
2001	501	63,372
2000	168	33,934
1998	129	21,648
Percentage increase (decrease) in 2003 over 1998	341	403.86

Note:

*: Units is the term used by STPI. Since each physical location needed to be registered, a firm can register more than one unit. The data presented here is at the unit level.

Source: Annual reports collected from STPI, Bangalore

Table 5 Number of Units* and Employment in the IT Sector during 1998-2003

4.2 Employment Growth

The growth in employment is presented in Table 5. The increase in employment in the IT units in the corresponding period was 87,428. Though not remarkable in absolute terms, the rate of increase in employment over the five year period 403% increase from the levels prevalent in

1998 – indicated a trend that was quite positive and aggressive.

		1998	2003
Units Employing <20 persons	No. of units (% of total units)	34.2	26.3
	Employment (% of total Employment)	2.1	1.4
Units Employing >100 persons	No. of units (% of total units)	30.2	30.6
	Employment (% of total Employment)	87.4	87.9

Source: Research team analysis of Annual reports collected from STPI, Bangalore

Table 6 Distribution of IT Units by Size of Employment

4.3 Distribution of firms by size of employment

The distribution of IT firms by size of employment in 1998 and 2003 is presented in Table 6. The share of smaller units, both in number and employment accounted for, was decreasing, while the share of large units remained stable at roughly a third of all units. In 2003, the smaller units accounted for less than a third of all units, and their share in employment was a mere 1.4%, while the larger firms accounted for almost ninety percent of the total employment in the IT sector. Thus, amongst the IT units, the larger units employing over 100 persons accounted for the largest share of employment. The larger units had maintained their share of number of units, despite the more than fourfold increase in the number of units during the period 1998-2003, while the smaller units had decreased in proportion.

4.4 Employment changes due to the dynamics of firm births, expansion and deaths

Table 7 presents the data about the births, deaths, expansions and contractions of units and the corresponding changes in employment during the period under discussion. The employment in the IT units presented a striking contrast. The number of IT new units was almost five times those that were in the beginning of the period, and the net increase in the number of units was in excess of four times the number of units at the beginning of the period. The

increase during the five year period in employment in IT businesses due to the birth of new units and expansion of existing units was four and a half times the employment at the start of the period. But the IT sector lost very few jobs, and net increase was only marginally less, at four times the employment that existed at the beginning of the period. Thus, in the case of IT businesses, the increase in employment has hardly been dampened by the loss of jobs, and the net addition of each job has warranted the creation of only 1.13 new jobs.

Estimates for Bangalore population/STPI units	Units	Employment
Number of registrants/units and employment at the start of the period	129	21648
Number of registrants/units and employment at the end of the period	569	109074
Net change in number of registrants/units and employment over the period	440	87426
New registrants/units and employment - "births" - during the period	614***	37733
Total "deceased" registrants/units who closed or presumed closed, and the employment lost during the period**	91	4076
Number of registrants/units who expanded in the period and the employment added**	319	60923
Number of registrants/units who contracted in the period and the employment lost	107	4522
***:14 units for which employment data was not available are included Source: Research team analysis of Annual reports collected from STPI, Bangalore		

Table 7 IT Units: Births, Expansions and Deaths and Employment Changes

Of the gross new jobs created by the IT businesses, only 38.2% was accounted for by the birth of new firms, but

61.8% of the new jobs created were due to the expansion of the existing units.

5. Observed Differences between the IT and non-IT sectors

The units in the IT sector differed from their non-IT counterparts, in the rate of growth of employment, the source of increase in employment and the distribution of employment across firms of different sizes. A greater share of employment was accounted for by the larger firms in the IT sector. The job creation in the IT sector was dominated by expansion of the units, whereas the non-IT sector created new jobs predominantly through creation of new units. The IT sector exhibited much less churn and their units exhibited a propensity to grow.

It is obvious that the IT businesses in Bangalore have managed to overcome the barriers to growth that were experienced by all businesses in Bangalore. It then warrants an explanation as to how the IT businesses managed to break the barriers to growth and what specific factors contributed to their being able to overcome the barriers and the weak entrepreneurial framework conditions. An understanding of these factors may in turn provide valuable inputs that could facilitate policy makers to create conditions, and entrepreneurs to adopt strategies that could effectively contribute to the breaking of growth barriers.

