FOR AN EMPLOYABLE WORKFORCE
What India needs is a flexible TVET System

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ABSTRACT

This paper examines the global as well as domestic technological changes that necessitate a flexible Technical and Vocational Education and Training (TVET) which will enable the workforce to respond to the current challenges. Indian TVET was designed keeping import substitution and the Lewisian model of development in mind. While it gives more emphasis on manufacturing and has been quite a rigid system, it managed to serve the purpose well till 1980s. But once India entered into the phase of demographic dividend and opened its market, the GDP (gross domestic product) growth as well as skill-intensity increased significantly, thus increasing the demand for better-skilled workers both in quantitative and qualitative terms. As demographic dividend is not going to last forever, the paper suggests measures to make Indian TVET system more flexible to address the problem of employability.

Key words: TVET, technological changes, demographic dividend, workforce, India

Introduction

In the era of globalised capital and localised labour, when "the availability of a skilled workforce is becoming increasingly important in firms' decisions to locate, remain, and/or expand in a locality or region", (OECD, 2014), no country can afford to leave their workforce unskilled. Skills are not only important for individuals searching for jobs but also

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for the countries who are competing with one another in attracting the Foreign Direct Investments (FDIs). So, even though skills do not create jobs directly as does the "setting up of new industries or expansion of the existing one, infrastructure development, growth in services, exports or government interventions in labour market", skills play an important role in the growth of jobs and earnings. The need for imparting relevant skills to the workforce increases manifold, as we are living in a time when number of studies (Manyeka, et al., 2017; Nedelkoska & Quintini, 2018) are cautioning that due to automation and artificial intelligence a large number of jobs are at risk, which will further aggravate the problem of unemployment.

But, while on the one hand, a number of jobs are going to vanish in the near future due to the technological changes, on the other hand, it is also a fact that "the ageing economy phenomenon will globally create a skilled manpower shortage of approximately 56.5 million by 2020" (Planning Commision, 2008). The technological changes that are occurring and are expected to occur with a greater pace in the future are highly skill-biased. With an increase in international trade, the impacts of technological developments are increasingly being globalised at a rapid pace affecting the jobs not only in the country from where they originate but in the whole world. In such a global scenario, there are possibilities of great opportunities for the countries having or going to have a large population of young working age persons which is called demographic dividend. But this opportunity can be seized, only if the country successfully imparts proper education and ever-changing skills being demanded by the global economy. In simple words, in order to realize this demographic dividend and harnessing it for an increase in GDP growth, the countries with higher number of working age people will have to meet their skill challenge, otherwise there is a risk of demographic dividend turning into a demographic disaster if jobs could not be provided to the growing number of working age population joining the labour force.

This applies mostly to India as it has working age population incomparable to any other country. In 2020, India will have surplus of approximately 47 million workforces (Planning Commision, 2008). But at the same time, India is facing a huge challenge of employability. The Indian TVET system which served the needs of the country well until 1980s, failed to cope with the increasing demand of skills once the country entered into its phase of accelerated gross domestic product (GDP) growth and demographic dividend. Recognising the need for overhauling the existing skilling system, the policymakers for the first time included

a separate chapter on skill during the 11th Five Year Plan (2007-12). It is appreciable that now the need of skilling is being recognised well and successive governments are working in this direction as a call has been taken by none other than the Prime Minister himself, who wants India to be world's 'human resource capital'. The goal is to be achieved with a futuristic vision and with proper planning for the next ten years. For which, India not only needs to make a proper analysis of sectoral as well as geographical skill gaps and investment in education but also to change its existing rigid system of vocational education and training (VET) into a flexible one, that would meet the domestic as well as global skill requirements.

This paper based on the secondary sources analyses the available literature and intends to advice some policy measures to better prepare India's workforce for the future challenges. The paper which starts with a brief note of the global factors responsible for the rapid change in skill-demands discusses in the first part as to how the skill-biased technological changes and trade-in-services led to skill-deepening in manufacturing as well services on a global scale. The second part of the paper which is focused entirely on India, analyses the current demographic scenario and education level of the workforce in the country. It briefly looks at the historical evolution of Indian TVET system and analyses the new initiatives taken by the successive governments in the last five-ten years in order to address the present situation of skill mismatch. The third part of the paper argues that because of the outdated and rigid curriculum TVET has failed to impart the right skills demanded by the market and even the new initiatives are not being able to guarantee jobs to those who are receiving trainings. In the last section some policy measures have been suggested which can be helpful in the pursuit of having a better prepared workforce to meet the future skill challenges.

2. Drivers of Skill-obsolescence and Future of Jobs

From the 1970s onwards, when capitalism entered the neo-liberal phase, the production process underwent a dramatic change. The "Fordist" system of production – characterized by the mass-production of standardized goods at one fixed place and by fixed labour force – had its golden period until late 1960s which got replaced by a new mode of production. The technological changes in the form of Information technology and rapid development in transport facilities brought a huge movement of goods (finished as well as intermediate), services, capital, technology and labour across borders. The production process was no more a nationalized one as one after another governments facilitated the changes in order to get benefitted from new

emerging trends. The first ones to seize these opportunities were the giant firms, who restructured their production systems scattering it all over the globe. A new division of labour took place which was not local but global and the shift that happened in the production of goods and services was a global one. The research and development activities requiring highly skilled labour force remained concentrated in the developed nations of global north. Labour intensive jobs were transferred to the labour-surplus countries of global south, where cheap labour was available in abundance and as a result of which, new centres of productions emerged in the countries of global south with the active supports of their governments. Intra-firm trade of multinational corporations which basically constitutes of tasks and intermediate goods increased drastically, which, as Roy notes, account for the one-third of international trade (Roy, 2014). This global participation in the process of production gave rise to what we call as "global value chain (GVC) or global production network (GPN)" (Jha, 2014), which acted to integrate economies at a global scale and brought what we call as "neo-liberal globalization".

