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## **Quality of VET in India: The case of Industrial Training Institutes**

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### **Abstract**

The paper focusses on the need for quality in vocational training institutions in India. The need for integrating Quality Management principles in effective functioning of vocational schools (Industrial Training Institutes) is emphasised. In a first step the discussion about the quality of vocational education and training in India will be described. In the following chapters findings of two own empirical studies of ITIs conducted in different states of India are presented. One survey focusses on the ordinary or regular ITIs and the other on upgraded ITIs, the so called Centres of Excellence (COE). Our findings highlight the lack of application of quality principles in these institutions and, especially in ordinary ITIs, problems with infrastructure and equipment and sometimes with the recruitment of qualified teaching staff.

On the basis of the findings we will discuss an appropriate Quality Management model which could be applied. Further, a need for research in quality implications for ITIs and cross-country collaboration are highlighted.

*Keywords: India, vocational education, TVET, Quality, ITI*

### **1 Introduction**

Vocational education and training in India is an issue and task of big numbers in comparison to many other Asian countries except China (Tara & Kumar 2016; Pilz 2016a). According to the National Policy on Skill Development and Entrepreneurship 2015 (Government of India 2015) the number of young people who potentially enter the work force every year is estimated to be 26 million. Assuming an average labour participation rate of 90% (male) and 30% (female), at least 16 million persons will enter workforce and they all, except those opting for higher education (about 12%), need to acquire skills. This will add another 105 million persons to be skilled in the next seven years. Thus, it can be seen that 105 million fresh entrants to the workforce over the next seven years (by 2022) will need to be skilled (Singh 2012). In addition, 298 million of existing farm and non-farm sector workers will need to be skilled, reskilled and upskilled. Thus, appropriate infrastructure needs to be created keeping in view sheer numbers, sectoral division and spatial dispersal across the country. This is clearly brought out in the policy document thus: Foreign Governments, corporate and agencies will also be encouraged to set up skill centres and universities as well as participate

in content creation, design of curricula and delivery of training. Exchange and capacity building programmes for teachers, administrators and students will be facilitated (Government of India 2015).

This is also reiterated by Chenoy (2013, 199) who says "... with the opening up of the economy and increase in exports, improving the productivity of the workforce is a key challenge for many corporations and entities in India. Further, as the Indian economy grows, a large number of skilled persons will be required to sustain this growth. Current studies indicate that net enrolment in vocational courses in India is about 5.5 million per year. A mere 2% of Indian workers are formally skilled." Further, Chenoy (2013) quoting from the 11<sup>th</sup> Plan Document mentions, that India is uniquely positioned to take advantage of this favorable demographic profile to take that giant leap from being a developing country to a developed one in a decade from now. However, leveraging this 'demographic dividend' (the average age of an Indian would be 29 by 2020 compared to 37 in China and 45 in western Europe; Chenoy 2013, 199) is easier said than done on account of the poor level of skills possessed by the vast majority of those joining the workforce each year – a situation that has arisen owing to high rates of school dropouts, inadequate skills training capacity, a negative perception around skilling, and low employability of even those holding professional qualifications, such as degrees in different engineering disciplines (Chenoy 2013). An additional issue is that these outcomes vary from state to state. Also Mehrotra (2014b, 367) noted: „Quantity & Quality: Policies to meet the twin challenges of employability in Indian labour market“.

We are facing this aspect in the paper. First we will give a short introduction of the political background before explaining the major training institution in India, the so called Industrial Training Institutes (ITIs). Followed by this we will briefly describe the state of research on the quality in the ITIs before describing two of our own empirical studies.

## **2 Political background**

In March 2009, the Government of India announced a National Policy on Skill Development, laying down the framework within which it wanted skills-related training to be conducted. The Policy clarified the roles that different stakeholders – government, industry, trade unions and civil society – would need to play for the creation of a skills ecosystem in India.

Making a departure from the past, the National Skill Development Policy (Government of India 2009) clearly specified that skills-related training should become outcome-focused and linked to jobs and employability. The policy stated that access to training should be available to all, particularly those at the bottom of the pyramid. It said that the government should complement private sector initiatives in skill development and emphasized the need for short-term, industry-relevant courses. Skills and knowledge were considered as the driving forces of economic growth and social development for any country.

