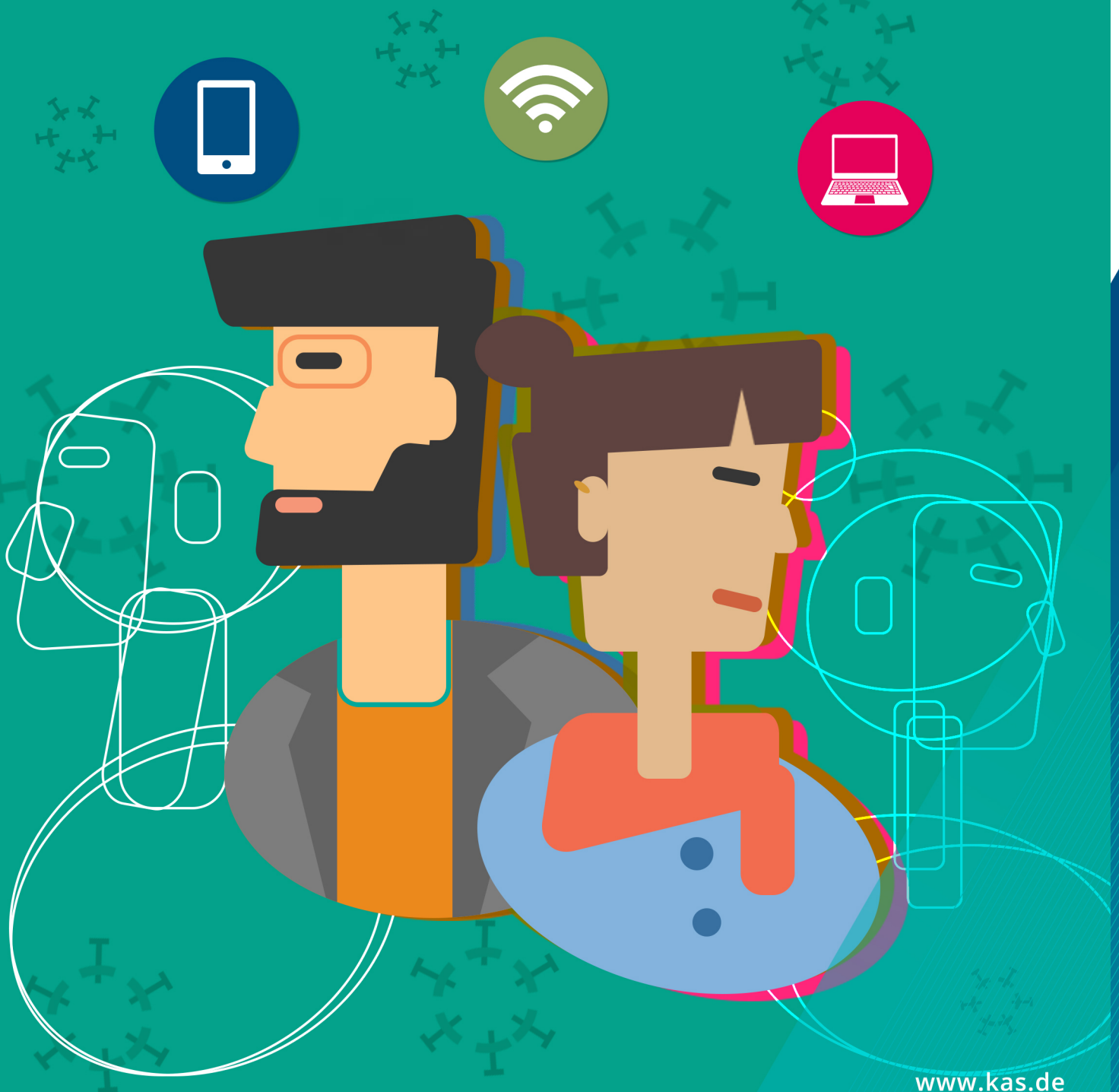# The Future of Work
for the Asian Youth
Country Profile: Indonesia