As claimed, the GVC brought huge opportunities for what we call "the third world countries", in the form of technology and participation. The success of the firm in the GVCs and the success of the overall chain depends on the efficiency and competitiveness in carrying out the tasks, competency to run the firm, etc. This increasing investment in new technologies and R&D demanded further shift towards more skilled, better educated workers who can easily cope with new technologies. So, it can be said that the success of the firm and the overall chain depends on education and skill of both the worker and the entrepreneur (OECD, 2014). All these changes hugely benefited Asian countries which had a large pool of educated better-skilled workers ready to work at a price multiple times below that of the developed countries. Thus, the past three decades have been the decades of Asia, and with the rapid growth in GDP of major Asian economies, the centre of world economy is shifting towards Asia. Here, one thing worth to be noted is that the growth was partly "propped up by a relatively broad human capital base in terms of completion of basic education, combined with low wages. The education systems in Asia, including technical and vocational education and training (TVET), were well suited at the time to allow Asia to become the world's assembly line". As under neo-liberalisation there exists almost no hindrance in the movement of capital but of the labour which is still struck with the national boundaries especially those who are not qualified for the gold collar jobs. And, in contrast to Fordist system, which was about mass-production of standardized goods, now the mantra was differentiated

goods with the help of flexible production units with a different type of machines employing flexible labour. The basic requirement for a place in the GVC was one's competitive advantage over others and especially advantage in terms of human resources.

For the workers all over the world, it all unfolded as a challenge because no matter whether the firm was situated in a developed country or in a developing country, the constant improvement and upgradation in technology – either by in-firm research or technology import – kept the workers on toes for acquiring new skills to meet the level of industry and sustain in the GVC. Gone were the days when capital was national, production was centralized and workers competed with one another on the national scale, mostly, within a specific sector and specific sets of skills which were associated with one or few activities and the pace of change in the skills demanded was so slow that workers use to gain skills through their work in most of the cases. Hiring and firing also were not easy as the employees were protected by the state, and firms also helped them to gain new skills and adapt with the new situation. The relation between employer and employees underwent a drastic change, as in GPN production was being performed within complex and dynamic economic networks made up of inter- and intra-firm relationships and global networks (UNDP, 2015). Now the relation was that of "many-to-many" rather than "one-to-the-next" which changed the whole work environment. The minor adjustments in the skill were not going to serve the purpose and the old experienced employees were more burden than assets.

As a result of these developments, a lot of traditional occupations disappeared and challenges are also being faced by the others. Because large percentage of less complex tasks are being assigned to the smart machines having skills to perform these tasks at lesser costs, the demand for the less or unskilled worker is diminishing rapidly. In the sectors requiring less or unskilled workers, there is a fight between labour and machine to prove their efficiency in terms of cost and time and no doubt machine is winning everywhere.

The manufacturing sector has got maximum impact which still accounts for 23.2 per cent of global employment. From 1995-2008, in developed OECD countries there was a huge decline in the demand for low-skilled workers due to decline in their demand in manufacturing sector. Since 1990, the share of manufacturing in the total employment is almost constantly decreasing in many countries. In the European Union, 2.8 million manufacturing jobs were lost between 1992 and 2000, which

means 8.6 per cent of contraction (Doogan, 2005). Even in the countries like Germany and South Korea which are strong exporting countries and have a large share of manufacturing in the total GDP, manufacturing employment fell by 8 per cent and 11 per cent respectively during the first decade of new millennium. Share of manufacturing in GDP went down as the reliance on digital technology increased. Manufacturing jobs are still under a lot of pressure due to mechanization and robotization. As Brooke Masters wrote, some of the plants in Germany are employing robots for routine work as these robots cost about €5 an hour over their lifetime in comparison to €40 an hour of a typical German worker (Masters, 2015).

But, it is not only the manufacturing sector which is under pressure. A study by Frey and Osborne (2013) showed that almost half (47 per cent) of the total employment in the United States, which includes not only the manufacturing but also transportation, logistics and lots of office and administrative support workers, are in the high-risk category. Even in those areas of service sector where substantial growth has been witnessed, computerisation will have a huge impact. What we will see in the future is the gross relocation of the workers in those sectors which require creative and social intelligence. So, they advise that workers will have to have "creative and social skills". The technological changes impact wages also, as at the dawn of the new millennium, Feenstra and Hanson noted that as a result of skill-biased technological change (SBTC), between 1979 and 1995 for full-time US workers the real wages of those with 12 years of education fell by 13.4 per cent and the real wages of those with less than 12 years of education fell by 20.2 per cent. During the same period the real wages of workers with 16 or more years of education rose by 3.4 per cent" (Feenstra and Hanson, 2001).

So, what we can say here is that, as a result of the technological advancements in the last few decades, it is clear that the employment intensity of growth will go down and the labourers are not going to get as much benefits as their predecessors were getting, be it in terms of employment or wages. Now, two very important but inter-related questions emerge here. First, are these challenges limited to the developed countries only or whether they will impact developing countries also? And, second, will the growth trajectory and structural transformation which the new developing countries are going to witness will be same as that of Korea and other countries which became part of GVC in the 1960s and 1970s, or will it be different?

