

Overview of Existing and Emerging Models for Skilling in India





Sales Associate

- 1. RAS / N0114 To process credit applications for purchases
- 2. RAS / N0120 To help keep the store secure
- 3. RAS / N0122 To help maintain healthy and safety
- 4. RAS / N0126 To help customers choose right products
- 5. RAS / N0127 To provide specialist support to customers facilitating purchases
- 6. RAS / N0128 To maximize sales of goods & services
- 7. RAS / N0129 To provide personalised sales & post-sales service support
- 8. RAS / N0130 To create a positive image of self & organization in the customer's mind
- 9. RAS / N0132 To resolve customer concerns
- 10. RAS / N0133 To organize the delivery of reliable service
- 11. RAS / N0134 To improve customer relationship
- 12. RAS / N0135 To monitor and solve service concerns
- 13. RAS / N0136 To promote continuous improvement in service
- 14. RAS / N0137 To work effectively in your team
- 15. RAS / N0138 To work effectively in your organization

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Contents



Abbreviations and Acronyms	2
Introduction	5
Overview of Skills Value Chain	6
Existing Implementation Models in Skill Value Chain	7
Mobilization and Counselling	7
Implementation Models for Training Delivery	11
Centers of Excellence	16
Training of Trainers and Assessors	20
Content and Curriculum Development	23
Assessments and Certifications	26
Cluster-Based Initiatives	31
Domestic Staffing Agency	36
Overseas Placement Centres	41
Science and Technology Entrepreneurship Parks	45
Emerging Models in the Skill Value Chain	48
Skills University	48
Global Skills Park	49
Technology Centres (Erstwhile Tool Rooms)	52
Accelerators and Incubators	56
Conclusion	61

ABBREVIATIONS AND ACRONYMS



AA	Assessment Agency
ADB	Asian Development Bank
A&I	Accelerator and Incubator
ASHA	Accredited Social Health Activist
BDO	Block Development Officer
BFSI	Banking, Financial Services and Insurance
CAGR	Compound Annual Growth Rate
CDP	Cluster Development Programs
CFC	Common Facility Centre
CoE	Center of Excellence
CSR	Corporate Social Responsibility
CSTRI	Central Staff Training and Research Institute
DDUGKY	Deen Dayal Upadhyaya Grameen Kaushalya Yojana
DfID	Department for International Development, United Kingdom
DGIS	Directorate-General for International Cooperation
DGT	Directorate General of Training
DIB	Development Impact Bonds
DSD	Department of Skill Development, Malaysia
DST	Department of Science and Technology
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
ESFA	Education and Skill Funding Agency
FY	Financial Year
GDP	Gross Domestic Product
GISDC	Ghana Industrial Skills Development Centre
GTTC	Government Tool Room and Training Centre
GOI	Government of India
GVA	Gross Value Add
HQ	Headquarter
HR	Human Resource
HRDC	Human Resource Development Council, Malaysia
HRDF	Human Resource Development Fund, Malaysia
ICT	Information and Communication Technology
IFI	International Financing Institution
IISc	Indian Institute of Science
IISCs	India International Skill Centres
ITC	Industrial Training Centre
ITeS	Information Technology Enabled Services
ITI	Industrial Training Institute
IVQ	International Vocational Qualifications
MEA	Ministry of External affairs
MOESS	Ministry of Education Science and Skills, Ghana
MOET	Ministry of Education and Training, Vietnam
MOHE	Ministry of Higher Education, Malaysia
MOLISA	Ministry of Labor - Invalids and Social Affairs, Vietnam
MoM	Month Over Month
MOOC	Massive Open Online Course
MOU	Memorandum of understanding
MQA	Malaysian Qualifications Agency

MSDE	Ministry of Skill Development and Entrepreneurship
MSME	Micro, Small & Medium Enterprises
NBFC	Non-Banking Financial Institution
NGO	Non-Governmental Organisation
NMDFC	National Minorities Development & Finance Corporation
NOS	National Occupational Standards
NOSS	National Occupational and Skill Standards, Vietnam
NSDC	National Skill Development Corporation
NSDF	National Skill Development Fund
NULM	National Urban Livelihood Mission
OJT	On-the-Job-Training
OPC	Overseas Placement Centres
PAT	Profit After Tax
PDOT	Pre Departure Orientation Training
PE	Private Equity
PKVY	Paramparagat Krishi Vikas Yojna
PNQF	Philippine National Qualification Framework
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
PPP	Public-Private Partnership
RPL	Recognition of Prior Learning
SAF	Skilling Australians Fund
SDI	Skill Development Institutes
SFURTI	Scheme of Fund for Regeneration of Traditional Industries
SHG	Self Help Group
SLAs	Service-level Agreements
SME	Small and medium-sized enterprises
SOP	Standard Operating Procedure
SSC	Sector Skill Council
SSDM	State Skill Development Mission, India
STAR	Skill Certification and Monetary Reward Scheme
STEP	Science and Technology Entrepreneurs Park
TITP	Technical Intern Training Program
ToTs	Training of Trainers
ToAs	Training of Assessors
TP	Training Provider/Providers
TVET	Technical and Vocational Education and Training
USD	US Dollar
VC	Venture Capital
VET	Vocational Education and Training
WB	World Bank
WBL	Work Based Learning

OTHER COMMON TERMS USED

Anganwadi	A type of rural child care centre in India.
Gram Panchayat/ Panchayat	Village council
Mela	Fete/fair
Nukkad Natak	Street or outdoor plays
Rozgar mitra	Counsellor/advisor
Sarpanch	Village head
Shivir	Summit
Taluka	A subdivision of a district



The technical, vocational education and training landscape is continuously evolving from brick and mortar institutes largely addressing manufacturing sector to modular blended learning addressing future of work, aspirational skill universities, bite sized learning and many more innovations.

INTRODUCTION

The vocational training and skill development landscape has been evolving in India from the post-independence era. The initial focus was on establishing a formal technical vocational education training or TVET sector, with dedicated technical and vocational institutions mainly designed for the manufacturing and engineering trades. This era was marked by establishing the first Industrial training institute (ITI) in 1969. It was preceded by setting up of the Central Staff Training and Research Institute (CSTRI) in Kolkata.

With the advent of economic liberalisation in India during the 1990s, new sectors grew rapidly, including the IT industry and a growing service sector. This led to a paradigm shift and the need to rapidly expand the capacity of skills training sector was recognised. Significant effort was made to bring more private sector organisation into the skilling ecosystem. National Skill Development Corporation (NSDC) was incorporated in 2009 and the first National Skill Policy came into being that year. Since then NSDC has played a role of a catalyst in the skilling ecosystem and has nurtured private sector organisation to be part of the skilling value chain either as training partners,

mobilising partners, placement partners or encouraging innovations in skill development.

Over the years, the skilling landscape in India has strengthened and there are various implementation models for activities within the skill value chain. The providers – public, private or public private partnerships – are innovating in different ways to mobilise the right candidates for skill courses. There are different kind of institutes providing training either as long-term training, short term modular trainings, dual TVET programs, bite sized learning through online medium etc. The brick and mortar type of training centres have evolved adjusting to the present needs and we now see mobile centres, skill vans, blended learnings, learning at the workplace and many other such models. Skilling has become aspirational and it is converging with formal education pathways through establishment of skill universities now providing degree programmes.

This report provides an understanding of various existing and emerging implementation models in the skill value chain with few case examples prevalent in India's skill ecosystem.

OVERVIEW OF SKILLS VALUE CHAIN

Technical and Vocational Education Training or TVET activities can be classified systematically in the form of skills value chain. The value chain is intrinsically mapped to a student's life cycle from mobilization to training followed by assessment, certification and employment opportunities. The structure below

(Figure 1) highlights the key building blocks of skills value chain and list of broad functions and activities under each block.

For the purpose of this study, a host of existing and emerging models in this value chain, in the context of India, have been studied.

Figure 1: Skills Value Chain

Capacity Building, Concurrent Monitoring and Continuous Evaluation				
Target Group Analysis and Counselling	Learning and Support Resources	Skills Training Delivery	Assessment and Certification	Placements and Entrepreneurship
<ul style="list-style-type: none"> Target group mapping and analysis Mobilization and communication plan Awareness and counselling sessions Usage of social and print media for maximum outreach 	<ul style="list-style-type: none"> Industry relevant courseware Develop learning resources - content and curriculum (offline and online) Support services such as modern tools, common facility centres etc. 	<ul style="list-style-type: none"> Classroom as well as online training delivery Demand assessment Focus on practical skills via OJTs, field visits, simulators etc. Training intra/ classroom/labs etc. 	<ul style="list-style-type: none"> Bridge courses for RPL and assessments Evaluation of skills learnt (online and offline) Trainer and assessor pool Certification from recognized awarding body (SSCs etc.) 	<ul style="list-style-type: none"> Industry tie-ups and employer linkages Tie-ups with incubators and micro-start up mentoring cells Overseas placement Financing support for start ups



- Mobilization Model
- Counselling and Career Planning



- Classrooms
- Skills on Wheels
- MOOCs
- Skill Parks
- Skill Universities
- CoEs
- Corporate Training



- Content and Curriculum
- Tools Rooms
- Cluster Based Initiatives: CFCs



- ToTs and ToAs
- Assessment Models



- Overseas Placement Centres
- Incubators
- STEPs - DST
- Domestic Staffing Agency

EXISTING IMPLEMENTATION MODELS IN SKILL VALUE CHAIN

MOBILIZATION AND COUNSELLING

TVET and skills development pose a serious challenge, particularly in countries with rapidly evolving labour markets. TVET has more than any other sub sector of education, strong linkages to both formal and non-formal labour markets. In many developing countries like India, where the government plays the dual role of policy maker and regulator, skills training is largely government-driven and constant efforts are made to increase private sector participation to perform the role of a training provider (TP) and for successful absorption of trained youth.

Despite the substantial efforts made in the last few years to augment the TVET ecosystem, the sector still faces challenges in strategically channeling the young population towards vocational education to reap the massive demographic dividend in the country. The challenges to encourage trainees to sign up for their courses are :

- Lack of awareness and information regarding availability, utility and potential of vocational courses.
- Weak correlation of training programs with labour market outcome in the form of better jobs and higher incomes
- Affordability is a concern since major target population for these courses comes from low-income households, whose fee-paying capacity is low.
- Low aspirational value of VET courses compared to a degree in higher education.

Implementation models for mobilization and counseling

Methods and strategies deployed by TPs for effective mobilization and counselling are driven by the type of training programs (manufacturing or service related), type of trainees (women, youth, disadvantaged sections of the society etc.), geographical spread of the training centre (rural or



In India government plays the dual role of policy maker and regulator and skills training is largely government-driven, while constant efforts are made to increase private sector participation.

urban) and envisaged outcome (wage employment or self-employment) etc.

Few of the models deployed are:

Counselling and Career Planning

(Community Model): This model involves reaching out to the communities and partnering with them to organize awareness events-mobilization fairs or setting up dedicated mobilization centres. The key activities in the process are:

- **Step 1 (Identification/Establishment of key partnerships):** The first step in pre- mobilization activities is to identify the key community members to support the process of mobilization. Tie-ups with key members and influencers assist the TPs in creating awareness of their courses and establishes a channel of communication between them and the end beneficiaries. Some of the key community members who assist in mobilization by ensuring large-scale community representation are gram panchayats and local political parties; local NGOs; school teachers; families (women and elderly); Self Help Groups (SHGs); and other government bodies such as Block Development Officer (BDOs) and District Collectors, etc.
- **Step 2 (Set up a team of expert mobilizers and counsellors):** The next step is to hire a team of experts to carry out the key activities during mobilization. These are generally local to the geography and assist in large scale community mobilization.
- **Step 3 (Creation of awareness material and organizing awareness events):** The next step is to create the necessary marketing material. The training partners generally make use of a wide variety of outreach tools and

mechanisms, some of which are listed here:

- Mass media campaign: Television scrolls, radio jingles
 - Local campaigns: Roadshows, planned video van campaigns, panchayat meets, local advertisements through haats and markets, rozgar rath yatra/shivir/ mela, nukkad natak
 - Print campaigns: Posters, banners, fliers distributed through video vans/local partners/outreach executive/village volunteers
 - Direct campaigns: Door to door mobilization by team, counsellor cum motivators
 - Creating a Skills toll-free helpline
 - Meeting with the BDOs/sarpanch/ primary school headmaster/ local panchayat members/local government bodies/religious opinion leaders of the area/ NGOs/SHGs/anganwadi teachers/ ASHA workers/women and child welfare departments and making them understand the program to facilitate community meeting
- **Step 4 (Counselling and Pre-Admission Process):** The candidates mobilized through the awareness events and through direct walk-ins undergo the counselling and pre-admission process, which includes the activities mentioned below:
 - **Basic Form:** The candidates are required to fill out a form with basic details like age, educational qualifications etc.
 - **Pre-assessment:** Test is conducted to evaluate the aspiration levels of the candidate. This could be in the form of questionnaire, personal interview etc.

- **Counseling and Student Selection:** The counselor segregates the candidates based on their form and pre-assessment. The counselor then engages the candidates to understand their interest, preference, etc., and suggests the suitable program
- **Enrolment and Admission:** This involves allocating the candidate to a new batch of the preferred choice of course and training centre

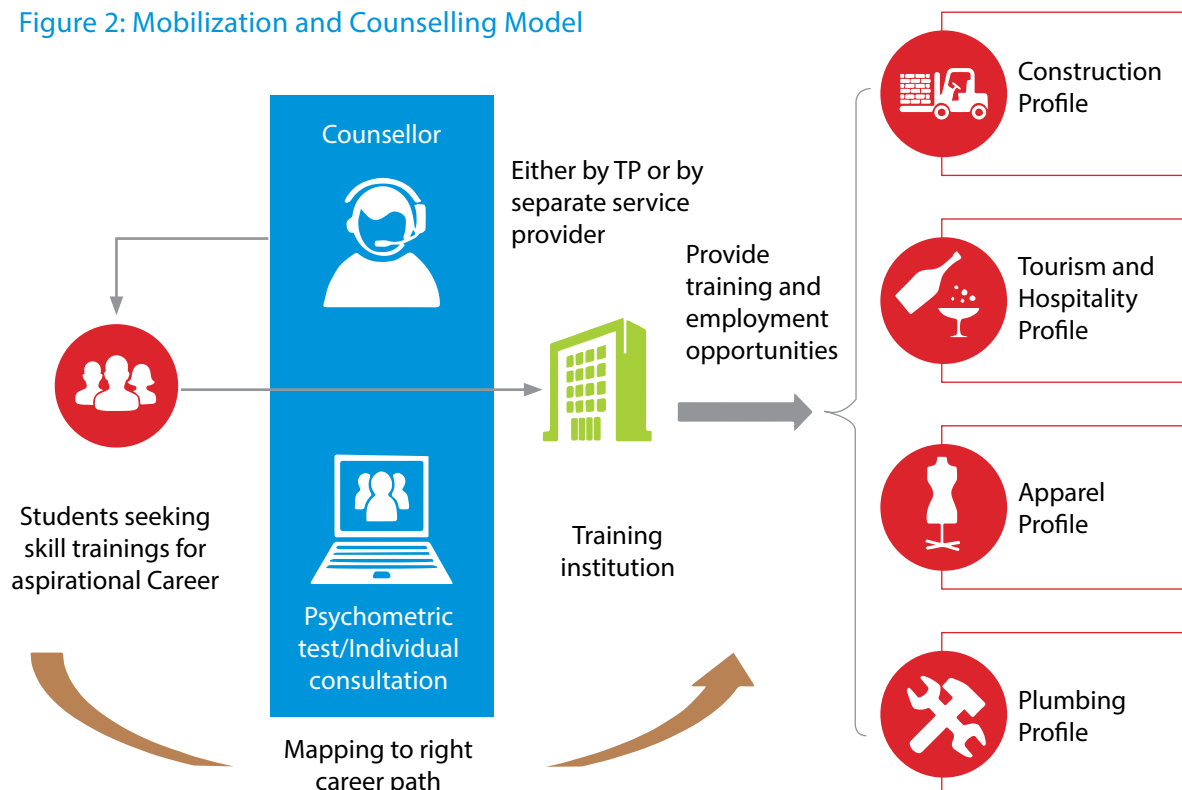
Use of Technology in Counselling and Career Planning: In addition to the manual process of counselling, the TPs, post mobilization, have been increasingly relying upon technology, such as e-psychometric tests, to better gauge the aspiration level of the trainees and suggest a suitable career path. These online platforms blend artificial intelligence and machine learning solutions with strategic human interventions to improve the decision making for the end user. A high-level snapshot of the model is presented in Figure 2 below:

The key stakeholders involved in the process of mobilization and counselling include:

- **Trainees:** Active participation and advocacy of courses
- **Counsellor/Technology platform/ Intermediary:** Design and management of tech platform; conduct training of counsellors to effectively utilize the technology
- **Training Organization:** Management of end- to-end process
- **Community Members:** Assist organization in conducting awareness campaigns and facilitate mobilization and counselling by offering infra and other support

The customer segment for the model are potential trainees (age group: 14-35 years); parents (in select cases) and training organizations.

Figure 2: Mobilization and Counselling Model



The revenue sources for this model include per student fees collected; initial platform subscription charges and annual maintenance charges; fees for creation of customized tests for specific sections of the

society, geography, job roles etc; and fees for premium access to the software enabling detailed insights, reports and dashboards to assist business decision making.

CASE STUDY 1: iDreamCareer.com (iDC)

About: iDC is India's leading education company in the space of career planning for students and provides career planning solutions to students through career assessments, access to information and one on-one-counselling (FY 2018 revenue – INR 21 million)

iDC Methodology: iDC focuses on five steps for career planning i.e. career exploration; know yourself; find the right career fit; find the correct subject/stream; and college selection and application.

Impact so far: iDC mentors over 0.1 million students every year, have over 50,000 assessment takers, pool of 200+ quality mentors with at least 15 years of experience with 10+ offices globally.

CASE STUDY 2: CareerGuide.com

About: CareerGuide.com is a one-stop platform that answers all career related questions. It is an integrated solution to provide instant, accessible, flexible and affordable career guidance and planning.

