SUPPLY AND DEMAND FOR SKILLS IN THE INDIAN LABOUR MARKET AND IMPACT OF COVID-19

Mitali Gupta* and Manik Kumar**

ABSTRACT

India has been facing the huge problem of skills–jobs mismatch and high unemployment rates for quite some time, and the COVID-19 outbreak has brought in a new set of challenges. The current study attempts to (i) present an overview of supply and demand for skills and the extent of skill mismatch in the Indian labour market in the pre-COVID-19 period and (ii) examine the impact of COVID-19 on various skill categories. The study used the attainment of general, technical, and vocational education as indicators of skills of a person and examined the status of skill mismatch among people with the aforementioned three education levels on the basis of a skill mismatch index in the pre-COVID-19 period, generated using the Periodic Labour Force Survey data (2018–19). Moreover, the impact of COVID-19 on various skill categories was determined by using a skill spectrum based on the International Standard Classification of Occupations (ISCO-08) published by ILO in 2012. The findings revealed that the extent of quantitative mismatch has further aggravated in the ongoing COVID-19 period, which would be a huge challenge to be addressed in an era of information technology and artificial intelligence.

Keywords: *Skill mismatch, skill acquisition, education, COVID-19, lockdown, digital literacy*

* Assistant Professor, Institute for Studies in Industrial Development (ISID), New Delhi. E-mail Id: miafgr2809@gmail.com. (Corresponding author).

** Manik Kumar, Policy Analyst, Center for Budget and Governance Accountability (CBGA), New Delhi. Email Id: maniktiwary@gmail.com

1. INTRODUCTION

Human capital formation is a measure of the economic value of education and skills acquired by a person. An efficient utilisation and allocation of human resources is critical for economic growth (Sengupta, 2017). Grundke et al. (2017) also recognised that as human capital is acquiring a central position for reaping sustainable competitive advantages in today's era, only a skilled and motivated workforce would be able to provide the necessary momentum and flexibility required by new global entrepreneurs and thus would be the key for enhanced organisational performance in the future.

Hajela (2012) and Froumin et al. (2007) have pointed that India is currently facing a shortage of skills inspite of being endowed with a favourable demographic dividend primarily because (i) the institutions responsible for skilling the population seem to be inefficient in catering to the skill-related demands of the industry and (ii) a sizeable percentage of India's working population is engaged in the economy as a casual or informal workforce, which mainly remains outside the ambit of the formal education and training system. Thus, India's problem is more of a quantitative rather than a qualitative skill mismatch. Thus, requisite and adequate skilling of the labour force should be done at a faster rate than the current rate of economic growth, which can provide equal and sustainable opportunities of livelihoods to all the sections of the society in an era of technological revolution.

Currently, when India is already facing a huge magnitude of skills–jobs mismatch and high unemployment, new challenges have emerged due to the COVID-19 outbreak, which would be altering the skills landscape of India. According to the Center for Monitoring Indian Economy (CMIE) estimates, more than 122 million workers lost their jobs during the nationwide lockdown until April 2020, which started from 24 March 2020. Among these, approximately 75% workers were small traders and wage labourers[i]. The massive job losses, slashing of salaries, and uncertainties regarding further continuance of the existing employment contracts have not only magnified the existing inefficiencies in the skill matching process but also steered the stakeholders of the education sector towards newer directions of the skill acquisition process to handle the current pandemic situation. Thus, anticipating the skills of tomorrow amidst the continuing COVID-19 pandemic is of paramount importance.

The current study presents an overview of supply and demand for skills and the extent of skill mismatch in the Indian labour market in the pre-COVID-19 period and examines the impact of COVID-19 on various skill categories.The paper is organised into the following sections: Section II presents a literature review related to various approaches adopted towards understanding the concept of skill mismatch; Section III presents the conceptual framework, data, and methodology of the study; Section IV presents the findings of the study,

which is divided into two parts: Part I provides an overview of the education system and the extent of skill mismatch in India in the pre-COVID-19 period, and Part II examines the impact of COVID-19 on various skill segments and discusses the future direction of skill acquisition in India amidst the existing pandemic and 'lockdown' conditions. Lastly, Section V concludes the paper with the future policy perspectives.

