

Towards Strengthening Technology Culture amongst MSEs: Evidence from a Field Study in Bangalore, India

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Article abstract

The Micro and Small Enterprises (MSEs) contribute a great deal in income and employment generation in India. The MSEs competitiveness is often marred by the level of technology they adopt. Realizing the vital role played by these units in the economy, previous Government of India provided tacit support to encourage them in adopting new technology. This shifted away from the hitherto approach of viewing the technology as the mere generators of employment. While state intervention could harness their growth, the forms of intervention require a careful examination of technology culture amongst MSEs. To explore firms' tendencies in this regard, a field level investigation was conducted covering a few auto component manufacturing firms based in Bangalore. Availability of skilled labor and ease of finance were found to be the major constraints to technology acquisition and upgradation. While there are a plethora of government sponsored schemes implemented through other formal credit market channels, there are obstacles faced by the units in accessing those credit facilities. Based on the findings, the paper outlines some state interventions that may enhance technology acquisition and upgradation processes amongst the MSEs

Towards Strengthening Technology Culture amongst MSEs: Evidence from a Field Study in Bangalore, India¹

by

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The Micro and Small Enterprises (MSEs) contribute a great deal in income and employment generation in India. The MSEs competitiveness is often marred by the level of technology they adopt. Realizing the vital role played by these units in the economy, previous Government of India provided tacit support to encourage them in adopting new technology. This shifted away from the hitherto approach of viewing the technology as the mere generators of employment. While state intervention could harness their growth, the forms of intervention require a careful examination of technology culture amongst MSEs. To explore firms' tendencies in this regard, a field level investigation was conducted covering a few auto component manufacturing firms based in Bangalore. Availability of skilled labor and ease of finance were found to be the major constraints to technology acquisition and upgradation. While there are a plethora of government sponsored schemes implemented through other formal credit market channels, there are obstacles faced by the units in accessing those credit facilities. Based on the findings, the paper outlines some state interventions that may enhance technology acquisition and upgradation processes amongst the MSEs

1. Introduction

In India, entrepreneurial culture is by and large identified with entrepreneurial firms, which are characterized as micro and small enterprises (MSEs).² The trajectory of growth of firms mostly begins with commencement of business with limited capital, and hence harnessing entrepreneurship in the country goes hand in hand with facilitating the growth of MSEs.³ Till the late 1980s, small firms in India were given protection by virtue of affirmative economic policies. Reserving a number of products for small firms and prohibiting entry of large firms into these areas, and providing easy bank credit facilities with concessional interest rates had featured the hitherto institutional environment in which growth of small firms was expected to take place. The de-reservation and de-licensing, considered as the hallmark of economic reforms ushered in since the early 1990s, heralded a new era in which small firms were exposed to competition from large firms, though the reform has opened up new market opportunity for MSEs to exploit.

The MSEs, engaged in manufacturing activities, have entered into business that uses capital intensively and so they face direct competition from firms of medium size. On one hand, acquiring technology enables MSE to migrate to areas considered capital intensive; on the other hand, updating them helps them to sustain their competitive advantage and survive in the competitive environment. Technology acquisition and upgradation (henceforth TAU), thus, become the major enablers of growth and survival of MSE. Entrepreneurship culture in the country is thus inevitably influenced by the ability of MSEs to acquire and upgrade technology.

The importance of MSEs in Indian economy can be gauged from their contribution to GDP. According to the *Annual Report 2010-11* of the Ministry of Micro, Small and Medium Enterprises (MMSME), the contribution of MSEs to GDP has gone up, from 5.9% in 1999-00 to 8.7% in 2008-09 and to total industrial production from 40% to 45% during the same period. They employed about 59.46 million persons in 2006-07, which went up to 69.54 million in 2009-10 (MMSME, 2011, p. 19). As shown in Figure 1, growth rate of MSEs had outperformed that of overall industrial sector in the country. The MSEs are present in almost every sphere of economic activities specializing in as many as 6000 traditional to high-tech products (MMSME, 2011).