Career Guide Methodology: CareerGuide.com provides the following services

- **Career Guidance:** On-demand, instant expert backed career advices to all career queries
- **College Planning:** Planning with the help of in-house team of experts
- **Study Abroad:** Study Abroad Counsellors assist in planning overseas studies
- **Career Explorations:** Knowledge base of around ~1,15,000 questions answered by renowned career counsellors can be a useful exploration tool
- **Career Assessments:** A series of psychometric career test for all levels to scientifically and holistically assess personality interests, aptitude, motivation and personality

Impact so far: Website traffic of ~ 80,000 every month with a growth of 13 percent month over month. A team of 1000+ career counsellors with free and paid subscriber numbers are growing with a MoM rate of 14 percent and 6 percent, respectively.

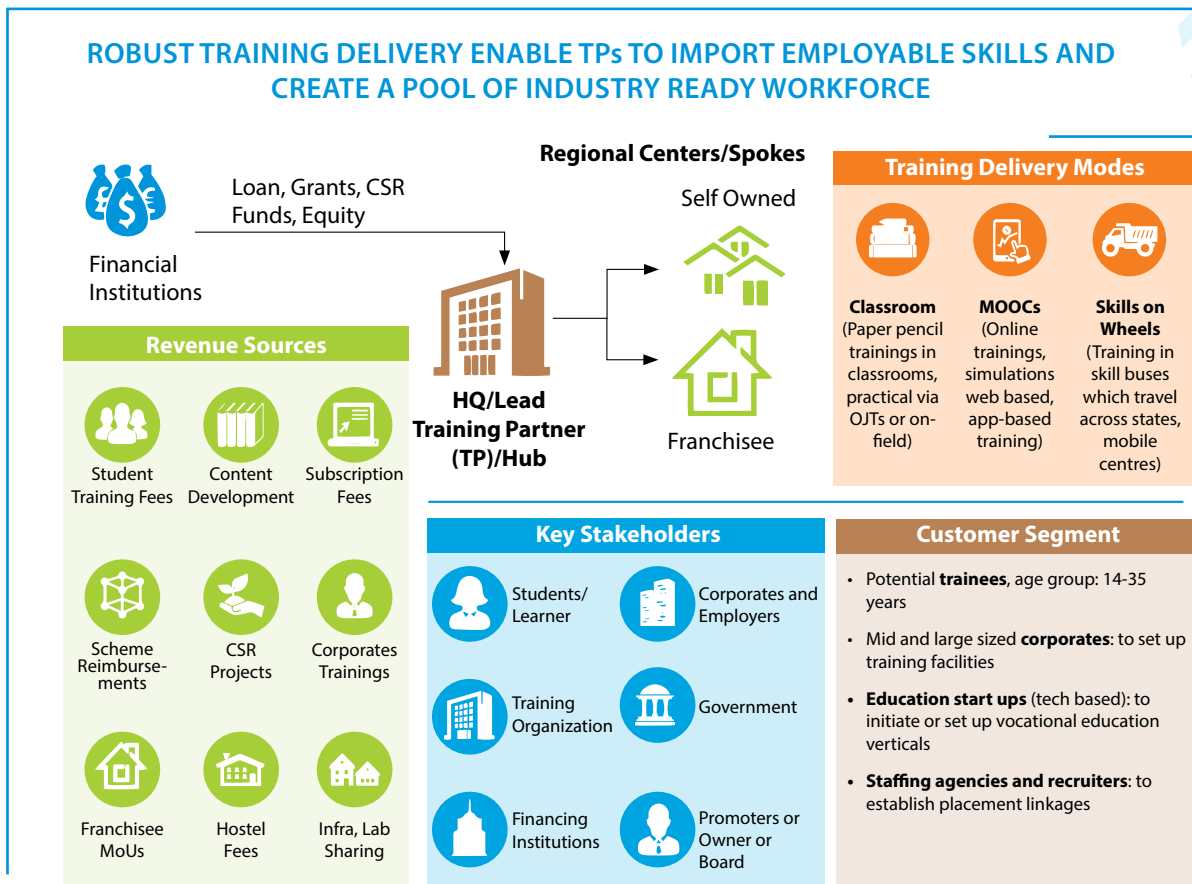
IMPLEMENTATION MODELS FOR TRAINING DELIVERY

In India, traditionally, the Industrial Training Institutes (ITIs) had been responsible for conducting vocational and technical trainings. These were accompanied by various in-house training programs imparted by the industry to create a pool of skilled workforce in India. However, in order to scale-up the training delivery and build additional capacity, MSDE and NSDC have in the past ten years been making efforts to institutionalize an ecosystem which has strong participation from private sector entities, which has resulted in a network of TPs. In the process, various training delivery models have evolved in the last decade such as conventional classroom learning, skills on wheels and blended online learning programs, and Massive Open Online Courses (MOOCs).

Summary of the training delivery model is provided below. In the subsequent sections, we have captured some of the established and emerging training delivery models along with the model profiles.

Business Model and Key Stakeholders

In a training ecosystem that NSDC has catalyzed in India, the TP is a registered organization with its main activity as training (as a not for profit or for profit company/society etc.) and it opens up various training centres, which are both mobile and fixed in nature. Training centres are either self-owned or based on franchisee arrangements.



Model I: Classroom Learning



It is a conventional set-up consisting of trainers, students, paper based vocational content and curriculum. By industry standards, one classroom consists of 30-40 students per session, lasting for one and a half to 2 hours. Size of a standard classroom varies between 300-500 sq. ft. of area (average ~10 sq. ft. per person) depending upon the type of courses being offered. Trainers organize theoretical sessions in the classrooms and practical sessions are held in laboratories or on the site. In some cases, TPs also tie up with local industries in order to facilitate on-the-job-trainings or field trainings. Duration of short-term trainings ranges between 200 to 600 hours, depending on module type. This model is capital intensive since a physical centre needs to be established (or utilized in case of franchisee arrangement). Benefits of such

a model include better student connect, greater control over centre operations, quality assurance, flexibility to run courses as per the local needs and physical infrastructure. This increases credibility amongst the students with regards to the training program. Lately, TPs have started to introduce online modules, simulations and other tech-enabled tools to make the classroom learning interactive for trainees. The content is either procured centrally or developed in-house. In rural areas, classroom learning is still preferred by the trainees over online trainings.

Model II: Skill on Wheels



This is an upcoming short-term skills recognition model (especially for prior learning or upskilling) adopted by a few states and TPs in India. In this, a hi-tech vehicle moves around geographies in order to reach out to the rural youth. The vehicle has pre-planned stops wherein it takes a halt for a four to five day period and sets up a mini-facility to upskill the local youth. The vehicle is equipped with tools and equipment that can be used readily during these stops. Students, schools and local authorities are informed about the travel schedule in order to encourage maximum participation. The target audience for such kind of trainings are generally the semi-trained youth or students with basic education base. Courses offered in skill on wheels program are generally from 'informal' sector or the ones wherein low capital expenditure is required. Students are taught bridge courses and are made to perform the simulations in the lab set up with the vehicle. This model enables maximum outreach within a short span of time.

Model limitation includes availability of the trainers, demand assessment (in the catchment areas) in order to target the right audience for courses being offered and necessary basic qualification of the trainees to attend bridge courses.



Financing requirements in the model include setting up of the mobile lab (state-of-the-art vehicle) and demand assessment in the catchment areas. This model has caught the interest of a lot of TPs especially in the informal sectors such as handloom, handicraft, textile, apparel, beauty and wellness, logistics etc. This is so because the potential trainees are already equipped with the required skill-set, and they just need basic upskilling (as per latest industry standards) and formal recognition from an awarding authority (Sector Skill Council or Government), which is fulfilled through this model.

Model III: Massive Open Online Courses (MOOCs)



This model uses the power of technology to provide just-in-time trainings at speed and scale, and offers vocational education for unlimited participation at a low cost. It has been estimated that India's online education market (both formal and informal segments) is poised to grow to USD 1.9¹ billion (9.6 million user base) by 2021 from USD 247 million (and 1.6 million user base) in 2016. Typical MOOC features include open access, free enrollment, massive scale, instantaneous assessments and results, and host of industry benchmarked courses. The roles of both teacher and learner have changed in this model. While the teacher has become more of a subject matter expert, the process of teaching has become a process of modelling and demonstration. The learner has to undertake the process of learning and application – usually, 70 percent as self-driven and rest is instructor-led. TPs and service providers have now gone a step ahead by introducing remotely proctored platforms and developing simulations and e-modules in order to make learning much more engaging and interactive, providing the human touch in a virtual world.

Limitations of the model in vocational education space include high drop-out rates (especially in cases wherein trainers play a limited role), limited practical experience, and limited employment opportunities post completion of online courses. While the companies are shifting away from conventional models of classroom learning, a trainee's mindset is yet to adapt to online learning and instructor-free environment.

Online training methodology consists broadly of four components – video lectures, downloadable content, question and answer forums, and help from e-trainers to clear any doubts. Some platforms have premium features such as online assessments, online scorecard and recommendations on bridge courses etc. Some of the ed-tech players who are prominent in this space are Coursera, Udemy, upGrad, Udacity, Unacademy, and Edureka amongst others. In the skills space, traditional TPs have also innovated to provide online trainings, for example,

- Nettur Technical Training Foundation has introduced interconnected virtual classroom systems across six locations and tablet PCs for its flagship diploma programs;
- ePalmleaf ITeS Pvt. Ltd. has developed a virtual office concept – Arthvidhya, (<https://arthavidhya.com/>) which facilitates online trainings, simulations, and various transactions as carried out in real world finance and accounting functions of an office. No trainers are deployed and students can select Qualification Packs (QPs) as per their own choice;
- iPrimed Education Services Private Limited conducts online classes through web portal – (www.iPrimedathena.com) in IT-ITeS sector etc.

The major financing requirement in this space is in developing the online platform to offer MOOCs.

¹ KPMG-Google India Report – 'Online Education in India: 2021'

KEY STAKEHOLDERS AND THEIR ROLES



Students/Learners: Users of the training delivery model are generally in the age group of 14 to 35 years, and may or may not have completed school education. They possess limited (in case of RPL) or no vocational skills.



Training Providers: Organizations that are responsible for on-ground skills delivery. These can be mid or small-sized corporates, tech-based education startups, NGOs, vocational arm of educational institution, private service providers or foundations. They set the training schedules, hire trainers, conduct trainings (online or offline) and facilitate employment.



Employers: Industry or corporates who provide inputs on training delivery in the form of guest lectures, vetting of courseware for industry relevance, opportunities for on-the-job trainings, field visits for practical sessions. They pay for the skills created by providing employment opportunities.



Government: They regulate the skills ecosystem, set the operational guidelines, provide grants in some cases to create an enabling ecosystem and set skilling objectives at national or state level.

CASE STUDIES

CASE STUDY 1: Skill on Wheels² in Karnataka

Targeting 0.5 million rural youth at taluka level in Karnataka, NSDC had launched Skill on Wheels campaign in 2017. This campaign was launched in association with Raman International Institute of Information Technology (RiiIT), India's first IT finishing school (ITFS) and supported by GSS and Dharti Foundations.

Some of the activities covered were Skillathon (to create skill awareness); Techathon (hackathon for programming and computer science enthusiasts); Teachathon (concept focusing on teachers to bring in innovation by blending technology and knowledge); 3I Summit (Industry, Institute and Investor summit bringing everyone on one common platform); Ideapreneur (entrepreneurship development program) and RISE (Rural Inclusivity to Strengthen Employment).

Impact created: The Skill on Wheels covered 30 districts, 129 talukas in Karnataka reaching out to over 0.25 million youth and job seekers. It is proposed to replicate this model in 10 more states. Skill on Wheels is an impactful and a scalable concept as it reaches out to rural India effectively. It aims to bridge the gap between mentors and last mile candidates by spreading awareness about importance of skill development and providing success stories, all packaged in a skilling centre on wheels (state-of-the-art vehicle).

² <https://blog.mygov.in/building-a-skilled-tomorrow-skill-on-wheels/>

CASE STUDY 2: upGrad Education Private Limited (Online Education Platform)

About: upGrad is an online higher education service provider. They offer online programs in collaboration with leading institutions, faculty and industry. Their courses are in the areas of entrepreneurship, data analytics, digital marketing and product management. Course duration varies between six months to one year. They also partner (as a Training Provider) with corporates to deliver trainings to new hires, both fresh and experienced professionals and provide continuous upskilling to existing employees. They are also expanding their offerings to college going students through mentoring and career guidance support.

Website: <https://www.upgrad.com/>

Value Proposition: Online courses in higher education space, transforming talent-force digitally. They offer industry relevant courses focusing on new age technologies.

Impact so far: Tie-ups with leading education institutions (MICA, BITS Pilani, IIT B and IMT etc.). Top industry partners (Snapdeal, Saavn, Zomato, HCL, Paytm etc.); 450+ successful career transitions enabled; 250+ hiring partners; over 0.3 million students empowered and average ~50 percent salary hike.

CASE STUDY 3: Simplilearn.com (Online Education Platform)

About: Simplilearn Solutions Private Limited (SSPL) owns and operates the online education and training portal Simplilearn.com. They offer courses in business, technology and vendor, among others. Its business segment courses include project management, finance management, quality, sales and marketing, IT service and architecture, Big Data and analytics, agile and scrum certification, among others. SSPL's technology segment includes courses in IT hardware and networking, virtualization and cloud computing, web app and programming, OS and databases, and IT security management. They also offer a blended model of training like instructor-led classroom training and online self-learning. Clientele include Dell, HCL, Oracle, Mahindra, Intel and Bank of America, among others. SSPL was incorporated in 2010 and is based in Bangalore, Karnataka.

Website: <https://www.simplilearn.com>

Value Proposition: Blended learning programs to combine online classes, instructor-led live virtual classrooms, project work, and 24/7 teaching assistance.

Impact so far: Transformed one million+ professionals; 2000+ qualified trainers; 400+ course; 40+ global accreditations; Ranked 8th on a list of the 50 most influential global education brands on LinkedIn.

CENTERS OF EXCELLENCE

Center of Excellence (CoE) are places where the highest standards are maintained in respect to skill development in a specific sector(s). CoEs for skilling include structures, entities that leverage shared resources from the private sector, government and public sector.³ By bringing the various stakeholders together, CoEs can support adoption of best practices, superior leadership, research and high quality training by focussing on a specific sector. Contributions can be made by various stakeholders in setting up these CoEs. The government could contribute towards the provision of land/ infrastructure, education institutions could contribute towards faculty and training staff, and industry could contribute towards co-financing, design of training courses and providing of equipment and training facilities.

Some of the key features of CoEs include:

- Delivery of high quality, specialized and advanced skill training that caters to a niche market, where volumes are low making it less attractive to conventional TPs
 - Demand-driven training that is achieved by close inter-dependency with the government and private sector
 - Alignment of training activities with government initiatives for economic development, providing courses in high end fields, including training of trainers and assessors
 - Potential to incorporate global standards due to involvement of international industry employers
- Undertaking of research, innovation and applied learning by co-locating with research and development facilities
 - Focus on job roles involving advanced technical, engineering roles, industries with high need of workers skilled in technical aspects and manufacturing and scientific fields where R&D is critical

Business Model and Key Stakeholders

Model 1: CoEs under Institutions/ Universities: In this model, the CoE is housed within an educational institution or university by leveraging existing infrastructure as well the university or institution's existing brand name. Collaboration with the industry helps the CoE in garnering technical expertise and financial assistance.

Model 2: Standalone CoEs set up by Government Private/Public Sector: These are established as greenfield centres or by upgradation of a brownfield facility but outside the purview of an education institution. These are primarily set up by industry in collaboration and recognition of the government. Intensive capital and human resource investment is required at such facilities, as infrastructure and processes have to be established from scratch. Industry organizations and industry skills councils could establish such facilities to cater to their specific requirement by drawing on workforce in the catchment area and fulfilling the industry's immediate workforce requirements. The lead time for such centres is greater than other models as regulatory requirements, procurement of land and construction could require government approvals. Accreditation of

³ Development Asia, an initiative of Asian Development Bank <https://development.asia/explainer/creating-centers-excellence-fill-critical-skills-gaps>

courses by these centres would require collaborations with educational institutions or adoption of international standards through partnerships with world-renowned institutions abroad.

Model 3: Networks of Excellence: These are set up by bringing together existing TPs, the government and private sector to form networks of excellence. This model does not require high capital expenditure, because a key feature includes application of existing infrastructure and shared resources to offer training and collaboration on research and innovation. These are prominent in sectors where the skill needs are diverse. It is crucial to ensure that the entities that come together for formation of these structures ensure high quality output, and are aimed at improving productivity in response.



CASE STUDIES

CASE STUDY 1: Centers of Excellence in Karnataka

The Skill Development, Entrepreneurship & Livelihood, GoK, Government Tool Room & Training Centre (GTTC) and Siemens Industry Software India Pvt. Ltd., (SISW) have established four Centres of Excellence (CoEs) at GTTC – Bengaluru, Mysuru, Kalaburgi and Dandeli

- Key focus sectors for these CoEs include automotive, industrial machinery, industrial automation, aerospace and defence, and renewable energy
- These centres offer short-term skilling program in areas including computer-aided design [CAD], computer-aided manufacturing [CAM], project life cycle management [PLM], metrology and measurements, automation, mechatronics, robotics, CNC turning, CNC milling, design & validation, 3D printing [rapid prototype]

CASE STUDY 2: Centres of Excellence by Maruti

International Centre of Excellence (i-Ace) in Gujarat: On the basis of an MoU signed between Gujarat State Government's Industrial Extension Bureau (iNDEXTb) and Maruti and Ford, the International Centre of Excellence is housed in Pandit Deen Dayal Petroleum University (PDPU), with IIT Gandhinagar as the knowledge partner. International standards are being set by drawing on learnings from Kangan Institute Automotive Centre of Excellence. Key focus areas would be upgrading of skills of workers in the automotive industry and undertaking specialised research and innovation activities.

