

Bridging the Skills vs. Employability gap for a SMART INDIA

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Theme: Project Management - Powering India's Global Leadership .
Leveraging India's skilled population for competitive edge

Key words: Skills vs. Employability, right skills, skilled workforce , Job Catcher

Abstract:

Background:

Education and skills are the key foundation elements of the nation's economic growth and powering global leadership A good ongoing central scheme is the PMKVY (1500 Cr budget for skilling 24L youth in 24 emerging sector) To attain the competitive edge as skilled nation, we need a industry-ready and job-ready workforce.

Challenges:

> 60% of the 8 L engineers graduating from technical institutions across the country every year remain unemployed (Source : AICTE)

~39% employers state that attracting and finding quality talent is one of the most challenging aspects

~90% of jobs are skill-based, only 2% of the population (in the 15-25 age group) is currently enrolled for vocational training (vs.60-80% worldwide).

It is evident that an enormous gap exists between skills and employability

Approach :

As a PM competency, we can immediately support this initiative using the PDCA (Plan-Do-Check-Act) cycle as follows:

- 1) Crowd-sourcing the expert PM Talent pool to implement this complex program
- 2) Analytics to identify current market demands, predict needs and refine the skills program
- 3) Cognitive to Match skills and job openings
- 4) Cloud Infrastructure hosting
- 5) Agile principles to handle a complex project with strictest circumstances & rigid hierarchy of decision-making
- 6) Automation in Tooling & Reporting for
 - a) Deployment tracking
 - b) Resource utilization management
 - c) Balanced scorecard-measurements & metrics

7)EVM to track cost-effectiveness

Conclusion :

This is a clarion call to India's own complex PMs to join hands and help India emerge as a skilled nation. Let's contribute our skills as a give back to the society

Intent: (Mandatory)

It is now common knowledge that India has potential for explosive economic growth, with its big market, low costs and large % of young population. Based on the learnings from other countries, to attain a competitive edge in the global market, a skilled workforce is the need of the hour. Using the project management methodology and the complex project management expertise, we can develop a solution to bridge the skills-to-employment gap. This will be the greatest giveback from the PM community-"leveraging the skilled population to gain a competitive edge".

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Introduction

Economic growth is caused by two main factors: increase in aggregate demand & aggregate supply.

Demand: As per the Economic Survey 2017, the growth boost is likely to peak in the next five years contributing to the GDP as India's share of the working-age population plateaus, thereby making skilling and entrepreneurship key imperatives. According to the quarterly employment survey of the labour and employment ministry, the estimated employment in eight sectors including manufacturing, construction, trade, transport, education, health, accommodation and restaurants and IT/ BPO (information technology/business process outsourcing) stands at **20.52 million in the country**.

Supply: In India, less than 4% of the workforce is skilled, while China has 47%, Germany 74%, Japan 80% and highest is in South Korea at 96%.

The overall objective of NSDC is to create training capacity in the country, fund scalability and sustainability of private enterprise, create a market ecosystem for skill development and meet the targets set out by the Government. Their mandate is to train 150 million people by 2022.

The sectors facing acute manpower shortage include IT, BFSI, pharma, healthcare, infrastructure, retail, auto and consumer durables, amongst others. By 2025, India's demographic dividend is expected to contribute 25% of global workforce. Therefore, the magnitude of the challenge is enormous.

With skill development as one of the priority agendas, the government has set up sector skill councils (SSCs-national partnership organizations that bring together all stakeholders –industry, labour and the academia) to complement the existing vocational education system for the industry in meeting the entire value chain's requirements of appropriately trained manpower in quantity and quality.

With the numerous center-level & state level government schemes focusing on increasing the supply and demand numbers, **it is imperative that the skilled are employed in the right opportunities, thereby contributing to the national income.** This is an important step toward making the government schemes like 'Make in India', 'Digital India', or 'Smart Cities', a resounding success.

The paradoxical situation on the ground today is that more than 30 lakh graduates join the Indian job market every year, but only about 5 lakh are considered employable. This gap between skills & employment will turn out to be a major hurdle to our economic growth, if not addressed at the right time.