6. Inferences and conclusions

Three major factors seem to have enabled the IT businesses in Bangalore to break the barriers to growth- the inherent characteristics of the IT industry, the market forces and focused policy support from the government.

The characteristics of the IT industry – particularly its focus on global market and process innovation- seem to have played a dominant role to play in overcoming the barriers to growth. The offshore outsourcing was turning out to be an innovative process driven opportunity that was just ripe for adoption on a large scale. This in turn led the IT industry to focus on the global market and become highly export oriented. Many of the world’s largest firms, who were keen to adopt this innovation both as providers and consumers, not only contributed to a robust growth in demand, but also to building scale and capacity. Being a service industry, the supply chain of this industry was

very short, with very minimal involvement of physical goods in its value chain. The major resource driver of this industry was the skilled engineers, and not the blue collared workers. This technically skilled, white collared workforce flocked to this industry once they recognized the opportunity for career growth.

The infrastructure limitations were overcome with the help of market forces that enabled the IT sector to create the required infrastructure on its own. The IT sector's ability to create, to a large extent, its own infrastructure, was a result of interplay of the industry characteristics and market forces. The firms in the IT sector were able to buy their own power plants (diesel generating sets), since their requirement of power wasn't of the industrial scale. While this low capacity requirement enabled the IT businesses to acquire their own power plants, it also led to market initiatives that created the capacity to supply and maintain these power plants or diesel generating sets. A similar line of reasoning explains the bypassing of limitations posed by another aspect of deficient infrastructure - the absence of good roads and public transport. Being a service industry, the IT businesses did not warrant movement of physical goods, and the transport facilities required for the movement of people to their place of work and back was easily provided by the private service providers. Similarly, the private market also played a role in supplying the commercial real estate required by the IT sector, by building the commercial office space and renting them out to the IT sector firms.

The targeted policies of the government also played its part. The Government of India had long recognized the potential of the IT sector, particularly with respect to exports, and was steadily improving the policy environment for this industry, taking into consideration its unique needs. The Software Technology Parks of India (STPI) scheme, which was introduced in 1991 to function as a single window to support the software industry, was in a way a recognition on the part of the government of the need to support the IT businesses, both with respect to their unique needs and to minimize the barriers faced by them in setting up and running their

businesses. The STPI scheme minimized the need for the firms in the IT sector to deal with multiple departments in the government, and provided a guided passage for foreign firms to set up their operations in India. Since the benefits offered under the STPI scheme were not related to the size of the firm, there was no specific incentive for any firm in the IT sector to remain small to avail these benefits. In addition, the STPI worked closely with the state government to address any issue concerning the IT sector's needs in terms of local infrastructure – be it roads, power, land with clear titles etc, albeit to a limited effect.

Thus, on balance, the characteristics of the IT industry (sector) had a significant role to play in mitigating the barriers to growth faced by Bangalore units. The market forces also helped, though in many aspects the characteristics of the IT industry combined with the market forces to mitigate the barriers. The role of targeted policies, aimed at supporting the growth of the IT sector also had a considerable role to play in overcoming the barriers to growth.

References

- Bhide, A (2004) "What Holds Back Bangalore Businesses?" Working Paper, Columbia Business School.
- Manimala, M.J (2002) *Global Entrepreneurship Monitor India Report 2002*, NSR Center for Entrepreneurial Learning, Indian Institute of Management, Bangalore, India.
- Parthasarathy, B (2004) *Globalizing Information Technology: The Domestic Policy Context for India's Software Production and Exports, Iterations-An Interdisciplinary Journal of Software History*, Vol 3, 2004 [online] <http://www.cbi.umn.edu/iterations/parthasarathy.pdf>.
- Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez-Garcia, P and Chin, N (2005) "Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998-2003", *Small Business Economics* (2005) 24: 205-231.
- Saxenian, A. L (2001) "Bangalore: The Silicon Valley of Asia?" Working Paper No. 91, Center for Research on Economic Development and Policy Reform, Stanford University, Stanford, CA.
- Sternberg, R and Wennekers, S (2005) "Determinants and Effects of New Business Creation Using Global Entrepreneurship Monitor Data", *Small Business Economics* (2005) 24: 193-203.