Maruti Suzuki Centre of Excellence at Government Polytechnic, Manesar: In order to improve the level of technical education of polytechnic students in Haryana and effectively contribute to the Skill India movement, this CoE was set up. The centre is aiming to benefit over 5000 students in Haryana from various polytechnics as well as workers on the shop floor.

- **Value Proposition:** The state-of-the-art CoE is equipped with latest equipment and training tools. Facilities like Maruti Suzuki Basic Training Lab, safety lab, and finishing schools for weld/paint/assembly, simulation workshop, robotics lab, AutoCAD (CAD/CAM/CAE) lab, electropneumatics lab and smart classrooms will be used to impart practical training.
- **Funding:** While the land and building is provided by the government polytechnic, infrastructure for labs comprising training tools and workshops is set-up by Maruti. Operating expenses are also borne by Maruti.



CASE STUDY 3: Bosch Vocational Centre

It is a full-fledged training centre in Bengaluru, which was set-up to leverage skilled workers for production of high quality sophisticated machines. The Bosch Vocational Centre offers career oriented training to train technical apprentices for one to three years in the Bosch Vocational Centre in Bengaluru. The German dual VET model of vocational training has been adopted, which involves 20 percent theoretical training in the classroom, 30 percent practical workshop training, and 50 percent training in real life production environment.

CASE STUDY 4: Telecom Centres of Excellence

These COEs have been set up in a PPP structure by leveraging the synergies that arise out of the collaboration between the Government of India, the telecom industry as well as the educational institutions. Eight telecom CoEs have been set up, of which six have been set up in IITs, one in IIM and one in IISC. Each of these Centres has been sponsored by a telecom operator. A telecom Centre of Excellence had also been set up in New Delhi, in collaboration with telecom players, academic institutions and the central government. The main objectives of these telecom COEs include:

- Performing specialized application oriented indigenous research and innovation in the telecom sector
- Capacity-building to develop highly skilled workforce to cater to this rapidly growing sector
- Playing the role of think tank for policy advocacy and participation in global standards
- Opening of research platform to all stakeholders in the ICT sector in order to enable industry driven research through a competitive process

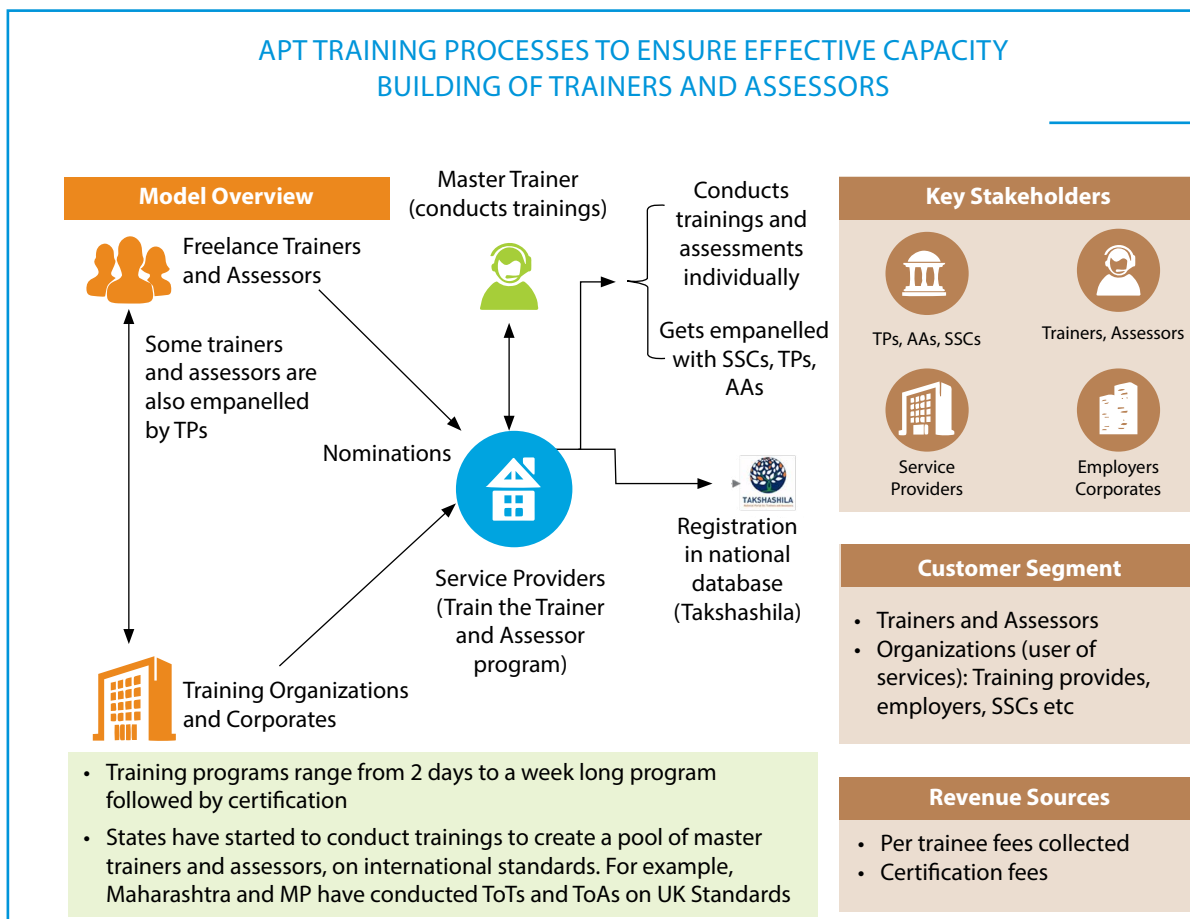
Incubating Institution	Private Sponsor	Total Project Cost (INR Million)	Contribution by Sponsor (INR Million)
IIM A	Idea Telecom	100	90
IIT Delhi	Airtel	120	108
IIT KGP	Vodafone	120	108
IIT Bombay	Tata Teleservices	120	108
IIT K	BSNL	140	126
IISC	Aircel	120	108
IIT M	Reliance	100	90
IITR	Railtel	120	120

TRAINING OF TRAINERS AND ASSESSORS

Trainers and Assessors (T&As) form a critical part of the institutional delivery mechanism. Standards for training of trainers and assessors are high in developed countries. In developing countries, there is a move towards compliance to quality standards such as certificate from a recognized body, work experience in non-academic fields and years of total experience in the specified sector, etc. In vocational education space, trainers and assessors play an overlapping role. A vocational trainer is somebody who imparts skill trainings and is employed at an industrial training institutes/centres (ITI/ITCs), private industry, private training institutes that offer diploma or certificate course for identified trades across sectors. Assessor is somebody with similar credentials as that of a trainer, but is also responsible for assessing the skills acquired by the learners post completion of training.

In India, training of vocational trainers and assessors has not been viewed with too much seriousness due to limited number of professionals taking up such roles. This is attributed to challenges related to seasonality of employment in skills ecosystem, low remuneration levels compared to formal education system, weak career paths and lack of adequate regulatory and quality frameworks. This has resulted in deployment of inadequately qualified trainers and assessors in the Indian skills space.

To overcome this issue, MSDE (through its regulatory body) and NSDC have attempted to streamline the T&A ecosystem by bringing in standard operating procedures and quality assurance frameworks that highlight the standard requirements in delivery by T&A and institutions which



can undertake Training of Trainers and Assessors.

In subsequent sections, we have captured the Training of Trainer (ToT) and Training of Assessor (ToA) model currently operational in India’s skill eco-system.

Business Model and Key Stakeholders

Training of trainers and assessors is undertaken by accredited institutions within the skills space. It is typically in two stages, beginning with a 10 day class training module resulting in a provisional certificate. This is followed by on-the-job trainings and continuous assessment by master trainers, typically assigned by SSCs, completed over a period of 15 weeks, leading to a final certificate. The process has been captured in Figure 3.

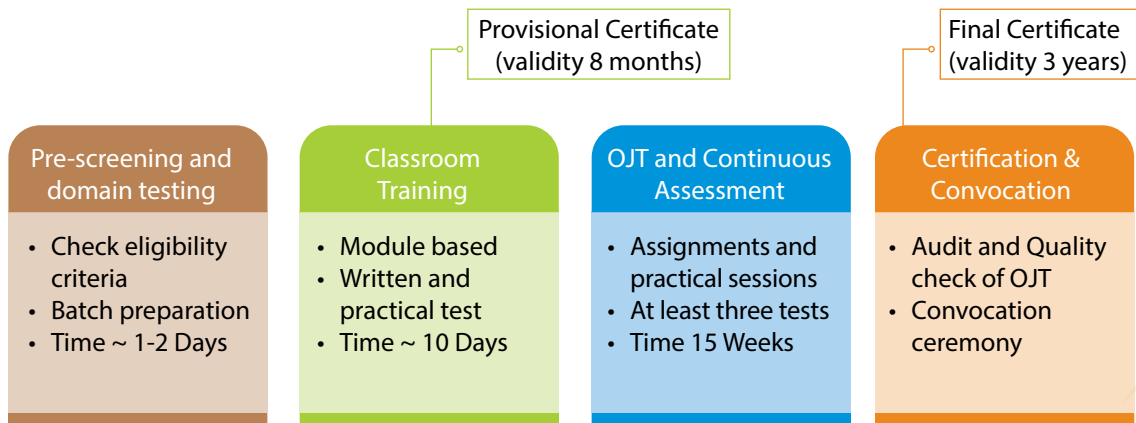
Institutional Accreditation: The institute shall be accredited at two levels – one at institute and then at course level. Institute applying for conducting ToTs/ToAs should comply with some of the critical parameters such as past performance in conducting trainings, strong governance and management structures, sound financial health, business sustainability, industry linkages and training delivery capabilities. Once accredited, institutes can offer courses (benchmarked to national or international best practices) customized to learning needs of trainers and assessors from various organizations. Institutes



are allowed to offer courses which have certified master trainer (faculty for ToTs and ToAs), defined course fee and SLAs with SSCs and sub-sector infrastructure.

To manage the trainers and assessors’ life cycle, NSDC has operationalized a national portal for T&As in its eco-system, called Takshashila. The portal provides information about training programs planned by SSCs for T&As, in the form of a training calendar. It also has features to search T&As being trained by accredited institutions across states, sectors and job roles. Freelance trainers or assessors may apply and/or TPs nominate the personnel for the training program. Accredited institutions (or the ones approved and empanelled by SSCs) create training calendars and batches for ToTs/ToAs. Once trainings are completed and certificates are issued– T&As get empanelled with SSCs or TPs or conduct trainings or assessments individually.

Figure 3: Overview of ToT and ToA process



KEY STAKEHOLDERS AND THEIR ROLES



Learners: Are trainers or assessors who have experience in teaching, have prior experience of working in SD space, understanding of industry sector(s). People with prior teaching experience or personnel already employed with TPs or retired defense personnel also participate in such training programs.



Service Providers: Are organizations that are responsible for conducting training of trainers and assessors. These can be mid or small-sized corporates, tech-based education startups or private players. They set the training schedules, hire master trainers, conduct trainings (online or offline) and facilitate on-the-job-trainings. These institutes seek accreditation to conduct ToTs and ToAs.



Employers: Are industry or corporates who provide on-the-job-training opportunities. These can be industry clusters, private TPs operating in skills delivery space or those who conduct skills assessments. They pay T&As the stipend during on-the-job-trainings and later on absorb them for full-time employment opportunities.



Sector Skill Councils: Are industry bodies responsible for accrediting institutions for ToTs and ToAs, facilitate assessments of trainers through empanelled third party assessment body, create a pool of master trainers and certify the successful T&As.

CASE STUDIES

CASE STUDY 1: Indian Society for Training & Development (ISTD)

About: ISTD was established in 1970 as non-profit society registered under the Societies Registration Act, 1860. They organize programs at state and national levels training with special emphasis on training of trainers, training goals and objectives, and training tools and technologies. ISTD runs and administers an 18 month correspondence diploma course in training and development, which was introduced in 1979 at INR 45,000 per candidate. This is the only professional course for training of trainers in India and is designed keeping in view the requirement at vocational trainings. ISTD had also undertaken pilot project for assessment of candidates and on successful completion was nominated as a nodal agency for assessments for testing and certification of skills for all sectors and for all states. ISTD has also been entrusted to develop 10 QP/National Occupation Standard (NOS) by Management and Entrepreneurship and Professional Skills Council (MEPSC) on trainers and assessors qualification pack for the Sector Skill Council for NSDC's training project.

Website: <https://www.istd.co.in/>

Impact: 24000+ diploma training completed for people in industries, business, banks, government departments, etc.; 36+ chapters across the country for program implementation; 90+ members in India; 0.4 million + assessment since 2008.

CASE STUDY 2: Walchand PeopleFirst Limited

About: Walchand PeopleFirst Limited, a listed organization was founded in 1920. With prior experience in construction, manufacturing, automobile and financial services, Walchand has now ventured into the service sector, with focus on talent development and consulting, succession planning, assessments, certifying and assessments of trainers in India.

Walchand provides online behavioral skills assessment solutions to individuals and corporate organizations during the entire life cycle of employees. They have also launched a program called India Futures: License to Train, in partnership with Dale Carnegie (company headquartered in US) to certify existing and aspirational trainers for employability skills. In association with Dale Carnegie, they offer a three-day training of trainers program at INR 35,000 per individual. This is conducted throughout the year in Mumbai, Delhi and Bangalore.

Website: <http://walchandpeoplefirst.com/>

Impact: 8,500+ clients; 2,50,000+ trainings; success stories from corporates for improvement in productivity and emotional intelligence of their employees post; market cap of INR 260 million.

CONTENT AND CURRICULUM DEVELOPMENT

The success of any training program is measured by the success of the trainees in the work environment. This means that the curriculum should be designed according to the needs and competence of the employers and the industry. The industry needs are constantly evolving and the training curricula must be dynamic enough to meet the different knowledge and skill requirements. Exposure to practical elements of the course is an indispensable element; and building practical experience into the curriculum through project work, apprenticeships, etc. enhances skill development.

All training content that is supported by the government has to adhere to the National Skill Qualification Framework (NSQF). Sector skill councils have the primary responsibility to assess supply and demand gaps, identify industry demands and job roles and develop curriculum based on competency based

framework of National Occupation Standard (NOS) and Qualification Pack (QP). These competency standards developed by SSCs are typically accompanied by a model curriculum and in the case of government funded programs, learning resources are also developed by SSCs for candidates and trainers. In addition to this, private TPs also develop their own content based on market demands.

Business Model and Key Stakeholders

The content development process is typically as follows:

- Step 1: Identification of learning goals and objectives
- Step 2: Designing – assessment instruments, exercises, content, subject matter analysis, lesson planning and medium of instruction

- Step 3: Selection of content creator (in house content creation vs hiring external agencies)
- Step 4: procedure for training the facilitators and the trainees, rolling out of program pilot
- Step 5: Evaluation of the content created catering domain specific requirements of industry and academia or creation of content through an outsourced agency.

Model 1: In-house Content Development

This model involves creation of an in-house team with expertise in designing content and curriculum for the training programs. This team is responsible for activities like:

- Arrange tie-ups with representatives from industry, academia and employers
- Design tools to capture feedback - questionnaires, surveys, templates for personal interviews, etc.
- Gather inputs/feedback from relevant stakeholders and incorporate the same during designing the content for a particular trade

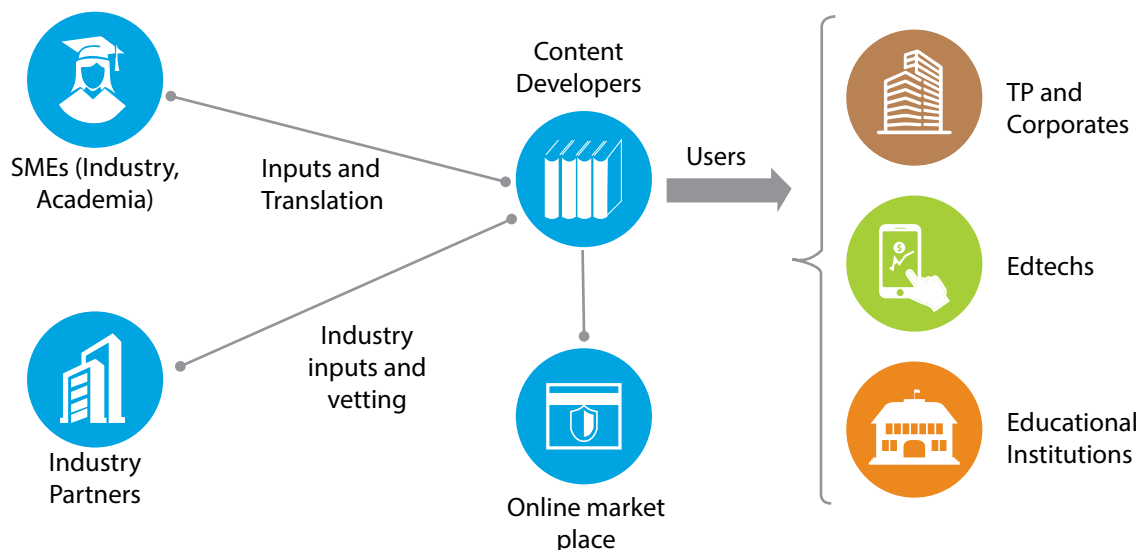
- Manage translation of the content to vernacular languages
- Ensure quality assurance through alignment to established standards and regular updating of the created content
- Supervise delivery through various platforms – instructor led, online-smart phones, tablets etc.

A high level snapshot of the model can be seen in Figure 4.

Model 2: Outsourced Model of Content Development

In addition to the in-house model, the training partner can also outsource the process of content creation to an external service provider with expertise in designing content mirrored to the requirement of the training programs. All the activities listed in the in-house model are responsibility of the outside service provider, including procuring tie-ups with representatives from industry, academia for content creation, translation and validation.

Figure 4: In-house Content Development Model Overview



Key Stakeholders

Training Partner: Responsible for creating tie ups with representatives from Industry and academia, hiring a team of experts, supervision of content developed and creation of process for periodic validation of created content

External Service Providers: They manage the process of creation, updating and translating of created content into vernacular languages. They are also responsible for creation of content to support delivery and conducting information gathering exercise for timely updation of created content.