The Future of Work
for the Asian Youth
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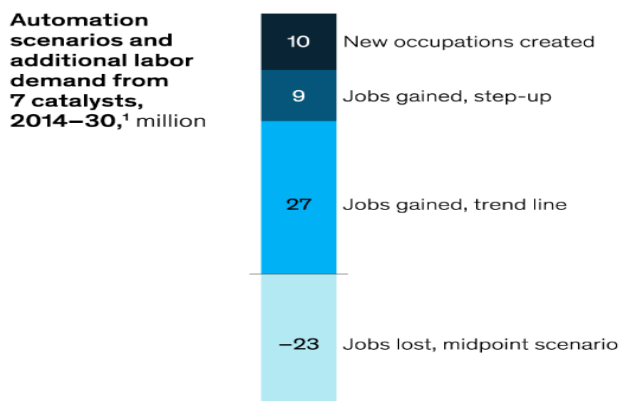Catherine SETIAWAN and Tri Indah OKTAVIANTI

Contents

I.   Introduction

The future of work is now. For years, the technological changes of the Fourth Industrial Revolution have sparked radical shifts in how we live and work. The COVID-19 pandemic has sped up that transformation and has presented us the opportunity and responsibility to pursue a great reset of work. The World Economic Forum (2018)[1] finds that more than 80 % of employers expect to make wider use of remote work and to digitize work processes, and about half of all employers are also preparing to automate some work. McKinsey (2019) further predicted that 60 % of all jobs globally contained up to 30 % of tasks that can be automated.

Figure 1. Automation scenario in Indonesia

By 2030, many more jobs will be created than are lost to automation.

Automation scenarios and additional labor demand from 7 catalysts, 2014−30,[1] million

10	New occupations created
9	Jobs gained, step-up
27	Jobs gained, trend line
−23	Jobs lost, midpoint scenario

[1]We identified 7 catalysts for labor demand around the world: rising incomes; healthcare spending; investment in technology, buildings, infrastructure, and energy; and the marketization of unpaid work. We compared the number of jobs to be replaced by automation with the number of jobs to be created by these 7 catalysts and by change in the labor force from 2014 to 2030. In addition, a study has shown that, on average, 0.5% of the workforce has been working in "new jobs" every year (Jeffrey Lin, "Technological adaptation, cities, and new work," *Review of Economics and Statistics*, May 2011, Volume 93, Issue 2, pp. 554−74, mitpressjournals.org).
Source: "Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages," November 2017, McKinsey Global Institute, McKinsey.com; McKinsey Global Institute analysis

McKinsey & Company

Source: McKinsey Report (2019)

Despite all uncertainties with future of work impacts in Indonesia, McKinsey (2019)[2] has a good projection (see Figure 1) noting that even automation will destroy up to 23 million jobs, it will simultaneously create additional 27 to 46 million new jobs in Indonesia

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1   *World Economic Forum, Future of Jobs Report (2018),* http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf.

2   *McKinsey, Automation and the future of work in Indonesia: Jobs lost, jobs gained, jobs changed, (2019)* https://www.mckinsey.com/~/media/mckinsey/featured%20insights/asia%20pacific/automation%20and%20the%20future%20of%20work%20in%20indonesia/automation-and-the-future-of-work-in-indonesia-vf.pdf.

by 2030.[3] According to Mckinsey, predictable and repetitive physical tasks, as well as data processing and data collection, are some examples that have high potential to be automated. Unfortunately, those who are currently being displaced from the labour market are on average more likely to be female and younger people with a lower wage. That said, to fully capture the productivity boost of automation, Indonesia's government, business, community, and educational institutions must work together in a concerted way to address skills transitions.

This country profile is meant to give readers an understanding about the future of work in Indonesia. **The first part** will provide information about Indonesian young people, looking through the demographic, education and employment trends. **The second part** will analyze future of work opportunities and challenges for Indonesian young people. **The last part** will be policy responses and recommendations to further support young people in transitioning to their work in the future.

II. Indonesian Young People

The UN Secretariat uses the terms "youth" and "young people" interchangeably to mean people aged 15-24 years old.[4] The definition of youth perhaps changes with circumstances, especially with the changes in demographic, financial, economic and socio-cultural settings.[5] For instance, the Indonesian Law on Youth of 2009 defines 'youth' as including persons in the 16 to 30 year age range. Following the Indonesian Law, the term youth in this report will refer to people age 16-30 years old, unless otherwise specified.