The empirical evidences tell us that the challenges listed here are not only limited to the developed countries but even developing countries are

facing them. As even in developing countries with the diffusion of labour-saving technologies, manufacturing jobs are under severe pressure and as Dani Rodrik points out that many countries, particularly Latin-America and Sub-Saharan Africa are witnessing a "premature deindustrialization", which means "a phenomenon where opportunities in industry shrink sooner and at much lower levels of income than for early industrializers" (Rodrik, 2015) Experience from India supports the findings of Dani, as before the reforms, when the labour-saving technologies were not available and certain protections were there, for the sectors employing more labourers, growth rate of GDP was around 3.5 per cent and the employment was rising with a rate of 2 per cent. But in the very first decade of liberalisation the situation was that there was rise in the GDP growth – it was around 6.4 per cent per annum during 1992-2000 – but rate of growth of employment fell to 1.5 per cent in the first two years i.e. 1990-92 and then around 1 per cent for the rest of 1990s (Sharma, 2007).

The discussion brings us to the conclusion that the above discussed challenge of skill biased technological change (SBTC) is not only limited to the developed countries but is equally facing the developing ones and the growth trajectory of the late industrializers are going to be different from the early ones. Other than this, as a part of the GPNs and GVCs the late industrializer developing countries need to constantly improve their workforce not only to attract FDIs – as in a globalized economy the mass-skilling of the labour force becomes one of the major factors in attracting foreign investments and the clusters develop according to them whereas the dearth of skilled labour force will lead to losing FDI which will hamper their economic development – but also for their domestic production to remain competitive enough for its survival. But what we need to add here is that seeing the huge unskilled, uneducated population which these countries have in comparison to the developed ones and their poor track record of imparting even the basic education, the problem seems to be a mammoth one.

But the gloomy picture which we have seen above is just one side of the coin, there exists another side also. As a lot of jobs are being destroyed due to the factors which we discussed above it is also a fact that at the same time globalization and technological changes are creating a plethora of opportunities in the new emerging sectors. The different growth trajectory which will be followed by the late industrializing countries does not mean a "jobless growth". Because technology is neither going to eat up all the jobs nor every job is equally likely to be replaced. There are opportunities waiting to be capitalized in the services sectors. If there are some jobs

which are being replaced or likely to be replaced soon there also exists certain jobs which are least likely to be replaced at least soon (Table 1). Along with this, there are certain sectors in which jobs are being created which are not traditional but the new emerging sectors and in these sectors jobs are related to the technological advancement, which is a favourable development for the workers because with the penetration of the high-end technologies in every sector, high skilled workforce has become a necessity rather than a benefit. If plenty of high-paying and rewarding jobs

Table 1: Jobs least and most likely to be replaced

Jobs least likely to be replaced	Jobs most likely to be replaced
Recreational therapists	Telemarketers
First-line supervisors of mechanics, installers and repairers	Title examiners, abstractors and searchers
Emergency management directors	People working in sewers
Mental health and substance abuse social workers	Mathematical technicians
Audiologists	Insurance underwriters
Occupational therapists	Watch repairers
Orthotists and prosthetists	Cargo and freight agents
Healthcare and social workers	Tax preparers
Oral and maxillofacial surgeons	Photographic process workers
First-line supervisors of fire-fighting and prevention workers	New accounts clerks
Dieticians and nutritionists	Library technicians
Lodging managers	Data entry operators
Choreographers	Timing device assemblers
Sales engineers	Insurance claims
Physicians and surgeons	Brokerage clerks
Instructional coordinators	Order clerks
Psychologists	Loan officers
First-line supervisors of police and detectives	Insurance appraisers
Dentists	Umpires, referees and sports officials
Elementary school teachers, except special education	Tellers

Source: HDR, 2015

have been created in the services sector, it is because of the technological advancement which we saw in the last couple of decades.

Human Development Report 2015, which explores how work can enhance human development, notes that a whole new pool of jobs has been created by the development of internet and mobile technology. These jobs have been created both directly by new technology producer companies and indirectly by a wider system of support-based companies. Further, indirect jobs also include installation, maintenance and the connected activities from product promotion, advertising to the managerial and financial activities. If developing countries are provided with the same accessibility to internet as developed countries have, we will be able to create about $2.2 trillion in GDP and also will create an additional 140 million jobs of which 65 million would be in India and 44 million in Africa. This will also boost the long-term productivity by 25 per cent in the developing world (UNDP, 2015). In many European countries the employers were unable to fill vacancies as those applying lacked required skills. This type of situation was also found in Greece and Italy where 45 per cent and 47 per cent of the employers found that their businesses were being hampered by lack of basic entry level skills, respectively (UNDP, 2015).

So, we are not heading towards a future where humans will not have jobs and wages but a future with rapidly changing nature of jobs and nature of skills required. There is nothing which can stop growing skill-intensity of the work and for each job specifically skilled workers will be demanded. Industries will locate themselves in the area where skilled labour force is available. It is not something new – we have plenty of examples of industries locating as per the availability of labour force. It was mass education during the communist era that helped China in attracting labour intensive manufacturing industries. In India successful sectors have either been capital-intensive or skilled-labour intensive, which includes "auto parts, automobiles, two-wheelers, engineering goods, gems and jewellery, petroleum refining, pharmaceuticals, financial services, information technology and information technology enabled services" (NITI Aayog, 2017). What we need to understand here is that it was the establishment of institutions of higher-learning, especially institutes like Indian Institute of Technology (IIT), Indian Institute of Management (IIM) and skill in the form of English language which is one of the major mediums of study in India that helped the country in becoming one of the champions in the information technology.

