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From the informal to the formal economy: Skills initiatives in India

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Abstract: The chapter focuses on skills development for the informal (unorganized) economy. While much effort has been made over the years to improve the skill level of workers in the informal economy as a means for improving their living and working conditions, the challenge remains – and will continue to be an issue well into the future. Given the still-large size of the informal economy in Asia and the Pacific, the extent to which the skills system can respond to the needs of this sector will be key for realizing an inclusive future. Recognizing that India has made considerable effort in meeting this challenge, the chapter examines the experience of India by assessing various reforms and programmes, such as reforming industrial training institutes to be more relevant and responsive through the Centres of Excellence Scheme and the implementation of the Modular Employable Skills programme, which were implemented for improving the skills of informal economy workers. The chapter examines the effectiveness of these programmes and reform initiatives to indicate how and to what extent India has made progress in skills development for the informal economy and suggests policy directions for other countries in the region.

Introduction

Of India's 475 million workforce in 2011–12, some 78 per cent were working in enterprises (both agricultural and non-agricultural) that employ fewer than ten workers (categorized in India as the unorganized sector). All workers in the unorganized sectors are informal. If we define informal workers as persons who do not possess social insurance, then the share that is informal rises to 93 per cent of the total workforce[133] because as much as 62 per cent of workers in the organized-sector enterprises are also without social insurance (Mehrotra et al, 2014).

With the lack of social insurance as the defining feature of informality globally, informal workers in India are thus found in both organized as well as unorganized enterprises. Informality is a problem in any economy, especially for inclusive growth, for three reasons: First, informality is a source of continued poverty and inequality. Most workers in the unorganized sector in India are caught in a low-level equilibrium trap because they are

133 If only the non-agriculture workforce was counted, then some 85 per cent of all non-agricultural workers were informal (Mehrotra et al., 2014).

self-employed own-account workers with little capital. Persons who are wage workers (whether engaged in regular or casual wage work) tend to earn a wage below the legal minimum wage because they receive little or no protection from laws, which mainly apply to enterprises in the country's organized segment.

Second, informality is a problem for inclusive growth. Informal work typically is characterized by little use of technology or low-level technology, which accounts for low productivity per worker. This implies that such enterprises typically generate little surplus. With little access to credit and capital markets and due to information asymmetries, they are rarely able to grow. The result is they can never upgrade their technology or raise their productivity. They are thus caught in a low-level equilibrium. Because they cannot grow into larger enterprises, they cannot even generate new jobs. When new units emerge, they compete in a similar service or good, except that they might operate in another, equally tiny, market with limited reach (such as within their own neighbourhood).

A third reason why informality is the enemy of inclusive growth is that it undermines public finance. Informal workers in unorganized enterprises are likely to be outside the tax net, both for direct and indirect tax purposes. Their ability to survive partly depends on their ability to escape the formal government tax system because it eats into their small surplus. However, the poor tax base in a country that has a large informal economy also means that the government is unable to provide quality services (health, education, social insurance) for precisely that segment of the population who needs it most.

The chapter gives a brief overview of the characteristics of the informal economy in India and examines the skills-related shortages and problems in the country's labour force. It then describes what the skills development ecosystem looks like at present, discussing its five pillars and whether it is capable of overcoming the quantitative challenge of skilling such a large and growing labour force, including informal workers. The chapter argues that the skills ecosystem system is designed to service the organized segments but ends up still catering to the unorganized. The chapter then examines the quality issues with both the education and skills development ecosystems and analyses the issues of relevance of training being imparted, as well as the mismatches between the supply and demand of skills. These quality issues are such that the skill ecosystem is training people but only a small proportion of them are capable of entering formal employment. The chapter presents three case studies of skilling programmes that cater to informal workers, even though at least one of them was supposed to cater to the needs of the organized sector. The chapter concludes with policy implications.

12.1 Informality in India

A large workforce that is informal and engaged mostly in tiny enterprises indicates that the level of education and skills of workers in such enterprises is low (an issue discussed further on). But the implication becomes even graver because of the country's ageing dynamics: The country is at the midpoint of its demographic dividend, which began in the early 1980s.

The dividend is defined as an increasing share of the population in the labour force aged 15–59 and a decreasing share of the dependent population (younger than 15 and older than 60); it will end by 2040. The dividend, which is usually associated with a rise in gross domestic product (GDP) growth, comes but once in the lifetime of a nation; once it is over, it will never come back because the society becomes an ageing one, and the working-age population then must support the growing older population who are not economically productive (while facing rising health costs). Since 2011–12, India has added only 2.5 million young people to its labour force each year who will need decent jobs (Mehrotra, 2018). This number will rise sharply until 2030, to 12 million or so per annum.[134]

Accordingly, the skill development ecosystem in India will need to cope with the vocational skilling not only of the young people joining the labour force but also persons in the informal economy who have only acquired vocational skills informally. And this is a stupendous challenge.

This challenge to inclusive growth stems from the very nature of the growth. As of 2018, India is the third-largest economy in the world in purchasing power parity terms and the sixth-largest at market exchange rates). It is also the fastest-growing economy and is likely to continue its rapid growth over the next two decades, at least. This fast growth will be accompanied by a changing structure of output (larger secondary and tertiary education sectors) as well as an evolving structure of employment (with the share of agriculture shrinking and the share of the two remaining sectors expanding). This structural change will require a better educated and more vocational skilled workforce. Otherwise, the workforce quality will become a constraint upon the pace of structural transformation. In other words, the skills of the labour force will need constant upgrading if the pace of economic growth, and especially its inclusiveness, is not to be compromised.

There is an alternative path to economic growth, but it is characterized by greater inequality rather than inclusion. To prevent exclusions, jobs must grow with GDP growing. However, the logic of capitalism in this phase of transition and sustained GDP growth is that it could be "jobless growth" (not inclusive). If employers cannot find enough skilled and educated workers, they will turn to greater levels of imported technology and inputs, which is likely to be capital intensive and which is already happening in India. This path will lead to greater wage and income inequality because it will create fewer jobs in the secondary and modern services sectors.

Job growth, itself partly dependent upon improving education and skills, is an integral part of the narrative and may be a crucial determinant of how inclusive or exclusionary the GDP growth process is. India's challenge is even greater if we recognize that, generally, there are three types of skills: cognitive (or foundational), non-cognitive (or transversal) and vocational. The challenge for India is monumental because all three types are in seriously

134 In addition, the economy will need to find jobs for persons wanting to leave agriculture (which is already happening on a large scale) as well as for persons who currently are either underemployed or unemployed.

short supply. The foundational skills are sorely lacking, given that while the total population at independence was slightly more than 300 million persons, the total number of illiterate persons in 2011 was also slightly more than 300 million. And it is the latter who are mostly self-employed own-account workers, landless agricultural labourers or construction workers – constituting the vast majority of the informal-sector workers of India (see the Annex table A2).

This chapter concentrates on how these multiple challenges will be met. We know that job growth in the formal economy (or organized sector, as it is referred to in Indian academic and policy parlance) has been less than impressive, despite rapid GDP growth. Unless formal-sector jobs grow faster than the fast-growing economy, they will be unable to absorb new entrants to the labour force, let alone ensure that persons in the informal economy find formal, decent jobs. Thus, the foundational problem the economic policy-makers face is job growth and, with it, job growth in the organized enterprises with social insurance. Even with slow job growth, the demand for better skills grows from formal employers. So, when the skill ecosystem produces poor-quality skills or mismatches between the type of skills needed and what trainees are learning, then the workers inevitably end up finding less than decent jobs in the informal economy.