A. Demography

Size

With a population of almost 270 million, Indonesia is the fourth most populous country in the world after China, India and the United States. Indonesia Central Statistics Agency (BPS) (2019) mentioned that Indonesia comprised of around 64.19 million young people, spreading across west to east Indonesia.[6] Table 1 below shows that the number of young people in Indonesia makes up almost a quarter of population (24.01 %), meaning 1 out of 4 Indonesian people are youth.

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3 McKinsey, *Automation and the Future of Work in Indonesia, (2019)* < *https://www.mckinsey.com/featured-insights/asia-pacific/automation-and-the-future-of-work-in-indonesia*>.

4 UN DESA, *Website of the Focal Point on Youth;* <*http://undesadspd.org/Youth.aspx*>.

5 UNFPA Indonesia, *Youth in Indonesia (2014),* <*https://indonesia.unfpa.org/sites/default/files/pub-pdf/BUKU_Monograph_No2_Youth_in_Indonesia_ENG_05_Low-res.pdf*>
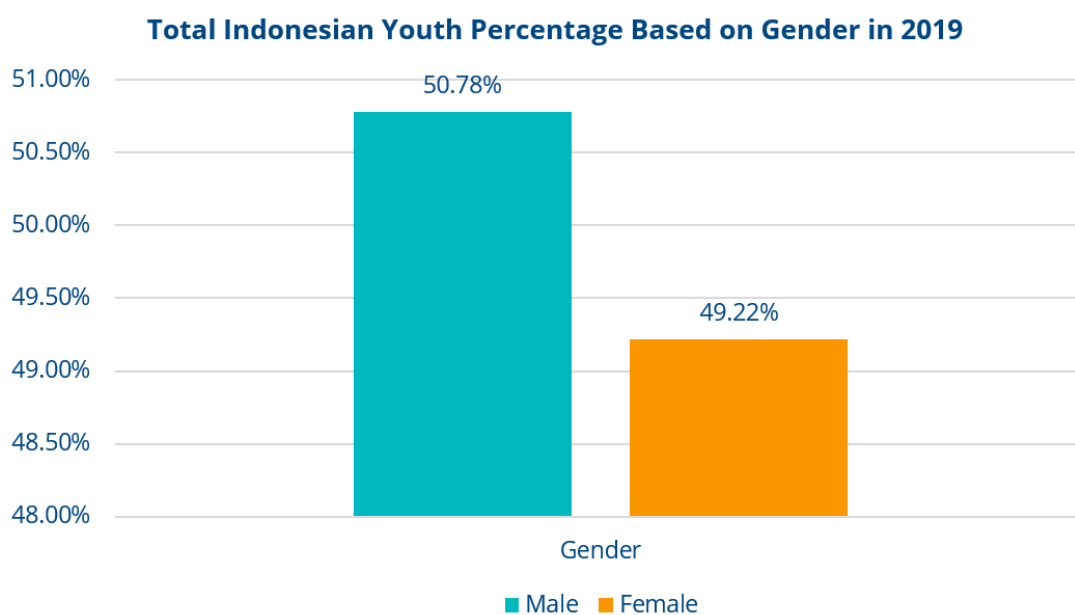
6   BPS, *Indonesia youth Statistic (2019).*

Table 1. Percentage of Indonesian Citizen based on Age in 2019

| Age range (Years) | Demographic Characteristic (%) | | | | |
| | Gender | | Area of Residence | | Total |
	Male	Female	Urban	Rural	
<16	28,76	27,71	27,41	29,29	28,24
16-30	**24,25**	**23,77**	**24,90**	**22,89**	**24,01**
>30	46,98	48,53	47,70	47,82	47,75
Total	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**

Source: BPS Susenas (2019)

Figure 2. Total Youth Percentage based on Gender

Source: BPS, 2019

While looking through gender, Figure 2 shows that out of 64.19 million of youth, there are more male (50.78 %) than female (49.22 %) in Indonesian youth distribution.

Geographical Distribution

Based on Island distribution, we can see in Figure 3 below, from 2004 to 2019, that more than half of the youth were concentrated in Java Island (55.28 %). We can also see that the percentage of youth in other Indonesia nislands has slightly increased in the last decade and a half.