However, the National Policy for Skill Development and Entrepreneurship 2015 (Government of India 2015) supersedes the policy of 2009. As stated in the document, the primary

objective of this policy is to meet the challenge of skilling at scale with speed, standard (quality) and sustainability. It aims to provide an umbrella framework to all skilling activities being carried out within the country, to align them to common standards and link skilling with demand centres. In addition to laying down the objectives and expected outcomes, the policy also identifies the overall institutional framework which will act as a vehicle to reach the expected outcomes.

The 12<sup>th</sup> Five Year Plan document (Planning Commission 2013) clearly states that there is an urgent need to mainstream skill formation in the formal education system and at the same time for innovative approaches focussing on skill creation outside the formal education system. Although the Coordinated Action on Skill Development has brought about a paradigm shift in addressing the issues of relevance in skill development, the gaps in the skill development are to be identified so as to achieve the objectives in terms of quantity and quality while building on the foundation (Sodhi 2014). Further, some of the areas that merit attention, according to the Plan are

- (a) the challenge of reaching out non-formal sector;
- (b) putting in place a National Skills Qualification Framework which lays down different level of skills required by industry, which allows multiple points of entry and exit, which recognizes prior learning, and which allows for mobility across different levels;
- (c) putting in place a permanent institutional framework, entrusted with the requisite authority and resources, which is responsible solely for skill development in the country; and
- (d) support to students in terms of access to bank loans on soft terms that are linked to their placement.

### **3 Industrial Training Institutes**

In India, ITIs are the major training ground for skilled manpower (Kumar 2016; Venkatram 2012). At present there exist 11.964 ITIs (Public 2.284 and Private 9.680) in the country (DGET 2016). With a mere 59 institutions in 1956, the number of ITIs frog-leaped to today's numbers indicating the extent of demand for employable industrial trades as well as the realization of policy makers to promote building a professional workforce to meet the industry demands. This is also reflected in the increase in the seating capacity of ITIs which was a modest 388.000 in 1992 to a figure of 1.69 million in 2014 (DGET 2016).

Training is imparted in 126 trades (73 Engineering + 48 Non-Engineering + 5 exclusively for visually impaired) of regular maximum duration of two years. The students learn the profession exclusively inside the training center. Theoretical instruction is still the dominating teaching and learning style, even more practical orientated forms like training workshops are implemented during the last few years in many ITIs (Kumar 2016).

The so called National Trade Certificate – nationally & internationally recognized under the aegis of National Council for Vocational Training (NCVT) – is awarded to successful trainees. Central Government is entrusted with responsibility of framing the overall policies, norms/standards and examination for vocational training while day-to-day administration of ITIs rests with the State Governments/Union Territories Administrations.

However, the quality of technical and vocational education imparted in these institutions in the country has been a matter of concern among policy makers. The challenge is to facilitate ITIs to keep pace with the fast growing technological demands for industry and the expanding universe of knowledge. Further, such an attempt to enhance the quality of training and training infrastructure through improved design and delivery system especially in the areas of curriculum development, capacity-building of trainers and course managers, state-of-the-art training infrastructure, industry-ready student evaluation system among others would, more importantly, have positive employment outcomes of graduates from the vocational training system especially in the existing industrial and economic scenarios where considerably high demand for professional technicians exist.

#### **4 Current research into quality at ITIs**

The quality of India's VET system has been subject to considerable criticism in the past, which has also had an impact on the activities of foreign companies in India (Pilz & Li 2014). For example, in its Efficiency Study Report on Indian ITIs, the International Labour Organization (ILO) concluded that the employability of those completing training at state-run ITIs was poor and that only 30% to 40% found employment or became self-employed on completion of their training (ILO 2003, 31). The fact that the training provided does not match actual labour market demand has also drawn criticism. Each year, for example, in ITIs graduate almost half the total number of welders, mechanics and electronic engineers already in employment in the Indian labour market.