An implication of the foundational problem is that high-quality skills development is only one supply-side factor, inter alia, that influences whether youthful entrants to the labour force join the formal workforce in the organized segment of industry and services. But there are many factors on the demand side for labour – such as the pattern of growth and the labour market institutions – that impact the decision by employers on whether they will offer formal employment with social insurance. Education levels and skills are but a small part of the underlying dynamics, even when total non-agricultural jobs are growing, whether it is formal jobs that are growing or informal ones.

This conundrum can be easily resolved by ensuring that informality and its concomitant poor skills base in the workforce does not become a constraint upon inclusive growth. If the government can institute a tax-based social insurance system (with old-age pension, death and disability insurance and parental benefits), at least for the poorest informal workers, informality can be sharply reduced. Then the main or binding constraint upon the inclusiveness of GDP growth will be (i) the pace of labour absorption of new entrants and of workers leaving agriculture; and (ii) the education and skill level of both the new entrants as well as those leaving agriculture. Most of the chapter talks about this latter problem and the challenge it poses to Indian policy-makers.

12.2 Education levels and skills issues in the Indian labour force

This section first examines the education level of the current workforce, most of which is employed informally. Then it examines skill levels in terms of vocational training and particularly the issue of how many people need to be trained. The latter is important for planning purposes and has been a subject of much debate.

Education level of the Indian labour force

Some 146 million (or 30 per cent) of India's workforce of 485 million in 2012 are illiterate. An additional 253 million workers (52 per cent) had a secondary level of education (class 10) or less.[135] Barely three per cent of the workforce had technical education at the tertiary level, and another 7.2 per cent had general academic education at the tertiary level (see the Annex for all details). There is high correlation between informality and the low levels of education among workers.

The National Sample Survey data, the best source of data on this subject, allow analysis of the workforce by three types of employment: self-employed, casual labour and regular salaried work. It is not surprising that hardly any illiterate worker has a regular salaried job. Most workers who are illiterate are either casual workers or in self-employment, usually engaged in low-productivity work. The latter two categories of workers are almost entirely found in informal work.

Slightly more than half of the workforce with an education up to the secondary level are self-employed. The international literature reflects a high degree of correlation between self-employment and informality (ILO, 2018). What is more worrying in India is that as many as 75 million persons with ten years of school education are in casual work.

The total number of persons with a senior secondary education (12 years of schooling) (34.4 million) and those who have graduate-level education or more (35.6 million) are roughly similar. Half of the persons with a senior secondary education are self-employed. Less than a third of persons with a senior secondary education are in regular salaried employment (while only 15 per cent of workers with a secondary education have regular salaried jobs). And half of the persons with graduate-level education or more are in regular salaried employment. What is worrying is also that nearly four million persons with senior secondary level of education are engaged in casual work.

Having a technical education (at less than graduate level or more) significantly raises the probability of finding a regular salaried job, compared with persons having only a general academic education.[136] The good news is that the share in the workforce of persons with any tertiary education has been rising, from 7.3 per cent in 2004–05 to 10.3 per cent in 2011–12 (see the Annex table A1).[137]

Both the labour market as well as tertiary education outcomes for women and men are different. It is well known that the labour force participation rate is lower for women (at

135 But 40 per cent of them had less than a Class 8 level of education. Only 15 million workers had a tertiary level or technical education, about half of whom had a diploma (two years post-senior secondary (Class 12) or certificate level (or one-year post-senior secondary), and the other half of this group had graduate-level technical education. See Mehrotra and Parida (2018) for more detailed analysis.

136 The rate of unemployment of persons with graduate general academic education is only slightly lower, at 7.3 per cent, than for persons with a graduate level of technical education or less (at 8.8 per cent).

137 Since 2011–12, the tertiary gross enrolment rate has increased sharply, reaching 26 per cent of the relevant age cohort of 18–23 years by 2016.

23 per cent in 2012) than for men and is one of the lowest in the world (Mehrotra et al., 2014). Even more worrying is that it has been declining. While there were 351 million men in the workforce in 2012, there were only 134 million women. Nearly half of the women were illiterate, compared with less than one third of men. If women acquire education up to the graduate level, whether it is general, academic or technical education, there is high likelihood they will find regular employment. The probability of finding regular employment is slightly greater with a graduate-level education for women than for men.

Two-thirds of workers with a graduate level of education enter the services sector. This is more than seven times as many workers engaged in the manufacturing sector. Services account for 25 per cent of total employment in the Indian economy, while manufacturing accounts for only 12 per cent. The services sector accounts for the majority of workers with a technical education as well. Half of the workers with less than a graduate technical education are employed in the services sector. That share rises to 80 per cent when persons with a technical education at the graduate level are factored in (Mehrotra and Parida, 2018).

Thus, the services sector accounts for the majority of workers with some tertiary-level education, including those with a technical education. For example, more engineering graduates from the prestigious Indian Institutes of Technology end up in finance and other services, while manufacturing and non-manufacturing employment accounts for less than a third of all technical education graduates who have employment.

Skill level of the workforce and the massive need for training

Vocational education and training have remained relatively neglected in India historically. As a result, only 2 per cent of the workforce has acquired vocational education or training formally. An additional 8 per cent of the workforce has acquired vocational training informally. The result is that some 90 per cent of workers have no formal or informal vocational education or training, which compounds the problem.

It is no wonder that when structural shifts were happening, with the GDP growth rate rising sharply over the past two decades, there was sudden government interest in increasing technical and vocational education and training (TVET) capacity in the country. Planning for skills development began with the 11th Five-Year Plan (2006–07 to 2011–12). It was the first plan ever that had a chapter devoted to skills development.

In the 2009 National Skills Policy, the Government estimated that 500 million workers needed to be trained between 2010 and 2022. However, in 2014, when a new government came to power, the need for vocational training was downsized to an estimated 400 million persons (MSDE, 2016) and a new National Skills Policy was announced. Mehrotra (2013) and Mehrotra and Parida (2018) disputed both estimates and, based on analysis of the National Sample Survey data, put the need for vocational training at no more than 200 million persons between 2012 and 2022. In addition, nearly 100 million persons need at least a secondary education over this period to meet the requirements of the non-agriculture sectors.

The 500 million-persons estimate would have resulted in a requirement of training and educating 50 million new workers annually, while the 400 million estimate would have been not much less. These estimates were unachievable mainly because the skills ecosystem was geared in 2010 to train fewer than 1 million persons per annum. Even in 2015 it could only provide TVET to no more than 5 million persons. In fact, this rapid expansion of vocational training providers had already been criticized for focusing on quantity at the expense of the quality of training (Mehrotra, 2014; MSDE, 2016).

In 2016, an expert group[138] for the Ministry of Skill Development and Entrepreneurship (MSDE) estimated that the training capacity in India was seriously inadequate. There are 131,287 secondary schools in the country, in which approximately 37 million children enrol every year. If we take a pass percentage of 75 per cent, about 27.7 million children will graduate every year. There is a total of 102,558 senior secondary schools in which 22.2 million children enrol every year. Thus, about 5.5 million children drop out after ten years of schooling (MSDE, 2016).