2. REVIEW OF LITERATURE

Skill mismatch, in general, is defined as 'some sort of discrepancy between the characteristics of employed workers and the requirements of the jobs that they occupy' (Quintini, 2011). According to the ETF Report (2012b), a mixture of deficiencies in the labour market such as wage inflexibilities, limited geographical mobility, lack of clear definitions of skills, matching frictions (ex-retraining or moving costs and incomplete insurance), and lack of information are the main causes of a series of skill discrepancies. While understanding the concept of skill mismatch, at the aggregate level (or rather the firm level as also pointed by Mc Guinness et al. (2017)), we discuss about skills shortage or oversupply[ii], and at the individual level, we understand it as a vertical or horizontal mismatch. Although different approaches are available for identifying and measuring a particular skill or a skill set embodied in the labour force, consensus at the international level identifies two types of skill acquisition: cognitive [basic generic skills that enhance mental faculties and abilities, facilitating the process of reading, writing, and numeracy (simple arithmetic calculations and problem-solving)] and non-cognitive ('soft' skills, more precisely referred to as 'socio emotional' skills that govern patterns of thought, feelings, and behaviour, influencing individual personality traits, attitudes, and motivations).

Studies have shown that the hiring tendencies and preferences of employers have recently shifted towards hiring of labour which possesses both cognitive as well as non-cognitive skills. This phenomenon is changing the way we understand the role of cognitive skilling as a core of human capital formation and has placed a greater emphasis on the role of non-cognitive skilling in human capital formation, and eventually enhancing the capabilities of a person to survive and compete in an ever-changing world of production. However, apart from a few studies measuring skill mismatch in terms of non-cognitive abilities, most studies have primarily focused only on the cognitive abilities of a person which is predominantly measured by the degree of education attained at the level of general, technical, or vocational education as a primary indicator for measuring the same.

Unni (2016) measured skill mismatch by distinguishing between general (type1) and technical (type2) higher education mismatch. On the basis of the acquisition of essential technical skills, Richardson (2007) identified three types of skill mismatch: (i) those few people who have the essential technical skills

but are not using them and a long training period is required to develop the skills, (ii) those few people who have the essential technical skills but are not using them and a short training period is required to develop the skills, and (iii) those sufficient people who have the essential technical skills who are not using them and are not willing to apply for vacancies under current conditions. Based on the evidence from Asian and Pacific countries, Tilak (2003) reported a significant impact of higher education on development. Mehrotra et al. (2013) used the attainment of general, technical, and vocational education to estimate the skilling requirements in India and concluded that the challenge is huge. Although these studies have used the 'level of education' to determine the level of skills of a person, it is not an adequate measure of the skill level. Education has mostly been referred to as a 'fairly blunt instrument' as skill is a socially constructed capability of a person that cannot alone be captured adequately through the acquisition of formal education but is used as a proxy variable in the absence of other relevant indicators. Among the few studies conducted on skill acquisition and skill mismatch in India, a few of them have examined the same in a holistic manner. Thus, the current study attempts to fill this gap by using all the three levels of education, namely general, technical, and vocational, to understand the skill acquisition process and the extent of skill mismatch in the pre- and ongoing phases of COVID-19 in India.

3. RESEARCH METHODOLOGY

3.1 Data Source

The current study uses Periodic Labour Force Survey (PLFS) data for 2018–19 released by the Ministry of Statistics and Programme Implementation to understand the skill acquisition process and examine the extent of skill mismatch in the pre-COVID-19 period. Various other secondary data sources such as Center for Monitoring Indian Economy were also used to introspect the challenges posed by the ongoing COVID-19 pandemic.

3.2 Description of Study Variables

(i) We divided general education into four parts: (i) below primary (having 0–4 years of schooling), (ii) elementary/primary (having 5–8 years of schooling), (iii) secondary (having 9–12 years of schooling), and (iv) tertiary (having 15 and more years of schooling). Technical education is categorized into three types: (i) technical degree (individual having a technical degree in any discipline)[iii], (ii) diploma below the graduation level, and (iii) diploma above the graduation level. Vocational education is divided into (i) informal (hereditary, self-learning, learning on the job, and others) and (ii) formal training.