Our paper explores the problem in detail and suggests a solution which will demonstrate how to leverage **India's skilled population to gain a competitive edge**. The recommendation is also to leverage the existing Complex Project Management skills & leadership in India to develop and implement a complex solution of this significant size & impact to a diverse nation like India. The solution also takes into consideration the existing schemes and policies that the Government is focusing on.

The trigger :: Inspirational leadership vision – India 2020

Our former President, Abdul Kalam elaborated his India 2020 vision in his book, calling India a knowledge superpower & strongly advocating an action plan to develop the nation to be among the top 4 economic powers by 2020. In the book, he has recommended an integrated action plan for a developed India, which will lead to transformation of India in five areas where the nation has core competence:

1. Agriculture and food processing
2. Education and healthcare
- 3. Information and communication technology**
4. Infrastructure development
5. Self-reliance in critical technology

Against the backdrop of this growth, we have to assess where we stand in terms of what we aspired to do and where the gap exists. It is time for the nation and its leaders to take up a review mission and suggest methods by which we can accelerate progress so that by 2020 India can become a developed country with zero poverty, 100 per cent literacy, quality healthcare for all, quality education embedded in a sound value system for all, and value-added employment for every citizen consistent with his education and professional skills. If we channelize our integrated efforts towards Vision 2020, the economic development of our nation is certain.

The industry has played a key role in regional development with IT-BPO intensive states accounting for over 14% of respective state GDPs. Additionally, the future outlook is very bright too-

- IT will continue to play a role in reducing enterprise costs, changing business processes, workforce practices and information use
- There will a move towards SaaS, Cloud Computing, shared services and more selective outsourcing
- Government IT spending will continue to rise across the world, focusing on infrastructure and security
- Other areas where spending will rise include BPM, data management, on demand ERP, virtualisation, and enterprise managed services on IP networks
- BPO spend will go up, driven by the F&A segment, procurement and HR outsourcing

The skill vs. employability gap – Case Study

Shortage of a skilled workforce is emerging day by day and is considered as a significant challenge for the Indian IT industry. According to a research conducted by NASSCOM, every year more than 3 million graduates and post-graduates are added to the Indian human-resource and out of these, only 25% of IT graduates are considered employable by fast growing IT & ITES industry.

This data is in alignment with the data from Mckinsey on engineers' employability (20-25%) and even recently, a survey by the employability assessment firm, Aspiring Minds, said 95% of engineers cannot code. This problem cuts across the demographic dividend and is a challenge that the nation needs to focus on high priority.

Let's look at Maharashtra state as an example. It is the 2nd largest contributor to India's population and thus, also to India's demographic dividend. The Maharashtra Government is proactively following the skill development agenda in the State. It has planned to equip 4.5 crore people with employable skills by 2022 as a part of the overall plan of the Government of India.

IT& ITES is one of the high growth industry in Maharashtra along with auto, building construction, food processing etc. According to the IMACS (ICRA Management Consulting Services Limited) analysis, IT/ITES sector has a incremental demand of 1 million. Within this, in the next ten years, maximum demand for skilled workers is expected to be at 37% of the total incremental demand (semi skilled workers at 35% & minimally skilled workers at 28%).