Figure 3. Indonesian Youth Distribution based on Island in 2004 and 2019 (%)

Source: BPS, 2019

Further, Figure 4 below shows that the percentage of youth in urban areas was greater than in rural areas (57.94 % compared to 42.06 %) in 2019.

Figure 4. Total Indonesian Youth Percentage based on Area, 2019

Source: BPS, 2019

B. Level of Education

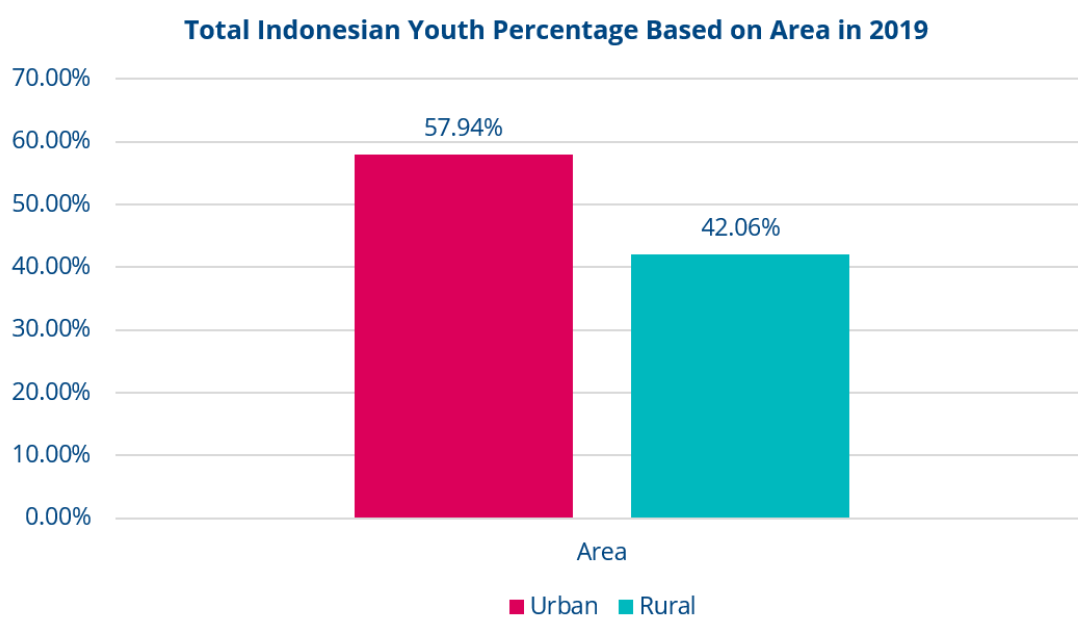**Conventional Education**

As we can see in Table 2 below, the two highest educational attainment for the Indonesian youth are high school graduate or equivalent (37.59 %) and junior high school graduate or equivalent (34.87 %), respectively. There are still 0.85 % youth who never go to school, and only 9.98 % have completed tertiary education.

Table 2. Educational attainment of youth by area, gender, disability status in Indonesia (%), 2019

Demogra-phic Cha-racteristic	Never go to schol	No gradu-ated from Primary School	Primary School (SD)	Junior High School (SMP)	Senior High School (SMA)	Univer-sity
Total	**0,85**	**3,54**	**13,17**	**34,87**	**37,59**	**9,98**
Area						
Urban	0,33	2,98	9,02	32,12	42,93	12,63
Rural	1,56	4,31	18,90	38,66	30,24	6,32
Gender						
Male	0,81	3,88	14,07	34,05	38,74	8,45
Female	0,89	3,19	12,25	35,72	36,41	11,55
Houshold Income Level						
Below 40%	1,26	4,46	20,07	40,79	29,84	3,59
Medium 40%	0,68	3,41	11,79	35,63	39,68	8,80
Upper 20%	0,48	2,27	4,46	23,89	46,43	22,48

Source: BPS, 2019

When viewed according to area, it can be seen that the percentage of youth in urban areas who have completed tertiary education is higher than the youth in rural areas (12.63 % compared to 6.32 %). The same trend can be observed at the high school education level (42.93 % versus 30.24 %). Looking through gender, the percentage of young women who completed tertiary education is higher than men (11.55 % compared to 8.45 %). Meanwhile, for the other levels of education, there is no big difference between male and female youth. Also, it can be seen that the gap in education is also influenced by the economic status of the household. The percentage of youth who have completed senior high school education and tertiary education is seen to be dominated by the top 20 % of household expenditure groups, namely 46.43 % and 22.48 %. Meanwhile, the bottom 40 % of household expenditures mostly dominate youth who complete education at a lower level.