(ii) We also used a skill spectrum developed by ILO (2012) in its ISCO-08 classification to assess the nature of demand and supply in the Indian labour

market **(Table 1)**. ILO has classified the skill level as skill levels I, II, III, and IV based on the (i) nature of work, (ii) level of formal education, and (iii) amount of formal and informal training.

Table 1: Skill spectrum and its measurement developed by ILO (2012)

Skill level	Definition/Description	Measurement	Skill spectrum
Skill level I	It involves the performance of simple or routine physical manual tasks.	Basic literacy and numeracy + some on-the-job training (ranging from few weeks to months)	Low
Skill level II	It involves the ability to read information (such as safety instructions), make written records of work completed, and accurately perform simple arithmetical calculations.	First (ISCED-97 Level-2) and second stage (Level-3) of secondary education + specialised vocational education (Level-4)+ on-the-job training combined with interpersonal skills	Low and medium
Skill level III	It involves performance of complex technical and practical tasks that require an extensive body of factual, technical, and procedural knowledge in a specialised field.	High level of literacy and numeracy + well-developed interpersonal communication skills. This is obtained by studying at a higher educational institution for 1–3 years following completion of secondary education (ISCED 97 Level 5b) + extensive relevant work experience and prolonged on-the-job training	Medium and medium-high
Skill level IV	It involves performance of tasks that require complex problem-solving, decision-making, and creativity based on an extensive body of theoretical and factual knowledge in a specialised field.	Extended and highly advanced levels of literacy and numeracy + excellent interpersonal communication skills. It is obtained by studying at a higher educational institution for 3–6 years, leading to the award of a first degree or higher qualification (ISCED-97 Level-5a or higher) + extensive experience and on-the-job training.	High

Source: ISCO-08 classification by ILO (2012)

1 Information and Communication Technology.

(iii) The degree of skill mismatch is measured using the unemployment–employment skill mismatch index at all levels of attainment of education, namely general, technical, and vocational. It is estimated by the formula:

$$\textbf{Unemployment-Employment Skill Mismatch Index (UESMI)} = \frac{\textbf{Uj}}{\textbf{Ej}} \times \textbf{100}$$

where U is the number of unemployed persons, E is the number of employed persons, and j is the skill level.

If the number of unemployed persons at a given level of education or skill is more than that of employed persons in the same category, then the supply of this particular skill group is considered to be in excess, and if it is the opposite case, then it is considered to be 'skill gap' in the respective group.

(iv) Estimates for the workforce that is at the risk of losing jobs are determined by considering the variable 'workers without any written job contract', assuming that this section of the workforce, which is informally employed, is at the highest risk of job loss at any given educational level. We estimate this for only hired workers (casual and regular both) because PLFS provides job contract-related data for only these two categories.

4 STUDY FINDINGS

4.1 Assessing Supply and Demand for Skills in the Pre-COVID-19 Period

4.1.1 Supply of skills

Table 2 presents the supply of labour by the level of education, their attributes, and the skill spectrum they belong to. Of the total labour force, which is 518 million according to the PLFS data (2018–19), approximately 57% have general, 4% technical, and 7% vocational education. This implies that majority of the labour force still relies primarily on the attainment of general education to obtain jobs in the labour market and hardly able to acquire education beyond this level due to various reasons. Among the labour force with general education, the share of those with only primary education was the highest (40%). The labour force that is illiterate and has received schooling up to below primary education was approximately 24% of the total labour force. The current supply of skills at the general education level shows that the labour market it is dominated by the creation of low-skilled workers in the economy. Regarding technical education, the share of low- and medium-skilled labour force (share of diploma holders above and below the graduation level was 42% and 17%, respectively) was greater than that of the high-skilled labour force (any technical degree constituted approximately 41%). Similarly, vocational education, which constituted approximately 7% of the educational attainment of the labour force, also contributed largely to the creation of low- and medium-skilled workers

(informal training constituting approximately 75%). Thus, the supply-side of the Indian labour market is predominantly characterised by the creation of low- and medium-skilled workers.