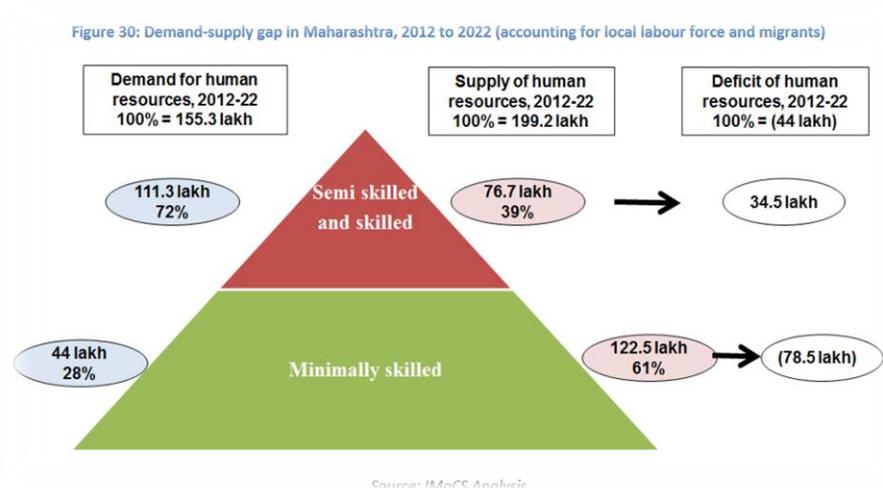


Figure 3 - Demand supply gap

According to the iMaCs analysis, a huge gap exists between the supply and demand in the semi-skilled and skilled areas where IT/ITES sector resides.

With many upskilling programs launched by the government & employment demands being created by entrepreneur organizations, there is a need to provide the right match, incentives and collaboration at a central level to reduce the gap

Our analysis of the reasons for the gaps & associated recommendations/ actions in progress

Area	Challenge	Actions in progress/ Recommendations
	Availability of the right skills	Government schemes launched to develop skills in key sectors, based on analysis of the growth areas <i>e.g. PMKVY (Prime Minister's Kaushal Vikas Yojana), PMKK (PM Kaushal Kendra), etc.</i>
	Right job fitment	Government scheme for employability – <i>e.g. PMEGP (PM's Employment Generation Program), SGSY & SGSRY (Swarnajayanti Gram Swarajgar and Shahari Rojgar Yojanas)</i>
	Corporate Social Responsibility from private organizations & entrepreneurship	A holistic view of corporate responsibility will usher in innovation, collaboration and organisational transition that will not just make corporations commercially and socially viable but also provide the much-needed external thrust in augmenting government's effort in achieving social goals. <i>E.g. organisations like NextWealth</i> Set mandatory intake targets for corporates participating in this scheme <i>e.g. 10% intake from NSDC, vocational training institutes etc</i>
	Feedback mechanisms	To create fit-for-purpose supply & demand with a future perspective <i>e.g. soft skills for students, appropriate customized courses to be identified & 'structured' with the help of prospective employers for higher chances of placements, set 'realistic' expectations at both ends, more industry interactions for students, mock interview sessions, internships, meeting old students, strong alumni networks to be organized</i>
	Resource & Capacity management expertise	Leverage the PM expertise in managing resources & capacity management in complex projects

Technology Solution

Now let's spend some time to understand the solution being proposed.

The need of the hour is an intelligent national & state –level "**Dream (job) catcher**", which will be able to map skills to demands using cognitive technology, and predictive analytics to project job and skill trends to the government bodies, entrepreneurs and other stakeholders.

This will ensure a platform with an intelligent matching engine & continuous feedback mechanism, creating a fit-for-purpose supply & demands and clear projections on the future outlook.