Hence, in the present situation as well as in the coming future, investing in the human resources and making them skilled is the only way to take the country towards development. Investment in the human

resource becomes even more important for those countries which have a large young population as the youth left "uneducated, unskilled, inefficient and inexperienced, instead of contributing positively towards growth and progress of the economy pulls back the country" (Bala, 2017). The challenge is therefore how to retrain the workers who are engaged in the sectors where mechanization is soon going to replace them. To meet the challenge, the policies need to be adjusted to suit the new environment created by globalization. But because of the downtrend in wages a vast majority of workers especially in global south are incapable of making themselves properly skilled and re-skilled, which further increase the skill shortages. So the possibilities of providing on-the-job training needs to be searched. The State needs to play a proactive role in facilitating redeployment, retraining and job-search. It needs to formulate policies based on studies that help in solving market failures related to labour market information. ILO notes that such policies will be valuable in productivity enhancement and growth and these policies need to be more widely and firmly adopted especially in middle-income developing countries (ILO, 2004).

3. Skill Mismatch and the Policy Response in India

After 1980s, when changes started occurring in Indian economy with pro-business and pro-market reforms, a change took place in the labour demand also. A skill-deepening happened in Indian economy which was not only because of the increasing trade-in-services but also due to changes within economy. As Chamarbagwala (2006) states, "skill-deepening in the Indian economy was not solely generated by the increased trade-in manufacturing and services brought about by trade liberalisation, but was also the result of changes within the economy that were not related to trade. Perhaps domestic sector reforms such as deregulation and delicensing of industry, privatization and possibly even tax reforms were responsible for generating some of the increased demand for skilled labour". She further notes that "the agricultural sector experienced a dramatic contraction, whereas manufacturing employment fell down slightly during the 1980s and 1990s in India". But what is more notable is that rather than expansions of skill-intensive sectors, skill upgrading was happening within the industry – a shift from the occupations demanding unskilled or low-skilled workers to those demanding high-skilled ones – during the same period that caused a rise in demand for the workers with education at least of high school and relevant skills. As expected, the relative demand for the better educated and skilled workers increased but at the same time it decreased for less educated ones.

With the rising population the labour force in India increased about 5.5 million per annum during 1993-94 to 2011-12. But, as a result of neglecting education, especially primary education, a major part of the rising labour force was either uneducated or had low education level. The current census of India (2011) shows that, the literacy rate of the country is just 74.04 per cent. 29.14 per cent of our workforce are not literate, next 23.7 per cent have an education of less than primary level and 17.6 per cent have an educational qualification of between classes 6 to 8. It is not surprising to see that a large number of our workforce is still employed in agriculture where there is a huge problem of under-employment causing poverty, but these poor people cannot move out from agriculture because once they migrate from agriculture they become "unskilled" (Mehrotra, 2014).

But, does the education guaranty an employment? In India it is "No". As Bala (2017) notes "the distribution of persons by educational classification based on usual principal status for the age group 18-29 years (in per cent) for India at an aggregate for the year 2013-14 tells us that among the non-literate persons 50.3 per cent are employed, 1.8 per cent are unemployed and 47.9 per cent persons are not in labour force. Among the persons with below primary level education, 50.9 per cent are employed, 2.1 per cent are unemployed and 47 per cent are not in labour force. Among the persons with primary education, 56.2 per cent are employed, 2.3 per cent are unemployed and 41.5 per cent are not in labour force" (Bala, 2017). Being more precise, in India, unemployment increases with the increase in the level of education, educated people constitute 69 per cent of the total unemployed. As of 2011, there were 6.8 crore graduates and above in India (Hindu, 2015) and we are right now living in a situation where even the candidates who have done Ph.D. are applying for the job of the peon, "for which the minimum qualification was just the school education and bi-cycle riding skills (Bala, 2017). This is because we have a huge under-employed population as the numbers of jobs being created are less than those being demanded (NDTV, 2016).

But this is just one side of the coin, the other side is that, around two-thirds (64 per cent) of the employers in India are having difficulties in finding suitable persons with the required skills to fill the positions (NDTV, 2014). Confederation of Indian Industry (CII) claims that out of about 1,00,000 candidates surveyed, only 34 per cent were employable (DNA, 2013). India Skills Report 2017 points out that "new jobs are getting generated in e-commerce, energy, retail, telecom, hospitality and financial industry; but there are not enough "skilled" people available"

(ISR, 2017). One after another India Skills Reports note that majority of the graduates are not employable. For example, India Skills Report 2016 notes that out of "5,20,000 candidates who appeared for Wheebox Employability Skill Test across domains, only 38.12 per cent were found employable and this was an improvement from the number of past two years, when only 33.95 per cent and 37.22 per cent were employable in 2014 and 2015 respectively" (ISR, 2016).

The above data point to the fact that in India education and skills do not go hand in hand and India's skill challenge is related but larger than its challenge of education. Before going into further discussion about the skills challenge, let us have a brief look at the history of India's technical and vocational education and training (TVET) system.