Table 2: Supply of skills, attributes acquired, and skill spectrum by level of education in 2018–19

Levels of education	Attributes acquired	Share of labour force (UPS+USS) (figures in millions and %)	Skill spectrum
General education (primary and above)	**NA**	**294.69 (56.85)**	**-**
Below primary	NA	128.30 (23.89)	Low
Elementary	Routine cognitive skills	207.24 (39.98)	Low
Secondary	Routine cognitive skills, ICT[1] skills and language skills	107.87 (20.71)	Low and medium
Tertiary	Routine cognitive, non-routine cognitive skills, core socio emotional skills, ICT skills, language skills, financial literacy, and knowledge and ability to apply	75.71 (12.89)	Medium and medium-high
Technical education (any type)		**20.61 (4.1)**	**-**
Any technical degree	Routine cognitive skills, non-routine cognitive skills, ICT skills, financial literacy, and knowledge and ability to apply, sector- and job-specific skills	8.65 (40.81)	Medium-high and high
Diploma below the graduation level		8.87 (41.78)	Low and medium
Diploma above the graduation level		3.73 (17.65)	Medium
Vocational education		**37.24 (7.41)**	**-**
Informal	Job-specific skills, ICT skills, English language skills, and some financial literacy	29.06 (75.47)	Low and medium
Formal		9.34 (24.53)	Medium
Total labour force		**518.36**	

Source: Authors' estimates on the PLFS (2018–19) unit level data.

4.1.2 Demand for skills by type of employment

Table 3 shows that a greater share of the labour force was employed as hired workers than as self-employed workers at the level of general and technical education, whereas the scenario was exactly the opposite when it came to vocational education. Moreover, the employed proportion of low- and medium-skilled workers was greater than that of high-skilled workers across both the categories, which also exhibited the high vulnerabilities associated with the various aspects of employment generated in the Indian economy (this was for both casual and regular workers, although casual and regular workers are at a greater risk mainly owing to their low levels of education). Self-employed personnel can further be classified into low-skilled basic/necessity entrepreneurs (pertaining to mainly micro and small units) and high-skilled professional employers (mainly running larger units) (NCAER, 2018). **Table 3** indicates that in India, more of basic/necessity entrepreneurs having a low degree of education at all the three levels are self-employed. Among those entrepreneurs too, the tendency to acquire vocational education and that too in the form of 'informal' training (66%) was more than that in the form of formal training (58%). This perhaps indicates the existence of 'family' and 'generational' enterprises to a great extent compared with the new formal and professional start-ups.

Table 3: Demand for skills and skill spectrum by level of education and by type of employment in 2018–19

Level of education	Hired workers (figures in million and %)	Self-employed workers (figures in million and %)	Skill spectrum
General education (primary and above)	206.16 (45.6)	153.7 (54.4)	-
Below primary	56.66 (54.4)	70.36 (37.3)	Low
Elementary	112 (57.0)	85 (43.0)	Low
Secondary	53.91 (46.3)	45.92 (53.6)	Low and medium
Tertiary	40.25 (64.4)	22.25(35.6)	Medium and Medium-high
Technical education	11.32 (72.3)	8.15 (27.6)	-
Technical degree	5.7 (67.0)	2.8 (33.0)	Medium-high and High
Diploma below the graduation level	4.08 (63.0)	3.29 (37.0)	Low and medium
Diploma above the graduation level	1.54(42.0)	2.06 (58.0)	Medium
Vocational education	13.38 (38.65)	23.96 (61.3)	-
Informal	9.80(34.0)	19.02 (66.0)	Low and medium
Formal	3.58(42.0)	4.94 (58.0)	Medium

Source: Authors' estimates on the PLFS (2018–19) unit level data.