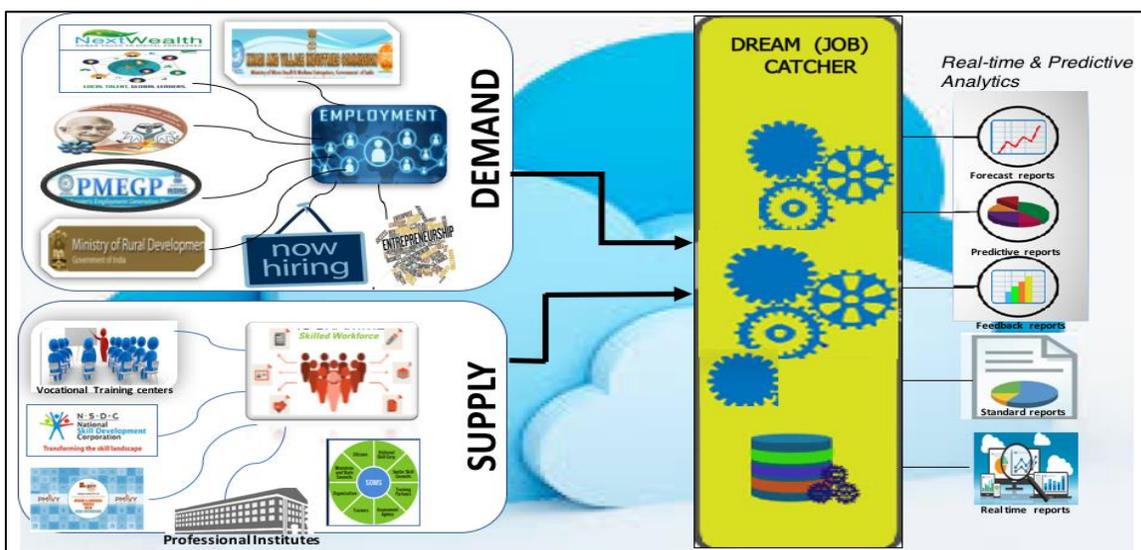


Figure 4 - Technology Solution

This complex system will have multiple stakeholders (government bodies, corporates, training organisations, etc.), their numerous input sources and report requirements

Stakeholders	Inputs	Outputs
<ul style="list-style-type: none"> <input type="checkbox"/> Private sector organizations (Trainers , Employers, entrepreneurs, Hiring companies) <input type="checkbox"/> Public sector Schemes (NSDC, SSC,PMEGP,SDMS) <input type="checkbox"/> Skilled Professionals <input type="checkbox"/> Social Organizations/ entrepreneurs like NextWealth <input type="checkbox"/> Ministry of Skill Development and Entrepreneurship <input type="checkbox"/> Vocational training Institutes <input type="checkbox"/> Professional institutes <input type="checkbox"/> Government bodies 	<ul style="list-style-type: none"> <input type="checkbox"/> Job opportunities <input type="checkbox"/> Skill demands <input type="checkbox"/> Training programs & criteria <input type="checkbox"/> Skill demand for a particular industry, location, area and skill <input type="checkbox"/> Job aspiration and profiles <input type="checkbox"/> Targeted skilled supply <input type="checkbox"/> Available opportunity data from existing repositories 	<ul style="list-style-type: none"> <input type="checkbox"/> Forecast report for trainers and employers <input type="checkbox"/> Match reports Feedback reports <input type="checkbox"/> Sector wise ,skill , area wise reports <input type="checkbox"/> Training needs <input type="checkbox"/> Performance reports <input type="checkbox"/> Trends in employment & skills-predictive reports <input type="checkbox"/> Real time reports

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Components of the technical solution

Job Database : Currently there no reliable data source available on job demand. (If NSDC's SDMS is made available in a timely manner, our system will take the inputs from database else there will be a provision for employers to register their job demand on a real time basis in this repository.

Data preparation : Enormous amount of input data interfaces will be required and data cleansing, migration and ETL/ data warehousing will need to be implemented to aid the analytics.

Dream (Job) Catcher : The key component will be the matching engine where in based on the demand parameters (viz. sector, state, area, location, technical, domain, process skills etc.) and supply parameters (viz. skills, availability, assessment ratings, training institute certification, etc.) the matching engine will show the following types of results:

1. **Perfect match**
2. **Approximate match**
3. **Recommended match**

Real time & predictive analysis : Using the real time data from the data sources, the analytics dashboard will compute the match combinations and and predict the trends.

Reports: Our core system will publish various reports based on the matches between the employers and skilled professionals. Sample published reports are mentioned in the diagram above

Cloud infrastructure & hosting: The entire system will be hosted on cloud in order to optimize the cost of implementation

Here are some examples of how this solution can help the trainees and unemployed in the remote villages.