Vocational training should aim to attract those 5.5 million students who drop out of school plus around 20 per cent of the students[139] enrolling in senior secondary school, for a total of about 9.9 million students. The training infrastructure should therefore be capable of accommodating about 10 million students each year.

Based on the rationale that the reduction in labour force entrants between 2004 and 2012 related to young people staying in education longer, the system should thus prepare for those new workers as they graduate. And that number is estimated at between 5 million and 10 million persons per annum, including those who leave agriculture and those who are openly unemployed.

There are 3,925 polytechnics institutions in India with a capacity of more than 1.2 million seats (an average of 317 seats per institute). There are 12,412 industrial training institutes (ITIs) with a seating capacity of 2.5 million (an average of 206 seats per institute). Increasing the capacity of the diploma colleges and the ITIs to about 500 trainees per annum would increase total capacity to 8.1 million seats. To reach the ten million per annum training seat target, only some 3,600 new institutions would be needed (at an average of 500 seats per annum) – which does not seem a daunting task. If capacity of each existing institution is not increased, then 7,630 new training institutions will be needed.

Without new capacity to ensure TVET for all young people, they will inevitably enter the informal sector.

The analysis now turns to the skills ecosystem to understand what the problems are with

138 The author was a member of this expert group.

139 This 20 per cent would still constitute a significant scaling up of vocational education at the secondary and senior secondary level of schooling. Any larger proportion would strain the capacity of vocational instructors available in India. Assuming demand, this ratio of 20 per cent could be raised later on, provided the instructors become available.

the institutions that are currently training workers in the economy, especially the informal economy, and why so many apparently vocational trained persons are informally trained.

12.3 The five pillars of the skills ecosystem of India

India's skills ecosystem has evolved over the past 70 years since planned development began in 1951, with the first Five-Year Plan. There are five pillars of TVET in India: (i) vocational education in schools and higher education; (ii) vocational education by the National Skill Development Corporation's (NSDC) private training partners; (iii) public and private ITIs; (iv) in-plant training by companies; and (v) skills development schemes of the 16 government ministries.

Since 1991 and the beginning of the economy's post-liberalization era, the private sector has grown hugely. Its involvement in skills development, however, has not grown proportionately. Overall, general tax revenues are used to fund public and private vocational training partners. Government funds are utilized for all pre-employment training for every pillar of TVET. The Ministry of Human Resources and Development funds vocational education in the secondary school system. The MSDE funds vocational institutes (the public ITIs) and regulates (though does not fund) the private ITIs (each set up after meeting certain criteria of the MSDE). The other 16 government ministries fund their own skills training programmes. The NSDC (created only in 2010) is funded completely by the MSDE, which in turn funds the private vocational training partners and also covers the cost of training provided through the Pradhan Mantri Kaushal Vikas Yojana (Prime Minister's Skill Development Scheme).

First pillar: Vocational education in secondary and senior secondary schools

The Right to Education Act, 2009 makes eight years of general or academic schooling compulsory**.** Until 2013, no vocational education was offered in schools before the senior secondary stage (Classes 11–12). In 2014, however, vocational education became an option in Classes 9–12 and mainly for employability in the services sector. This vocational education is roughly based on the country's National Skills Qualification Framework (NSQF), initiated in early 2014. The NSQF consists of ten levels. Levels 1–3 in service-oriented courses are now available in 6,000 schools (as of end 2017). A total of 225,000 students were enrolled in 2016 (Sharda Prasad Committee, 2016).

Vocational education in the senior secondary school system is in its infancy. However, it has evolved a bit in the sense that it has begun to provide for vertical mobility. Bachelor in vocation courses have been introduced in 150 colleges. However, the long-standing traditional divide between skills versus education remains in Indian society, and there are clear disconnects between skills and knowledge.

Second pillar: Industrial training institutes

The ITI Craftsmen Training Scheme is run by government as well as private institutions. A total of 13,105 institutes (2,293 government and 10,812 private as of 2015) historically formed the foundation of the vocational system in India. While vocational education in its current form is relatively recent, the ITIs were initiated in the early 1960s. They provide training primarily for manufacturing job roles. Industry has also supported the ITIs by adopting some government ITIs and placing its trainees in these institutes. But there are regular industry complaints of non-relevant curriculum. Not surprisingly, employers have had to retrain most of the ITI graduates they absorbed (Mehrotra, 2014), while many other graduates ended up working in the unorganized sector or became self-employed (in the informal workforce either way).

But the problem with ITIs runs deeper. Graduates' lack of employability in organized industry is often the failure of employers to engage with the ITI system. But it is also the cumbersome government procedures that make industry participation a tedious chore for employers. The ITIs have modified their curriculum twice over the past six years, with industry presence in that process not very prominent (Mehrotra, 2014).

The presence of private ITIs does not reflect the participation of employers either; rather, it only indicates the business opportunity for private service providers in skills development. An attempt to create Industry Management Committees to run the government ITIs has had moderate success. The ITIs offer long-term courses but are overshadowed in the numbers trained by the NSDC-funded private vocational training partners, although this is only the case because the latter offer short-term courses (not exceeding four months; see the discussion further on). Despite the weaknesses of it is (discussed at length in Mehrotra, 2014). Studies suggest that the ITIs remain the best option that the industry has today for hiring skilled workers (World Bank, 2015; Mehrotra, 2014).

Third pillar: Private sector providers

The 2009 National Skill Development Policy attempted to adopt a demand-driven approach to skills development and envisaged the significant participation of employers in articulating and meeting skills demand. The NSDC was created as a "market maker" to catalyse private investment. The NSDC, which is within the MSDE, was created in 2010 to finance vocational training by private sector providers.[140] The result was that overnight, a large number of providers emerged due to what they saw as huge market opportunity for skills training, on one hand, and significant government subsidizing on the other. These private vocational training partners were to be accredited by new private-sector bodies, called sector skills councils, that were financially supported by the NSDC (for an initial three-year period). This resulted in such councils cropping up quickly – 41 sectors had a skills council between 2011 and 2016.

140 The NSDC covers 75 per cent of costs, while the provider covers the remaining 25 per cent.

The Government also created the NSQF,[141] which envisaged a common standard for skills development across the country. However, according to a government report (MSDE, 2016), employer adoption of the NSQF has been limited. The skills councils were created as employer-led bodies, but they were all incubated with government funding from NSDC, with negligible contribution by employers. The peripheral employer involvement and ownership by employers (as opposed to private training providers) is reflected in the poor placement percentages and the courses that are not often used, even though they are supposed to have been prepared with industry involvement. Not surprising, the employment or placement record of the private vocational training partners has also been less than stellar; many of their trainees have ended up in the informal economy.

A major reason for the poor employability of trainees is that the training is too short. In the NSDC-funded flagship Pradhan Mantri Kaushal Vikas Yojana scheme, training does not exceed four months. Training providers (affiliated with the sector skills councils) conduct both classroom and practical training as per industry recognized National Occupational Standards.[142] The certification is done by independent assessing bodies accredited by the sector skills councils. The total training capacity is 2.4 million seats per annum (after about five years of operation of the scheme and its predecessor, the Standard Training Assessment and Reward Scheme). The so-called public-private partnership within the NSDC, which had a vision of private ownership, has not delivered and still relies on government funding. The NSDC private vocational training partners were funded for a skills-training business model, but no market-led model has followed, and they remain dependent on government funding.