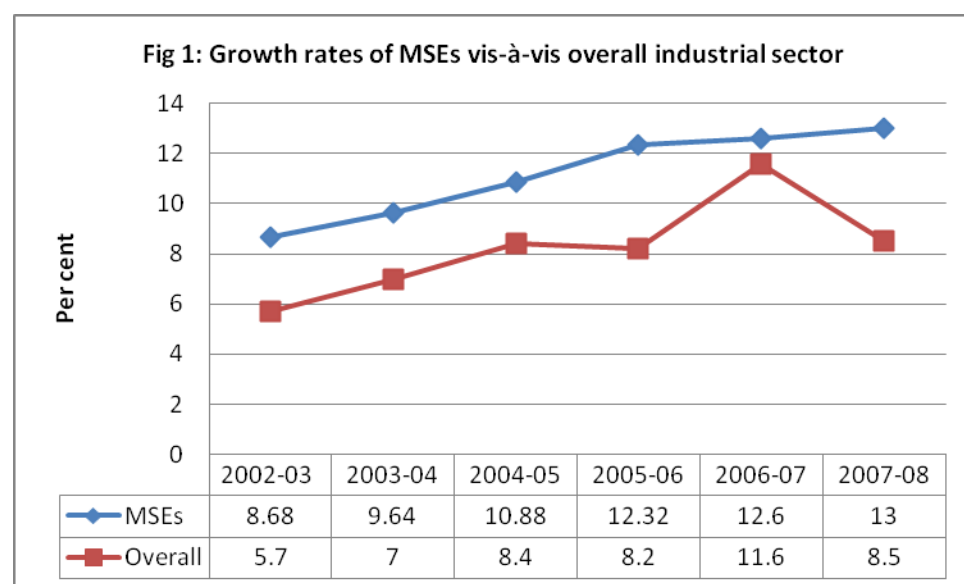
Considering the critical role played by the MSEs in the economy, their TAU needs to be facilitated by appropriate policy intervention.⁴ To this end, understanding the process of TAU amongst MSEs assumes significant. While state intervention can be regarded indispensable in facilitating TAU, the forms of intervention require a careful examination TAU culture in the MSEs. This paper aims to map the TAU culture in terms of their enablers and constraints based on field survey, and propose certain policy intervention.

This paper relies on the information collected from enabling institutions and industries associations. In addition, it also uses information gathered from the interview with owners of certain conveniently selected auto components machining firms based in Bangalore, India Findings from the survey have been presented in Section II, which begins with a brief discussion about auto component industry in general, and profile of the sample firms. It then goes on to analyze the enablers and constraints of TAU, and outline policy intervention that can potentially strengthen technology culture amongst MSEs. The paper ends with certain concluding remarks.

Table 1: Contribution of MSEs in GDP (at 1999-2000 prices)

Year	Total Industrial Production	Gross Domestic Product (GDP)
1999-00	39.74	5.86
2000-01	39.71	6.04
2001-02	39.12	5.77
2002-03	38.89	5.91
2003-04	38.74	5.79
2004-05	38.62	5.84
2005-06	38.56	5.83
2006-07	45.62	7.20
2007-08	45.24	8.00
2008-09	44.86	8.72

Source: MMSME, *Annual Report 2010-11*, p. 19.



2. Industry Overview

India has emerged as the major hub for manufacturing auto components. According to the Automotive Component Manufacturer Association of India (ACMA), which represents about 558 companies primarily engaged in auto components manufacturing, the total value of production of auto components amounted to US \$ 3008 million during 1997-1998, which went up by about five times to US\$ 18,000 million during 2007-2008. This growth was accompanied by a steep rise in exports, which went up by nearly 11 times from US\$ 330 million to US\$ 3615 million during the same period.⁵ Export intensity, defined as total exports to total turnover, of this sector had gone up from 11% in 1997-1998 to 20% in 2007-2008. While export performance of this industry appears to be good, import also went up simultaneously. To illustrate, in 2003-2004, import of auto components amounted to US\$ 1428 million, export was US\$ 1274 and turnover in the order of US\$ 6730. By 2007-2008, import increased to US\$ 4838 million, whereas exports to US\$3615 million and turnover to US\$18,000 million. Between 2003-2004 and 2007-2008, turnover increased by 2.7 times and export by 2.8 times. In sharp contrast to this, import increased by 3.5 times, which points out to the potential domestic market opportunities.

The employment figure, available for the year 2000-2001, shows that the industry employed about 250000 workers. The industry had 415 major players, who were well established companies. These large players supply components in the domestic market mostly to original equipment manufacturers (OEM) like vehicle manufacturers, Tier – 1 supplier, state transport undertakings, defense establishments, and railways and even to the replacement market. The data by size of firms are not available and hence the extent of contribution made by MSEs within the same industry could not be ascertained. It is possible that big companies would have accounted for a large share in the total production. However, considering that subcontracting of jobs is a normal practice of both large component manufacturers and auto manufacturers, MSEs have a significant presence in this industry.

2.1 Units Characteristics

As noted at the beginning, for understanding the TAU in MSEs, auto components machining units located in Bangalore city were contacted. A few of these units were located in several industrial estates,⁶ promoted by Karnataka State Industrial Development Authority (KSIDA). Few in the non-estate or non-cluster areas were also contacted.