3.1 History of Vocational Training in India

Soon after independence one of the first steps which was taken in the direction of employment and training was that the scope of the Directorate General of Employment & Training (DGE&T) – earlier Directorate General of Resettlement & Employment (DGR&E), set up well before independence in July1945 with the purpose of re-settling demobilised and discharged defence personnel and war workers respectively – was extended not only to cover employment services in the early 1948 but also the training services in 1950 (dget.nic.in). Since then, the Directorate which was "an attached office of the Ministry of Labour and Employment (MoLE) was the sole organisation providing vocational training. However, on 16th April, 2015 a part of it dealing with Craftsman Training Scheme (CTS) and the Apprenticeship Training Scheme (ATS) was transferred to the Ministry of Skill Development and Entrepreneurship (MSDE) and is now known as Directorate General of Training (DGT). Now, DGT is the apex organisation for development and coordination at National level for the programmes relating to vocational training including Women's Vocational Training and Employment Services" (ibid). Some of its major schemes are: Craftsman Training Scheme (CTS), Apprenticeship Training Scheme (ATS), Skill Development Initiative Scheme (SDIS) and Craftsman Instructors' Training Scheme (CITS).

3.1.1 Industrial Training Institutes (ITIs)

The CTS started in 1950 with the Central Government establishing 50 Industrial Training Institutes (ITIs). But soon several new private ITIs came up in the states of Kerala, Karnataka and Andhra Pradesh. If we see the growth in numbers, in the year 1980, when India started entering its demographic dividend phase, there were 831 ITIs (sixteen times more than

that of what was established in 1950) and "at the end of 2015-16, there were 12,412 ITIs – 2,051 Government and 10,361 private and the total seating capacity of these ITIs is 25,51,330 – 6,93,925 Government and 18,57,405 private" (GoI, 2016). These ITIs conduct 73 engineering, 48 non-engineering courses. There are also five trades for the visually impaired; the duration of these courses are 1 to 2 years. The entry qualification for an ITI is Class VIII (only for 11 courses), X and XII in the 10+2 system, which means that ITIs not only provide vocational education but also technical one, as Bala notes, "In India technical education refers to post-secondary courses of study and practical training aimed at preparation of technicians and engineers to work as supervisory staff, whereas vocational training refers to lower level education and training for the population of skilled or semi-skilled workers in various trades" (Bala, 2017). Two other important points worth mentioning here are that, with effect from 1956, the day-to-day administration of ITIs operating under the CTS rests with the state governments and Union Territory Administrations, and from April 1, 1969, financial control was also transferred to them. In order to impart training to women and for upgradation of skills of serving industrial workers to keep them updated, National/Regional Vocational Training Institutes for Women and Advanced Vocational Training Scheme (AVTS) respectively were started in 1977. Presently, we have one National Vocational Training Institute (NVTI) located at Noida and 15 Regional Vocational Training Institutes (RVTIs) for women spreading all over the country. Crafts Instructors' Training is also being provided not only at NVTI but at all the RVTIs also. Altogether they have a total seating capacity of 1,500 in 12 trades. As far as AVTS is concerned, it imparts training to the serving industrial workers in their field of work through six Advanced Training Institutes (ATIs) under the DGT and 16 Industrial Training Institutes (ITIs) under different state governments.

3.1.2 Apprenticeship Training

In order to impart actual working experience to the workers ready to join industries, a voluntary based National Apprenticeship Training Scheme (ATS) was started in early 1959 but the scheme was found as not being able to obtain desired results. Thus, in order to provide legislative backing, the Apprentices Act was enacted in 1961, which came into force from the very next year on March 1st, 1962. The Act was amended first in 1973 and then in 1986 to bring graduates and technicians also under its purview. The recent amendment in the Apprenticeship Act brought out by the present government with effect from 22nd December, 2014 and notified on 18th June, 2015 ended up with the system of trade-wise and

unit-wise regulation of apprentices. In addition to making deployment of apprentices in services sector compulsory, some of its features which are worth highlighting here are: other than linking the Stipend to minimum wages of semi-skilled workers at the state level (70, 80 and 90 per cent of the minimum wages in the year 1, 2 and 3 respectively and industries are free to pay higher stipend), the amendment allowed the establishments to "engage Apprentices within a band of 2.5 per cent to 10 per cent of the total strength (including contractual staff) of establishment, in optional trades (other than 259 designated apprenticeship trades of NCVT); the scope has been extended to non-engineering occupations also, establishments have been permitted to outsource basic training in an institute of their choice, state-restrictions on deployment of apprentices have been removed; Aggregation of apprentices can now be done through Third Party Agency (TPA)" (GoI, 2016). Provision has also been made for the submission of returns, other information and apprenticeship contract through online portal; approval was made time bound and for those establishments which are operating in four or more states; it was also made that for the matters related to apprenticeship they would now be dealing directly with the designated officer of MSDE at centre – even the penalties for non-compliance are now restricted to financial fine only.