Industry Partners/Subject Matter

Experts (SMEs): They provide feedback to support alignment of the created content to the workplace requirement and support in periodic validation and updating of the content

The revenue sources for this model are the listed below:

- Content generation and updating fee
- e-platform subscription fees
- Royalty income
- Fees for customization of content for different delivery platforms and languages

CASE STUDIES

CASE STUDY 1: ContentiSCAPE

About: ContentiSCAPE is a brand of Strengthscape, a learning and development company that offers customized training content for instructor-led trainings as well as e-learning solutions based on client needs and instructional design principles and methodology.

Methodology: ContentiSCAPE develops content with their proprietary STROD (Success Through Result Oriented Design) methodology. Their training content and supporting services enable organizations to plug gaps in competency, ensure an engaged workforce and align learning content with their strategic imperatives

CASE STUDY 2: Progilence

About: Progilence is a capability development firm that works across sectors and industries, in areas of consultancy, setting occupational standards, developing qualifications, content and training. They partner with sector skills councils that have been formed for propagating manpower development schemes, standard-based qualifications and other related activities. They are currently working in various sectors including hospitality, handicrafts and carpet, food processing, agriculture, capital goods (manufacturing), IT and electronics.

Key Services: Below are the services provided by Progilence in the vocational education space:

- Consulting Services
- Organizational Development Trainings
- QP/NOS Development
- Curriculum and Content Development
- Impact Assessment and Quality Assurance Studies

ASSESSMENTS AND CERTIFICATIONS

Assessment verifies that an individual possesses the skills required for performing a particular job and that a training program undertaken has been delivered adequately. It enables individuals to be benchmarked against their peers. Assessment is closely linked to certification, as individuals shall have the opportunity to gain a recognized certificate, post passing an assessment process which is duly recognized by the industry.

In NSQF ecosystem, SSCs are responsible for assessment through third party agency/ assessors.

The role and need for assessment has been increasing rapidly in India with the growing number of competitive examinations, certification courses, need for skill assessments for vocational trainings, future skills trainings (artificial intelligence, blockchain etc.). According to a study, assessment services market is projected to cross USD 750 million by 2021 in India.⁴ Increasing demand from authorities conducting various competitions authorities and growing preference among corporate and government to opt for online exams, is expected to drive assessment services market in India over the coming years. Mode of assessment could be classified as online (online tests, quiz, video conferencing/interview) or offline mode (written examination, face to face interview, etc.).

In 2017, online segment accounted for the largest share⁵ in the country's assessment services market and is expected to maintain its market dominance through 2021 due to easy management, lower handling cost, more accurate and quick delivery of results, transparency etc.

The assessment market can be classified in three segments namely:

- Entrance Exam Assessment Services
- Talent Assessment Services
- Certification Assessment Services

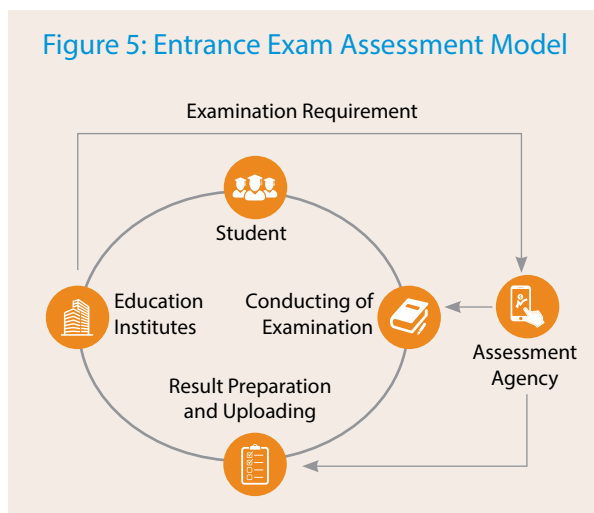
Business Model and Key Stakeholders

Model 1: Entrance Exam Assessment

Most of the higher education institutions and government organizations are opting for a competitive examination for shortlisting candidates for further education courses and job opportunities. Some of the common entrance tests for the admission in graduation and post-graduation courses are CAT, MAT, IIT-JEE, NEET etc.

Institutes/government organizations hire a company for conducting the competitive exam and share the requirement and purpose of the examination. These organizations provide multiple services such as setting of the assessment paper, organizing the examination at national level, coordination with applicants, checking and evaluating the papers, automated result generation, grievance redressal, analytical data for better decision-

Figure 5: Entrance Exam Assessment Model



⁴ India Assessment Services Market By Assessment Type, By Online Vs. Offline Medium, Competition Forecast & Opportunities, 2016-2021 by TechSci Research

⁵ <https://www.techsciresearch.com/news/3209-recruitment-assessment-services-to-lead-india-assessment-services-market-until-2021.html>

making. Some of the major players in this sector are Eduquity Career, ETS Prometric, Attest (testing division of Aptech limited), TCS, Catalyser Eduventures, Pearson India etc.

Model 2: Talent Assessment

Selecting the right individual for a job is key for a corporate. Of late, a growing number of corporate houses have been opting for comprehensive assessment tools for selection and promotion of candidates. The tests includes psychometric evaluation, aptitude test, subject matter questionnaire etc. As per an estimate, 18 percent of the companies use psychometric testing in the hiring process and this percent of usage is growing at a rate of 10-15 percent per year.⁶

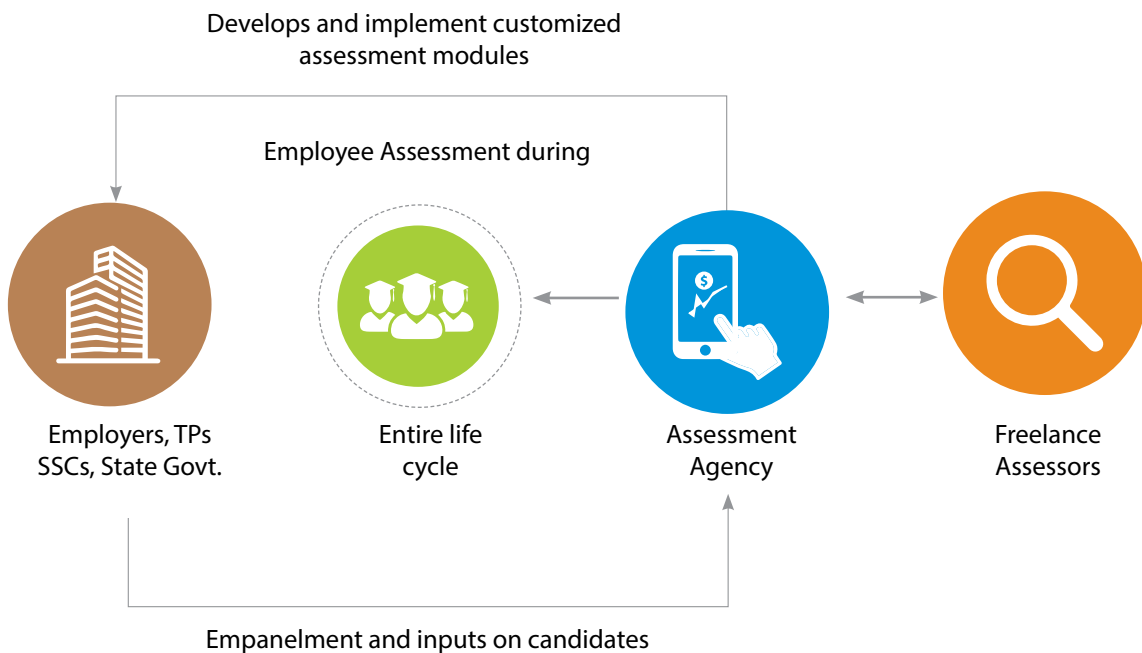
In 2016, approximately 744,000 assessments were used. This number grew by 114 percent in 2017 to 1,594,000. In

2017, 19 percent of assessments were used for learning and development while talent acquisition accounted for 81 percent. Most common assessment tools are cognitive, psychometric, domain, simulators and technical MCQs. Many organizations develop their customised assessments either in-house or through assessment providers such as Mettl, Eklavya, Sify Technologies, Cocubes, Aspiring minds, Elitmus Evaluation etc. The assessments also include innovative solutions such as app-based tracking, time spent at assessment centre, mapping of geographic location, video recording through wearable device.

Model 3: Certification Assessment

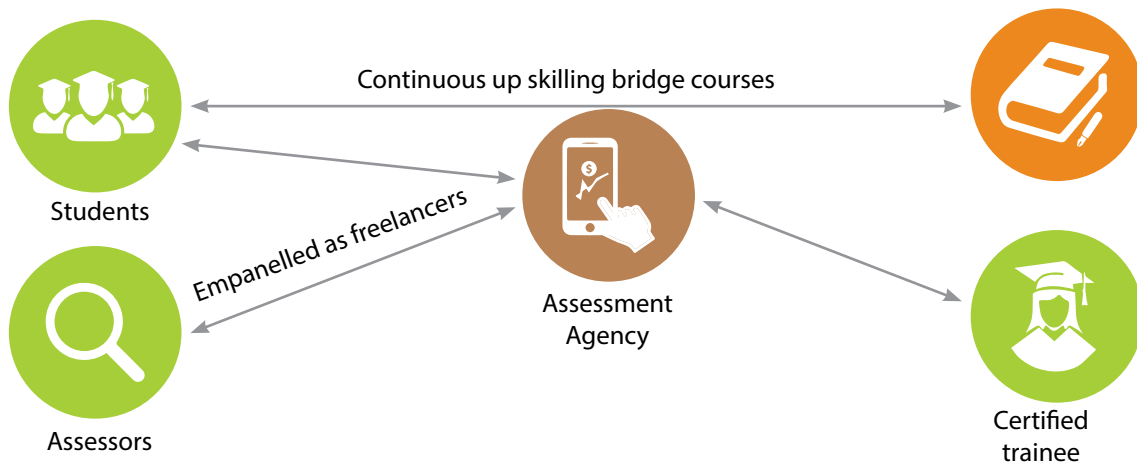
Schools and colleges conduct internal examination at regular intervals, as per the affiliated board guidelines (CBSE, DU etc.), to evaluate the learning of the students, followed by issuance of certificates

Figure 6: Talent Assessment Model



⁶ <https://blog.mettl.com/talent-hub/10-companies-using-psychometric-testing>

Figure 7: Certification Assessment Model



to successful candidates. This model usually involves in-house assessment and certification process. However, with the growth of the vocational training eco-system, certification courses, various government schemes (PMKVY, DDUGKY, NULM, STAR etc.) and demand from industry for standard assessment and certification, third party/players have been involved for carrying out the assessment and certification. The model includes:

- Traditional offline written and practical examination conducted by independent and affiliated assessor at the premises of learning provider.

- Online assessment tools using mobile and internet for evaluation of the skills imparted

The evaluation of the test is conducted independently by the learning provider in accordance to industry's regulations and requirement. The certification is given to the passing student by the learning provider in a standard format that is accepted by the industry. Key players in this sector are Sector Skill Council, Mettl, Cocubes, Aspiring Minds, India Can, etc.



KEY STAKEHOLDERS AND THEIR ROLES



Students/Learner: Are those acquiring the necessary skills and providing assessment test for evaluation of learning effectiveness and job readiness.



Training Institutions/Colleges: Training organizations and colleges require assessment of the candidates trained by them. These are the major clients in the assessment model.



Corporates: Includes large, small, established, startups, organizations that use assessments in the process of talent acquisition, learning and development and promotions for the employees.



Assessment Agencies and Assessors: Corporates and individuals providing customized assessment and certification services to TPs and corporates.

The revenue sources for assessment activities could include the following:

- Per student fees (reimbursement in case of government or sponsored projects)
- Subscription fees (from corporates, TPs) for assessment platforms, technology, applications
- Assessor training programs
- Fees for customized tests, bridge courses etc.



CASE STUDIES

CASE STUDY 1: Induslynk Training Services Private Limited (ITSPL) - METTL

About: ITSPL is engaged in the business of providing an online assessment and testing platform under the name Mettl, which enables hiring managers in companies to measure and track skills of pre-hires and employees. The company's Mettl platform enables users to create assessments for recruitment, training effectiveness, and engagement. Its platform is used in IT, ITES, telecom, and banking industries. Its clientele includes Vodafone, MTS, NIIT, Puma, Arvind, Marico and 3M, among others. The company's branch offices are located in Bangalore, Pune and Hyderabad.

Website: <https://www.mettl.com/>

Value Proposition: Conducts both online as well as offline (in absence of net) assessments; operates remotely in rural areas; proctoring techniques with image processing technology to verify candidates' profile; delivering quicker results, customized talent assessment tests for corporates, SaaS-based solution for end-to-end online assessments.

Impact so far: 2000+ clients across 80+ countries; 300+ skills assessed across 25+ industries; 1.2 million+ annual assessments; trusted talent acquisition and learning development tools.

CASE STUDY 2: CoCubes Technologies Private Limited (CCTPL)

About: Incorporated in 2007, CCTPL owns and operates Cocubes.com, an assessment and hiring platform. CoCubes connects colleges, students and corporates using online assessments to create a seamless entry-level hiring ecosystem. The assessments are carried out across multiple domains and sector. Its assessment platform is used by multiple HR consultants who hire individuals for different companies.

Website: <https://www.cocubes.com>

Value Proposition: Connects colleges, students and corporates using online platform; scientifically designed assessment to evaluate talent across various competencies; experience of more than 20 years in designing and conducting scientific assessments.

Impact so far: 2 million+ assessments every year; 100 percent online model of delivery - compatible with 35+ browsers, handles 75,000+ simultaneous assessments; 600+ clients across 350+ cities; empanelled with over 19 SSCs.

CASE STUDY 3: Elitmus Evaluation Private Limited (EEPL)

About: Launched in 2005, EEPL helps corporates in fresher and entry level recruitment. It provides services that include job seeker assessment, fresher evaluation, campus jobs, fresher and entry level jobs services. It provides pH Test that evaluates job seekers based on a variety of parameters, and grades them nationwide using an advanced statistical model. EEPL's clientele includes PatternWeb, Mindtree Limited, Tally Solutions Private Limited, Accenture Services Pvt Ltd and Amadeus Software Labs India Pvt Ltd.

Value Proposition: Technology driven end to end processes - from application capture to results declaration; pH test; 650+ tests on assessing general mental aptitude, english communication, behavioral skills and domain knowledge.

CLUSTER-BASED INITIATIVES

India's micro, small and medium enterprises (MSME) sector is the second-largest⁷ employment generator, providing 80 percent of jobs with just 20 percent of investment. The IT sector contributes about 31 percent to the country's GDP and has a 45 percent share in overall exports. Although, MSMEs play a pivotal role in equitable development of India, it faces many challenges due to lack of scale, low technology and competition.

To overcome these obstacles, the Government of India has adopted integrated development approach that targets clusters of similar MSMEs. The main concept of the Cluster Development Program (CDP) is to adopt a consortium approach for improving financial performance of MSMEs at a consolidated level. The firms under the cluster cooperate with each other with synergies in activities such as raw material purchase, marketing through common brand, export

promotion, common effluent treatment, capacity utilization, participation in exhibitions and marketing tours, etc.

India has the highest number of clusters as compared to any other country in world, with over 6000⁸ clusters. The estimates provided by the Cluster Observatory provide data for 1,156⁹ industrial clusters, which include 6,94,379 enterprises with a total 1,56,92,7369 employed persons. It is estimated that 77 percent of all industrial MSMEs with around 72 percent of employment, 61 percent investment of the small scale industry sector exist in clusters in India.

Government Support

The cluster development programs (CDPs) gathered noticeable momentum from early 2000's at the national level. Over the years, more than 30 cluster based programs/schemes have been introduced

⁷ <https://www.financialexpress.com/economy/why-msmes-need-more-than-mere-promises-on-ease-of-doing-business-and-slogans-such-a-make-in-india/1123168/>

⁸ Changing Paradigms of Cluster Development - Conference Theme Paper (CII, UNIDO, TCI)

⁹ www.clusterobservatory.in

by various agencies including central government ministries, state governments, financial institutions, business member

organizations, and international agencies.