Technology Usage and Digital Literacy

From Table 3 below, we can see that Indonesian youth is mostly using handphones. Only 16.34 % using computer in rural area and 33.48% in urban area. The usage of internet is higher in urban areas (89.62 %) compared to rural areas (69,66 %). The disparity in access to technology can also be seen from the economic status of the youth. A real difference can be seen from the use of the internet in the top 20 % of youth expenditure (96.16 %) compared to the lowest 40 % the expenditure group (67.06 %).

Table 3. Indonesian Youth Using Handphone, Computer and Internet (%)

Demographic Characteristic	Usage of Handphone (from 100%)	Usage of Computer (from 100%)	Usage of Internet (from 100%)
Area			
Urban	96,26	33,48	89,62
Rural	90,36	16,34	69,66
Gender			
Male	94,33	25,21	82,61
Female	93,20	27,37	79,80
Houshold Income Level			
Below 40%	88,62	11,82	67,06
Medium 40%	95,76	24,35	85,70
Upper 20%	98,56	53,23	96,16

Source: BPS, 2019

C. Labor Force Activities

The World Bank (2019)[7] noted that Indonesia has a huge labor potential, considering that many Indonesians are currently in their productive age (15-64 years old). Table 4 below shows that in 2019, the total labor force[8] for Indonesian young people is more than half of all labor activities (61.97 %), comprising of 53.89 % working youth and 8.08 % youth who are unemployed. The rest were active in school, took care of households, and were busy looking for and preparing for jobs. Also, more than half of the working youth are in the age groups of 19-24 years (55.88%) and 25-30 years (70.78%). There are still around 18.51 % of youth aged 16-18 years who are working, even though this group should be considered in to be part of the in school age.

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7   *World Bank, Data on Population Ages 15-64 (% of population), Indonesia (2019), https://data.worldbank.org/indicator/ SP.POP.1564.TO.ZS?locations=ID.*

8   *Labor Force = Number of Employed + Number of Unemployed (World Bank Website).*

Table 4. Percentage of Indonesian Youth Activities in 2019

Demo-graphic Characte-ristic	Labor Activities					Total
	Working	Unem-ployed	In School	Taking Care of House-hold	Others	
Total	**53,89**	**8,08**	**18,52**	**16,68**	**2,83**	**100,00**
Area						
Urban	53,36	8,85	20,52	14,66	2,62	100,00
Rural	54,61	7,02	15,78	19,46	3,14	100,00
Gender						
Male	65,49	9,63	18,19	2,60	4,10	100,00
Female	41,89	6,47	18,87	31,25	1,53	100,00
Range of Age						
16-18	18,51	7,24	61,86	8,29	4,11	100,00
19-24	55,88	11,40	13,31	16,01	3,42	100,00
25-30	70,78	5,10	0,70	21,87	1,56	100,00

Source: BPS, 2019

There is also an unequal participation between men and women in the labor market. Based on gender, youth activity shows that the percentage of male youth working is much higher than that of women (65.49 % compared to 41.89 %). On the other hand, more female youth are in charge of managing the household (31.25 %) compared to their male counterparts. This cannot be separated from the conservative and traditional culture of Indonesian society where men are responsible for providing family support and women are more directed to be smart in managing the household.

Employment Based on Education Level

Based on the level of education (see Table 5 below), the working youth is dominated by youth who have graduated from senior high school (SMA) at 46.36 %, while the percentage of working youth who have graduated from college is only 15.36 %. When viewed by area of region, there are clear differences in the pattern of education levels between urban and rural youth workers. In urban areas, the majority of youth workers are secondary school graduates and above. While the majority of youth who work in rural areas are only junior high school graduates and below.