The NSDC was supposed to conduct studies on gaps in the skills demand. But such studies have been inadequate and cannot be relied on for planning. The NSDC gives targets to the sector skills councils, which are supposed to be industry owned. The NSDC targets given to training partners are based on splicing its own targets (provided by the MSDE). The more than 1,850 qualification packs that were prepared by consultants are too narrow and not understood well by employers or training stakeholders.

Training courses are decided by convenience, and the budget of the vocational training partners is not based on demand, resulting in a skewing to training for job roles with little capital cost. With a fervent chase for numbers of youth trained, the quality of training has deteriorated, and the short-term training is not translating into jobs. Youths, now armed with government skills certificates, are shifting the blame to the Government (see the final section of this chapter for discussion on how these programmes need to radically change if more workers are to be eligible for formal employment).

141 The author of this chapter leads the task force that prepared the blueprint of the NSQF (see Mehrotra, 2016). Unfortunately, the implementation of the NSQF did not follow that design, and many of the current ills of the skills ecosystem owe their origins to the poor understanding among all stakeholders of what role the qualification framework should have in the skills ecosystem.

142 There are issues with these standards, as they were often drafted by consultants appointed by sector skills councils; neither really knew what a standard was meant to be. The result is that these standards have not really been adopted in practice by employers (see MSDE, 2016).

Fourth pillar: Ministry-provided training programmes

Each ministry has its own skills targets, programmes and budgets for skills training. The MSDE is the nodal ministry for skill development. In addition, 16 other ministries provide vocational training. In 2015–16, MSDE courses accounted for 58 per cent of all vocational training students, while all the other ministries combined trained 42 per cent of the students. Eight ministries[143] have set up their own training centre and trainers to meet the perceived skill needs of their sectors.

The nine other ministries[144] do not have any training infrastructure and conduct only short-term training courses of a generic nature with the help of vocational training providers in the private sector or the NSDC training partners. These are mostly run for the benefit of youths and offer subject matter relevant to their ministerial specificity, such as the Ministry of Rural Development for persons living below the poverty line in rural areas; the Ministry of Housing and Urban Poverty Alleviation for youth in urban areas; the Ministry of Tribal Affairs for youth belonging to Scheduled Tribes; the Ministry of Women and Child Development for women; the Ministry of Development of North Eastern Region for youth in that area; the Ministry of Minority Affairs for youth belonging to minorities; the Ministry of Social Justice and Empowerment for youth belonging to Scheduled Castes; the Ministry of Home Affairs for youth living in Jammu and Kashmir State. However, these programmes do not respond to skill needs of employers nor offer a standard course curriculum for trainees. Nor do they have independent assessment and certification machinery. "The training is mostly substandard, supply driven and doesn't have any correlation with the specific needs of the employers. As a result, it does not meet two basic objectives of the vocational training – meeting the exact skill needs of the industry and providing the youth with decent opportunities of livelihood at decent wages," noted the expert group in a 2016 report (MSDE, 2016).

Fifth pillar: Enterprises with in-house training

Only large enterprises conduct in-house training. Not surprising, a World Bank survey of enterprises in India found that only 16 per cent of enterprises in 2009 conducted such training (it was 85 per cent in China). The World Bank survey in 2014 concluded that 36 per cent of all registered enterprises were conducting in-house training. Small and medium-sized enterprises (SMEs) hardly train at all. The lack of a training culture in the enterprises that value getting work done over getting work done in a proper manner has compounded the skills problem in India.

143 Including the Ministries of Agriculture; Micro, Small and Medium Enterprises; Human Resource Development; Textiles; Commerce and Industry; Tourism; Chemicals and Fertilizers and Food Processing Industries.

144 Including Ministries of Rural Development; Housing and Urban Poverty Alleviation; Communication and IT; Tribal Affairs; Women and Child Development; Development of North Eastern Region; Home Affairs; Minority Affairs and Social Justice and Empowerment.

12.4 Quality issues in the formal TVET system resulting in training for informal work

In addition to the insufficient number of young people trained by the TVET system, the skills training provided is often of poor quality, for a variety of reasons, as this section explains.

Instructor shortage

There is a serious shortage of trainers and instructors in the formal TVET system, which leads to poor-quality training outcomes. For instance, the best of the vocational training (which happens to have the longest history in India) is provided in the ITIs. However, Mehrotra (2014) found an acute shortage of well-qualified trainers even in the ITIs (the situation in the other pillars of the TVET system was worse). Slightly more than a third of the ITI instructors were ITI graduates and had been employed immediately upon graduating. Another 20 per cent or so had had some teacher training. Another third of all ITI instructors were those who held a two-year diploma in the subject after their senior secondary education. Their salaries were low and most (some 55 per cent of all instructors) held contractual or ad hoc appointments (Mehrotra, 2014). A previous World Bank study (2007) had found that one third of the instructors had no industry experience.

The secondary and senior secondary school instructors offering vocational education are hired from among persons recommended by the sector skills council project implementing agency. The same applies to all the other ministries offering TVET. Only the Ministry of Micro, Small and Medium Enterprises has its own training institutions, like the ITI system (which operate with German and Danish government assistance).

All the private vocational training partners funded by the NSDC merely draw upon project-implementing agencies that are appointed by the sector skills councils, which are themselves the subject of much controversy (MSDE, 2016). According to a MSDE report (2016): The NSDC and sector skills councils made a mockery of trainers training by giving fresh diploma and engineering graduates two to five days training to become a qualified trainer. The importance of trainers could be judged by the efforts of the central government, who started the Crafts Instructor Training Scheme as early as 1948. The instructor training is of one-year duration, but despite the efforts of the government, the training capacity of trainers in India still stands at 8,268 per annum while we require at least 20,000 trainers per annum.

Apprenticeship is stand-alone activity

A feature of a good TVET system are three components to vocational training: (i) theory; (ii) practical training in a workshop environment; and (iii) practical industry experience. The NSQF[145] makes a provision for such training. However, apprenticeship, which is a normal way in which practical training in an industry environment is provided to trainees (such as the German agricultural technical vocational education and training system), has never

145 The author chaired the Ministry of Human Resource Development Task Force that drafted the NSQF in 2011.

been integral to TVET in India. The Apprenticeship Act of 1961 provides for apprenticeship (promoted by the Ministry of Labour and Employment), but it is conducted as a stand-alone activity in which ITI graduates as well as recent senior secondary school graduates can participate. Even in the case of engineering graduates and polytechnic graduates, in-plant apprenticeship has not become integral to the course curriculum.[146]

Recognition of prior learning remains of poor quality

The result of poor-quality training in TVET programmes for the formal economy results in a situation in which many trainees, even if emerging from so-called formal institutions, end up with informal-sector employment. For them, as well as the millions of informal workers before them over the past half century, there is no recognition of any skills they may have acquired that would help them transition to formal sector employment. Globally, one way out is the recognition of prior learning. This means that anyone who dropped out of school and joined the labour market should be given a second chance to acquire certification for the vocational skills they acquired in the labour market informally.

A typical feature of the rural and unorganized economy is the prevalence of informal apprenticeships. In the absence of formal vocational training institutions in these areas, young people do not get an opportunity to become skilled formally, but they acquire competencies while engaged as informal apprentices. However, in the absence of any certification of their skills, they command low wages and are unable to move vertically or horizontally. There is immense urgent need for recognition of their learning acquired informally.