The units contacted have been in existence for period ranging from 2 to 19 years and had annual turnover from Rs. 1 million to Rs. 15 million.⁷ Although those units were started with low capital, now most of them have grown big.⁸ In none of the units, the original value of plant and machinery had exceeded Rs. 8 million and hence they can be considered as MSE.⁹

None of these units had any product orientation in the sense they did not produce and sell directly in the market in their brand names. They were operating on the basis of job orders received directly from local companies or from global sourcing agencies. While receiving job orders, they also get product design on the basis of which production used to be planned and executed. Although they admit the importance of receiving quality certification to win more orders, particularly from well established local companies and global sourcing agencies, only a handful has made any serious effort to get them.¹⁰

Owners of these MSEs (entrepreneurs) were found to be of two types, namely, workers-turned and employee-turned.¹¹ Worker-turned entrepreneurs were primarily shop floor workers in their previous employment. They were qualified technicians having completed vocational training from government-run Industrial Training Institutes (ITIs)/Polytechnics or privately-run Industrial Training Centers (ITCs). Some of them had acquired trade skills over the years from their work experience. Employee-turned entrepreneurs were former employees of large companies, in the capacity as managers.

In the survey it revealed that the MSEs were using conventional machines like lathes, drillers, grinders, punching machines, winding machines, etc., besides hand tools. All of them had these regular machineries which were locally manufactured. Application of such conventional machines could be still regarded as technology adoption. Although they required more labors, all of them had adopted labour-augmenting technology in one way or other. While that being the case in most of the firms at the time of their inception, upgradation were also gradually happening.

In particular, upgradation basically involved purchase of new computer numerically controlled machines (CNC machines). The MSEs, run by worker-turned owners, had gone in for outright acquisition of CNC machines used by their former employers. Buying similar machines used by former employers had an advantage in the sense that skills acquired in their former employment enabled them to operate such machines. For many of them upgradation to CNC machines did not come from immediate necessity, but of the entrepreneurs' increasing awareness of the changing times. A few firms acquired CNC machines right at the start up stage because of the knowledge and experiential sharing the owners had from their peer and family members. They were, however, supplemented by conventional machines.

Many units did not have any plan for expansion and expressed their intention to continue with their current scale of operation. This was so because of assured flow of job orders from their present customers and also the hurdles they often faced for raising required funds. At the same time, a few of the respondent MSEs had plans for expansion by investing in advanced technology. Such expansion by and large would mean competing directly with large players; however, their desire to expand was largely an outcome of the orders they anticipated. Such aspiring firms wanted to upgrade their machines or acquire new machines in order to reduce wastage, improve quality and reduce production cycle. While they opined that TAU could result in cost savings, the overriding considerations was to supply quality and reliable product to customers. As they depended upon job orders, they placed enormous thrust on the quality and reliability of their supplies so as to ensure regular flow of jobs. Thus, their willingness to expand business, by focusing on quality and reliability, had considerably influenced their decision to acquire and upgrade technology.

2.2 Entrepreneur's Characteristics

From our interviews, it is clear that entrepreneurship was the sole driving force of TAU. As noted, these units are run by workers-turned and employee-turned entrepreneurs. Although pursuit of profit was central to both, the kind of difficulties they faced differed. In particular, the level of awareness of employee-turned entrepreneurs with respect to latest technology was limited to the type of technology their former employers were using. Since they start off as unregistered units, they do not have the advantage of technology related advisory services from official agencies. More so, these workers-turned employees did not have adequate assets to produce as collaterals, and thus faced difficulties while availing loans for the first time from banks. But industry contacts, they developed in their previous employment, enabled them to acquire job orders when they commenced new business.

At the same time, employee-turned entrepreneurs were well aware of the latest technology, besides having better financial standing. This type of entrepreneurs had better access to market intelligence and introduced better labor management practices. These entrepreneurs received orders from a wide set of customers and also did not face major problems of retaining their workers.

Thus, employee-turned entrepreneurs begin ventures relatively at a stable platform, as compared to worker-turned entrepreneurs, whose starting happen to be on a weaker ground. So much so, the process of TAU was more rapid in units owned by employee-turned entrepreneurs.

2.3 Supply chain Characteristics

There is no single source of information available to the owners about the technologies they could use for different types of jobs. While a few became aware of technology through industrial contacts, some got to know from advertisements. Notably, employee-turned entrepreneurs preferred to buy CNC machines after considering factors such as price, capacity (weights it can hold), brand name, after sales service provided by the suppliers, and performance of similar machine in other units owned mostly by peers or former employers. On the other hand, most of the worker-turned entrepreneurs mentioned that they acquired similar type of machine used by their former employers or peers.

For conventional machines, none of the workers received any kind of training from the suppliers. On the other hand, suppliers of CNC machines used to send their representatives to train operators/workers slated to work on such machines. This training had reduced the wastage associated with initial trials. At the same time, a few of the units suffered losses due to the lack of technical support given by the suppliers whenever the machine coned out. During the field visit to one unit, it was found that a CNC machine (with an initial investment of Rs. 1.5 million and machine hourly wage rate of Rs. 200 charged for the jobs) remained idle because the supplier delayed sending spare parts. While none complained of

initial training, the timely support to service machines was cited as a major factor influencing choice of suppliers, and hence, type of technology.