Example 1: Let's take the case of Nitin & Leena, the brother-sister duo who are from Nashik, Maharashtra. Their parents work hard on their small field and the agriculture produce helps them sustain a simple existence. Both Nitin & Leena assist their parents in the fields every day and are keen to bring in the latest technologies and infrastructure to help increase the yield and standard of living for themselves and other villagers. With this objective in mind, they have completed the IT/ ITeS training at the NSDC training center and are looking for jobs in BPOs working with Companies pioneering in agriculture technologies like Mahyco, Coromandel Agrico, Dupont etc. Their aspiration is to eventually emerge as champions of the change they can bring about in their little village. Thus ensuring that they retain their roots in agriculture, locality and yet, develop as individuals, growing their village with them. With the Drem (Job) catcher implemented, Nitin and Leena can go to the centralized website which has information on demands by sector, location, area and skill, training certifications and their aspirational job details. Based on the inputs provided by Nitin and Leena and also the information available on job opportunities from the registered employers, the system will assist them finding a perfect match, approximate match or recommend a career path based on similar available opportunities. With this information, Nitin and Leena can choose what is suitable for them reducing any forceful fitment and find fit-for-future jobs.

The matching engine will also send feedback to the respective SSC/ state & central government, entrepreneurs to explore the possibility of setting up the required infrastructure and facilities in the rural areas. This will ensure Nitin & Leena get placed in their area of expertise, interest and also have an opportunity to grow up the career path in the relevant areas.

Example 2: Ronny is from Mangalore, Karnataka and is looking for job opportunities that will take him to the IT hub, Bangalore. His parents are involved in the fishing occupation and neither have the financial backing nor infrastructure for his higher education. Ronny has heard about the NSDC "Hunar hai to kadar hai" campaign from his friends and registered in the IT/ ITeS training to complete his course. He is not sure of the available employment opportunities and apprehensive about his ability to take up a full-time job in a city like Bangalore now as his language proficiency is only in Kannada & Tulu. He does not have any knowledge of Hindi or English. With the implementation of this new solution, his background, aspiration, skills, proficiencies will be mentioned in the report from NSDC and the matching engine will identify suitable

jobs fitting the requirements. He will also get a call from the soft skills training center to provide him basic English speaking classes and help improve his soft skills and self-confidence overall. Ronny will now get details of BPO job opportunities in Mangalore as the first step, with additional opportunities listed for movement to Bangalore once the additional trainings are completed and his English language proficiency is certified. The feedback will also be sent to the NSDC Mangalore VT partner to include soft skills and language training in their curriculum. The need for increasing BPO opportunities in Mangalore will also be evaluated and entrepreneurship options made available.

The Project Management methodology

In order to have the maximum benefit and smooth execution of the solution, we propose the use of the following best Project Management practices: Scaled Agile, Crowd-sourcing, monitoring and tracking through Earned value management, balanced score card and PM policy council .

1. Scaled Agile framework (SAFe)

It is designed to help enterprises deliver value continuously and more efficiently on a regular and predictable schedule, making them more Agile in the marketplace and more competitive in their industry. Many of the largest organizations in the world have adopted SAFe, and the adoption rate is accelerating.

SAFe allows application of lean-agile practices at the enterprise level getting outstanding business benefits . These typically include

- 20 –50 % increase in productivity
- 50% increase in quality
- 30 –75% faster time to market