4.1.3 Demand for skills by sector

Table 4 presents the sector-wise nature of employment in 2018–19. Of the nine core sectors of the economy, two sectors, namely agriculture and construction, predominantly hired low-skilled labour; four sectors, namely mining and quarrying, manufacturing, trade, hotel and restaurants, and transports and communication, mostly hired low- to medium-skilled labour; and the remaining three sectors, namely utilities, financial services, and community and personal services, mostly hired in high-skilled labour in 2018–19. This again indicates that the demand for low- and medium-skilled labour by attainment of different education levels has been higher than that for high-skilled professionals in the Indian economy. However, as per the India Skills Report (2019), over the last few years, the services sector[iv], which largely includes utilities, financial services, and community and personal services, has hired the maximum number of job seekers, indicating a shift from the demand of low- and medium-skilled to medium- and high-skilled labour in the economy. As per the current picture of supply of skills presented in **Table 2**, a good deal of mismatch exists between demand and supply of labour in the Indian economy.

Table 4: Demand for skills and skill spectrum by level of education by sector in 2018–19

	No (illiterate+ informal schooling)	General (tertiary)*	Any technical education	Any vocational education	Skill spectrum
Agriculture	46.51	3.59	0.53	10.49	Low
Mining and quarrying	31.34	13.03	5.8	9.63	Low and medium
Manufacturing	22.63	12.57	4.28	21.97	Low and medium
Utilities	16.06	29.69	13.33	18.87	Medium and high
Construction	36.06	4.35	1.83	10.11	Low
Trade, hotel and restaurants	17.06	16.59	3.26	8.82	Low and medium
Transport, storage, communication, etc	18.4	8.92	2.24	18.85	Low and medium
Finance, insurance, real estate and business services	12.84	42.66	12.56	14.7	Medium and high
Community, social and personal services	11.56	45.36	13.53	15.31	Medium and high

Source: Authors' estimates on the PLFS (2018–19) unit level data.

Note (*): In case of general education, only tertiary education is considered for (i) simplifying the presentation of data in the aforementioned table and (ii) it is noted from the estimates at various education levels that meaningful employment is possible only after reaching or completing tertiary education level.

4.1.4 Results of the skill mismatch index in the context of Indian economy

The skill mismatch index shows the difference between the population having a certain level of skill and the workers employed in that particular group. In the present study, we estimated the skill mismatch index at general, technical, and vocational education by using the PLFS data (2018–19). The high skill mismatch index revealed that the number of unemployed persons was more than that of employed persons. **Table 5** presents that across all education levels, the highest mismatch between demand and supply of labour occurred at the technical education level with a skill mismatch index of 24.02. Within general education, the highest index of 20.29 was observed for tertiary education (college level and above), whereas the lowest index of 1.40 was observed for workers with almost 'no education'. This presents a very grim picture of the Indian labour market with both shortage of high-skilled workers and high unemployment rates within the high-skilled category.

Table 5: Unemployed–employed skill mismatch index by level of education 2018–19

Level of education	Employed	Unemployed	UESMI
General education (primary and above)	**25.26**	**32.89**	**6.59**
Below primary	32.39	6.99	1.40
Elementary	34.34	26.73	5.03
Secondary	20.46	26.11	8.25
Tertiary	12.80	40.17	20.29
Technical education	**3.52**	**10.37**	**24.02**
Technical degree	40.50	41.58	24.66
Diplomabelow the graduationlevel	41.44	42.98	24.91
Diplomaabove the graduationlevel	18.06	15.43	20.52
Vocational education	**13.53**	**8.61**	**4.45**
Informal	83.35	18.17	0.97
Formal	16.65	81.83	21.86

Source: Authors' estimates on the PLFS (2018–19) unit level data.

4.2 Anticipating the Impact of COVID-19 on Various Skill Segments and Future Skill Acquisition in India

4.2.1 Estimated job loss due to COVID-19 in different phases of the nationwide lockdown

Table 6 presents the number of pre-COVID-19 employees and job losses due to COVID-19 in a few selected sectors of the economy (Economic Times, 2020). Massive job loss occurred for the workers belonging to the low-and medium-skill spectrums, with the highest loss observed in the travel and tourism sector.