A research report commissioned by FICCI (2006) surveyed 69 ITIs and concluded that many lack the right technical equipment and that a shortage of funding mean there is little scope for improvement. It also noted a shortage of trained instructors and few opportunities for in-service training.

A study by the National Skill Development Corporation of initial and continuing training for instructors (NSDC n.d.) found that most instructors at India's ITIs have received no pedagogical training and are not, therefore, adequately prepared to teach.

A more recent (2014) study of almost 150 state-run ITIs found that they were appropriately equipped (Joshi, Pandey & Sahoo 2014, 95), but that there was a shortage of instructors, that instructors often lacked appropriate skills, and that many were employed on part-time or fixed-term contracts (105 ff.). It also found that more than 15% of all those who started training dropped out before completing the course (101) and that about a third were unemployed on completion of their training (103).

In a study of learning opportunities in fisher families in the state of Orissa, Pilz and Wilms-höfer (2015) found that ITIs were poorly equipped and that potential students had to travel long distances to access them. They also found a shortage of courses geared to the needs of students and the local employment market.

Finally, research into street food vendors in two states also found that the formal training provision offered by ITIs did not meet the needs of potential trainees (Pilz, Uma & Venkatram 2015).

Given the vital importance of vocational training, it is surprising that there is so little by way of robust research findings in the area of quality.

## **5 Description and discussion of two research studies**

Considering the contradiction of the big issue of quality of it is in the political discussion in India on the one hand and the rather limited number of empirical findings about the quality of ITIs on the other hand, we have conducted two studies: one in normal/regular ITIs and one in upgraded ITIs.

### **5.1 A study of regular ITIs**

Interviews were conducted in 2014 at state-run ITIs in the states of Karnataka, Orissa and Tamil Nadu and in New Delhi; these regions were selected to reflect cultural and economic diversity. Selection of and initial contact with ITIs was carried out by local partner institutions. 15 case studies were investigated, representing different institution sizes and both urban and rural settings. The aim of the study was not to reach generalizable conclusions about the quality of training at Indian ITIs but to make an initial exploratory contribution to fleshing out their concept of quality.<sup>1</sup>

To gather data and information about the understanding and practice of quality assurance in Indian ITIs, we conducted and documented interviews with their principals. These individuals have responsibility for all processes and information relating to quality within their institutions and act as intermediaries between state bodies, who set the requirements, and the instructors, who implement these requirements. Interviewing this group enabled us to gain in-depth insight into the framework for and practice of quality assurance.

The design of the guided interviews was theoretically based on the internationally acknowledged concept of quality assurance in vocational education and training adopted by the European Training Foundation (Galvão 2014). This concept defines quality assurance using three dimensions: defining quality; quality assessment; and quality enhancement. The first stage of the study involved establishing the principals' own understanding of quality. The second stage was to determine how they assessed the current quality of the training at their ITIs. The final stage was to gauge the potential for enhancing quality.

### ***Findings: defining quality***

The survey of principals showed that their understanding of quality is very strongly output-oriented. They regard employability and stakeholder satisfaction as the key markers of training quality, a view that reflects the requirements of the Indian government. Quality is associated with both output and income – that is, the skills and expertise acquired by trainees and their opportunities on the labour market, with a focus on the overlap between trainees' skills and the requirements of the labour market.

*“Our quality is measured by what our trainees have learned here, we focus on the output. When they get a job afterwards, then we know they had quality training.” (ITI Karnataka)*

*“The performance of our students is our indicator of quality – their practical and theoretical skills, as well as their behaviour and way of thinking.” (ITI Orissa)*

In line with this definition of quality, the quality indicators used in the ITIs surveyed focus almost exclusively on using tests and examinations to assess trainees' knowledge. Other commonly cited indicators include employment rates on completion of training at an ITI, drop-out rates, and completion rates.

### ***Findings: quality assessment***

The input factors involved in quality of vocational training include instructors, infrastructure and equipment, and curriculum.