Labor issue was found to be a major consideration for the TAU. It is not the sheer availability of labor but quality of their technical skill that often poses problems for TAU. This problem could be discerned in terms of poor vocational education training that created shortage of skilled labor. Most of the operators of CNC machines were apparently pass-outs from vocational training institutes such as ITIs/ITCs or Polytechnics. In the initial period of employment, wastage by fresh diploma holders was found to be very high and wasting more than one piece was seen not a viable option. These owners felt that high wastage by fresh candidates was due to the education system that did not adequately bridge the gap between theory and practice. They complained that course contents of technical education institutes were not up to date, which created a gap between conventional and the latest technical skills. They somehow surmounted this problem by giving proper training to a fresher, who had to pick up appropriate skills by working in the shadow of some experienced workers.

On an average, these units employed about 12 workers. Under the Indian Factories Act 1872, a unit employing 10 or more workers using power has to be registered under that Act. Although all these units qualify for registration, they have defied the Act's stipulation. These units employed workers on shift basis with duration of 8 hrs. But it was found that they employed workers for 12 hrs; of which 8 hrs was assigned to regular shift and remaining 4 hrs to overtime work. Monthly wage expense ranged from Rs. 6000 to Rs. 7500, including payment for overtime. Except for the tea served twice in a shift, these workers did not enjoy any other benefit. These units normally have a Floor Manager, who looked after programming and maintenance of CNC machine. In the absence of owners, they also attended to works not related to shop floor. Monthly salary paid to a typical Floor Manager ranged from Rs. 12,000 to Rs. 15,000. As they were crucial for the day-to-day operation, they became the obvious candidate for poaching by others.

In the normal course, ordinary (unskilled) workers, particularly those employed on conventional machines, did not fly overnight. Their non-reporting to duties did not affect the work much. Even if they left all of a sudden, these units did not face much problem. This was so because of the easy availability and substitutability of such workers. However, absenteeism of skilled workers/operators of CNC machines was found to be a major obstacle factor. Their absence often obstructed job flow, which adversely impacted on meeting deadlines. As the skilled operators were not available in plenty, they also became the target for poaching.¹² Whenever the workers failed to show up for the job, CNC machines remained idle. With machine hourly rate ranging from Rs. 180 to Rs. 200, non-reporting by skilled operators caused losses.

In fact, firms having workers with appropriate technical skills were found having upgraded their technology more rapidly, as compared to others suffering from inadequate supply of skill operators. However, the intensity of loss differed between firms owned by employee-turned entrepreneurs and by workers-turned entrepreneurs. In particular, units owned by workers-turned entrepreneurs did not face serious problem because they themselves could easily work on the machine in the event of non-reporting by skill operators. This possibility also gave rise to differential labor management practices such that employee-turned entrepreneurs were forced to follow better labor standards, which was attractive for skilled operators. This resulted in TAU process being more rapid amongst firms owned by employee turnover entrepreneurs. However, both faced the problem of labor migration from one unit to another, which was hampering the TAU process too. Thus, it is not just the availability of workers but skilled workers which played a key role in TAU.¹³ Increasing the pool of such skilled workers could go a long way in mitigating such labor related problems.¹⁴

3. Funding Schemes for the MSEs

Most of the units surveyed relied on the loans from commercial banks, and a few of them had taken loan from financial institutions like Karnataka State Financial Corporation (KSFC), Small Industries Development Bank of India (SIDBI), etc.

Almost all owners complained that availability of funds from financial institutions was fraught with a number of difficulties due to redtapism and corruption, but more importantly due to the insistence on collaterals. While employee-turned owners could overcome these problems to some extent, workers-turned owners found it difficult, particularly to produce collaterals. For the latter, seed capital was mostly funds borrowed from friends and relatives, who in turn often raised personal loans to support the aspiring entrepreneurs.

Even if they were receiving loan from commercial banks, they still faced a number of hurdles on account of cumbersome formalities and lack of empathy of the bankers. In the initial stage, it is a mind-boggling task for these owners to convince bankers on the economic viability of the proposed venture, for which they sought funding. Pressed by the internal requirements, bankers seldom got convinced and so these entrepreneurs would have to visit at least 15 times to get a loan for the first time. Thereafter, they did face problems of convincing bankers, but not as much as the first time. The MSEs were not able to develop any sort of long term relationships with bank staff because of the frequent transfers of latter.

When asked about aid from government, they welcomed Technology Fund created for better financing of their expansion plans, although not sure about how much it would benefit them individually. But they strongly felt the need for adequate awareness creating campaigns for informing various schemes of the government and the benefits thereof. As their contact with commercial banks was immediate, they felt that these banks were to be involved in such campaigns.