While in the medium- and high-skill spectrums, the major sufferers were internet business and education sectors, followed by the real estate sector. Both these categories of skilled workers need to face their own set of challenges to gain re-entry into the labour market once the economy resumes its normal functioning. Amidst this despair, certain sectors witnessed job gains due to COVID-19 and the prominent among them were information technology, education tech, and banking and finance. However, the numbers reported by the respective sectors indicate that this gain is very low compared with the job loss that occurred in some of the major sectors, which would be very difficult to compensate for.

Table-6: Prominent sectors that suffered the most during the lockdown due to COVID-19 (in million)

Sector that incurred job losses	**Pre-COVID-19 employees**	**Job losses due to COVID-19**	**Skill spectrum**
Auto manufacturing	5	2–3	Low and medium
Travel and tourism	55	38	Low and medium
Restaurants	7.3	2	Low and medium
Steel	2	1.5	Low and medium
Auto dealerships	4	2–2.5	Medium and high
Retail (organised and unorganised)	46	6	Medium and high
Internet businesses	0.4	0.8-1	Medium and high
Real estate	70	14	Medium and high
Media and entertainment	6	0.6–0.7	Medium and high
Education	18	3.6–4.5	Medium and high
Telecom: service and manufacturing	2	0.7	Medium and high
Sectors that showed gains in jobs	**Pre-COVID-19employees**	**Job gains due to COVID-19**	**Skill spectrum**
Information technology	4.3	0.6	Medium and high
Education tech	1	1.5	Medium and high
Banking and finance	4.5	0.15	Medium and high

Source: https://telecom.economictimes.indiatimes.com/news/covid-19-70000-job-losses-in-telecom-industry-in-india/75884075

Actual job loss would be much more than the aforementioned reported figures. By using the variable 'workers without any job contract', we estimate from the PLFS data that total job loss would be approximately 197 million in the ongoing phases of the nationwide lockdown **(Table 7)**. Among the workers who have attained general education, the highest share was attributable to the primary and middle-class educated workers who majorly belonged to the low-skill spectrum. While the situation was almost the same (major job loss for low-

and middle-skilled workers) in case of vocational education, technical education poseda different picture by indicating that almost as high as approximately 44% who constitute medium- and high- skilled workers would be at the verge of job loss in the due course of time. This phenomenon also presents the fact that although attainment of technical education provides a greater level of employability to the outgoing candidates, it is also fraught with equivalent levels of vulnerability of insecure livelihoods for the workers. This vulnerability would become more pertinent in the post-lockdown period, as shown in **Table 8**.

Table 7: Workforce at the risk of job loss due to COVID-19 by level of education and sector (workers having no job contract)

Level of education	**Overall (figures in million and %)**	**Skill spectrum**
General education(primary and above)	**276.85 (74.24)**	-
Below primary	96.11 (25.77)	Low
Elementary	136.73 (36.66)	Low
Secondary	82.50 (22.12)	Low and medium
Tertiary	57.62 (15.45)	Medium and medium high
Technical education	9.10 (4.62)	-
Technical degree	86.12 (43.73)	Medium high and high
Diploma below the graduation level	76.86 (39.03)	Low and medium
Diploma above the graduation level	33.91 (17.22)	Medium
Vocational education	**25.31 (12.85)**	**-**
Informal	20.19 (10.25)	Low and medium
Formal	5.12 (2.6)	Medium
Total	**196.9 (81.99)**	

Source: Authors' estimates on the PLFS (2018–19) unit level data.