Most of the principals surveyed were satisfied with the training their instructors had, but some expressed concerns about their motivation, the currency of their knowledge, and the availability of adequate numbers of skilled instructors. In half the cases we investigated, principals were appointing external instructors on a temporary basis to fill vacancies. However, a number reported that these temporary staff often lacked the necessary skills, so their appointment did not enhance training quality. To ensure the long-term teaching quality, they said, it was important that instructors received regular in-service training and that both their technical knowledge and their teaching methods were updated. There was little agreement, however, on implementation of in-service training, suggesting that such training is inadequate and non-standardised.

*“It is essential that the trainers are well prepared, but not so much regarding what kind of diploma they have but if they can teach and motivate the students.” (ITI Delhi)*

*“They get a few days of training every three or four years, but only in technical aspects and not in teaching methods.” (ITI Orissa)*

Principals are of the opinion that the infrastructure and equipment of ITIs could be improved. In most cases, there is a shortage of machinery, tools and space to teach modern technologies. There are also no regulations on maintaining machinery.

*“I think we can be satisfied with what we have, compared to other institutions. But there is still a lot of room for improvement.” (ITI Karnataka)*

*“We still require more machinery and updated technology. Therefore, we are not completely satisfied yet.” (ITI Tamil Nadu)*

Principals also addressed curriculum quality and were critical of the fact that curricula were extremely theoretical and bore no relation to practice or modern technologies.

*“We are using the latest curriculum, but we are not satisfied with it. It is too vast, with too much theory and not enough practical parts.” (ITI Tamil Nadu)*

*“We are not satisfied with the curriculum. It is not up to the modern standard, it just contains basic skill training.” (ITI Delhi)*

The ITIs surveyed placed particular emphasis on the smooth integration of trainees in the labour market, with a focus on positive outcomes. Some had a dedicated member of staff whose main role was to coordinate job placement. These placement officers maintain contacts with companies and act as the interface between potential employers and newly qualified trainees. ITIs also used alumni associations as networking platforms for former trainees.

*“We have constant contact [with] industries. They come here and hire our students. We have a placement officer, who informs [us] about the openings and visits the companies.” (ITI Orissa)*

### **Findings: potential for quality enhancement**

Interviewees suggested ways of improving the quality of the training institutions. The key, they said, was to recruit enough skilled instructors. However, while higher salaries helped, the main obstacle was government constraints.

*“We require more manpower to improve the quality, but the government is not flexible enough to provide more staff.” (ITI Tamil Nadu)*

Interviewees also frequently referred in comments about equipment and infrastructure to the political and bureaucratic obstacles hampering their efforts to improve the situation.

## **5.2 A study on upgraded ITIs**

Towards producing technicians of world standard, the Government of India launched a programme of upgrading 500 ITIs during 2005-06 at the rate of 100 ITIs each year, and currently 1896 government ITIs have been upgraded into so-called Centres of Excellence (COE) at the national level (Rao, Sahoo & Ghosh 2014). Under this programme appropriate infrastructure and equipment are provided. Further, the programme has the overall strategy of enlisting cooperation with Industry and Chamber of Commerce and to create a public-private partnership model for designing and implementing the scheme. The salient features of the scheme of upgrading ITIs include the introduction of multi-skilling courses of one year duration fol-

lowed by advanced/specialized modular courses through an industry-wise cluster approach with multi-entry and multi-exit provisions. Most of ITI's impart training in engineering trades like instrument mechanic, electrician, fitter, plumber, diesel mechanic, Computer Operator & Programming Assistant (COPA), electrical mechanic, Information Technology, Mechanic Computer Hardware, Refrigeration & Air Conditioning, Turner, Welder, etc. Establishing Public Private Partnership in the form of Institute Management Committees (IMCs) is envisaged to ensure greater and active involvement of industry in various aspects of training.

An IMC is constituted for each selected ITI. The IMC is converted by the State Government into a Society under relevant Societies Registration Act. The IMC registered as a society is entrusted with the responsibility of managing the affairs of the ITI under the scheme. The composition of IMC, is as follows (DGET 2014): Industry Partner or its representative as Chairperson, four other members from local Industry to be nominated by the Industry Partner in such a way that the IMC is broad based, five members nominated by the State Government and the principal of the ITI, as ex-officio member secretary of the IMC Society.