Some of the initiatives are listed/below:

Table 9: Cluster Based Development Programs and Schemes

S no.	Name of the Scheme/Program	Name of Institution	Major Focus
Scheme			
1	Micro and Small Enterprises Cluster Development Program (MSECDP)	Development Commissioner (MSME), Ministry of MSME	Productivity and competitiveness, Infrastructure
2	Scheme of Fund for Regeneration of Traditional Industries (SFURTI)	Khadi and Village Industries Commission and Coir Board, Ministry of MSME	Productivity and competitiveness, Infrastructure
3	Scheme for Integrated Textile Parks (SITP)	Ministry of Textiles	Infrastructure
4	Baba Saheb Ambedkar Hastshilp Vikas Yojna (AHVY)	Development Commissioner (Handicrafts), Ministry of Textiles	Development of Handicrafts clusters
5	Mega Food Park Scheme	Ministry of Food Processing Industries	Infrastructure, Technology, Quality
6	Common Facilities for Ayurveda Clusters	Department of Ayush, Ministry of Health and Family Welfare	Infrastructure
7	Grant Assistant to Cluster Development Activities	Industries Department, Government of Kerala	Training/Skill
8	NMDFC Micro Financing Scheme	National Minorities Development & Finance Corporation (NMDFC)	Employment
9	Integrated Cluster Development Program	Rural Industries Department, Government of Madhya Pradesh	Competitiveness
10	Margin Money Scheme for Cluster Development Activities	Department of Industries, Government of Kerala	Productivity and Competitiveness
Program			
1	NABARD Cluster Development Program	National Bank for Agriculture and Rural Development	Competitiveness
2	National Program for capacity building of textiles SMEs through cluster based approach	Textiles Committee, Ministry of Textiles	Capacity building
3	SBI Project UPTECH	State Bank of India	Technology
4	Cluster Development Program	UNIDO	Productivity, Competiveness, Poverty Alleviation, Production
5	Small and Medium Enterprise Financing Development Project	SIDBI-DFID	BDS, Financing, Energy Savings

S no.	Name of the Scheme/Program	Name of Institution	Major Focus
6	IICA GIZ Program for CSR	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	Business responsibility
7	Promoting Innovation in Clusters	Department of Science and Technology; National Innovation Council	Innovation
8	National Program for capacity building of textiles SMEs through cluster based approach	Textiles Committee, Ministry of Textiles	Capacity building

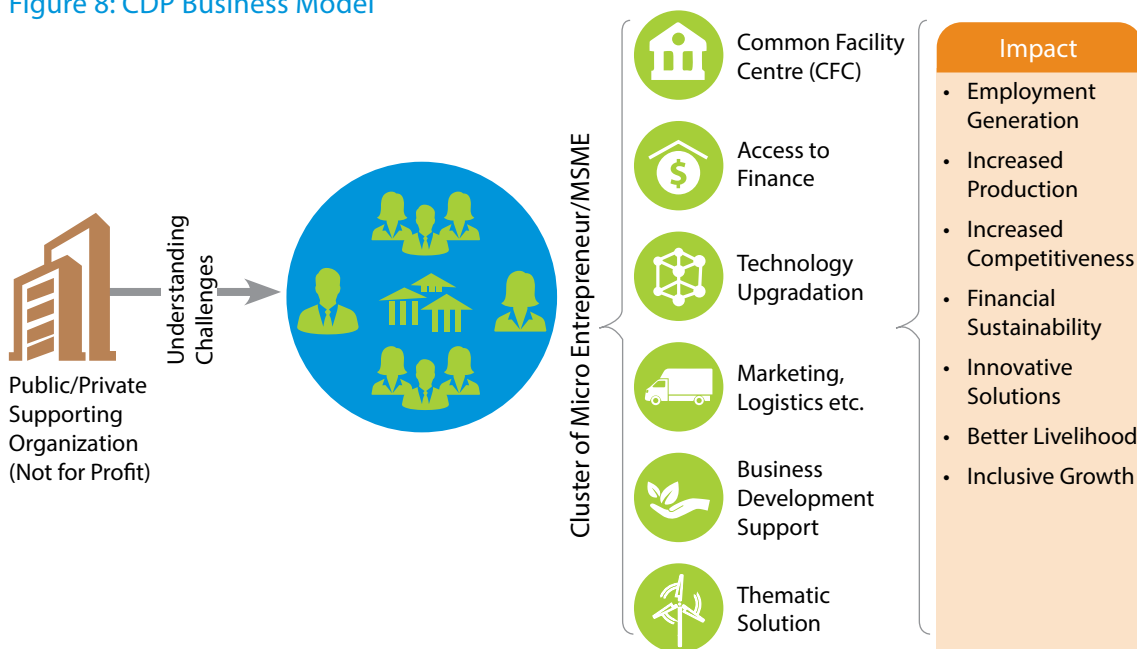
In addition to the above, initiatives like the Make in India campaign and Ease of Doing Business have also given huge emphasis to MSMEs, in order to boost manufacturing and the startup ecosystem. These initiatives also boost the cluster based program and schemes for achieving an inclusive growth.

Development Service providers, local policy makers, etc. Various institutions, government schemes and apex industrial bodies provide necessary support to mitigate the challenges identified with interventions in form of infrastructural support (common facility centre, basic infrastructure development etc.), advisory and support services (incubator, financing, market reach, inter-units communications channel etc.). Delivery of training services to the cluster and enabling entrepreneurship are important aspects of this support system. The overview of the model is provided below in Figure 8:

Business Model and Key Stakeholders

Cluster development initiatives include identification of collective competitive advantage of particular clusters and establishing local capabilities to realize it by supporting all the cluster actors, such as producers’ associations, Business

Figure 8: CDP Business Model



Model Overview

KEY STAKEHOLDERS IN CLUSTERS



Principal Stakeholder (Micro-Entrepreneurs): Is the enterprise producing 'the product' by which a cluster is known. They obtain various services from other small entrepreneurs through backward and forward integration.



Financing Institution: Provides long-term and short-term capital for setting up infrastructure, meeting working capital gap. This can be banks, NBFCs, private funders, government bodies or quasi-government entities, multilateral agencies, etc.



Functional Support Centres: Are technical service providers, training institutions, private business development service providers, providing assistance on quality, environment, design, energy, product and host of services.



Government: Ministry of MSME and other industrial bodies regulate and monitor the CDPs. They measure the impact and outcome, set the operational guidelines, provide financial assistance, promote involvement from private players and create a level playing fields for the MSMEs.



CASE STUDIES

CASE STUDY 1: ELCIA (Electronic City Industry Association) Cluster – ELCIA CFC

About: The ELCIA Cluster was established with an objective to empower growth of MSMEs in and around the Electronic City through the creation of state-of-the-art manufacturing facilities on a shared basis. This also addresses common issues such as technology upgradation, R&D, skill training, quality improvement, market access, etc. The ELCIA Cluster aims to be a complete product development hub. The Common Facilities Centre (CFC) has been established under the guidelines of GOI's MSME CDP scheme in Bengaluru Karnataka. The CFC provides opportunity to member organizations to come together and co-create products. It is a one-stop shop for high precision machining, fabrication, assembly and testing with quality as well as just-in-time delivery.

Value Proposition: Constantly exploring new initiatives to reinvent itself and partner in the growth of the businesses in Electronic City, help companies in implementing policies, and policy advocacy to Government of India and Government of Karnataka.

Impact so far: Gap-funding for creating CFC, 16 policy recommendations to GoI, out of which seven been accepted; 120+ primary members and 70+ Associate members; Collaboration with CII and Bosch in launching of Samridhi program to support MSMEs through specialized training; Business Development support (MSME connect program, MSME Bankers & Borrowers Business Meet etc.).

ELCIA is working towards establishing ELCIA Learning Centre for the benefit of ELCIA MSMEs. This is for all levels of employees aspiring for better performance and opportunities.

CASE STUDY 2: AHMEDABAD PHARMA CLUSTER

About: The evolution of the drugs and pharmaceutical cluster at Ahmedabad started off with the establishment of the first unit – Alembic Chemical Works Ltd. at Vadodara way back in 1907. Major products manufactured in the cluster include (a) pharmaceuticals both allopathic and ayurvedic formulation in different dosage forms (including tablets, liquid, capsules – also called orals; externals and injectable) and (b) medical disposable products like IV sets. There are around 450 drugs and pharmaceutical manufacturing units in Ahmedabad, Vadodara and nearby areas.

UNIDO took up cluster development program during FY 2000 and the results of the interventions are as follows:

- About 60 firms have gone for quality upgradation.
- At least 41 firms that have gone for quality upgradation made an estimated additional investment of INR 76.6 million
- Over 20 firms have got export linkages or got exposed to new export destinations. Estimated additional export was generated at INR 74.5 million

CASE STUDY 3: Tirupur Knitwear Cluster

About: Tirupur is a small township, 60 kilometers away from Coimbatore in Tamil Nadu. It is the hallmark of success among Indian clusters and is popularly known as Knit City. This township started with the production of low value cotton hosiery items, mainly undergarments during the 1920's and started with exports from the year 1974. The cluster involved a number of yarn spinners, integrating forward to set up a knitting plant, a textile process house, and then further integrating to produce garments. Tirupur cluster has units all along the value chain of knitwear starting from spinning, knitting, wet processing, printing, garment manufacturing, embroidery, compacting, calendering and exports.

The CDP, started at the Cotton Knitwear cluster in Tirupur (Tamil Nadu) in 1996 by UNIDO, has yielded dramatic results. The turnover of the cluster, which was about USD 100 million in 1994, went up to more than USD 3 billion in 2006 and the exports shot up from USD 40 million to about USD 2 billion in the same period.

Impact

- Wide density with more than 10,000 units including 7,000+ small units
- Employment to more than 3,00,000 people directly and indirectly.
- Earning considerable amount of foreign exchange by contributing more than 50 percent cotton knitwear exports from India.
- INR 240 billion export revenue in FY 2017-18

DOMESTIC STAFFING AGENCY

With the increasing global competition and complex organization structures, most of the corporates, irrespective of size and age, have been opting for outsourcing the non-core activities – including staffing and recruitment services – with a view to gain advantage over their competitors. This is especially true for blue and grey collar jobs such as security, lower level administration, kitchen, etc. This has also resulted in contract staff taking precedence over the traditional workforce hiring (on payrolls). The Domestic Staffing model showcases a cost-effective and reliable talent acquisition process, keeping turnaround time low and allowing companies to scale

up quickly when the business environment stabilizes.

The companies providing payroll outsourcing and other HR related services are referred to as domestic placement agencies or payroll outsourcing companies. The total market size of the Indian staffing industry stood at INR 330 billion¹⁰ in FY 17-18. India staffing industry is placed as 13th largest market, with annual growth rate of 15 percent in comparison to global industry growth of 1-2 percent. Some of the prominent players in this space are PeopleStrong, Manpower Group, Qness Corp, Randstad, TeamLease Services amongst others.

¹⁰ <https://economictimes.indiatimes.com/news/company/corporate-trends/gst-boon-for-flexi-staffing-industry/articleshow/64420451.cms>

Key enablers

Government Policies: Post-GST implementation, employers are preferring to engage more with organized staffing providers. The benefit of input credit has helped organized staffing players to be more competitive, as compared to unorganized players who earlier had a pricing advantage because they did not charge service tax.

Government Schemes and Initiatives: Over the past five years, various flagship schemes and programs have been launched by the Government of India such as Swachh Bharat Mission, Skill India Mission, Ujjawala Yojna, **Pradhan Mantri Awas Yojana** (PMAY), all of which led to substantial increase in demand for support resources for the specific project duration. The government employs a temporary work force of 12.3 million.¹¹

Sectoral Growth: Large corporates and BFSI players have to tap rural markets of India for further market penetration. This requires huge extended workforce, and outsourced staff is a preferred logistical choice. Healthcare and manufacturing sectors have the highest percentage of temporary staffing.¹² The others sectors adding to the growth of staffing industry are IT, retail, public administration, education, etc.

Technological Advancement: Mainstreaming of disruptive technologies has been a win-win proposition for staffing industry. On one hand, it has increased corporate demand for experienced and qualified technical experts and on other it has led to automation of the staffing solutions. Artificial Intelligence assists in automating the recruitment process in the staffing industry. This helps eliminate subconscious bias during the interview process, resulting in the selection of a diverse workforce. Staffing companies

are also investing heavily on cloud based payroll management system for easy access and shorter turnaround time.

Mobile Recruitment: With a tremendous increase in internet users in last 10 years, mobile devices are being commonly used for searching the web. It was imperative for staffing industry players to use mobile devices to stay in touch with candidates and sourcing database. Mobile has optimized career websites and mobile applications have been key to attract candidates and coordinate with them throughout the recruitment process.

Social Recruitment: Social platforms have created a new channel for communication with clients and candidates. Although, job portals like Naukari.com, Monster Jobs, Indeed, etc. remain a major source of recruitment, they also receive a lot of junk applications, which makes searching for the right talent difficult. With the help of social media networks like LinkedIn, Facebook, search for talented candidates, and meeting clients' requirements have become easier and swift.

In-house Training and Development Centres: Most of the staffing companies provide training and skill development services to the clients along with the recruitment and payroll management. Some of the large staffing companies like Teamlease has also set up vocational education institutes and universities to provide the growing demand for skilling and upskilling programs tailored to the requirement of clients.



¹¹ <https://www.smergers.com/industry-watch/indian-staffing-industry/>

¹² India temp & contract staffing landscape, a 2018 study by Kelly Services India

Future Outlook

There are 23,000¹³ recruitment companies in India and more than 10 staffing firms with a turnover in excess to INR 10 billion. Few listed companies have close to INR 40 billion turnover. Rapid growth in startups and government support have also added to the huge demand for staffing outsourcing services. As per an estimate, the Indian staffing market is expected to grow to USD 20 billion by 2025.

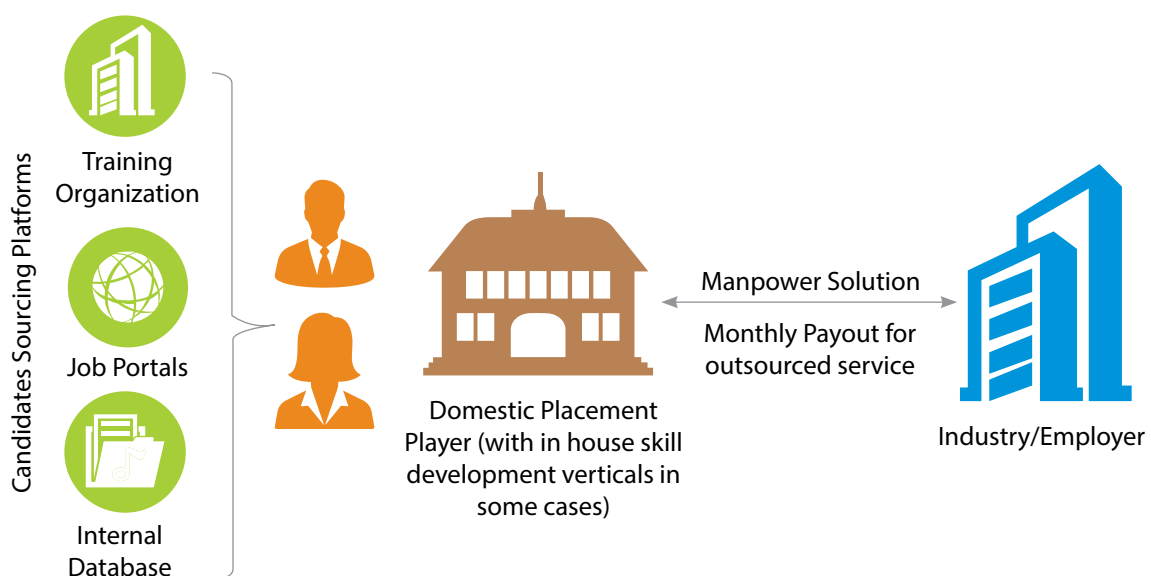
Business Model and Key Stakeholders

Increasingly, employers are seeking manpower for a fixed period and for specific projects without adding to payroll and administrative costs. Such requirements are met by the domestic staffing agencies in India who handle the entire range of processes from hiring, onboarding, documentation to payment of salaries, employee benefits and exits.

The operating model of a staffing company includes:

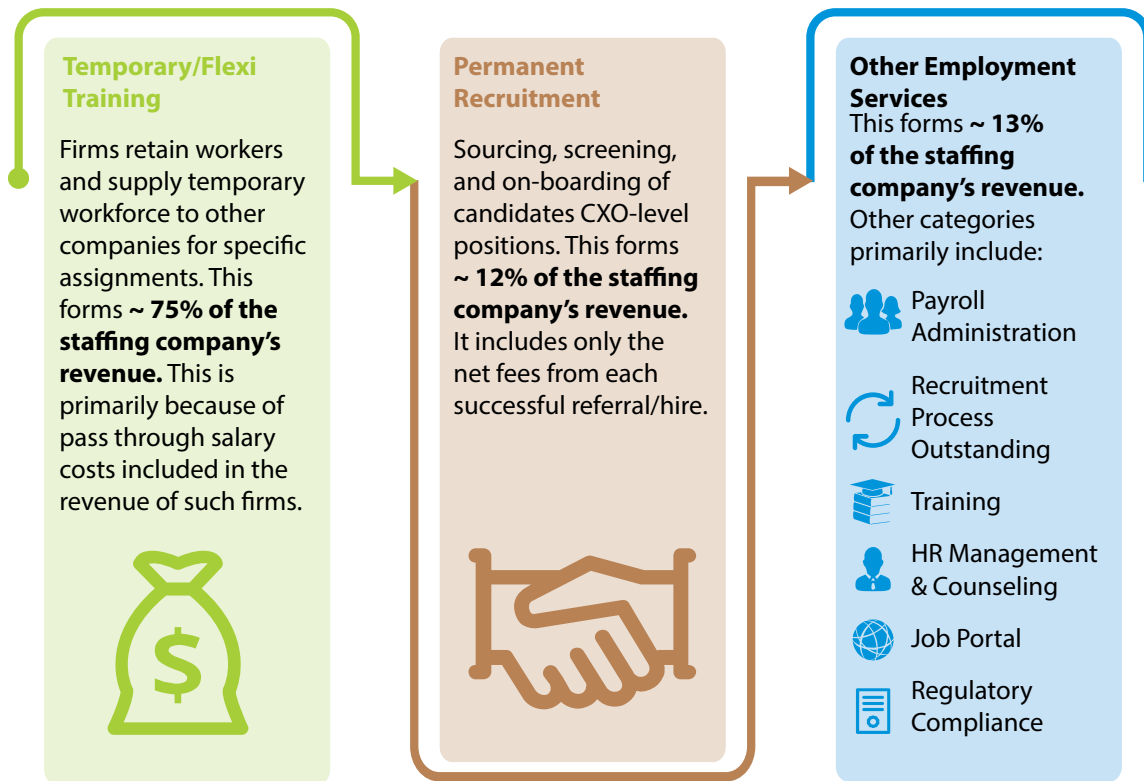
- **Demand/Lead Generation:** Staffing companies are in regular contact with HR managers of large corporate houses to understand their manpower requirement and challenges faced in routine administrative process. They are increasing the awareness and benefits of temporary staffing to large corporates, thus generating a constant growth in their revenues. The major business comes to these organizations from repeat clients and their referrals.
- **Sourcing of Candidates:** These agencies hire specialized resources and utilize comprehensive tools to source candidates as per the requirement. The major sourcing platforms for these agencies include training institutes, colleges, job portals (Naukari.com, Monster, etc.), internal database, referrals, government employment database, referral systems, social network, etc.
- **Services Offering:** The services offered by such agencies can be classified into broadly three categories as mentioned in Figure 10.