All the members interviewed had no knowledge of schemes or even the activities of the enabling agencies like the Micro, Small and Medium Enterprises Development Institute (MSMEDI).¹⁵ This is not surprising given the MSMEDI's predominant focus on the registered units and hence do not reach out to unregistered units.

There is no sector specific scheme, under which the TAU is facilitated amongst the MSEs. But these units could avail the benefits under a general scheme, known as, Credit Linked Capital Subsidy Scheme, which had been designed for technology upgradation of MSEs¹⁶ in 14 major identified products / sub-sectors, which included auto parts and components and hand tools. This scheme provided 12% capital subsidy for induction of proven technologies and thereby aimed to promote conscious upgradation to state-of-the-art technology.

Several changes were brought about in Credit Linked Capital Subsidy Scheme, with effect from September 29, 2005. Accordingly, the ceiling of the loan under this scheme was enhanced from Rs. 4 million to 10 million. The rate of capital subsidy was increased from 12% to 15%. More importantly, capital subsidy were to be calculated with reference to the purchase price of plant and machinery, as against the hitherto practice of using term loans disbursed as the reference. Even the category of products / sub-sectors eligible for benefits under this scheme was widened.

The aforementioned scheme was implemented through Small Industries Development Bank of India (SIDBI) and the National Bank for Agriculture and Rural Development (NABARD), who were the primary nodal agencies. A few public sector banks and state level financial corporations were also co-opted as the nodal agencies for the implementation and release of capital subsidy under the scheme.

Most of the owners were not aware of the technical details of the scheme; but did admit that they were entitled to 12 percent subsidy.¹⁷ Because of the cumbersome procedures involved in getting the subsidy, they tended to employ middlemen, who advised them and prepared the requisite papers, for which a blanket commission of 7.5 percent of the subsidy amount were to be paid. They felt that paying 7.5 percent of subsidy amount was not a major problem; however, could be avoided if financial institutions provided the much needed support.

4. Industry Value-chain

Some respondents believed that clusters helped since nearby units were in the value chain of their products. Thus being in a cluster lessened their costs by reducing transportation costs. Though most felt it was good to be in a cluster, a few cited some downsides like labour poaching and harassment by officials at times. They were not happy with the apathy shown by the development agencies in not being able to support them with basic infrastructure like providing uninterrupted power, good approach roads, water etc.

Many of the successful units who were interviewed had taken the land in the industrial area / estate either on lease based or rent based, as they were not registered. Land is normally allotted to only registered units. Though rent paid by them was very competitive, still they chose to locate in the estates because of uninterrupted power supply. Running captive plant (generator run on diesel) could be five times costlier than regular tariff of local state-run electricity board. If these MSEs were to be located outside industrial area, which suffer from frequent power shut down, they would have to continue their operation by using generators and incur cost higher than their counterparts located in industrial area. If they transferred such additional cost to customers by raising machine hourly rate, they would have become less competitive.

Nor have they any option of absorbing them, for it would reduce the economic viability of these units. Thus, situating in the cluster enables the MSEs to upgrade their technology as it contributes to cost savings on account of quality infrastructure and reaping the benefits of being a part of value chain.

5. Policy Interventions and Recommendations

5.1 Need for Focus on Vocational Training

In the survey, it was found that shortage of skilled workers was a major inhibiting factor of TAU. With a good proportion of population in the working age groups, the country is poised to have the advantage of demography dividend and this could apparently resolve the issue of labor shortage.¹⁸ Vocational training in the country is provided to aspiring candidates mostly through ITI/ITC and Polytechnics, owned by government or private.¹⁹ The large number of vocational training institutes such as ITI/ITCs and Polytechnics could meet the increasing requirements for skilled workers, but very few amongst the youth receive vocational training of any sort. As noted by Chandrasekhar, Ghosh and Roychowdhury (2006), less than 4% of youth had gone through vocational training in 2004-05. Moreover, they also noted that proportion of those having vocational training was high amongst the unemployed as compared to the employed youth. This clearly indicates that the employability of even the so called 'trained youth' is poor, which could be attributed to low quality of vocational training in the country.

Although MSEs are not reluctant to employ fresh diploma holders, they complain about more wastage by these fresh workers. MSEs allow the new entrants to acquire appropriate vocational skills on the job but there is a cost involved. This problem can be traced to the gap between what has been taught and what is required by industries. To avoid this, it is important to revamp existing curriculum of the courses offered by vocational training institutes, taking into account latest developments. This curriculum should be periodically revised, preferably once in two years, with active participation from industry experts. Course design should be demand oriented, that is, they should meet industry requirements.