A study has been launched to assess the progress of the programme of COE in the South Indian state of Karnataka (Tara, Kumar & Ramaswamy 2011). For the study purposes, six ITIs out of 36 ITIs upgraded to COEs formed the sample. The sample was chosen so as to provide regional representation, coverage of trade and socio-economic backwardness of the region. The main objective of the study was to assess the overall effectiveness of ITIs with respect to methods adopted for identification of trades that had industry demand (by way of discussions with industry representatives, IMC members and ITI functionaries), existing infrastructure facilities, capacity of trainers, curriculum development, among others. The ultimate goal was to arrive at an understanding of the level of quality in the functioning of ITIs. Personal visits were made to the selected ITIs and detailed interviews were carried out with the key functionaries including principal, training officers and others with a set of semi-structured interview schedules and check lists. In this respect, the study team was taken by the key functionaries to classrooms, workshops, office areas, storerooms, common facility areas of the establishments.

The course structure and the syllabi of all the course components namely, Broad Based Basic Training (BBBT), Advanced Module and Specialized Module under COE are prepared by a panel of experts under the aegis of NCVT, Government of India and the ITIs have clearly defined guidelines regarding following the course syllabi in total. In this regard, our discussions with the key functionaries of sample ITIs were held.

The principals and instructors of the sample ITIs were asked to give their opinions regarding the system of evaluation presently adopted and to offer suggestions for any modifications. As students are the critical elements of ITIs, a cross section of students were interviewed to elicit their views about the programme as well as the problems encountered by them.

Furthermore, a cross section of industry partners were interviewed to elicit their opinions with regard to the Internship programmes of ITIs, their role in teaching in the courses, training of Instructors at ITIs by the industry experts, etc.

Placement of trainees is a crucial indicator of the value of the course from the point of view of student's career aspirations and more importantly, their livelihood. Moreover, the popularity and demand for a course is also a function of the quality of training imparted and the reputation of the institution offering the course. In this light, prompt and decent placement of successful trainees is an avowed objective of ITIs. In this respect, efforts were made to elicit responses regarding the prospects of placement of trainees in the sample ITIs.

The major findings of the study at a glance are:

1. Though COE was a well-conceived programme, lack of awareness regarding its uniqueness and usefulness among parents, students and industry had resulted in very poor demand for the courses as the course had not achieved a brand image.
2. While some of the sample COEs were endowed with adequate training infrastructure including latest tools and equipment, there were others which lacked such training infrastructure. Interestingly, older COEs as compared to recent ones were relatively well equipped in this regard. Most of the Instructors reported that the training they had received was quite beneficial and stated that there was an urgent need for participating in such programmes on a regular basis in order to keep pace with the latest advances in the industrial sectors. There were no career growth opportunities for the Instructors which was a de-motivating factor.
3. Findings regarding the status of girl students in the sample COEs indicate low intake of girls against sanctioned seats. Further the drop out and pass rates also show a poor profile of girl students. For instance in one of the sample COEs, though there was a sanctioned intake provision for 32 girl students none were admitted during the reference period. In another sample COE, out 11 girls admitted, 3 had dropped out while none passed. The findings clearly reveal the urgent need for emphasizing the need for focused attention to girl students in the training transaction, placement activities and providing a social ambience and support that would enhance their self-esteem and motivate them to accomplish excellence in their studies. Interestingly, women trainees are generally not preferred by the industry as the tasks involve handling of heavy material and equipment besides working in inconvenient shifts. Further, women have to work in close proximity with boymen which is culturally not acceptable.
4. The role of the IMCs appeared to be weak in many sample COEs and limited to only a few issues such as financial approvals, procurement related matters and to some extent student placements. IMCs appeared to have only advisory role without adequate powers and minimal roles in the areas of staff training, constant interaction with industry to generate demand for COE students, instilling confidence among students through regular interaction with them and providing all necessary support and guidance.

5. The major problems experienced by students in the course of their study included comprehension difficulties due to poor English knowledge and communication skills, no or inadequate stipend, lack of hostel facilities and inadequate transport.