3.1.3 Skill Development Initiative Scheme (SDIS)

ITIs in India focus mostly on manufacturing and the courses are meant for those who have at least eight years of schooling. Keeping in mind the needs for providing skilled manpower especially to the services sector at a faster rate and the barriers of early school leavers and released child labourers, in May 2007, Skill Development Initiative Scheme was launched. Along with the provision of recognition of prior learning (RPL) for those working in the unorganised sector, 1,632 short-term modular courses covering large number of sectors were designed and training was imparted to 13.67 lakh persons. Its approved outlay during the 11th Five Year Plan was Rs. 500 crore, of which, Rs. 407 crore was utilised. In subsequent modifications the number of modules were reduced to 632, but during the 12th Five Year Plan, the outlay was increased to Rs. 2000 crore. A vast network of 13,700 vocational training providers spreading throughout the country was created and successful candidates have been awarded the National Council for Vocational Training (NCVT) Certificates. NCVT is a tripartite body formed on the recommendation of Shiva Rao Committee through a resolution by Ministry of Labour in August 1956. Apart from advising the Central Government on the issues related to vocational training, it has been assigned with the functions like

establishing and awarding of National Trade Certificates for craftsmen, prescribing standards and curriculum for craftsmen training throughout the country etc. (sci.nic.in, 2011)

3.1.4 Instructors' Training

As already mentioned, right after independence some steps were taken for imparting vocational education; so, in order to train instructors in the techniques of transferring hands-on-skills, the first Craft Instructors' Training Institute was established way back in 1948. Programmes were structured in a manner to impart comprehensive training, both in skill development and training methodology to the future trainers. They were provided training in 29 Engineering trades. As demand for instructors grew, the DGE&T extended the Instructors' Training Programme to all of its Central Institutes making a total seating capacity of 3,808 trainees per year. This worked quite well for the next five decades, but as already mentioned, a huge demand was created when the economy started growing at a rate of more than 7 per cent per annum. So, during 2010, in order to meet the rising demand, the government decided to allow the state/UT governments, companies in the private sector along with societies and trusts registered under respective Acts to set up Instructors' Training Institutes called as Institutes for Training of Trainers (ITOTs) with affiliation to NCVT. Steps were also taken for the maintenance of quality as NCVT approved exhaustive standards for infrastructure and course curriculum and provided that after completing the training, the instructors get tested by NCVT and awarded National Craftsman Instructors' Certificate. In order to impart more flexibility to instructors' training, modular pattern of crafts instructors' was introduced for a one-year course comprising of two semesters.

Along with NCVT, the role of which we have already discussed above, The Report of the Committee for Rationalization & Optimization of the Functioning of The Sector Skill Councils" mentions two more Institutes – Central Staff Training and Research Institute (CSTARI), Kolkata and National Instructional Media Institute (NIMI), Chennai for special mentioning "as they could be leveraged for systematic improvement in vocational training eco-system in the country" (GoI, 2016).

3.2 The New Initiatives

The system of vocational training in India served the purpose quite well up to the time till GDP growth lingered around 3.5 and with the country's import-substituting industrialisation policy we tried pushing manufacturing only. But situation changed with the reforms – growth rate

increased rapidly and the opportunities which got created as a result of the growth were in the services sector which contributes around three-fifths of GDP – while our TVET still focuses on manufacturing whose share is less than one-third of services. So, in order to make our workforce ready, a new and unique public-private partnership organisation called National Skill Development Corporation (NSDC) was set up in 2008 and many new initiatives were being taken by various ministries and departments and presently, as Bala notes, "in India there are more than 20 ministries and departments running 70 plus schemes for skill development in the country" (Bala, 2017). As it is not possible to examine all the schemes here, we will have a brief overview of Apprentice Protsahan Yojana first, before moving to other two well publicised recent schemes: National Skill Certification and Monetary Reward Scheme (STAR) and Prime Minister's Kaushal Vikas Yojana (PMKVY).

3.2.1 Apprentice Protsahan Yojana

Apprentice Prtotsahan Yojana (APY) which was launched with the changes in Apprenticeship Act envisages to increase the engagement of apprentices from the present 2.3 lakh to 50 lakh cumulatively by 2020. Year-wise targets were set to be "5 lakh apprentices in 2016-17, 10 lakh in 2017-18, 15 lakh in 2018-19 and 20 lakh apprentices in 2019-20 and it was also provided that the engagement of fresh apprentices shall be 20 per cent of the total annual target" (GoI, 2016). Under the scheme highest priority was given to MSMEs in manufacturing sector. As a result of all these initiatives, apprentices increased from 2.70 lakh to 2.92 lakh in 2015-16.

3.2.2 National Skill Certification and Monetary Reward Scheme (STAR)

The proposal of STAR was presented in the Finance Minister's budget speech of 2013. The scheme which intended to cover all the jobs across all the sectors was launched in September 2013, but initially covered only specific sectors and even in those sectors only some of the Job Roles. The idea behind STAR was that the monetary rewards given will motivate a large number of youth to get vocational training. The scheme can be said to be quite successful in imparting trainings as a total of 14.15 lakh trainees have been trained, of which, 8.79 lakh got certified but the problem is with placement, as only 1.2 lakh persons have been placed. The scheme is very much similar to Skill Development Initiative Scheme (SDIS) with only difference that it is being implemented by NSDC (GoI, 2016).

3.2.3 Prime Minister's Kaushal Vikas Yojana

As one of the flagship schemes of the government, Prime Minister's Kaushal Vikas Yojana (PMKVY) was launched in July 2015.

The approved outlay of the Scheme was Rs.1500 crore and it was to be implemented through NSDC. The objective was "to enable and mobilize a large number of Indian youth to take up outcome-based skill training and become employable to earn their livelihood". In pursuance of this objective PMKVY aimed to cover 24 lakh persons, of which, 14 lakh persons were to be fresh trainees whereas others to be under Recognition of Prior Learning. It makes provision of monetary reward for those trainees who get successfully trained, assessed and certified. The training focuses on the new entrants which mostly constitute of school drop-outs. Not only different ministries and departments of the central government but also sector skill councils (SSCs), state governments, and vocational Training Providers–all have been given specific targets on the basis of skill gap studies.