Intense institute – industry interface should be emphasized. In India, the Apprentice Act of 1961 in a way aims to strengthen the nexus between institute and industry as it facilitates apprenticeship training to students in various trades. But due to its stringent clauses on training and penalty, the Act seemed to have had limited impact in inducing companies to absorb apprentice. To the extent that the Act remains prohibitive, the objective of enabling learning by doing by the fresher is likely to remain a difficult agenda to achieve. Thus, the gap between theory and practice would remain, contributing to skill shortage problem. In this context, it is also important to relook at the present design of the Act.²⁰

Efforts should be made to upgrade technical training providing institutes. Government has been making budgetary allocation for the cause of skills development under 'National Skill Development Fund'. As there are more than 2100 government ITIs, upgradation of all these institutes concurrently may not be a feasible option, but efforts should be made to upgrade them in a phased manner. For private ITCs, the profile for upgradation needs to be spelt out clearly at the time of granting recognition, along with the period in which mandate upgradation needs to be done. Upgradation not only will reduce the skill shortage but also enable the MSEs to employ them without imparting further training. This would make TAU more rapid amongst the MSEs.

As the entrepreneurial spirit is the underlying force for MSEs to spin off, issues related to TAU needs to be addressed at the technical education level. It calls for having a full fledged course in 'Entrepreneurship', wherein several topics like planning for venture, project report preparation, setting up of unit, planning for expansion, market development, scientific management, basics of accounting, seeking funds from unconventional sources venture capital, etc. have to be covered. It may enable young people to commence business of MSE scale and, given their technical skills acquired through formal education, they would be able to harness the process of TAU. This calls for technical education bodies like All India Council for Technical Education (AICTE) and National Council for Vocational Training to mandate offering course 'Entrepreneurship'. This can be enforced as part of conditions for granting approval.

5.2 Need for Strengthen the Role of TAU Enabling Bodies

The Micro, Small and Medium Enterprises Development Institute (MSMEDI), although aims to facilitate and educate entrepreneurs, normally reach out to only registered units. While one cannot deny their role in nurturing growth of registered units, it is equally important that unregistered units are brought under its purview. The unregistered MSEs undoubtedly outnumber the registered counterparts. For example, the 4th All India Census of MSMEs with reference period 2006-2007 estimated the size of MSME sector as 1.56 million,²¹ as against the estimated size of 26.1 million (MMSME, 2011, p. 16 & 23). It may be expected that amongst the MSEs, the unregistered units would have a larger role. Thus, extending the services of MSMEDI to unregistered units would redress several TAU related issues of units in MSEs *per se*.

The MSMEDI could have a separate cell, preferably named as Technology Cell, for diffusing technology-related information. This cell should collect materials from the manufacturers of both conventional and CNC machines, along with the product endorsements by the current users. This cell should constantly advertise and encourage potential entrepreneurs to seek its advice. The proposed cell could organize technology suppliers-buyers meet once in a while, preferably a year, so that even the entrepreneurs not so well exposed to latest technology would become aware of the same.

The envisaged system should also provide counseling services to the unregistered MSEs. Their advisory role could include communicating latest technology viable for the proposed project, finding the right suppliers and informing government schemes available to support the MSEs in that regard. The Technology Cell can also provide market intelligence to the entrepreneurs. They can guide them to write the project proposal for seeking funding and finding location. MSMEDI could organize buyers-sellers meet to facilitate marketing by the MSEs. Their interface even with unregistered MSEs should be intense and frequent so as to understand the problems faced by them, and for devising appropriate and timely interventions by the government.

5.3 Need for compulsory registration

One of the important reasons for non-registration by an MSE is the perceived harassment by the inspectors from different law-enforcing departments. Typically, a registered firm receives far more benefits, as compared to unregistered ones. For instance, land allotment in government-promoted industrial estates is subject to registration. Once located in these estates, the MSEs could considerably reduce costs because of adequate availability and quality of infrastructure. On a balanced consideration, it can be said that the benefits of non-registration is far outweighed by the loss due to non-registration. Apart from all these benefits, the unregistered units are likely to remain unregistered because of the perceived harassment, which are usually the fact. None of these units operate without getting requisite state sales tax number. If issuing state sales tax number is linked to registration, many of them would get registered.

While inspection of registered units is easy, the installation of mitigation system against the harassment made by the officials within the MSMEDI is complicated. To solve this problem, quality and safety standards should be built in and enforced with the registration process. This would reduce the number of visits by officials and the Advisory services of MSMEDI could aid more to the TAU process amongst MSEs efficiently.