The NSDC started a recognition of prior learning scheme under the Standard Training and Assessment Reward (STAR) Scheme and that carried into the Prime Minister Kaushal Vikas Yojana. But it did not follow the essence and spirit of recognition of prior learning. The concept was misused to inflate the numbers reached by certifying existing employed contractual workers after giving them two to three hours of training (MSDE, 2016). The expert group report of 2016 (MSDE, 2016) recommended the creation of the following framework for recognition of prior learning:

1. A person who claims to have acquired skills informally and wants to be certified should be tested and any gap in terms of process, professional knowledge, professional skill, core skill and responsibility should be determined.
2. After the identification of the gaps, the person should be trained according to the requirements of the NSQF level at which they want to be certified in relevant competency units.

146 Thanks to this kind of criticism, a nine-month apprenticeship has been tagged on since 2017 to the three-month training programmes of the NSDC-funded vocational training providers. However, it is a bit unclear if this add-on will solve the problem of the poor employability, and inability of trainees to get jobs. See later discussion.

3. Once the person has attained those attributes, they should be assessed by the National Board for Assessment and Certification.

4. The assessment should be for the National Competency Standards as a whole, but if the person has acquired skills in some competency units only, they should be encouraged to acquire competencies in all the units and then be certified so that their skills are recognized at a level that commands higher wages. This will engender them to upward mobility and lifelong learning.

12.5 Examples of training programmes for the informal sector

In addition to the five pillars of the formal TVET system, there are many training programmes that appear to be training merely for work in the informal sector. In this section, we look at such cases to understand how inclusion is still being undermined by such programmes.

Many bodies funded by the Government (under the Ministry of Human Resource Development) offer programmes that focus on skills development principally based on the needs of the informal sector, such as community polytechnics. An expert group of the All India Council for Technical Education (AICTE) recommended in 1978 that a few polytechnics should promote rural development on scientific lines through technology transfer. As a result, community polytechnics were started under a direct central assistance scheme in 1979 in 35 polytechnic institutes. They were envisaged as important centres for the application of science and technology in rural areas and the generation of self-employment and wage-based employment opportunities through non-formal training in various trades and multiple skills. There are now 617 AICTE-approved community polytechnics.

Another institution that provides training for informal sector workers is the Jan Shikshan Sansthan (People's Learning Centre). This programme was launched as an adult education programme of the MSDE, intended to improve vocational skills and the quality of life of workers. It targets adults and youth who have migrated from rural areas as a district-level vocational training programme. In 2012, 221 centres were functioning in the country.

Another resource is the National Institute of Open Schooling. This programme imparts education through open and distance modes, from primary to senior secondary school levels. It offers vocational education to general and prioritized groups (Scheduled Castes, Scheduled Tribes, women, rural people and persons with disabilities) through a network of study-cum-training centres known as accredited training institutes. The National Institute of Open Schooling has a network of 11 regional centres and some 2,067 study centres. In 2012, there were about 1,063 accredited training institutes. The average duration of these courses is shorter than courses in an ITI.

Prime Minister Kaushal Vikas Yojana

The Prime Minister Kaushal Vikas Yojana (PMKVY) was approved by the Government (in 2015), with an outlay of 15 billion rupees (INR) to provide skills to 2.4 million persons (1.4 million new trainees plus 1 million under recognition of prior learning). The NSDC implements the scheme.

The objective of this skill certification and reward scheme is to enable and mobilize a large number of youths to take up outcome-based skills training and become employable. A monetary reward is provided to trainees who complete a training course run by affiliated training providers and are assessed and certified. The training focuses on first-time entrants to the labour market, mostly school drop-outs. Targets are assigned to different ministries and departments, sector skill councils, state governments and various private vocational training partners on the basis of demand emanating from the skills-gap studies.[147]

Under the scheme, the indicative reward amount for trainees ranges from INR5,000 to INR12,500, with a greater amount for the manufacturing, plumbing and construction sectors. The indicative reward for recognition of prior learning amounts to INR2,500 for the manufacturing, plumbing and construction sectors and INR2,000 for other sectors. The training has been provided through 8,749 centres across 375 job roles. Under the scheme, a total of 1.8 million persons have been trained, 1.29 million persons certified and 223,000 persons placed at an average training cost of INR8,319 per trainee. The placement rate is 12.4 per cent.

The expert group (MSDE, 2016) that examined this scheme concluded the following:

- Such an ambitious scheme with an outlay of INR1,500 billion was started without conducting any evaluation of its predecessor, the STAR Scheme, which was provided a budget of INR1,000 billion in 2013–14, with poor employment outcomes. Only 8.5 per cent of the persons trained were able to find employment. But this was the NSDC estimate of employment; the reality will emerge only after a detailed survey of trainees trained and placed.
- A second version of the PMKVY was approved by the Union Cabinet (July 2016) with an outlay of INR12 billion to impart skills training to 10 million people over the next four years (2016–20). However, no evaluation was conducted of the PMKVY in 2015 to determine the outcomes and whether it was serving the twin purposes of providing employment to youth and meeting the skill needs of employers before launching such an ambitious second scheme.
- In consultations with various stakeholders, all of them noted that the targets allocated to them were high and without regard to any sector requirement. Everybody was chasing numbers without providing employment to youth or meeting sector-based employers' needs. Many participants eloquently said that it benefited the private vocational training partners, assessment bodies and sector skills councils only.
- Even if the trained youth were able to access placement opportunities, they received a monthly salary of INR5,000 to INR10,000, while the aim should be to train in a manner and with skills that could command INR40,000 to INR50,000 to make skills aspirational and attract youth towards the training.
- We do not need to chase numbers. The entry into the labour force between 2004–

147 We question the value of these so-called skill gap studies in a previous section.

5 and 2011–12 was only 2 million per annum, which increased to 2.5 by 2015–16. The seating capacity of ITIs and polytechnics alone is 3.85 million. With little effort and using part of the PMKVY outlay, we can double the training capacity in long-term competency-based courses that could provide employment to youths and meet the skill needs of employers. If not, the funding of the PMKVY will continue as a waste of public resources.

Modular employable skills

Yet another scheme of the Government, initiated in 2005–06, is the Modular Employable Skills Scheme (MES, also called the Skill Development Initiative and managed by the Ministry of Labour) catering to workers in the unorganized sector and to school leavers. The skill level of persons already employed can be tested and certified under this scheme through the certification of an informal or experiential learning component. A public-private partnership was envisaged for the scheme, with employers participating at every stage of the design and implementation. And indeed, the centres for training were decided in consultation with industry. Employers and state governments have been conducting the training, while the central Government funds the training. Testing of skills is done by independent assessing bodies, which are not involved in the training delivery.

There are 6,500 private vocational training partners across the country. Their objective is to meet the demand for skills in the services sector, given that is the fastest-growing sector in the economy. Training in the services sector trades does not require huge investment in tools, equipment and machinery, and job entrants are required to do entry-level jobs for four to five years. This Skill Development Initiative was supposed to provide skilled human resources at a faster rate than the two-year courses under the Craftsmen Training Scheme. It was not a substitute for the long-term craftsmen training courses run through the network of ITIs. It also was necessary to run these courses because not many of the ITIs offer skills for the services sector.