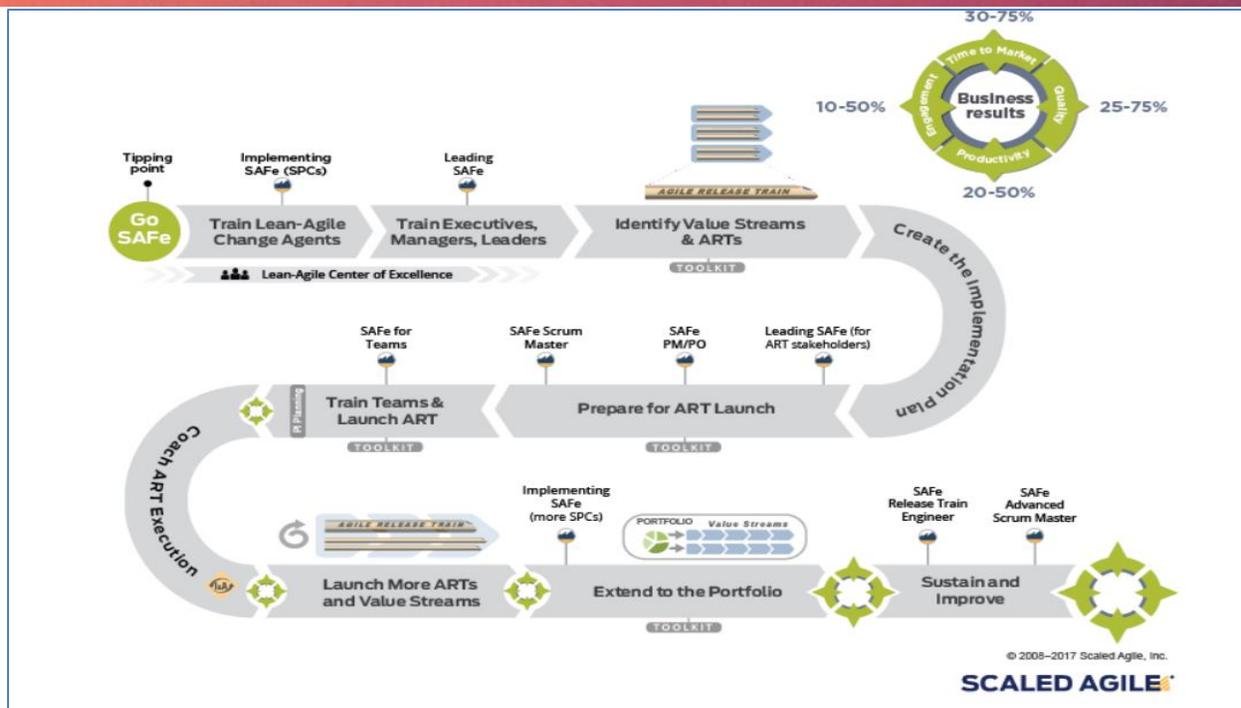


Figure 5 - Scaled Agile Framework

Team composition & Structure : Our solution proposes crowd sourcing to utilise the existing skilled talent pool across the country both from project management & the technical developer community to provide best in class services. As depicted in the figure 5, the complex project managers, architects, developers, industry SMEs will all have a opportunity to contribute to this initiative at the national level – a true example of give-back by this bustling community.

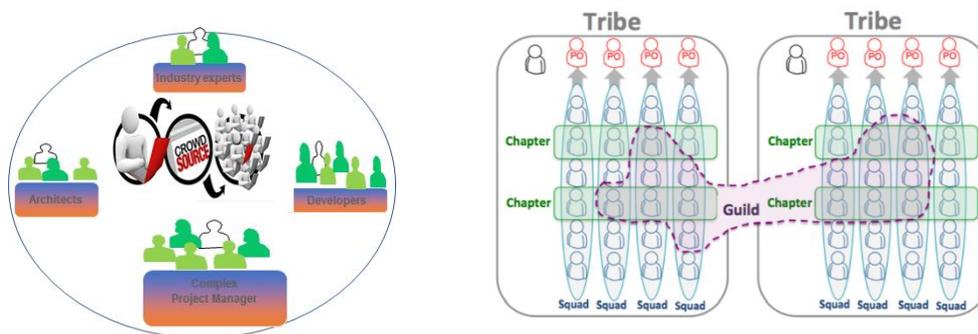


Figure 6- Team Organization

With crowd-sourced teams & multiple stakeholders at the central and state government levels, the SAFe teams will need to be organized in a different way. Organising the agile teams as Tribes, squads and guilds

helps promote teamwork, collaboration and innovation, as well as give the team members ownership and a sense of enablement. The teams will be fully autonomous and cross-functional teams will have complete responsibilities. The Spotify company is a good example for successful implementation of this concept.

Monitoring and Tracking

1. **Earned Value Management:** Earned value analysis is a project performance method which simultaneously presents both cost and schedule performances. EVM highlights all delays in the project and gains management attention in a timely manner. It focuses attention on the priority & high value deliverables with the critical path outlined. This is extremely crucial for complex project of this nature and impact, where delays and challenges may arise & need to be given the right focus at the right time and resolved.