## 6 Discussion

From the research findings given above, it becomes clear that the existing training courses, offered through ITIs, focus only on theory rather than practical components. In this context, it could also be said that the link between general and higher education is weak. It does not meet the future skill requirements of the labour market. It further complicates the transition from education into the labour market. Thus, the interaction with the labour market becomes clear. The labour market is characterized by a high degree of liberality in India. Flexibility and high turnover are two aspects that have been mentioned repeatedly in many studies. They make an extensive and therefore expensive company training to a high risk investment because of the deferred migration risk. In addition, it is important to remember that in India, more than 90 percent of workers are allocated in the unorganized sector (Singh 2012, 181; Agrawal 2012, 457). This means that there are no regulated working conditions (e.g. activities in small family businesses or as day labourers). A corollary is that only about two percent of the workforce has undergone any formal vocational qualification (Singh 2012, 181). As a consequence, it is clear that the employers seeking workers must either focus on a relatively small group of more theoretically qualified ITI graduates or on unskilled assistants who cannot accept challenging tasks.

The society's take on educational programmes must also be considered. Vocational education has a very low reputation, especially when it comes to manual activities. The reason for this situation is the caste system in India and its influence on the culture (cf. detailed Pilz 2016b). From many studies it has become clear that vocational training and trained laborers will be accepted in the future only if the social opinion regarding manual workers changes. In particular, this has to be reflected in their pay and career prospects (Pilz 2016a).

But what are the detailed conclusions in the case of the ITIs themselves? What emerges out of the findings is that despite several efforts of up-gradation (Singh 2012), ITIs have not been able to meet the expected quality standards. Against this backdrop, it is of highest importance to address the issue of quality of vocational training imparted to the students in vocational training institutes, more precisely in the ITIs. The learners that come out of these institutions go into the world of work and hence it is imperative that the quality of inputs provided to those students must be of high calibre – this implies the adoption of a Quality Management System.

Our data have shown that (like in many other countries) financing, infrastructure, equipment, teacher training and teacher payment are crucial aspects to enhance quality. Due to the fact that these parameters have been discussed in India for a while already (ILO 2003; FICCI

2006; Joshi, Pandey & Sahoo 2014; Sukumar & Kumar 2015), we will focus our discussion here exclusively on the topic of quality awareness.

Our data have shown clearly, that first of all a complex approach as a basis for quality awareness is missing. In the past, only a reporting on “hard data” like entrance data, drop-out rates and job placement rates to the school boards and ministries was common. To enhance the quality awareness we recommend a compulsory and much broader approach of quality management. The concept of quality management implies creating a set of policies and actions with the support of the direction which facilitates the mobilization of the ITIs towards a quality culture that goes beyond mere certification process in itself. It implies a commitment to a new way of doing things in order to achieve objectives from its inception. The quality problem stems out of the twin dimensions, viz., (a) those trained do not possess the competencies for employability (either core or soft skills) and (b) there is a mismatch between what is demanded and the skills supplied (Mehrotra 2014a). Our findings (see above) give clear evidence that both dimensions are of high relevance. Firstly to enhance the internal processes in the ITIs, but also in relation to labour market aspects and the transition from education and training into the (formal or informal) labour market. If the teaching is of poor quality and the competences trained in the ITI programmes are not facing the needs of the labour market, vocational training will not be recognised by employers as suitable.

Hence from the point of view of Quality Management, quality is everything that an organization does, in the eyes of its customers, which will encourage them to consider an organization as the best (Tara 2003; Sukumar & Kumar 2015). From this perspective Sadgrove’s Quality model (1996) appears to be relevant for the Indian case and adoptable for its application in the ITI domain. In this respect the elements would include (a) Focus on student, industry; (b) Developing professionally trained teachers/instructors who are constantly trained to upgrade technically to match the industry demand; (c) Clear and formal efforts to include all the stakeholders in Quality Management planning exercises; (d) Constantly measuring and recording the programme efficiency and effectiveness; and (e) Commitment to teamwork which must permeate in the entire organizational structure through effective team building, addressed in the ‘process’ section (faculty development training programmes).