During the 11th Five-Year Plan period (2007–12), short-term modular courses were formulated. Subsequently, the number of modules was consolidated and reduced to 632. The training is available through a network of 13,700 vocational training providers throughout the country. Under the scheme, assessments are carried out by 180 independent bodies. The scheme was continued during the 12th Five-Year Plan period, with some modifications and an outlay of INR2 billion. About 2.92 million youth have been trained and tested under the scheme, at a cost of more than INR750 million. Trainees who complete the course are awarded a National Council for Vocational Training Certificate.

Both the NSDC-funded PMKVY and the Modular Employable Skills Scheme (and three other schemes) were examined in a study by the World Bank.[148] In the case of the NSDC, 90 per cent of training providers within the sample were private. For the Modular Employable

148 The other schemes examined were the Ministry of Rural Development's DDU-Grameen Kaushal Yojana, which was previously called Aajeevika; the Rural Skills and Employment Training Institutes; and STEP-UP.

Skills Scheme, 75 per cent of the vocational training partners were private. At least two-thirds of the vocational training partners were located in urban areas, and the remaining were in rural areas.

Around half of the vocational training partners of the PMKVY claimed to get feedback from employers on their curriculum, and about 40 per cent said they hire instructors from the industry or arrange for apprenticeships with the local industry.

Although the survey of 1,995 trainees reported participation in a range of trades, certain trades dominated – they attracted more than 50 per cent of all trainees (table 12.1).

Table 12.1: Top-five courses of the National Skill Development Corporation programme and the Modular Employable Skills Scheme

NSDC	Modular Employable Skills Scheme
Computer	Tailoring
Data entry operator	Tally
Tally	Electrical
Retail sales and marketing	Beautician
Hardware and networking	Computer

Source: World Bank, 2015.

Most trainees are hired by private employers, and, as intended, three-fourths of them are in services (table 12.2). The majority of trainee graduates are hired by enterprises that employ fewer than ten workers, thus, they are effectively in the informal sector.

Table 12.2: Who is hiring beneficiaries?

Employers or enterprises	NSDC	Modular Employable Skills Scheme
% hiring from the scheme	42	36
% private	91	95
Employment sector		
Agriculture	2	2
Manufacturing	23	22
Services	75	76
Size		
Fewer than 10 employees	60	81
10–19 employees	14	10
More than 20 employees	26	9
No. of hiring firms	283	239

Source: World Bank, 2015.

Table 3 provides information on the placement rate at completion of training, and former trainees' job status one to two years later.

Table 12.3: Placement rate at completion of training and job status one to two years later

Programme	Initial placement rate	% working 1–2 years after training	Of them, % in wage employment	Of them, % in self-employment
National Skill Development Corporation	31	32	22	10
Modular Employable Skills Scheme	23	26	18	8

Source: World Bank, 2015.

Job status one to two years after training

As table 3 indicates, the employment rate one to two years after training was 28 per cent overall. This indicator may be more relevant than the initial placement to measure the impact of training because it relates to a period after job search and job adjustment have taken place. World Bank (2015), however, shows that after a period of one or two years, the employment rate is not markedly different from the initial placement rate for all programmes.

Data from a survey of youth of similar age and socioeconomic background[149] who did not participate in any training were used to estimate the counterfactual for each programme. As in other non-experimental evaluations, estimates are obtained controlling for individual characteristics of both treatment and comparison groups, such as age, sex, marital status, education, family income and state of residence. Estimates indicate a modest but positive treatment effect. The participation in skills development programmes increases the employment rate by 7 percentage points overall, with a stronger effect for women than for men (12 percentage points compared with 4.5 percentage points). Given the different population groups targeted by each programme and their different operating modes, estimates were also obtained for each programme separately.[150] The results indicate that participation in the NSDC training increases the employment rate by 11 percentage points, while the Modular Employable Skills Scheme increases employment by 7 percentage points (World Bank, 2015).

Participation in skills development programmes also seems to lead to better-quality jobs, as measured by proxies, such as length of the work day (not more than eight hours worked per day) and whether individuals were given a job contract and/or were provided with a

149 The comparison group comprised youth who had been admitted to any of the reference schemes but did not complete the training and youth of same age and socioeconomic background, such as friends or neighbours of trainees who could have been eligible to undertake the training (World Bank, 2015).

150 In this case, separate regressions were run, with a matched control group for each programme.

pension plan and paid leave by their employer. Although the proportion of workers in the World Bank survey sample with "quality jobs" was small,[151] the analysis suggested that persons who participated in a skills development programme were 7.6 percentage points more likely to have a job contract, 14.7 percentage points more likely to have access to a pension plan and 9.5 percentage points less likely to work more than eight hours a day than control persons (World Bank, 2015).[152]

Assessment and certification are important quality-assurance mechanisms. While the guidelines for these government programmes mandate third-party assessments and certification, in the NSDC, assessment is also carried out by vocational training partners, with no external independent evaluation. While enabling the training partners to carry out assessments has the advantage of a lower cost and a more rapid process, the absence of an independent evaluation gives scope for masking quality deficiencies.

As explained previously, short-term training programmes have some limited benefits. They continue to remain beset with design flaws, which undermine their utility. This information is useful to feed into strategies to improve outcomes. Most importantly, short-term training is leading the majority of persons trained into employment in unorganized enterprises.

12.6 The way forward

This section summarizes what might be implications for policies within four overarching recommendations on the way forward. If the following recommended actions are taken, skills development efforts likely will contribute to improving the prospects of promoting inclusiveness in the economic growth process by preparing workers to enter formal work of high quality in organized enterprises.

Augment the training capacity

The entire skills ecosystem is still too small to offer vocational education and training to the majority of young entrants to the labour force. Not surprising, with limited access to formal training, the number of workers in the informal economy has expanded. One reason why workers have historically joined the informal sector in India is because they have lacked formal vocational training opportunities. If India can increase the capacity of its diploma colleges and ITIs to about 500 trainees per annum, the capacity will increase to a total of 1.96 million seats in diploma colleges and 6.2 million seats in ITIs (for a total of 8.1 million seats). If training capacity is augmented to about 10 million seats per annum, India will need only about 3,600 new institutions, with an average seating capacity of 500 per annum, which does not seem to be a daunting task. If there is no increase in capacity, India

151 Only 15 per cent of workers (trainees and non-trainees) had a contract, 37 per cent had paid leave, 24 per cent were given access to a pension plan and 21 per cent worked more than eight hours a day.

152 The analysis of wage and earnings effects can only be done with a small sample. Information on wages or earnings and work history can only be available for persons (trainees and non-trainees) who are or have been working, reducing the original sample size to about one third. Participation in a skills development programme appears to provide a positive wage premium. The premium is of the order of 21 per cent and is statistically significant. There is an additional wage gain when the content of the training programme is directly relevant for the job being held.

will require 7,630 new institutions.

If there is no new capacity to ensure access to TVET for all young people, they will inevitably enter the informal sector. Or they will continue into higher levels of general academic education. Since there has been a rapid universalization in elementary school enrolment followed by nearly universal secondary-school enrolment in general academic education, there has accordingly been upward demand for tertiary level general academic education. As a result, between 2006 and 2016, the tertiary-level enrolment ratio rose from 11 per cent of the 18–23 age cohort to 26 per cent. Such a rapid increase in general academic tertiary level enrolment in India has caused a precipitous fall in quality at that level. Hence, growing enrolment at the tertiary level is an extremely poor alternative because it does not prepare young people for work. It will be much more effective from the perspective of ensuring employability of youth that they are diverted towards vocational education and training in larger numbers so that they do not continue to higher levels of general academic education. Larger numbers of youths graduating from tertiary institutions' general academic subjects will not lead to their greater employability. Such an outcome undermines inclusiveness in the economic growth process. Hence, access to TVET must grow for young persons of legal working age (beginning at age 15 years).