Figure 7 - EVM Dashboard

2. Balanced score card :

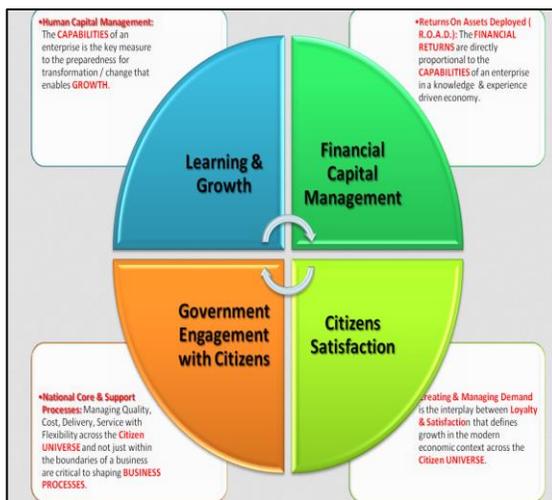


Figure 8 - EVM Dashboard

Using the balanced score card, we will translate the strategic objective or vision into a set of measurable outcome which all stakeholders will find the relevance to.

3. Program Management Policy Council:

This will act as the principal interagency forum for improving stakeholder practices related to program and project management. With responsibilities like phase gate reviews, architecture boards and methodology approvals, this governing body will be the key controller of the technical solution, project status and stakeholder management.

Critical success factors

- Sponsorship from the government body/ MSDE and employment generators
- Stakeholder involvement & buy-in
- Mature management processes
- Solid business + technical architecture
- Strong program governance model with clear R&R
- Contracts with Crowd-source/ other party
- Participation & commitment from all stakeholders to execute the complex project

Quantified benefits to business

Our objective is to reduce the gap between skills and employability in IT/ ITes in order to meet the IT/ ITes growth targets - 9.2% employment growth by 2022, 14% GDP contribution at the state level rolling up to the 8% of the total GDP at the center level economic growth.

Also, this industry is expected to reach US\$300 billion by 2020 driven by rising demand in domestic market, along with increasing IT Services exports. The CAGR* (Compound Annual Growth Rate) for 2013-2020 is estimated to be 16 percent

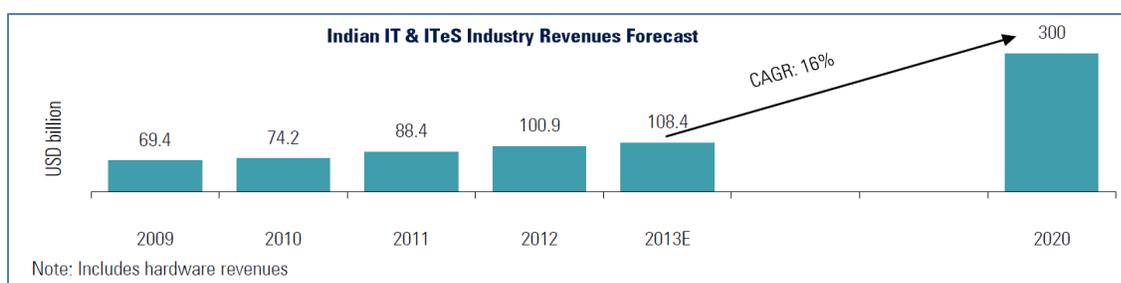


Figure 8 - Indian It & ITES industry Revenue Forecast

Thus implementing this solution has a direct impact on India's economic growth and GDP along with tapping the data mine of the skilled population in India to gain the competitive edge.

In Phase 1, the solution can be implemented for employment of vocational trainees in the IT & ITES sector as the first agile sprint and it can be expanded to other sectors in more sprints. The solution is scalable enough to accommodate other sectors and serve as an overall skilling-to-employment bridge for all professions.

Lessons learnt

Governments, employers' associations and trade unions around the world are working to improve the employability of workers, move young people into productive and decent work, and increase the productivity of enterprises through better quality and relevant training. The Skills and Employability Branch conducts comparative research and provides policy guidelines and technical assistance to help constituents integrate skills development into national and sector development strategies.