5.4 Harnessing of cluster formation²²

For MSEs to succeed, they need to continuously utilize their assets like CNC machines, given the size of investment involved. This is possible if steps are taken to ensure adequate infrastructure, like uninterrupted power supply. If these units are brought under a particular location, then the State Electricity Boards of respective states could provide uninterrupted power supply to them. As most of these units are in various parts of the value chain, having them all in a single location reduces their transportation costs too.²³ Considering advantages of clusters, government could earmark about 50 acres of land for a cluster, on the outskirts of major cities; as many as 4 units can be established in an acre of land. Thus, at least 200 units can be nurtured in a single cluster. The assured infrastructure support will enhance TAU in an orderly manner.²⁴

Clusters facilitate transmission of knowledge on account of inter-firm migration of workers and contacts (Breschi and Malerba, 2005). However, with this advantage comes losing the skilled workers because of poaching behavior of other firms within the cluster. To mitigate this problem, the following strategies should be established: A) Members of the cluster should employ experienced workers, provided they produce no objection certificate from their former employers; b) Factory Inspector could insist on production of no objection certificate while checking the workers on roll; and, c) Owners can lodge a complaint with the Factory Inspector whenever a worker is lured away by another employer without insisting on the production of 'no objection certificate'. This is not to curb the workers' right to mobility but to reduce the uncertainty created by the unexpected and sudden departure of workers that affect the scheduled production. In order to avoid this, inter-firm mobility of workers should be facilitated but in an orderly manner.

5.5 Financing terms should be made easy

The awareness level of the technology fund amongst the MSE owners is not very encouraging. In particular, the awareness of the current government sponsored Credit Linked Capital Subsidy Scheme was found to be very poor. It is suggested that financial institutions, like SIDBI, periodically conducts awareness campaign by involving industries association. Additionally, procedures for obtaining loans should be made easy, and financing agencies must follow a prudent policy of understanding and appreciating the standpoint of entrepreneurs.

Though it is desirable to do away with the insistence on collateral, it is a thorny issue, given the need for reducing non-performing assets on the part of commercial banks. At the same time, demand for collateral reduces borrowing capacity of firms, which acts as a constraining factor for TAU. As an alternative, Mutual Credit Guarantee Schemes (MCGS) can be encouraged. Such schemes should be tripartite agreement between commercial banks, industry association and borrower. In this, commercial banks can form a consortium for assisting members of an industry association with a locally prominent bank as the lead bank and borrower has to be mandatory a member of the industry association.

As the association members are knowledgeable about the industry and market value of assets, they can assess fund requirements and monitor utilization of funds by a member. This can reduce adverse selection problem to a considerable extent. The industry association should also monitor repayment of loan by the members so as to mitigate moral hazard problems associated with possible default. Thus, they could act as a guarantor (Rajakumar, 2010a).

In such type of arrangement, commercial banks could extend loan by hypothecating assets financed by them and require borrowers to contribute 20 percent of purchase value of the assets out of owned fund. To ensure that TAU process does not suffer for want of fund, it is essential that Mutual Credit Guarantee Agency are founded with active support from local industry association (SIDBI) and locally prominent banks, by involving international bodies like UNIDO which has been promoting MCGS in the recent times.

6. Concluding Remarks

The paradigm shift in India resulting from the hitherto state-led growth to market-led growth strategy essentially requires entrepreneurship to lead the growth process. In the changed milieu, entrepreneurial spirit needs to be harnessed carefully. Entrepreneurship is inevitably influenced by their ability to acquire and upgrade technology. This calls for understanding the major challenges and problems faced by entrepreneurial firms, essentially MSEs, in respect of technology acquisition and upgradation. This paper made an attempt to examine the enablers of technology culture amongst MSEs based in Bangalore city, India, primarily engaged in auto components machining.

Technology culture across sectors has varying dimensions. It needs to be sector specific to make the TAU process more effective. Although substances of intervention may differ from sector to sector, the forms of intervention tend to be common for all sectors, particularly when all of them face similar problems (Government of India, 2010). As revealed by interview with the entrepreneurs, the process of TAU was inhibited by the inadequate financing facilities, labor shortage, limited intervention of enabling state agencies, and infrastructure inadequacies – these are widely found problems of MSEs cutting across every sectors in the economy. Thus, the findings of this paper become relevant in the context of other sectors too in terms of identifying the forms of intervention.

It is noticed that involving industry association as a facilitator for financing could be a viable option. Considering this, the MGCS should be encouraged. The scope of intervention of enabling agencies should be widened to include even unregistered firms – the segment to which MSEs mostly belong to. Enabling agencies and industry associations could work hand in hand, with vocational training institutes to mitigate labor shortage problems. And, finally, promoting industry clusters / estates would go a long way in reducing most of the problems associated with infrastructure.

Endnotes:

¹ This paper draws from the *Position paper on issues relating to viability of micro and small enterprises with special reference to technology acquisition and upgradation*, prepared by the author for the National Commission for Enterprises in the Unorganized Sector, 2009).

² According to the 4th All India Census of Micro, Small and Medium Enterprises (MSMEs), with reference period 2006-07, as much as 90.1% of registered MSMEs were proprietary type of organization and 4.0% of partnerships (MMSME, 2011, p. 24).