Table 8: Impact of COVID-19 at different levels of skill spectrum

Phases of lockdown in India	**Skill mismatch in different levels of skill spectrum**		
	Low	**Medium**	**Medium-high and high**
I: Onset of lockdown from 24 March 2020 (a phase of sudden job loss)	S>D (most impacted)	D>S Started to feel the impact but mostly safe	D>S Largely safe
II: Prolonged phase of lockdown with restrictions until 30 June 2020 (a phase of massive job loss)	S>D Severely impacted	S>D Majorly impacted	D>S Some segments affected but mostly safe
Impact on the existing skill mismatch conditions	The prolonged lockdown conditions have largely led to the phenomenon of reverse migration from the cities to the hinterlands and rural areas, which would intensify the existing skill mismatch in this category of workers to a huge extent. Moreover, this is likely to remain as demand would shrink owing to the growing automation rate in industries.	Demand for middle-order positions are likely to remain stagnant as most jobs would be automated with time but at a slower rate than the low-skilled jobs as middle-skilled jobs constitute a mixture of low- and high-end jobs that may or may not get automated as per the requirements of the industry.	With an already existing shortage of high-skilled labour in the economy, this problem would become more acute and structural changes[v] would be required to produce adequate number of high-skilled workers in the coming future.
III: Conditions of 'unlocking' the economy in a phased manner from 30 June 2020 onwards	Demand would revive but at a slower pace	Supply may or may not be greater than demand	Demand is greater than supply

Phases of lockdown in India	Skill mismatch in different levels of skill spectrum		
	Low	**Medium**	**Medium-high and high**
Impact on the existing skill mismatch conditions	This would be particularly because of the low level of job openings once the economy resumes its functionality but would be equally challenging to bring the laid-off workforce back to work due to forced migration.	Middle-order positions are expected to witness a difference owing to the 'work from home' condition and will not be the same as before as the institutions are using more of 'online' platforms to work. During this mode of working, the existing supply and demand of labour would largely depend on the level of 'digital literacy' of the labour force.	Given the current skill acquisition scenario, skill mismatch in this category would continue to exist and may even aggravate further owing to (i) diversion of resources to create secure livelihoods for the low- and middle-skilled category, (ii) adequate digital literacy, and (iii) lack of quality of higher education in India.

Source: Authors' understanding based on various data sources on job loss due to COVID-19.

Note: In the aforementioned table, S and D denote supply and demand for labour, respectively.

4.2.2 *Assessment of 'feasibility' of 'work from home' condition: basic mode of work during the lockdown*

As per the ISCO-08 classification of occupations, there are three categories of high-skilled roles, managers, professionals, and technicians and associate professionals, and these people constitute approximately 50% of the total labour force (estimates drawn from the PLFS data 2018–19) and are 'largely' able to work from home. The next two categories of middle-skilled roles are clerical support and services and sales workers, and these people may or may not be able to work from home depending on the nature of job requirements ('desk' or 'field'). People belonging to the third and the lower rung of the occupations (involving low- and middle-skilled roles) include skilled agricultural, forestry, and fishery workers; craft-related trade workers; plant and machine operators and assemblers; and other elementary occupations. These people constitute approximately 40% of the total labour force and would certainly not be able to work from home owing to the manual nature of jobs. Given the ongoing lockdown conditions only approximately 50%–60% of the total labour force would be able to perform their job roles under 'work from home' conditions because of (i) the digital literacy they possess while attaining education (the

situation can be assessed from the attributes acquired column of **Table 1**), (ii) conditionally not having any work related to the security aspects of an organisation/region, and (iii) sound access to proper and affordable internet facilities.

4.2.3 Digital literacy: an indispensable skill for future job roles

According to the 2020 statistics from Internet and Mobile Association of India, the world's second highest number of internet users after China are in India, which stands at approximately 687 million users and an overall net penetration rate of approximately 52% (with 88% 4G penetration). Although internal usage has increased manifold from the last few years, it is fraught with certain challenges.

(i) Most users access internet on their mobile phones than on other devices such as laptop, desktop, and tablet and thus face slower speeds of internet due to unavailability of high-speed broadband connections (particularly as in the workstations), which may or may not be conducive for effectively performing office duties from home.

(ii) Two-thirds of the users belong to the age-group of 12–29 years, which is an optimistic figure. However, the top three activities performed using internet are accessing social media, watching entertaining content/downloading content, and other surfing and transactional activities. This shows that most people are equipped with general ICT skills, but acquisition and learning of job-specific ICT skills would still be a challenge for many internet users as the 'work from home' norm has never been imposed on such a massive scale as it is now.