Training under PMKVY "has been provided through 8,749 centres across 375 job roles. Under the Scheme, a total of 18.03 lakh persons have been trained, 12.9 lakh certified" but again even in this scheme placement percentage remains low – only 12.4 per cent and in absolute numbers, only 2.23 lakh persons (GoI, 2016).

4. India's Skill Challenge

India started witnessing a change in economy as well as demographic dividend, which, according to United Nation's Population Fund (UNFPA) means "the economic growth potential that can result from shift in a population's age structure, mainly when share of the working-age population (15 to 64 years) is larger than the non-working-age (14 years & younger and 65 years & older) share of the population" since 1980s (UNFA, 2017). The opportunity of demographic dividend comes to a country only once in its lifetime and India is currently in the midst of its demographic dividend which means that our working population must be provided with a decent work in non-agriculture sectors of high productivity. The transition from agricultural to non-agricultural sectors needs employability, which, as we have already seen, is very low for our workers. The international experiences show that the most suitable way to increase employability is skills training.

But, unfortunately, in India the rise in demand of skilled labour as well of working age population has failed to initiate a debate about the skill needs. As Mehrotra et al. notes, "there was very little discussion in academic or policy circles about skill shortages in quantitative terms, or supply-demand mismatches in the labour market for specific skills/ trade" (Mehrotra et al., 2014). But the changes soon took place and in the

new millennium when growth jumped above 7 per cent, a need was felt to seriously think over the issue of skill challenge being faced by India. The 11th five-year plan noted that only 2 per cent of the 470 million of total workforce in 2011-12 had vocational training with formal technical and vocational education and training (TVET) system existing in the country and around 8 per cent had non-formal vocational training. It is a dangerous situation as India Skills Report warns that "many jobs are getting mechanised and can be managed by a few people and intelligent algorithms, then we are heading to a large challenge where many of us are unaware of the unknown future. India will have plenty of low to moderate skilled people for jobs that may not exist" (ISR, 2017).

Ministry of Skill Development and Entrepreneurship in its Annual Report 2015-16 notes that in comparison to the developed economies like UK, Germany, USA, Japan and South Korea with 75, 68, 52, 80 and 96 per cent of the skilled workforce respectively, it is estimated that only 4.69 per cent of the total workforce in India has undergone formal skill training. It is also worth noting that in India the general public perception about vocational education is not a positive one. Skilling is viewed as the option only when a person has no hope of making any significant progress in formal academics. What adds to this problem is the limited mobility options available between formal education and skill trainings, lack of coordination between different ministries and departments imparting skills through various schemes, and more than that, lack of trainers (MSDE, 2016). Now at a moment when skill-deepening is happening in manufacturing as well as services sectors – be it hospitality, retail, education, and even construction – there are around 250 million young people in India who are going to enter workforce before 2025 (ISR, 2016). This problem needs to be seriously addressed because, if not provided with proper skills, these young people will ultimately settle as daily wage worker, most probably in agriculture sector which is already facing a huge problem of underemployment. Not only the mental bloc which gives rise to a situation where only 3 per cent of the children reaching higher secondary level opt for vocational streams needs to be removed but also there is a need to develop a "credible, sound, aspirational, national system, which assures quality and international compatibility with the close involvement of the industry" (GoI, 2016). It should be kept in mind that vocational education and skill development are the pre-conditions for sustainable economic development, increased employment, and social equity.

As we have already mentioned, despite all technological developments and policy changes, there are jobs but not in the sectors where they

need to be. So, the first step towards developing our workforce is the identification of the opportunities. ISR notes that "vocational/professional courses which are built keeping the jobs in mind increases the chances of getting a job" (ISR, 2017). During past decades we have successfully managed to evolve "a knowledge-based economy due to abundance of capable, flexible and qualified human capital. However, now there is a need to further develop and empower the human capital to ensure the country's global competitiveness" (ISR,2016).

5. The way forward

The dismantling of Fordist system of production and evolution of global production networks provided giant firms with opportunities to exploit the cheap and abundant labour of the global south and also provided the labour of these capital deficient labour-abundant opportunities to be a part of global economy. But this opportunity is not an unconditional one, as along with capital the multi-nationals brought the technologies and work which may not have been a skill-intensive one from developed countries' point of view but required the labour of underdeveloped south to learn new skills. With the spread of globalisation and removal of restrictions, capital, goods and technologies all are moving with a greater pace, but as the labour is still nationalised, industries are rapidly locating themselves according to the availability of labour force. As the result of all these developments, if an individual needs skills for getting a decent work, then the overall skill levels of the labour force becomes the key of success for a country in order to attract FDI.

But with the rapid change in technology, the skill needs are also changing with a greater pace which is the main reason why even those who have acquired a formal training do not get jobs. The sector that would be affected most because of the future technological changes specially those of artificial intelligence and automation, will be manufacturing. Even in the case of services all the jobs are not equally resistant to the technological changes. There are number of jobs which are soon going to be replaced by the machines. In these circumstances, the emerging sectors and the skills needed to harness the opportunities provided by these sectors need to be identified. An immediate identification of the skills needed for the next ten-fifteen years must be done not only sector-wise but also spatial skill-needs-wise, as it requires making relevant changes in the TVET system as per these identifications because, if the TVET system of a country remains dotted with outdated and rigid curriculum, an improper assessment of sectoral and local industry needs will aggravate the problem

of skill mismatch and joblessness, forcing even those who have received formal training to end up finding jobs in agriculture or construction, from where they may never manage to move out. And, even if a small number of those who received formal training ends up finding jobs in these low-productive sectors, it will discourage the overall working age population to take vocational trainings.