But augment capacity while ensuring high quality

Without quality training, young workers will continue to enter informal work. Enhancing training capacity while improving the quality of training will require several actions, as the following articulates.

1. **Training of trainers needs to increase and improve.** First of all, the country needs more TVET trainers. The instructor training for ITIs is of one-year duration, but despite the efforts of the Government, the training capacity of trainers in India still stands at 8,268 persons per annum while the system requires at least 20,000 trainers per annum. But this is just for the ITI system. The other pillars of the TVET system also need more and better-quality trainers.

2. **Apprenticeship cannot be stand-alone but must be integral to the curriculum of training.** As noted earlier, a good TVET system offers theory, practical training in a workshop environment and practical industry experience. In India, the only provision for formal apprenticeship has no formal connection to the pre-employment training. Therefore, all pillars of the TVET system must include not only internships as part of the training but also apprenticeships must become compulsory before certification is awarded.

3. **Industry and employer engagement must increase.** All but one of the five pillars of the TVET system (the exception being enterprise-based training and private ITI) is financed by the Government. This makes the TVET system practically entirely supply driven, as opposed to demand driven. Even the enterprise-based training is confined to large-scale corporations among the registered firms. The SMEs that are registered

with any government body do not conduct much enterprise-based training (Mehrotra, 2014). However, this can be changed by the Government making apprenticeship mandatory and requiring registered SMEs to offer apprenticeships. Even in the absence of enterprise-based training, employers can contribute to pre-employment TVET in their own interest, provided the Government negotiates this at appropriate levels with industry. The next section looks at ways this could be done.

Draw in industry to improve TVET and reduce informality

There are five ways in which the TVET system could prepare workers for employment in the organized segment of industry and services. First, if industry wants well-trained people, it should provide professional trainers. Government or private vocational training partners will have to compensate industry for this service, and this process must be facilitated by the government bodies at the state level.

Second, employers must engage with curriculum development institutions of the government that manage the secondary school curriculum (such as the Central Institute of Vocational Education, Bhopal) and for ITIs (such as the Central Staff Training and Research Institute Kolkata, the National Institute for Media Instruction and the advanced training institutes). Industry will also need to be compensated by the state government for this role.

Third, industry must provide internships to trainees in vocational secondary courses, ITIs (private and public) and vocational training partners of the NSDC as well as for those ministries that are conducting long-term training. This, too, must be facilitated by the state governments, in consultation with the central Government.

Fourth, state governments must engage with industry on an institutional basis to ensure that a cadre of assessors from industry are well trained. Stand-alone assessors have cropped up due to NSDC efforts, but that system is less than effective and full of conflicts of interest (MSDE, 2016).

Finally, industry must provide placement counsellors for secondary schools, ITIs and the NSDC vocational training partners as well as the pre-employment training institutes of the Government to provide graduating youth placement guidance.

If all these measures were taken jointly by the Government and industry, there is a possibility that most trainees would not end up in informal work in the unorganized sector of industry and services. However, poor skills alone is not the reason for the growth of informality – there are many others (Mehrotra, forthcoming).

Institutionalize recognition of prior learning

Recognition of prior learning is barely institutionalized in India, even though it has one of the largest numbers of workers in the unorganized sector and in informal work. Only when recognition of prior learning becomes serious can informal workers be regarded as even capable of joining the organized sector. All short-term training in India (for three to four

months) must be converted to recognition of prior learning. This will ensure certification of vocational skills for persons who are already in the workforce but had become workers after dropping out from school and acquiring formal vocational training.

Short-term vocational training should not be imparted to any young person who recently entered the labour force unless it is part of a continuous training in a credit-based system. In other words, short-term training must lead to the accumulation of credits by trainees; they can then re-enter the labour market. But if they are to be given a terminal certificate or diploma, the training must last at least one full year, through the accumulation of credits.

However, three to four months of training can and should be imparted to persons already in the workforce who have acquired skills informally and have low levels of education. Recognition of prior learning must consist of three parts: (i) some foundational cognitive skills (given that a large proportion of workers are without basic cognitive skills); (ii) some non-cognitive and soft skills (given that these are rarely imparted in schools or TVET institutions in India); and (iii) upgrading vocational skills. A recognition-of-prior-learning certificate should only be awarded if these three conditions have been met. Otherwise, it will remain a farce, even if workers need to be prepared to enter the organized sector workforce with some form of certification.

Conclusion

As this chapter explains, there are ways in which a skills development strategy can contribute towards reducing informality of work (though not eliminating it). In the absence of such action, skills development will merely prepare workers for informal work, which is why reducing the size of new entrants to the labour force who are informally trained workers is so critical; this is the way in which skills development is important for inclusive growth. In sum, to reduce inequality, we must reduce informality – but also improve TVET. The informal economy will stay in Asia and the Pacific; that is, informality will exist also in the future of work, not just artificial intelligence or robotics. It is essential for policy-makers in Asia and the Pacific to ensure that their skills strategy does not encourage informality but that it encourages the growth of quality jobs in the formal economy.

Informality of work is characterized by lack of social insurance; this is a necessary condition, but in India, only 7 per cent of all workers (including in agriculture) and 15 per cent of non-agricultural workers are in the formal economy. There are other characteristics of informality (low level of education or skills of workers, low wages, high self-employment or own-account work, no career progression), but these are symptoms, not causes. Providing social insurance for a growing share of informal workers will strike at the heart of informality and is critical to inclusiveness in the economic growth process.[153]

Skills development (along the lines outlined here) will contribute to prepare workers for formal-sector jobs across Asia and the Pacific. But skills are not a panacea for dealing with informality. While skills are critical in dealing with informality, on its own, skills development suffers from limitations as a means of reducing informality. The main instruments for ensuring inclusiveness in the growth process are expanding jobs in the formal non-agriculture sectors along with social insurance for persons left behind in the informal sector.

153 In 2017–18, the Government formulated a Code for Social Insurance for Unorganized-sector workers by converging 15 laws in the statute books and also extending them to the unorganized sector workers. The draft code is on the Ministry of Labour website (https://labour.gov.in) but has not yet been introduced in Parliament as a formal law (as of Sep. 2018).