(iii) Adequate and advanced internet infrastructural facilities have largely been concentrated in the metro cities of India (metros alone account for 30% of the total broadband connections) owing to the nature and requirements of the job structure in the last few years. This has largely deprived the 'laid-off' or at 'the risk of being laid-off' workforce of the sound infrastructural facilities when they shift from their existing places and return to their home towns, hampering their effective working for their existing jobs or finding newer ones.

These figures show that given the existing pattern of skill acquisition in India, a very small section of the population would be able to perform productively in the coming days if the norm of 'work from home' becomes a major mode of working, thereby leading to a greater degree of vulnerabilities and lay-offs for the existing workforce. This eventually would further worsen the skill mismatch situation in India.

5 CONCLUDING REMARKS

The findings in the aforementioned section reveal that the Indian labour market is largely characterised by an excess supply of low- and middle-skilled workers. while the demand for such type of workers has not grown proportionately. Owing to the worldwide technological advancements in the last few decades, the nature of demand has shifted towards hiring high-skilled workers wherein Indian educational institutions still fall short in supplying adequate and quality labour. Thus, India's skill mismatch problem is still more of quantitative than of qualitative nature, and this situation is expected worsen in the ongoing and post-COVID-19 period. To address this issue, the currently laid-off workforce need to be reskilled in terms of future skill sets so as to ensure secure livelihoods along with a greater emphasis on bringing the labour force under appropriate social security nets.

Achieving the aforementioned goals would particularly require huge investment to subsidise quality vocational education and training programmes that may be especially inclined towards equipping the labour force with various levels of digital literacy and upgraded courses. This measure should also be accompanied with a greater degree of universalisation of primary and secondary education because an appropriate level of vocational education can be attained only after this universalisation. A greater proactive focus is required for 'smart access' to education, thereby provisioning internet facilities (online platforms) and devices to the currently laid-off workforce and to the upcoming generations at an affordable cost. This would ensure equitable access to high-skilled jobs across different sections of the population.

A greater streamlined approach is required on the facilitation of generation of successful self-employed personnel and entrepreneurs, especially for those who are highly skilled and are currently facing uncertainties of job loss. This will not only provide them sustainability in terms of income opportunities but also strengthen the premise of 'Atma Nirbhar' Bharat.

A focused strategy of decentralisation of job opportunities from the metro cities towards semi-urban, hinterlands, and villages has become an indispensable requirement amidst the current situation of reverse migration and would play a great role in absorbing the currently migrated and laid-off workforce (largely low-skilled workers) and curtailing further mass displacement of labour. Although attainment of regional balanced development has been echoed by the academia for very long, its seems an urgent necessity in the existing situation and calls for an integrated action plan from the various ministries to create job opportunities according to the embodied skill capacities of the labour force.

The study findings indicate that COVID-19 has aggravated the already existing skill mismatch problem and worsened the so called 'stable' livelihood security in India for all categories of workers. The challenge faced by the

government seems huge in terms of (i) combating existing inefficiencies in skill acquisition, (ii) containing the conditions of ever-increasing skill mismatch, and (iii) creating secure livelihood opportunities in the future in the wake of changing job roles and structure.

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(Endnotes)

i This category lost more than 90 million in April 2020 compared with the average loss in April 2019–20. Among the other categories that suffered the most in terms of jobs losses are entrepreneurs (18.2 million) and salaried employees (17.8 million). The average count of entrepreneurs was 78 million in 2019–20, which fell to a drastic 60 million in April 2020.

ii ETF (2012b) defines shortages as the condition in which the number of people holding certain qualifications (skills) is less than the number of available jobs requiring those qualifications (or skills). The opposite conditions are said to be characterised by oversupply.

iii Such as agriculture, engineering/technology, medicine, crafts, and other subjects.

iv Some of the prominent sectors include banking, financial services, and insurance; hospitality; energy; retail; e-commerce; healthcare; and software and hardware development.

v Structural changes in the attainment of a particular level of education (especially of the tertiary order) refer to the provision of more pronounced measures to be undertaken by the government in terms of access, affordability, and quality of higher education.