Even after seven decades of independence there remains a large population of India which is either illiterate or educated up to very elementary level. International experiences tell us that only those labour-surplus countries who had enough educated population for skill development managed to exploit the opportunities provided by globalisation. So, in order to make its labour force prepared for the coming opportunities, the very first thing that India needs to do is to increase its investment in education up to the level of at least higher secondary, as this makes the foundation for imparting skills which a person needs to excel in the labour market. Second, we need to develop a robust TVET keeping all this in mind. Hence, being a late industrialising country, India has only limited opportunities in manufacturing as automation opportunities are shrinking here and the past experiences show that the country excels in services. So, it will be a wise decision to focus more on services in which employments are rising and will keep on rising in the coming years. But that doesn't mean that the country should neglect manufacturing because with the rising wages in the countries that have successfully made themselves as manufacturing hubs, it is very much likely that the global giants may shift their manufacturing base to India. Hence, in order to capitalise those opportunities, flexibility needs to be maintained in designing of courses lest the TVET system is not crippled with rigid and outdated curriculum.

References

Bala, S. (2017), Gaps in Education & the World of Work: A Gender Perspective. NOIDA: V.V. Giri National Labour Institute.

Chamarbagwala, R. (2006), Economic liberalization and wage inequality in India, World Development, 1997-2015.

DNA (2013), Retrieved from http://www.dnaindia.com/india/report-only-34-of-graduates-are-employable-survey-1933055

Doogan, K. (2005), Labour Globalisation & The New Economy, B.C.H. SzéllGyörgy (ed.), Perer Lang.

Feenstra, R.C. and G.H. Hanson (2001), Global Production Sharing and Rising Inequality: A Survey of Trade and Wages (Working Paper number 8372), National Bureau of Economic Research, Cambridge.

GoI (2016), Report of the Committee for Rationalization & Optimization of the Functioning of The Sector Skill Councils, MSDE, Government of India.

ILO (2004), Enhancing the Employment Impact of Globalization, Geneva: ILO, November 2-3.

ISR (2016), India's Skill Report, New Delhi: Wheebox, People Strong, Confederation of Indian Industries (CII), Linkedin and Association of Indian Universities.

—— (2017), India Skills Report 2017. New Delhi: Wheebox, People Strong, Confederation of Indian Industries (CII), Linkedin and Association of Indian Universities.

Jha, P.A. (2014), Post-Fordism, Global Production Networks and ImplicationsforLabour: Some Case Studies from National Capital Region, India, WP-172, New Delhi: Institute for Studies in Industrial Development (ISID).

Manyeka, J., S. Lund, M. Chui, J. Bughin, J. Woetzel, P. Batra, S. Sanghavi (2017), Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages, McKinsey Global Institute, Retrieved from https://www.mckinsey.com/featured-insights/future-of-organizations-and-work/Jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages.

Masters, B. (2015), The Nuts and Bolts of Robot-Human Working Relations, Financial Times, July 3.

Mehrotra, Santosh, et al. (2014), Is India's TVET System Responding to the Challenge of Rapid Economic Growth? In S. Mehrotra (ed.), India's Skills Challenge. New Delhi: Oxford University Press.

MSDE (2016), Annual Report 2015-16, New Delhi: MSDE.

NDTV (2014), Retrieved 11.11. 2017, from NDTV: http://profit.ndtv.com/news/economy/article-indian-employers-face-third-highest-talent-shortage-survey-38992.

—— (2016), Retrieved 11.11.2017, from NDTV: https://www.ndtv.com/india-news/no-jobs-rising-workforce-government-confronts-its-worst-nightmare-1413778.

Nedelkoska, L. and G.Quintini (2018), Automation, skills use and training, OECD, Paris: OECD Publishing, doi:https://doi.org/10.1787/2e2f4eea-en.

NITI Aayog (2017), Three Years Action Agenda 2017-18 to 2019-20, New Delhi: NITI Aayog.

OECD (2014), Job creation and local economic development, OECD Publishing, doi:doi: 10.1787/9789264215009-en

Planning Commision (2008), 11th Five Year Plan, Volume 1, New Delhi: Oxford University Press.

Rodrik, D. (2015), Premature deindustrialization, J Econ Growth.

Roy, S. (2014), Labour process and the dynamics of Global Value Chains: A developing country perspective, New Delhi, India: Institute for studies in Industrial Development.

sci.nic.in. (2011), Retrieved from http://www.sci.nic.in/scr/2011_v5_pii.pdf

Sharma, A. N. (2007), Flexibility, Employment and Labour Market Reforms in India, Working paper no. 37, New Delhi, India: Institute for Human Development.

The Hindu (2015), (C. D. Only 8.15 per cent of Indians are graduates, Producer) Retrieved November 16, 2017, from http://www.thehindu.com/news/national/only-815-of-indians-are-graduates-census-data-show/article7496655.ece, August 4.

UNDP (2015), Human Development Report, New York: UNDP.

UNFA (2017), Retrieved on 12.11.2017, from unfa.org: www.unfpa.org/demographic-dividend.

Wheebox, People Strong, Confederation of Indian Industries (CII), Linkedin and Association of Indian Universities (2016), India Skills Report 2016.