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Annex

Table A1: Distribution of the Indian labour force, by sex, level of education and types of employment, 2004–05 and 2011–12 (million)

Level of education		2004–05					2011–12				
		SE	RE	CL	UE	LF	SE	RE	CL	UE	LF
	Male+ Female										
General education	Illiterate	102.0	7.9	71.9	0.67	182.5	76.4	7.7	61.5	0.67	146.2
	Up to secondary	132.2	32.5	58.2	5.47	228.4	135.5	38.1	75.3	4.48	253.4
	Senior secondary	12.5	6.8	1.5	1.41	22.2	18.4	10.8	3.7	1.60	34.4
	Graduate & above	9.6	10.9	0.4	1.94	22.9	13.8	18.4	0.9	2.52	35.6
Technical education	Below graduate	2.6	4.2	0.4	0.85	8.0	2.1	5.2	0.5	0.81	8.6
	Graduate & above	1.7	3.0	0.1	0.48	5.2	1.4	4.4	0.1	0.53	6.5
Total		**260.6**	**65.3**	**132.5**	**10.8**	**469.2**	**247.6**	**84.6**	**142.0**	**10.6**	**484.7**
	Male										
General education	Illiterate	45.1	4.9	37.4	0.43	87.9	38.4	4.8	35.8	0.46	79.5
	Up to secondary	98.9	27.9	46.6	3.69	177.1	104.6	32.3	60.6	3.40	201.0
	Senior secondary	10.8	5.6	1.3	0.83	18.5	15.7	9.0	3.3	1.13	29.1
	Graduate & above	8.7	8.6	0.3	1.08	18.7	12.4	14.2	0.7	1.58	28.9
Technical education	Below graduate	2.1	3.3	0.3	0.51	6.2	1.8	4.3	0.5	0.52	7.1
	Graduate & above	1.4	2.4	0.1	0.28	4.1	1.2	3.4	0.1	0.33	5.0
Total		**167.0**	**52.7**	**86.0**	**6.8**	**312.5**	**174.1**	**68.0**	**101.0**	**7.4**	**350.6**
	Female										
General education	Illiterate	56.9	3.0	34.5	0.24	94.7	38.0	2.8	25.7	0.21	66.8
	Up to secondary	33.3	4.6	11.5	1.77	51.3	30.9	5.8	14.6	1.08	52.4
	Senior secondary	1.7	1.2	0.2	0.58	3.6	2.6	1.9	0.3	0.47	5.3
	Graduate & above	0.9	2.4	0.0	0.86	4.2	1.4	4.2	0.1	0.93	6.7
Technical education	Below graduate	0.5	0.9	0.1	0.35	1.8	0.3	0.8	0.1	0.29	1.5
	Graduate & above	0.2	0.6	0.0	0.21	1.1	o0.2	1.1	0.0	0.20	1.5
Total		**93.5**	**12.7**	**46.3**	**4.01**	**156.7**	**73.4**	**16.6**	**40.8**	**3.2**	**134.2**

Note: Higher secondary education includes both regular and diploma certificate courses. SE=self-employed, RE=regular salary employed, CL=casual labour, UE=unemployed; LF=labour force.

Source: Author's estimates based on National Sample Survey unit-level data.

Table A2: Industry distribution of the Indian workforce, by sex, level of education, types of employment, 2011–12 (million)

Level of education	Male				Female				Male & female			
	SE	RE	CL	Total	SE	RE	CL	Total	SE	RE	CL	Total
	General education (illiterate)											
Agriculture & allied	27.2	0.4	20.1	47.6	30.5	0.2	19.0	49.6	57.7	0.6	39.0	97.3
Manufacturing	3.1	1.7	2.1	7.0	4.9	0.4	0.9	6.1	8.0	2.1	3.0	13.1
Non-manufacturing	1.1	0.4	11.9	13.5	0.1	0.2	5.2	5.5	1.2	0.6	17.1	19.0
Services	6.9	2.3	1.7	10.9	2.6	2.1	0.7	5.3	9.5	4.4	2.3	16.2
Total	**38.4**	**4.8**	**35.8**	**79.0**	**38.0**	**2.8**	**25.7**	**66.6**	**76.4**	**7.7**	**61.5**	**145.6**
	General education (up to secondary)											
Agriculture & allied	58.9	0.8	27.9	87.6	20.3	0.3	9.8	30.4	79.1	1.1	37.8	118.0
Manufacturing	10.7	10.5	5.0	26.2	7.2	1.4	1.4	10.0	17.9	11.9	6.4	36.2
Non-manufacturing	3.4	2.7	22.6	28.6	0.1	0.1	2.8	2.9	3.4	2.7	25.4	31.6
Services	31.7	18.4	5.1	55.2	3.3	4.0	0.7	8.0	35.0	22.4	5.8	63.1
Total	**104.6**	**32.3**	**60.6**	**197.5**	**30.9**	**5.8**	**14.6**	**51.3**	**135.5**	**38.1**	**75.3**	**248.9**
	General education (senior secondary)											
Agriculture & allied	7.64	0.13	1.49	9.26	1.41	0.00	0.18	1.59	9.04	0.14	1.67	10.85
Manufacturing	1.31	1.93	0.30	3.53	0.57	0.22	0.05	0.84	1.89	2.15	0.34	4.37
Non-manufacturing	0.44	0.48	1.17	2.09	0.00	0.02	0.07	0.09	0.44	0.50	1.23	2.18
Services	6.33	6.42	0.37	13.12	0.66	1.62	0.05	2.33	6.99	8.04	0.42	15.45
Total	**15.7**	**9.0**	**3.3**	**28.0**	**2.6**	**1.9**	**0.3**	**4.8**	**18.4**	**10.8**	**3.7**	**32.8**
	General education (graduate & above)											
Agriculture & allied	4.06	0.09	0.24	4.39	0.40	0.01	0.03	0.44	4.47	0.10	0.26	4.83
Manufacturing	1.01	1.75	0.06	2.81	0.23	0.18	0.01	0.42	1.24	1.92	0.07	3.23
Non-manufacturing	0.35	0.56	0.32	1.23	0.02	0.06	0.03	0.10	0.37	0.61	0.35	1.34
Services	6.97	11.8	0.13	18.87	0.78	3.97	0.04	4.79	7.75	15.7	0.17	23.67
Total	**12.4**	**14.2**	**0.7**	**27.3**	**1.4**	**4.2**	**0.1**	**5.8**	**13.8**	**18.4**	**0.9**	**33.1**

Level of education	Male				Female				Male & female			
	SE	RE	CL	Total	SE	RE	CL	Total	SE	RE	CL	Total
Technical education (below graduate)												
Agriculture & allied	0.50	0.01	0.09	0.60	0.07	0.00	0.02	0.09	0.57	0.01	0.11	0.69
Manufacturing	0.14	1.61	0.11	1.86	0.05	0.06	0.01	0.12	0.19	1.67	0.12	1.98
Non-manufacturing	0.16	0.49	0.13	0.78	0.00	0.03	0.01	0.04	0.16	0.52	0.14	0.82
Services	1.01	2.23	0.13	3.36	0.22	0.73	0.01	0.96	1.22	2.96	0.14	4.32
Total	**1.8**	**4.3**	**0.5**	**6.6**	**0.3**	**0.8**	**0.1**	**1.2**	**2.1**	**5.2**	**0.5**	**7.8**
Technical education (graduate & above)												
Agriculture & allied	0.14	0.02	0.03	0.19	0.01	0.00	0.00	0.01	0.16	0.02	0.03	0.21
Manufacturing	0.10	0.75	0.02	0.86	0.01	0.03	0.00	0.04	0.11	0.78	0.02	0.90
Non-manufacturing	0.08	0.24	0.02	0.34	0.00	0.03	0.00	0.03	0.08	0.27	0.02	0.37
Services	0.92	2.36	0.01	3.29	0.16	1.0	0.00	1.17	1.08	3.36	0.01	4.46
Total	**1.2**	**3.4**	**0.1**	**4.7**	**0.2**	**1.1**	**0.0**	**1.3**	**1.4**	**4.4**	**0.1**	**5.9**

Note: Higher secondary education includes both regular and diploma certificate courses. SE=self-employed, RE=regular salary employed, CL=casual labour, UE=unemployed; LF=labour force.

Source: Author's estimates, based on National Sample Survey unit-level data.