The ILO's (International Labour Organisation) work with constituents focuses primarily on three areas: linking training to current labour market needs as well as anticipating and building competencies for the jobs of the future; building quality apprenticeship systems and incorporating core skills into training for

young people; and expanding access to employment-related training in rural communities in order to improve livelihoods, reduce poverty, and equip women and men to work in the formal economy.

Let's look at other countries and learn from their experiences on skill assessment & anticipation systems to improve employability & predictability of job fulfilment.

Canada is a country where multiple skill assessment & anticipation exercises are carried out to provide a comprehensive picture of existing and future skill needs: Canada's National Occupational Classification (NOC) contains detailed skill requirement for each occupation-updated every five years-and is the platform used to translate data from the national labour force survey and from the Canadian Occupational Projection System (COPS) into meaningful labour market information. The COPS System develops every 2 years a 10-year national-level occupational forecast. These information systems draw from both quantitative and qualitative sources and focus on a range of skill range measures: qualification levels and qualifications types - specific generic or information-processing skills and occupation. The exercises involve relevant ministries, public and private employment services/ agencies, trade unions the central bank and other stakeholders In addition, skills assessments are also carried out by large employers and sector-specific organisations to inform their strategic and workforce planning.

Brazil's mode of skills anticipation has proven highly successful and has been replicated in a number of other developing and emerging economies.

What makes the Brazilian approach stand out is the fact that the private sector takes a lead role by developing the skills forecast and in the provision of training itself-which ensures a closer alignment between the supply of skills and the needs of employers. The system is driven by employers in various sectors and is know as the S-system. It includes, among others:

1. SENAI (Servico National de Aprendizagem or the National Industrial Apprenticeship Service)- a network of not-for-profit secondary level professional schools established and maintained by the Brazilian Cofederation of Industry, which works with a range of stakeholders (universities, businesses, science & tech centers, sector experts etc.) to forecast the qualified labour in the 5-year period. These results are fed into the planning of training activities, offers of technological services to businesses to help improve competitiveness
2. SENAR-the National Rural Apprenticeship Service;
3. SESI-the Bational Social Services for Industry; and
4. SENAC-a vocational education institution.

The close alignment between the provision of training and business need results in very positive labour market outcomes for training participants: **80% of SENAI graduates find employment within 6 months after graduation.**

Conclusion

As India moves progressively towards becoming a 'knowledge economy', it is focusing on advancement of skills relevant to the emerging economic environment. The government's mission has twin objectives of economic growth and inclusive development so that India's Gross Domestic Product (GDP) can grow consistently at 8 to 9 percent a year.

As the workers migrate from the rural and predominantly agricultural sector to other urban sectors, India realises that it has the need for a well thought out and executed strategy to provide a new set of skills through vocational training in order to effectively absorb this additional workforce and sustain economic growth. However, it is necessary to also build a robust infrastructure of trainers and training institutes for the same.

Realising the need for skill development Government of India has taken several initiatives such as:

- Setting up institutional capacity: NSDC and Sector Skill Councils
- Increasing the vocational training institution network
- Launching various schemes for skill development
- Identifying potential employment demand industries

In addition, state governments and other stakeholders such as industry associations, international organisations, and industry players are also contributing via various types of financial aid, schemes and programmes in order to achieve the skill development objectives. We believe that skilling is the joint responsibility of both private and public sectors and each should leverage their expertise to come together and create a holistic skill environment for the country's youth.

All these schemes focus on skill development and employment generation, based on their own vision and objectives. There is a strong need to bring the demand and supply into the same system and match them to get the best results.

Our end-to-end solution, the robust - predictive & analytical "Dream (Job) catcher" implemented using the expertise of Complex PM community in India will be the best contribution we can make to the growth of the Indian economy. This solution can be also easily scalable to other sectors, graduate trainings and employment and mobilization of employees.

All sources of information (artwork or otherwise) including full name, title (if applicable), address and phone number/Web page must be listed.

At the end of the paper, references must be arranged in alphabetical order of authors' surnames and chronologically for each author. The author's surname is placed first, followed by the year of publication in parentheses.

Authors' own work copied from other published sites (blogs, published articles etc.,) should also be mentioned in this section.

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