Figure 9: Business model of Domestic Staffing Agencies



¹³ <http://bwpeople.businessworld.in/article/How-is-India-poised-to-become-the-6th-largest-market-for-specialist-staffing-in-the-world-by-2025-/21-03-2018-144073/>

Figure 10: Service Offered by Domestic staffing companies



KEY STAKEHOLDERS AND THEIR ROLES



Students/Professionals: Job seekers who are fresh graduates and experienced professionals are the major beneficiaries and stakeholders of such human centric business models.



Training Institutions/Colleges: Training organizations and colleges form a substantial source for supply of the employment-ready candidates. They also assist the placement agencies in meeting, training and assessment requirement of employers.



Candidate Database Providers: Online job portals such as Naukari.com, Monster.com provide real time database of job seekers. Companies also maintain internal portal and database of the employees and employers for quick reference.



Corporates: Includes large, small, established, startups organizations from various sectors, who create demand for employment and engage domestic placement agencies in managing the staffing solutions.

CASE STUDIES

CASE STUDY 1: Team Lease Services Limited

About: Team Lease was incorporated in 2002 with a seed capital of INR 25 million to provide people supply chain services for temporary and permanent staffing solutions. Over the years, Team Lease has grown substantially with current employment base of 35000+ and has been listed on NSE and BSE. They are also involved in vocation training and skill development and have established Team Lease Skills University (TLSU) in Vadodara in association with the Government of Gujarat. They also operate in National Apprenticeship Program.

Value Proposition: Offers services to cater 3Es which include Employment (manpower solutions), Employability (skill development and trainings) and Ease of doing business (seamless compliance, ICT development).

Impact so far: Part of Fortune 500 company, hired 1.7 million, 0.2 million open jobs everyday, 0.2 million associates/trainees, 6600+ locations.

CASE STUDY 2: Manpower Group India

About: Incorporated in 1997, Manpower Group provides end-to-end work force solutions including recruitment process outsourcing (RPO), contract staffing, permanent recruitment, innovative workforce solutions, career development and trainings and IT services. They serve both large and small organizations across various sectors through different brands - Manpower Group Solutions, Experis, Manpower and Right Management. It is part of Manpower Group Inc., USA (ultimate holding company).

Value Proposition: Implementation of global best practices in staffing solutions; detailed study and understanding of requirement in various geographies and providing custom solutions; thought leadership in HR domains.

Impact so far: About 3.5 million jobs in FY 2018 across the globe, 10+ thought leaderships and surveys in human resource sectors, 1000+ clients, global presence, elected as world's most ethical company in 2014, part of Fortune 500 and Forbes 2000 in FY 2013-14.

CASE STUDY 3: Randstad India Pvt. Limited (Randstad)

About: Randstad is part of the Dutch multinational human resource consulting firm viz Randstand NV. They specialize in human resource services for temporary and permanent jobs, including contract staffing of professionals. A specialized division of Randstad focuses on recruiting supervisors, managers, professionals, interim specialists and advisors. These people are deployed in temporary positions in middle and senior management, such as engineers, ICT specialists, or marketing and communication specialists. They provide integrated human resource services and staffing solutions,

including but not restricted to temporary staffing and involves services, facilities, solutions as required by the clients from time to time, permanent placement, selection, in-house services, turnkey recruitment services for multiple project implementation.

Value Proposition: Dedicated team and resources for sourcing and placing professional at managerial and strategic role; global experience of more than six decades.

Impact so far: Over 50,000 temporary workers on site daily; over 5,00,000 permanent placements to date, 1000+ clients in diverse industries across India, 25 years of operation in India.

OVERSEAS PLACEMENT CENTRES

Indian skilled workforce seeks global employment opportunities and India is one of the top emigration countries in the world. It is estimated that over 0.1 million Indian workers (freshers or experienced), travel overseas seeking employment

annually. Over 90 percent of India's workers emigrate to Gulf countries and South-East Asian countries. Table below provides a snapshot of emigration trends of Indian workers to other countries:¹⁴

Table 2: Emigration trends of Indian workforce

Geography	Sectors	India's labour outflow
Europe	Manufacturing	18%
	Retail	14%
	Health and Social	10%
	Services	9%
Middle East	Construction	41%
	Retail	32%
	Domestic Help	11%
	Manufacturing	9%
Asia and Pacific	Manufacturing	15%
	Construction	14%
	Retail	13%
	Hospitality	9%
Africa	Mining and Quarrying	50%
	Manufacturing	10%
	Community and Social	8%
America	Business Services	49%
	Retail	20%
	Education and Health Services	18%
	Transportation	9%

¹⁴ https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-new_delhi/documents/presentation/wcms_566156.pdf

Overseas Placement Centres (OPC) consist of state-of-the-art centres equipped with lab infrastructure to deliver internationally benchmarked training and certification programs. Pre-departure training modules are part of training delivery. OPCs develop placement linkages to other countries through direct tie-ups with employers or recruitment agents. Skilling on transnational standards, the quality of partnerships procured and the subsequent employment generated is a key critical success factor for the business model.

- **Freshers and Experienced Professionals:** Training is offered to freshers based on international standards. Experienced professionals undergo recognition of prior learning and additional training on International Standards. Trainees either pay their own fee or avail subsidies under government schemes such as PMKVY and PKVY.
- **International Employers:** The OPC offers workers to international organizations by offering emigration assistance as well as facilitating recruitment activities.¹⁵

Business Model and Key Stakeholders

Model 1: OPC by Private Training Providers

Several private TPs are involved in providing skill training and assistance for placements in organizations overseas. Private organizations offer these services as supplementary solutions, apart from skill trainings.

Model overview of OPC is provided below (Figure 11):

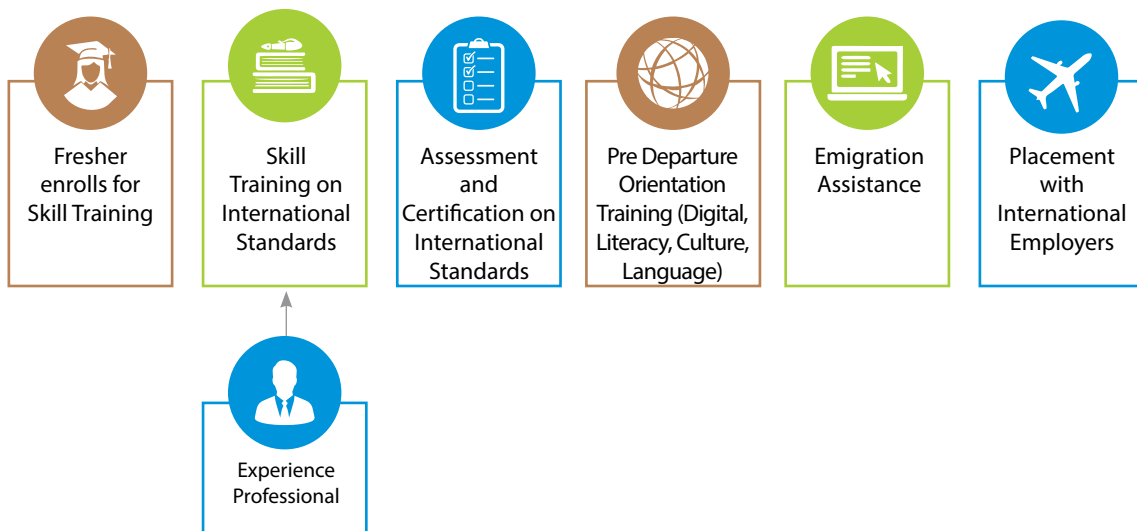
The revenue sources are defined by the customer segments as follows:

Model 2: OPC by State Government Target Segment

Target segment would include students, private TPs, ITIs and polytechnics. Key stakeholders would include government/private sector acting as sponsoring body; TPs, skilling centres of excellence; foreign immigration services/department of immigration; and international companies employing skilled workers from India.

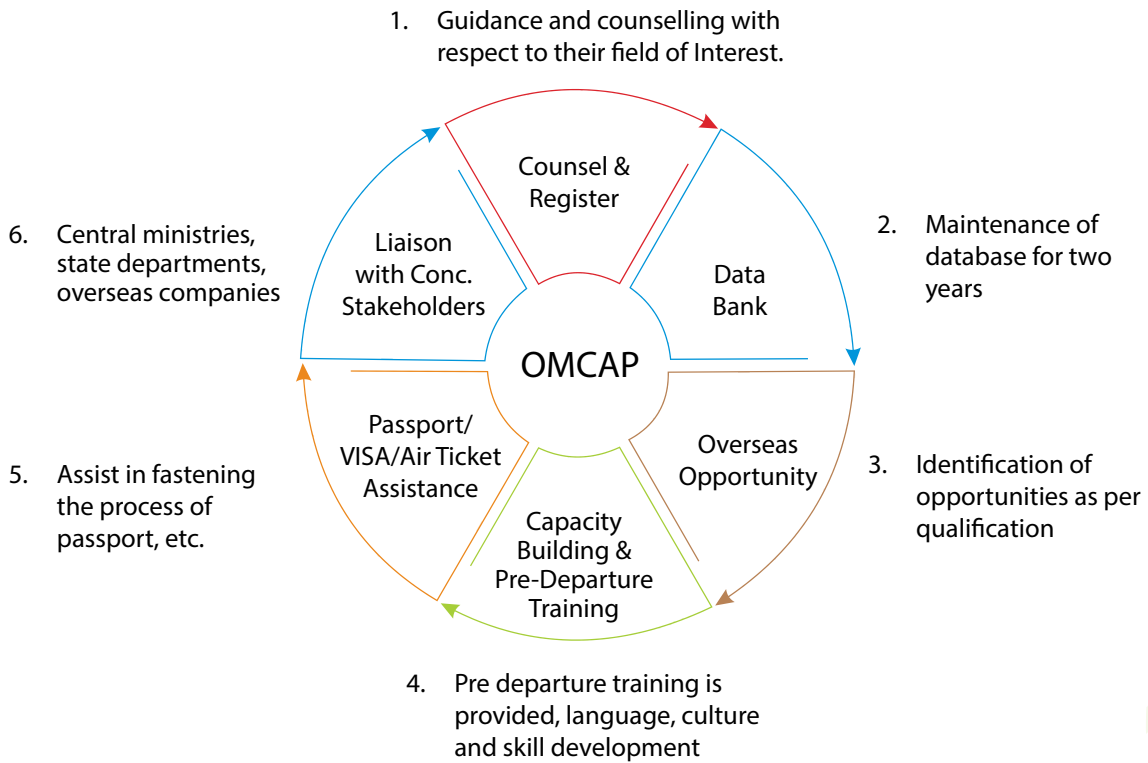
The model followed by Andhra Pradesh for overseas workforce mobility and management is provided in Figure 12.

Figure 11: Overseas Placement Centre Model Overview



¹⁵ Annual Report, ASMACS Skill Training, Quivan Skill Empowerment

Figure 12: OPC for Andhra Pradesh



Model 3: India International Skill Centres

India International Skill Centres (IISCs) were established by MSDE, Ministry of External affairs (MEA) and NSDC wherein the domain training of candidates was supported by MSDE while pre departure orientation training (PDOT) was supported by MEA. Initially the IISCs were provided training grant through PMKVY but eventually it has transformed into a market-led model where NSDC facilitates through business opportunities and market insights on labour mobility. Moreover, MEA has mandated that in a year at least 20% of all emigration check required (ECR) candidates undergo PDOT before migration for work.

Key activities of the IISCs include:

- Skill training and certification of youth benchmarked to international standards in order to enable them

to pursue international employment opportunities. To facilitate this, India's National Occupational Standards for various job roles, are benchmarked to International Vocational Qualifications (IVQ)

- Pre-Departure Orientation Training (PDOT) is provided for sensitizing the trainees on digital literacy, culture, and language of the destination country to help them adjust to the new environment
- Market driven and outcome oriented training is provided which is closely linked to demand from overseas employers

Under the current IISC market led model NSDC is facilitating a network of organisations that are in the business of labour mobility including TPs, recruitment agents, etc. These entities would be facilitated by NSDC for quality assurance,

monitoring, business opportunities and relevant insights. It has also been observed that most countries require experienced professionals, therefore instead of domain training for freshers, the focus is now on incremental training, RPL and assessments. There are also country specific dedicated

programs such as Technical Intern Training Program (TITP) for Japan, that NSDC anchors as an implementing organization. All candidates for Japan undergo relevant language and cultural background training by the training provider.

CASE STUDIES

CASE STUDY 1: Overseas Placement Training by ASMACS Skill Training

- The organization has eight of its own institutes and over 26 institutes operated jointly. The organization is involved in overseas placements, apart from domestic placements through its wide international networks
- Countries of placements include UAE, Kuwait, Qatar, Saudi Arabia, Bangladesh, Nepal, Sri Lanka, Philippines, South Korea and Japan through Technical Intern Training Program (TITP)
- Key sectors of operation include construction, telecom, capital goods, retail, IT, tourism and hospitality, automotive, banking and electronics council.
- Training is through student funded mode as well as employer funded programs
- The organization has been empanelled by NSDC for implementation of the TITP and also offers PDOT for overseas placements

CASE STUDY 2: Overseas Placement Training by Quivan Skill Empowerment

- Quivan Skill Empowerment offer skill training along with placement services. Most of placements are to international firms through collaborations with more than 35 international organizations, as compared to partnerships over nine domestic organizations
- The organization offers BCA (Singapore) courses for one to two months for students who have completed 8th and 10th standard. Courses include plumbing and pipe fitting (PPF), electrical wiring and installation (EWI), fiber optic installation (FOI), tiling (TL), plastering (PL), timber form work (TF), aluminium form work (AF), steel reinforcement (SR), acoustics ceiling (AC), ducting installation (DAV)
- Other short-term courses include international pipe welding and electrician courses Long-term one to two year courses are also offered for job roles such as welder, fitter and electrician.
- Most of the courses for international placements are self-paid. Courses through PMKVY are also undertaken
- Clientele are across sectors including manufacturing, shipyard, oil and gas, construction, capital goods and retail

Through a consortium with JITCO (Japan International Training Cooperation Organization) and JBC Ltd., the company has formed an entity named JQJ, which has been empanelled for TITP implementation.

CASE STUDY 3: Overseas Manpower Company Andhra Pradesh (OMCAP)

- OMCAP Ltd. was established in 2006
- Over 7,200 workers have been trained and 1,800 workers have been placed
- OMCAP is a Limited company under the government, which reduces the role of unscrupulous recruitment agencies
- Trainee has to pay subsidized service charge for getting any facilities through OMCAP
- Activities are undertaken by the states to incentivize the citizen to participate in their schemes
- A database is maintained as per skilled and unskilled workers, and it is updated through advertisements

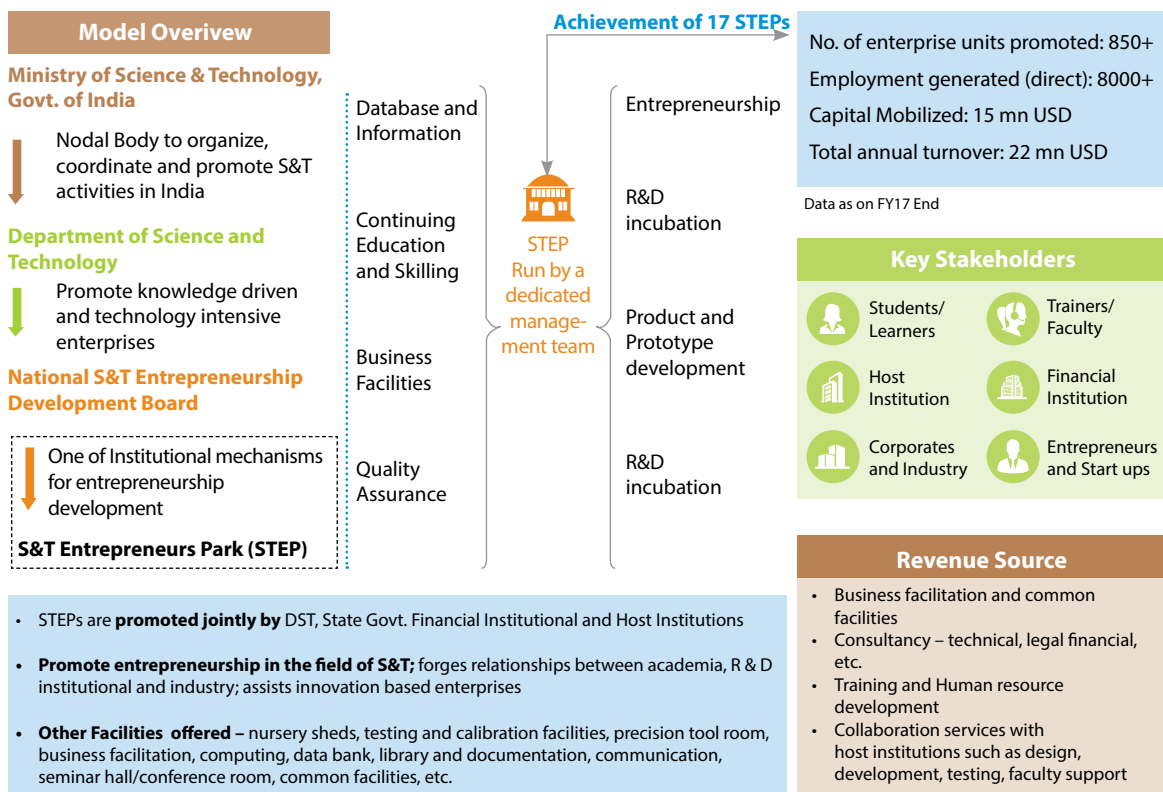
SCIENCE AND TECHNOLOGY ENTREPRENEURSHIP PARKS

Department of Science and Technology (DST) is the implementation arm of the Ministry of Science and Technology, Government of India for the promotion of science and technology sector. DST plays an active role in formulating science, technology and innovation policies and enables

frameworks for R&D in the sector. It also fosters national and international alliance to develop and implement various Science and Technology (S&T) related programs.