³ National Knowledge Commission (NKC) has aptly defined entrepreneurship as “the professional application of knowledge, skills and competencies and/or of monetizing a new idea, by an individual or a set of people by launching an enterprise de novo or diversifying from an existing one (distinct from seeking self employment as in a profession or trade), thus to pursue growth while generating wealth, employment and social good” (NKC, p.1). Given this, harnessing entrepreneurship is indispensable for securing economic welfare.

⁴ This must be viewed against the traditional practice of product reservation by the government with a view to encourage growth of small firms. For the latest list of product items reserved for MSEs, see MMSME (2011, pp. 325-326)

⁵ Principal export items include replacement parts, tractor parts, motorcycle parts, piston rings, gaskets, engine valves, fuel pump nozzles, fuel injection parts, filter & filter elements, radiators, gears, leaf springs, brake assemblies & bearings, clutch facings, head lamps, auto bulbs & halogen bulbs, spark plug and body parts.

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⁷ Peenya Industrial Area, JC Industrial Area, Jigani industrial Area and Bommasandra Industrial area.

⁸ This survey was conducted in 2008-09. The average Indian Rupee to US Dollar rate during the year was about Rs. 46/\$.

⁹ This has been the case with most of the entrepreneurial firms in the country, as shown by the study of NKC (2008).

¹⁰ Under the Micro, Small and Medium Enterprises Development (MSMED) Act, 2006, micro units are the ones where investment in plant and machinery (manufacturing enterprises) does not exceed Rs. 2.5 million; small enterprises are the ones where investment in plant and machinery is above Rs. 2.5 million but does not exceed Rs. 50 million. See, MMSME (2011, p. 347).

¹¹ For practical difficulties faced by MSEs in getting quality certification, see Rajakumar (2010b).

¹² Theoretically both types of owners are employees. This phenomenon of employees commencing business in the same industry is popularly known as spin-offs. See Klepper (2005).

¹³ This is mostly attributed to the mismatch between supply of skilled labors and demand for them. It was highlighted that the fresh diploma holders used these firms as their training ground and, after gaining sufficient experiences, they tended to migrate to large companies within the country or to countries like Singapore and in the middle-east region. Such migration of labor was cited as the major cause for skill shortage, besides poaching by other firms.

¹⁴ In a study by Bala Subrahmanya (2010), labor turnover problems amongst auto SMEs in Bangalore city was also observed. This hindered labour productivity to a considerable extent.

¹⁵ For details, see Rajakumar (2009).

¹⁶ The MSMEDI functions under Ministry of Micro, Small & Medium Enterprises, and Government of India. Its important activities include conducting training and skill development programs, consultancy services, CAD-CAM, motivation campaign, active participation in cluster development programs, and conducting self employment training program, training on computer hardware & networking, training on advanced computerized accounting (Tally), training on ISO-9000, and so on.

¹⁷ Under the scheme, they were originally described as ‘tiny and small scale industries (SSI)’.

¹⁸ In fact, none of the owners were found to be serious about availing the benefits. A few of them would not even remember such facilities for upgradation. This smacks of the low level of awareness.

¹⁹ The proportion of India’s population in the age group of 15-64 was in the order of 59.6% in 2001 and is projected to go up to 64.1% in 2011 (Basu, 2011).

²⁰ As on November 30, 2000, there were 1617 government ITIs with 366,603 thousand seats and 2722 private ITCs with 329173 seats, and combined the country had 4339 ITIs with 695,776 seats. They offered vocational training under as many as 31 trade groups (Directorate General of Employment & Training (undated)). As at the end of October 2010, government ITIs numbered 2189 with a seating capacity of 0.45 million and private ITCs numbered 6498 with seating capacity of 0.76 million (Ministry of Labour and Employment, 2011, p. 243). Together they offered more than 110 trade groups related training. This shows the phenomenal growth of ITIs/ITCs in the last one decade signifying demand for vocational training. At the same time, the response of firms shows poor quality of such training.

²¹ The recent move to ensure that half of the apprentice should be absorbed by the company providing training to them has met with severe criticism from captains of industry. See, Das 2011.

²² The proportion of micro, small and medium enterprises were in the order of 94.94%, 4.89% and 0.17%. This clearly indicates the dominance of MSEs in the population of MSMEs in the country (MMSME, 2011, p. 23).

²³ Industrial clusters have traditionally played a key role in enabling firms’ growth. Several papers in Yusuf, Nabeshima and Yamashita (2008) attempt to unravel intricacies of cluster development in selected Asian countries.

²⁴ The cluster thus formed would come close to Marshallian-type which facilitates trade and collaboration amongst firms along with institutional support. For details, see Markusen (1996).

²⁵ In a study of firms in industrial clusters in India, Okada and Siddharthan (2007) found that firms located in clusters performed better.

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