To implement these principles a differentiation between internal and external efficiency is helpful:

*Indicators for internal efficiency:*

- a. Performance and outputs,
- b. Number of students enrolled; retained & successfully graduated,
- c. Utilization of training seats,
- d. Capital assets and human resources in producing these outputs.

*Indicators for external efficiency:*

- a. Impact of training on employability of graduates,
- b. Student capability to utilize knowledge and skills acquired during training.

In order to bring quality on both levels in ITIs, we recommend the following set of operationalized criteria for quality measurement. To do so we adopted an Input-Process-Output Model. Furthermore, an attempt is made to include variables that may be considered under each of the elements in the model.

### *Input*

- a. Student selection process,
- b. Student profiles, student enrolment,
- c. Teachers' level of education and training,
- d. Curriculum,
- e. Infrastructure facilities, IT inputs, equipment-machinery,
- f. Financial outlays, support,
- g. Examination pattern.

### *Process*

- a. Curriculum revisions,
- b. Faculty development training programmes (on methods of team-play, involving instructors/trainers, students, course managers and external experts towards achieving a cohesive and functional participation of stakeholders at various implementational levels),
- c. Teaching methodologies,
- d. Provision of new machinery,
- e. Industry intervention (imparting training by experts from industry as well as members of IMC in, course planning and facilitating students and instructors transact curriculum and to provide practical training. In addition their expertise will be utilised for updating of curriculum from time to time and to provide apprenticeship training to students.),
- f. Internship in industry for students,
- g. Teacher-industry interface,
- h. Additional skill development programmes for students like communication and personality development, preparedness to face job interviews.

### *Output*

- a. Improved retention of students (reduction in dropping out),
- b. Improved performance metrics,
- c. Better qualified and better equipped teachers,
- d. Strengthened industry-ITI interface,
- e. Improved placements of students and improved utilization of assets,
- f. Teacher and student satisfaction with the processes,
- g. Attitude change among students, teachers and management and potential employers of students,
- h. Assessment of employable skills by industry.

The Sadgrove Model essentially focuses on ‘quality’ in a holistic manner, symbiotically combining the five critical elements of focus on customer (here students), team building, proficiency in carrying out tasks, documentation for optimal decision making and communicating and educating all the stakeholders. Team building involves active participation of all the players including principals, instructors/trainers, students, parents and other stakeholders together in all critical aspects of programme implementation. In this regard, specific teams needs to be created to conceive and manage specific tasks.

Also it is essential that a composite ‘quality index’ derived out of the expected performance of critical elements be evolved in order to monitor the levels of outcomes and to facilitate mid-course corrections.

The adoption of the above model to ITIs would certainly help to achieve the twin goals set forth by the Indian Government of enhancing the quality of the work force, providing employment and in the long run, achieving the competitive edge.

## 7 Perspectives

In future, sharing experience will be increasingly important, enabling India to access the experience of other Asian countries with quality management. However, shared learning based on the VET systems of contrasting countries will also be valuable (Pilz & Pierenkemper 2014). For example, there has been a steady increase over many years in exchanges between India and Germany (Preuß 2013; FICCI & BIBB 2013). At the level of research into VET systems, there has been fruitful cooperation between individual Indian universities and the German Research Center for Comparative Vocational Education and Training (G.R.E.A.T.), based at the University of Cologne (<http://www.great.uni-koeln.de/en/great/>). This cooperation has produced a new book on aspects of vocational training in India (Pilz 2016b), which gives a solid overview of the current state of research, findings and trends. It is likely that this research will be developed in future.

It would be most ideal for Indian and German partners to work together to establish quality standards of vocational education being offered, especially in ITIs as the students will be transiting into the world of work. Thus, in an internationally competitive training environment, the implementation of Quality Management Systems in VET can provide a comparative advantage in preparing the quality workforce required for micro and macro- economic reforms. The vocational training institutions that are quality driven will foster innovation and improvement and thus can have a strategic advantage in achieving the goal of skill development.

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