Summary of the STEP model is provided here (Figure 13):

Figure 13: Overview of the STEP Model



DST, in 1982, set up the National Science and Technology Entrepreneurship Development Board (NSTEDB) to promote and develop entrepreneurship through use of S&T. The board aims to convert job seekers into job generators through S&T interventions. NSTEDB is also responsible for establishment of Science and Technology Entrepreneurship Parks (STEPs) and Technology Business Incubators (TBIs); and acts as a policy advisory body with regards to entrepreneurship. As on FY 2017 end, 17¹⁶ STEPs have been established, which together have been able to promote over 850 enterprise units; they generated employment for 8000+ people. A total of USD 15 million capital has been mobilized for these STEPs.

Business Model and Key Stakeholders

STEPs are promoted jointly by the DST, state government, financial institutions and the host institution. Its key objectives are as follows:

- Forge close linkages between universities, academic and R&D institutions on the one hand and industry on the other to facilitate development of new technologies and their rapid transfer to the end user;
- Promote entrepreneurship among S&T enthusiasts (especially job seekers in the sector);
- Provide R&D support to MSMEs mostly through interaction with research institutions.

Facilities and Services Provided by STEP

- Nursery sheds, testing and calibration facilities, precision tool room/central workshop, prototype development, business facilitation, data bank, library, seminar rooms, etc.
- Common facilities such as phone, telex, fax, photocopying
- Other services such as product testing

and calibration, consultancy are also included

- Training, technical support services, database and documentation services, quality assurance services and market outreach planning

The STEP model focuses on entrepreneurship development together with self-sustenance. STEPs are generally autonomous bodies registered as societies under the Societies Registration Act. Various activities undertaken as part of the STEP offerings are broadly grouped under three categories viz. Promotional (database information, skill development and business facilitation); Cost (selection of startups or entrepreneurs, Quality Assurance and technology transfer); and Profit (entrepreneurship, R&D incubation, product and prototype development etc.). From the past STEP models, it can be concluded that one STEP typically supports 50-70 micro units, generates 300-500 direct employment opportunities and develops eight to 12 technologies and an overall annual turnover of INR 30 to 60 million.

Role of Host Institutions: STEPs are promoted around a host institution that helps with launch, sustenance and growth of STEP. The host institution aims to optimize the usage of its facility by conducting a periodic assessment of priorities and reallocate the resources, wherever necessary. During the stages of planning and implementation of the STEP project, the host institution aligns the goals and objectives with respect to academic excellence.

The activities through which the revenue is generated under this model are - Interest on loans to startups; Consulting fees; Returns/value generated from businesses mentored (exits); Fee from entrepreneurship events; Sub-letting working space, resources.

¹⁶ <http://www.nstedb.com/institutional/step.htm>

KEY STAKEHOLDERS AND THEIR ROLES



Students/Professionals: Users of the STEP model; individuals (or groups) who set up businesses from scratch, taking financial assistance from outside or invest one's own equity; have business idea and seek mentoring support.



Host Institutions: Mid-sized corporates or educational institutions that launch and grow STEP, provide access to finance, free office space (in select cases), mentorship, academic and industry linkages and technology assistance, etc. in order to set up STEP.



Government (DST, GoI): They are regulators of skills and STEP ecosystem, who set operational guidelines, provide financial assistance to set up or scale up (build capacity). Promotes entrepreneurship in the field of S&T.

CASE STUDY 1: PSG-Science & Technology Entrepreneurial Park (PSG-STEP)

About: With support from DST, the Government of India, IDBI and ICICI at PSG College of Technology, PSG-STEP was set up in 1998. It has an incubation facility spread over an area of 25,000 sq. ft. to accommodate startups. They also have seed fund support scheme to provide loan assistance to the tune of INR 5 million at five percent return on investment (RoI) with repayment over five years.

Key Focus Areas: Major focus is to promote technology based enterprises in the areas of software, electronic products, hi-tech mechanical products, eco-friendly textile products and bio-technology.

Website: <http://www.psgstep.org>

Impact so far: 79 current incubates and 115+ graduated incubated; identified as nodal agency by various government departments in implementation of innovative schemes; secretariat for the Asia Pacific Incubation Network (APIN), an initiative supported by InfoDev, World Bank & DST, GoI; awarded as the Best STEP in the country by Ministry of Science & Technology, Government of India, New Delhi.

Success Stories: Skava Systems Pvt. Ltd. (acquired by Infosys for USD 120 million); Surya Power Magic (investment from Infuse Ventures); Amulya Info Tech (Rashtriya Udyog Ratna Award and Quality Brands Award).

EMERGING MODELS IN THE SKILL VALUE CHAIN

SKILLS UNIVERSITY

The current skill development ecosystem has a large number of disaggregated providers, and lack competency based modular courses that are recognised in formal education thus providing limited mobility across educational streams. These are also less aspirational than the degrees provided under formal education. To address these challenges, the MSDE has formulated guidelines for setting up of Skill Universities under the ambit of the National Policy for Skill Development and Entrepreneurship 2015.

As per the guidelines, the purpose of Skills Universities is to serve as Centres of Excellence for training of students, trainers and in conducting research to improve the quality of training delivery by keeping abreast with the latest trends in skill development. The guidelines articulate the minimum conditions required to be met

by Skills Universities, apart from complying with the UGC Act of 1956. The National Council for Vocational Education and Training (NCVET) would be the regulatory authority for Skills Universities being set up in the country.

Business Model and Key Stakeholders

Skills Universities would offer the following value propositions to various stakeholders:

- Degrees: B Voc, B. Skills, M.Voc, Ph.D. in Skilling
- Diplomas and Advanced Diploma
- Certificate in Skill Training
- Other degrees with 40 percent to 50 percent skilling component: B.Sc., B.B.A., B.Tech, B.B.A, B.Arch, etc.
- Training of Trainer Programs
- Centre of Excellence in collaboration with the Industry
- Specialized Skill Training Labs
- Courses pertaining to skilling needs of immediate ecosystem
- Counselling cell to assess aptitude during enrollment
- Career Counselling during course
- Apprenticeship and placement

Key revenue sources for the Skills University would be from student training fee, research and consultancy, Centres of Excellence, placements, grants, loans, equity and funding from financial institutions. The target customer segments would include students from Class VIII and above (depending on diploma/degree), skilled and semi-skilled workers for RPL and apprenticeship training, trainers/ teachers of polytechnics, ITIs, etc.



CASE STUDIES

CASE STUDY1 : Symbiosis Skills and Open University

The University was established through a Bill passed by Maharashtra State Legislation in 2017. The University has been set up on 15 acres of land with specialized laboratories, workshops and CoE, having specialized skill training equipment and machines. The University will also have a Community College and a Vocational and Employment Guidance Cell.

The fee range for the courses is between ~INR 0.1 million to 0.2 million for degree programs and ~INR 5,000 to INR 25,000 for short-term certificates. The target segment includes 18-23 year old students from ITIs, schools, diploma holders, working professionals, companies for apprenticeship, ToT in polytechnics, ITIs, Vocational Higher Educational Schools. The institute has partnerships with key players such as the Logistics Sector Skills Council, Daikin, ICICI Bank, Shoppers Stop, SKF, Enrich, JNPT, etc.

The University offers the following value proposition for various stakeholders:

- Certificates, Diplomas and Degree programs in high growth sectors such as automobile, construction, mechatronics, architecture, retail, ports and terminal management, beauty and wellness, with multi-entry-exit and credit banking options.
- Programs include B.Tech, BBA, B.Sc., B.Arch. and MBA.
- Multi-entry exit, recognition of prior learning, credit transfer, etc.

Symbiosis Skills Finishing School

The Skills Finishing School will offer short term certificates programs in high growth sectors such as automobile, construction, mechatronics, architecture, retail, ports and terminal management, beauty and wellness, etc.

MoU with Volkswagen: This is a unique module for Volkswagen's workmen, who have been promoted as front level supervisors, for upskilling through a one-year weekend program.

GLOBAL SKILLS PARK

In order to create a skilled workforce that meets the evolving development needs of industry, GoI and various states have entered into international partnerships for setting up advanced TVET institutes of international standards. This is to introduce high-quality, technology-oriented skills training for the state's priority sectors aimed at increasing employability, productivity, and incomes of the

workforce, especially youth, women, and disadvantaged groups.

Business Model and Key Stakeholders

The Skills Park represents an apex institute for TVET programs in a state and supports all other establishments and initiatives in the state. It is expected to cater to address market demands for skilled labour across various sectors, with specific focus on

the growth oriented priority sectors in the state. They are generally expected to support the following requirements of the TVET ecosystem in the state:

- Provide state-of-the-art training to students
- A multi-skill development institute running multiple trades based on local industry demand with prime focus on growth sector
- Design and operate market driven course curricula through industry-academia partnership
- Create a pipeline of employment opportunities and placement linkages to deploy trained workforce nationally and internationally

An overview of the model is provided below (Figure 14):

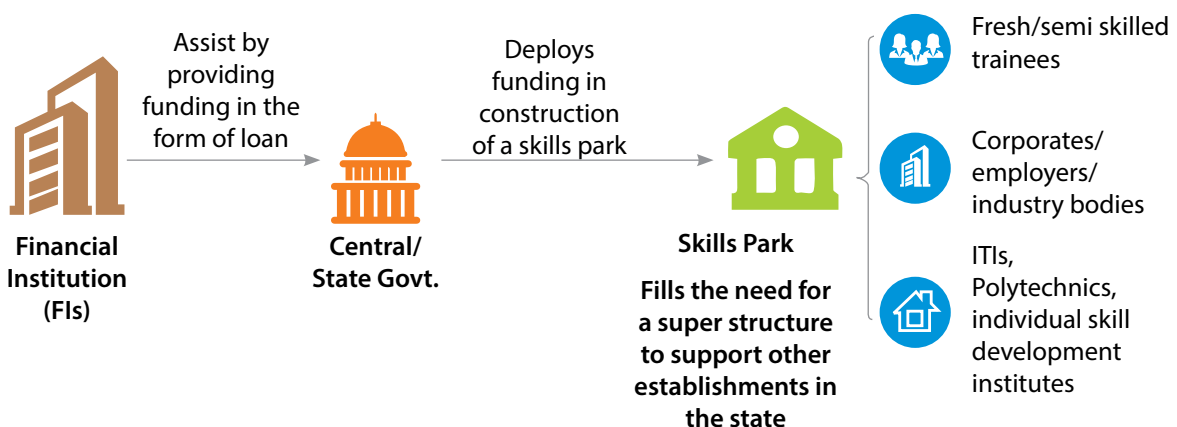
The vision of the Skills Park is to support economic growth agenda in the state by aligning its efforts to other flagship schemes of the government like Make in India and Skill India through skills development and certification at global standards. This is achieved through the following interventions:

- Establish internationally recognized standards in management, teaching, and training infrastructure for skills development
- Introduce an industrial cluster approach to developing occupation-ready skills
- Strengthen linkages and cooperation with industries through training partnership as well as to support in-company training such as structured apprenticeship program
- Stimulate and enhance innovations in skills development through research, future skills, lifelong learning, productivity enhancement, application of technologies and innovation

Apart from providing industry relevant training the Skills Park also perform the following functions:

- Upskilling of TVET trainers (training of master trainers)
- Certification and assessment services, including overseas employment
- Quality assurance services
- Support for apprenticeship services
- Entrepreneurship development and incubation services

Figure 14: Overview of a Skills Park



- Applied research on skills development to support the formulation of policy and strategies on TVET planning, development, execution, monitoring and evaluation, etc.
- Residential and hostel services, and convention and event services

Revenue sources under this model include revenue from course fee; consultancy and publications; assessment and placement fee; revenue from other support facilities (hostel fee, seminar hall charges etc.); income from productions units and other short-term customized trainings.



KEY STAKEHOLDERS IN SKILLS PARK



Government: The GOI and state governments (through their appointed agencies) coordinate forming partnership with international financing institutions (for securing financing), knowledge partners (domestic and international), and corporates and industry bodies to set up operational guidelines, decide on the service offerings, and fund flow process.



International Financing Institutions: International Financing Institutions (ADB, WB, USAID, UNIDO), in their endeavor to support the developing economies in their growth agenda, are the core financiers in establishment of such a structure. They bring in financing, project management capabilities, and also assist in securing foreign collaborations for effective knowledge management.



Industry Associations and Large Corporates: Industry associations and large corporates support the training and skill development efforts of the structure by exploring and designing entrepreneurship development and apprenticeship programs to support the trainees. They also provide expertise in setting up incubation centres.



International Knowledge Partners: They support the establishment by bringing in global best practices in TVET management, teaching, training infrastructure, industry cooperation, and quality assurance.

CASE STUDY

Global Skills Park, Madhya Pradesh

India and Asian Development Bank (ADB) recently signed a USD 150 million loan agreement to establish the country's first global Skills Park in Madhya Pradesh. The aim is to transform the TVET ecosystem in the state and create a talent pool of skilled workers suited to the requirements of the industry. The agreement reflects the priorities of ADB's country partnership strategy (FY 2018–22) for India, wherein it supports skills development to improve employability and productivity of the growing workforce, which will contribute to the competitiveness and transformation of the Indian economy.

Global Skills Park is an international skilling institute to provide students with international training methods in world class machinery, tools and equipment with state-of-the-art workshops, classrooms and other facilities. It will also provide students with an opportunity to get campus placement in overseas countries. The campus is projected to have training facilities focusing on skills for manufacturing, service, and advanced agricultural jobs, benefitting about 20,000 trainees and trainers.

TECHNOLOGY CENTRES (ERSTWHILE TOOL ROOMS)

The growth of the MSME sector is pivotal for the growth of the Indian economy, as the sector contributes significantly in the economic and social development of the country. In an endeavor to provide the right stimulus for growth of the sector, the GOI has established 10 Technology Centres (earlier known as Tool Rooms) at Aurangabad, Ahmedabad, Bhubaneswar, Guwahati, Hyderabad, Indore, Jamshedpur, Kolkata, Jalandhar and Ludhiana. Many of these establishments are a result of bilateral collaboration of the Governments of Germany, Denmark and the United Nations. These Technology Centres provide technological support to industries through design and manufacture of tools, precision components, moulds, dies, etc. They serve industry by providing skilled manpower in the areas of tool engineering and manufacturing sector.

The Ministry has supported these centres by keeping them relevant and abreast with

latest advancements in their respective fields and has periodically added new technologies such as CAD/CAM, CNC machining, vacuum heat treatment, 3D Printing, etc. They are concentrating on integrated development of the related segments of industries by providing quality tools, trained personnel and consultancy in tooling and related areas.

Apart from extending design, development and manufacturing support to MSMEs for complex tools, parts and components, they have also supported strategic sectors such as defence and aerospace towards their R&D requirements.

Business Model and Key Stakeholders

The Technology Centre's philosophy of integrated solutions for growth of industries is based on the provision of well structured, modular, hands-on practically oriented training programs. All courses

are regularly updated to keep abreast with global technological advancements. The intake eligibility for the training programs ranges from school dropout to M-Tech level. Various levels of courses like certificate, diploma, advanced diploma, post diploma, post graduate diploma and post graduate courses offered by Technology Centres are well accepted by the industries. This is evident from nearly 80 percent placement of its long-term trainees. A number of their alumni have also established their own enterprises, thereby contributing to the social and economic development of the country.

The overview of the model is provided below (Figure 15):

The technology centres provide various services like:

Training and Skill Development: Amongst other services, the technology centres provide a variety of training courses to cater to the skilling needs of the sector. These courses are well-structured modular, practically oriented training programs that are tailor made to the specific needs of industry. They offer specialized hi-tech courses in tool engineering for engineering graduates, skill upgradation courses for

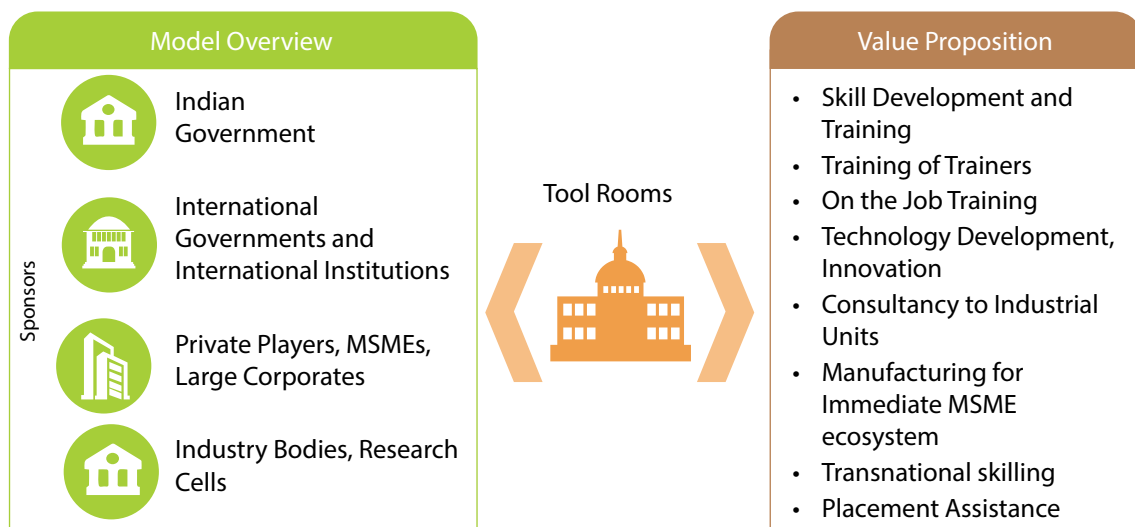
industrial employees and also customized training programs for foreign nationals.

Consultancy and Marketing: They provide support and guidance to industries with special emphasis on for Small and Medium sectors in the areas of product and process development; productivity and quality improvement; training program/course curriculum development for training institutes; execution of turnkey projects; support for entrepreneurship development; conducting seminars in tool and die technologies; consultancy for lean manufacturing and total tooling solutions

Production and Manufacturing support: They offer state-of-the-art infrastructure and machines and provide an array of cutting edge production services. The wide spectrum of sophisticated machines include all latest and advanced machines. The technology centre hires a team of experienced specialists, production engineers, plant supervisors, foremen, technicians like tool and die makers, fitters and machine operators, who can cater to various requirements of the customers for:

- Manufacturing intricate press tools, moulds, die casting dies, jigs, fixtures and gauges

Figure 15: Technology Center Business Model Overview



- Use of latest and optimum manufacturing and machining processes
- On Job TOT in design and manufacturing of tools and dies
- Provide total tooling solutions
- Tool tryouts - press tool/injection mould
- Batch production on press/injection moulding machine
- Machining of precision components

Quality Assurance: The technology centres have a strong focus on quality management and adheres to its principles. This is evident in the procedures adopted for checking components during and after the manufacture. High precision equipment like CNC coordinate measuring machine, electronic height master, profile projector and toolmakers microscope ensure thorough checking of the components. Quality assurance processes include product conformance and inspection; calibration of measuring equipment and scanning for reverse engineering.



KEY STAKEHOLDERS IN TOOL ROOMS



Government: Ministry of MSME and the state government regulate the setting up of Technology Centres, measure the impact and outcome, set the operational guidelines, promote partnership with industry and employers.



International Government and Institutions: Technology centres are set up in collaboration with foreign knowledge partners who support the social development agenda in the partnering countries by providing necessary machinery, equipment, technical, and management know how.



Industry Associations and Large Corporates: Industry associations and large corporates support the training and skill development efforts of the training centres and provide inputs on course structure and curriculum.

CASE STUDIES

Case Study 1: Indo-Danish Tool Room

About: The Indo Danish Tool Room (IDTR) Jamshedpur was established as a Gol Society, in the year 1991 under bilateral agreement with Goland Government of Denmark and assistance from the state government, for providing integrated solution in Tool Engineering.

IDTR, with its state-of-the-art manufacturing and training facilities, CAD/CAM/CAE services provides solution through focused group of specialist, covering products like plastic injection mould, pressure die casting dies, jigs, fixture and gauges, press tool for sheet metal, precision machining, hard material machining, laser calibration, project management, product development and quality management consultancy, training in tool engineering, machinist, CAD/CAM/CAE & CNC technology, PLC, VLSI, etc.

Going forward, IDTR is working towards establishing and operationalizing Samsung technical school at Jamshedpur and furthering their work towards the following opportunities:

- Starting of Business Incubation & Enterprise Development Centre
- Recognition of Prior Learning
- Coalitions with universities and technical institutions like IITs, NITs, etc.
- Development of new training areas like NDT, Forging Technology
- Conducting programs under Jharkhand State Livelihood Promotion Society Scheme
- Conducting Skill Development Programs under Bihar Skill Development Mission
- Modernization of IDTR under TCSP – Automation Lab, Robotics Lab & New Machines



CASE STUDY 2: Indo-German Tool Room

About: The MSME - Technology Center, Aurangabad (IGTR) has been established as a GoI Society under a technical co-operation program between GoI and Government of Federal Republic of Germany. The management of affairs of the Society rests with the Governing Council constituted by the GoI. Additional Secretary & Development Commissioner, MSME, Government of India is the President of the Society and Chairman of the Governing Council.

Going forward, among other activities, the IGTR is working towards the following opportunities.

- Conduct Skill Development training programs sponsored by MSRLM, NULM etc at the MSME centre
- Strengthen the new extension centre at MSIE campus at MIDC Bhosari, Pune with four labs of 100 computers
- Equip the IGTR Aurangabad extension centre in the Shivaji University campus Kolhapur with five labs and 100 computers
- Establish a new extension centre in Pune at Department of Technology in Savitribai Phule, Pune University with five labs and 100 computers
- Establish and equip 18-20 labs, along with full-fledged training workshop at Waluj extension centre
- Scale-up activities at newly created extension centre at Sant Gadge Baba Amravati University, with five labs and 100 computers
- Upgradation in design and development of the critical die casting dies and progressive tools with latest simulation software

ACCELERATORS AND INCUBATORS

Accelerator and Incubator (A&I) model consists of a platform (organization in some cases) that enables growth and success of startups by providing portfolio of services such as office space, providing market access, mentorship, funding assistance, technology and resource sharing, implementation and product launch, etc. Companies typically spend an average of two years in a business incubator, during which time they often share their working capital expenses with other startup companies, in an effort to reduce overhead and operational costs.

In India, there are over 210¹⁷ A&Is, out of which 20+ are government owned.

A&I are just like finishing schools for aspiring entrepreneurs and early stage ventures. A&I run fixed-term, cohort-based, mentorship-driven programs, culminating in launch day and help turn ideas into sustainable businesses. Role of A&I is to reduce failure of startups in India, create culture of entrepreneurship and help startups to grow into sizeable business.

GOI is playing a pivotal role in actively supporting the startup ecosystem

¹⁷ <https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/can-incubators-and-accelerators-of-all-stripes-help-indian-startups-achieve-escape-velocity/articleshow/67704765.cms>

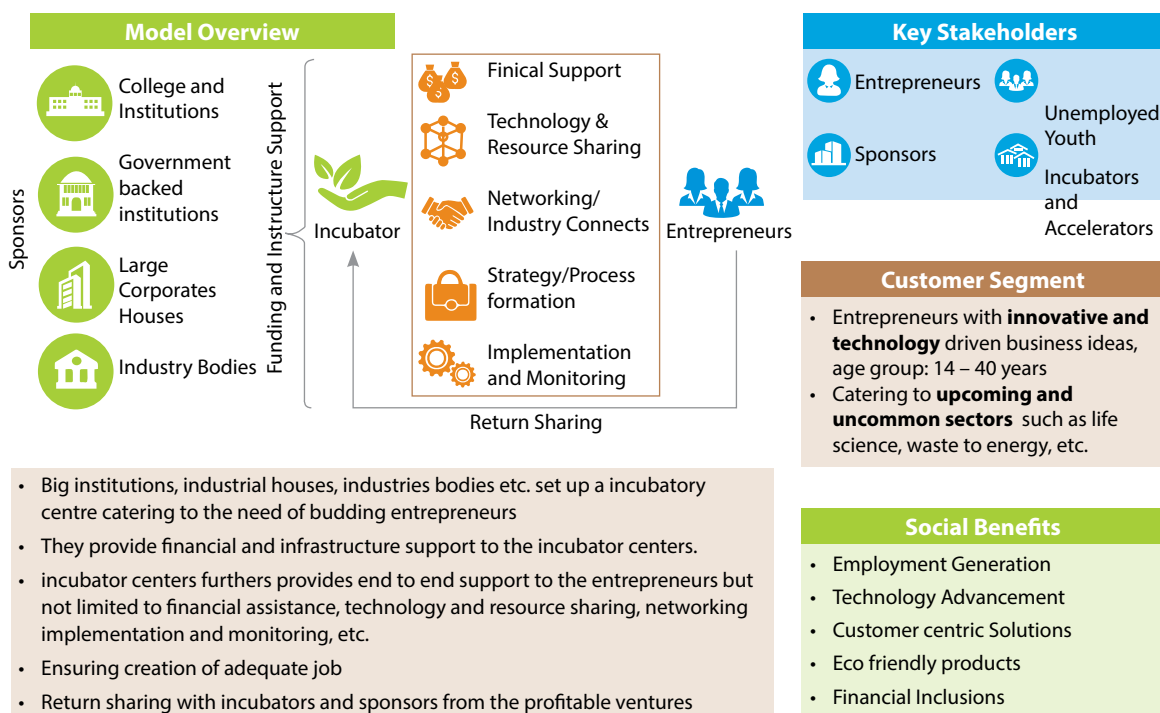
through policy initiatives. Startup India is an initiative intended to build a strong ecosystem that is conducive for the growth of startup businesses, to drive sustainable economic growth and generate large scale employment opportunities. The 19-Point Startup India Action Plan envisages several incubation centres, easier patent filing, tax exemptions, ease of setting-up of business, a INR 1,00,000 million corpus fund, and a faster exit mechanism, among others. In 2018, Kerala's T-Hub in Telangana to 36 Inc in Chhattisgarh, state governments funded their own A&Is. Atal Innovation Mission, the flagship initiative of GoI-NITI Aayog, is setting up 101 incubators, of which 30 are already operational. Different types of A&I models existing in India are captured below:

- **Support Led Incubators:** Tailored individual support provided by staff and external mentors post selection through application process; mostly time-limited; seed funding provided sometimes
- **Impact Accelerators:** Supports cohorts of startups with upfront investment

in exchange for equity; provides time-limited intensive support including events and mentorship

- **Classic Incubator Workspace:** Strategic advice, coaching or mentoring; office or desk space and access to shared facilities like meeting space; rolling application process; may provide seed funding or opportunities to apply for investment
- **Venture Academies:** Modules or trainings delivered through classes specifically aimed at social entrepreneurs or ventures
- **Impact Angel Networks:** Includes investment and mentoring, support and connections; group of high-net-worth individuals looking to invest, sharing cost and process of search and due diligence
- **Co-working Spaces:** Opportunities to meet other ventures or entrepreneurs; program of events or learning; flexible desk and meeting space

Figure 16: Overview of the A&I Model



Business Model and Key Stakeholders

Apart from various support services, management mentoring, A&Is also provide advice on intellectual property and sources of financing, markets, and strict admission and exit rules. These are designed to ensure that the incubator or accelerator focuses on helping innovative and fast-growth business startups that are likely to have a significant impact on the local economy

Model I: Accelerator Set-up

Accelerators support early-stage, growth-driven companies by providing mentorship and financing. Startups enter accelerators for a fixed-period of time and as part of a cohort of companies. Accelerator experience is a process of intense, rapid and immersive learning aimed at accelerating the life cycle of innovative companies and sharing years' worth of experience-by-doing into just a few months. Accelerators also invest a specific amount of capital in startups in exchange for a predetermined percentage of equity (usually 5-10 percent). Due to this investment, the accelerators have a greater responsibility in the success of the startup. The accelerators are generally formed or set up by corporates or group of private investors in order to identify, nurture and eventually scale up a potential idea, all in short span of time.

Early stage companies are typically provided with seed investment and access to a large mentorship network. The mentor network includes startup executives, venture capitalists, industry experts and other outside investors (sometimes sponsors of startups). Some well-known accelerators are Y Combinator, Techstars, Brandery and Google Launchpad, etc. The financing opportunities include establishing the accelerator facility, subsidized financial assistance for budding entrepreneurs, seed funding and working capital financing, etc.

Model II: Incubator Set-up

A startup incubator nurtures the growth of a young startup, providing an environment with access to resources that enables growth and development. Incubators usually work with startups at very early stages of development. Startups join an incubator when it's still just the founder or the founding team. The incubator provides access to a mentorship network, administrative or logistical support, office space and variety of other resources, all with the goal of helping the startup grow and succeed. Usually, incubators do not provide much or any upfront capital. Co-working space is the most critical element of the incubator experience wherein like-minded people come together to develop a business idea in a real business proposition.

There are both independent incubators and the ones sponsored or run by VC firms, angel investors, government entities, educational institutes and corporates among others. Depending on the sponsoring party, an incubator can be focused on a specific market or vertical. For example, an incubator sponsored by a hospital group may only be looking for health-tech startups. Typically, incubators play four types of role (sometimes overlapping):

- **Hand holding Support:** Startups will be put through trainings sessions and consultancy to get themselves ready to pitch their ideas to investors. There will also be networking events, where startups get connected to large network of stakeholders
- **Customer Scouting:** Helping startups to reach out to the right customer type and vice versa i.e. matching the corporates to the right kind of technological (or product) disruption. These type of incubators are the most viable from financial standpoint

- **Marketing and Advocacy:** Incubators help the startups with launch strategy and market outreach plan. Some of the activities include high profile networking meets, visits to large corporates, etc. These incubators are generally backed by large corporates.
- **Business Ideation:** These incubators are the most preferred out of the four as they are involved with the startups throughout the life cycle - right from ideation to launch. They pull business ideas within their own network and form internal teams to develop them. These teams spend most of their time pushing the product into the market and focus little on raising funds.

There is an emerging business model in the A&I space that focuses on skill development of young entrepreneurs by

tying up with accelerators, incubators and fund managers in a specific geography or sector. Such organizations provide relevant entrepreneurial skills in the modern age of technology and changing customer needs. They provide upskilling and personalized training programs in order to nurture A&Is for providing right guidance to the budding entrepreneurs.

One such example is Venturebasecamp (<https://www.venturebasecamp.co/>). They work with very early stage startups to provide skills relevant for an entrepreneur, and also train the managers and leads at various A&Is. Their model is unique and upcoming in the field of skill development for A&Is as well as young entrepreneurs, who in process of nurturing a business idea can sometimes lack essential entrepreneurial skills.

KEY STAKEHOLDERS AND THEIR ROLES



Entrepreneurs: Individuals (or groups) who set up businesses from scratch, taking financial assistance from outside or investing one's own equity.



Industry and Educational Institutions: Corporates, MNCs, independent firms and educational institutions (school, universities) that provide access to finance, investor network, free office space (in select cases), mentorship, tools and technology assistance in order to set up new A&I or support an existing A&I for scale up, through its resources.



Sponsors: Generally provide financial assistance with return sharing or partial stake in startups. They provide both seed as well as growth capital. In some cases, especially educational institutions, alumni play the role of sponsors.



Government: Regulators of the skills or startup ecosystem set the operational guidelines, provide financial assistance to set up or scale up (build capacity) of A&Is.

CASE STUDIES

CASE STUDY 1: Centre for Innovation Incubation & Entrepreneurship (CIIE) – IIM Ahmedabad

About: CIIE, established in 2007, supports research in innovation and entrepreneurship. It is India's leading centre in catalyzing entrepreneurship ecosystem through multiple initiatives such as Bharat Inclusion, IIMavericks, Start up Oasis, Ideapad, etc. It was set up in association with Gol and the Gujarat Government to provide seeding and incubation support with a focus on technology and mass impact areas. CIIE includes three autonomous bodies for different initiatives:

- **CIIE Initiatives:** Incubation and accelerating startups, recognized by department of science and technology as technology incubation centre
- **CIIE Advisors Private Limited:** Funding the startups
- **CIIE Regional Innovation Foundation:** Creating ecosystem for regional entrepreneurship with greater focus on Tier-2 locations

Success Stories: Ridlr, Mocha, Innovese, Mukti, Whirlybird, Tookitaki, Mobiotics, etc.

Website: <http://ciie.co/>

Impact so far: 25,000 ideas crystalized; 5,000 ideas mentored; 500 ventures trained, incubated or accelerated; seed funding to 100 startups; 80 startups raised follow up funding; 25 times amount raised vis-à-vis the amount invested by CIIE; 3000+ jobs generated.

CASE STUDY 2: Indian Institute of Technology Madras Incubation Cell (IITMIC)

About: IITMIC was incorporated in 2013 and is registered as not-for-profit organization, promoted by IIT Madras and its alumni. It is an umbrella body for supporting and encouraging entrepreneurship and innovation at IIT Madras. The major focus of IITMIC is towards providing a conducive ecosystem for technology and knowledge based startups. The major support services includes space and infrastructure, access to business support services, mentoring, training programs to enhance the skills of entrepreneurs and seed funds. At the operational level, IITMIC is primary responsible for nurturing new companies and identification of feasible pre-company opportunities which is hugely supported by extensive and very active alumni network. Further, IITM's Center for IC&SR is broadly responsible for technology transfer from IITM, whether by licensing of IP or taking the idea forward through to a commercial stage.

Website: <http://www.incubation.iitm.ac.in>

Impact so far: Incubation of 154 deep-tech startups; raising over INR 8 billion in angel/venture capital investments by startups; generation of INR 1.35 billion cumulative revenue in the last financial year by supported startups; creation of over 2,500 direct jobs; filing of over 60 patents.

Success Stories: Planys Technologies, Stellapps, Ather energy, Cygni energy, Skillsveri, DocsApp, Skill Angels.

CASE STUDY 3: deAsra Foundation: Supporting Micro Entrepreneurs

About: deAsra Foundation was set up as a Section 25 (a not-for profit) entity by Dr. Anand Deshpande, Founder, MD and CEO of Persistent Systems. The objective was to foster entrepreneurship. It currently operates in Pune and its suburbs. The cornerstone of deAsra's approach is de-risking entrepreneurship by providing a conducive ecosystem that de-mystifies it and provides the necessary building blocks. It achieves this by creating pre-designed business model templates through well tested and researched business model development methodologies for multiple business lines such as carpentry, housekeeping and computer repairs, etc. It disseminates information through an online portal that provides hand holding, right from providing a choice of a trade to applying for registrations and licenses and availing loans. They have supported many small entrepreneurs to set up a sustainable business model and improve their livelihood.

Website: <https://www.deasra.in/>

Impact so far: Online portal with more than 18,000 followers; face to face support to nearly 150 entrepreneurs for funding, registrations and marketing; Over 14,610 small businesses supported; About 276 businesses supported for funding; INR 285.2 million loan facilitated; 40+ partners for promoting mass entrepreneurship.

CONCLUSION

World over the thrust is on "development of human capital". TVET is one of the major interventions in nurturing this human capital.

This report has captured the evolution of various models of interventions in the skill value chain, along with the emerging models that are making TVET more aspirational for the beneficiaries while ensuring improved quality in the processes of delivery and implementation of training programs.

Each model has been explained in respect to the objective, its process overview their application, role of various stakeholders, case examples and their impact.



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About National Skill Development Corporation (NSDC): National Skill Development Corporation, working under the aegis of Ministry of Skill Development & Entrepreneurship, is a unique public-private-partnership which aims to catalyze creation of quality vocational training ecosystem in India. The organisation provides funding to build scalable and profitable vocational training initiatives. Its mandate is also to enable support system which focuses on quality assurance, information systems and train-the-trainer academies either directly or through partnerships. Since establishment in 2009, NSDC has trained more than 2 crore people through its partnership with 600+ training partners, wide a robust network of 11,000+ training centers spread over 600 districts across the country. NSDC has institutionalized 37 Sector Skill Councils and is also implementing Government's flagship skill development schemes such as Pradhan Mantri Kaushal Vikas Yojana (PMKVY), Pradhan Mantri Kaushal Kendra (PMKK), National Apprenticeship Promotion Scheme (NAPS), among others.

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