Table 5. Percentage Working Youth based on Demographic and Education Level

Demo-graphic Characte-ristic	Education Level					
	No gradu-ated from Primary School	Primary School (SD)	Junior High School (SMP)	Senior High School (SMA)	University	Total
Total	**4,77**	**13,18**	**20,34**	**46,36**	**15,36**	**100,00**
Area						
Urban	2,82	9,23	16,75	51,92	19,28	100,00
Rural	7,38	18,49	25,15	38,88	10,09	100,00
Gender						
Male	5,58	15,16	21,47	47,09	10,70	100,00
Female	3,45	9,98	18,50	45,18	22,90	100,00
Range of Age						
16-18	5,97	15,83	42,69	35,42	0,08	100,00
19-24	3,88	10,82	17,43	57,65	10,22	100,00
25-30	5,32	14,73	19,58	38,69	21,68	100,00

Source: BPS, 2019

Employment Sectors

The Indonesian Institution of Social Security employment (BPJS)[9] define "formal worker" as an individual who works and receives salary, wage or other compensation forms from an employer. For example, employees who work in government administration, defense, and social security; as well as in education services, health services, transportation and warehousing, etc. On the other hand, "informal worker" is a worker engaged in activities or any economic efforts independently to obtain income. Informal workers are those who are self-employed and are free workers in the agricultural and non-agricultural sectors. Examples of informal workers include street vendors, public transportation drivers, etc.

Table 6 below shows that in general, the employment status of the formal sector youth is higher than the informal sector. More than half of youth workers (60.30 %) work in the formal sector, and the rest (39.70 %) in the informal sector. The composition looks not much different according to gender. However if differentiate by area, more urban youth work in the formal than in the informal sector (72.59 % versus 27.41 %). In contrast in the rural areas, there are more youth workers who are employed in the informal sector compared to the formal sector (56.22 % versus 43.78 %).

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9   BPJS Ketenagakerjaan website <*https://www.bpjsketenagakerjaan.go.id/en*>.

Table 6. Indonesian Youth Percentage based on Status of Work and Main Business Field, *2019*

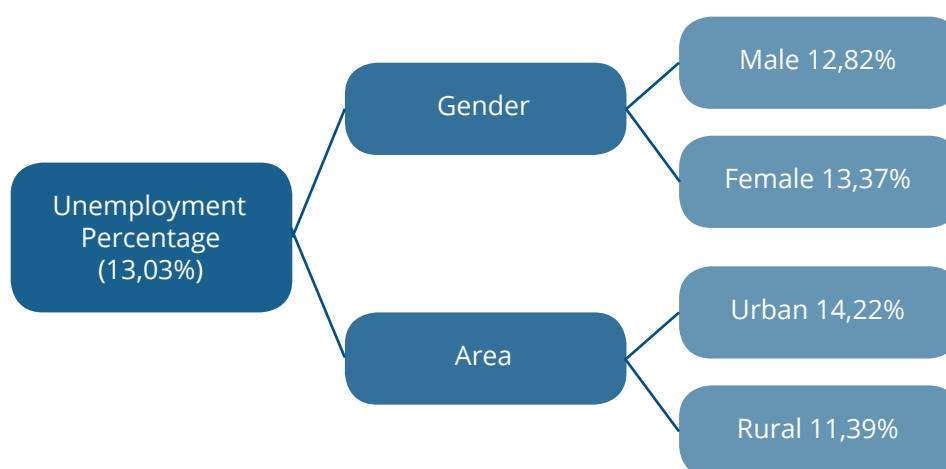| Demographic Characteristic	Factor						
	Status of Work			Main Business Field			
	Formal Worker	Informal Worker	Total	Agriculture	Manufacture	Services	Total
Total	**60,30**	**39,70**	**100**	**18,43**	**26,37**	**55,20**	**100**
Area							
Urban	72,59	27,41	100	4,76	28,57	66,66	100
Rural	43,78	56,22	100	36,78	23,41	39,80	100
Gender							
Male	59,11	40,89	100	21,88	29,54	48,57	100
Female	62,22	37,78	100	12,84	21,24	65,92	100
Education Level							
No graduated from Primary School	30,66	69,34	100	50,92	23,76	25,32	100
Primary School (SD)	38,38	61,62	100	36,17	31,02	32,81	100
Junior High School (SMP)	44,51	55,49	100	25,85	31,97	42,18	100
Senior High School (SMA)	67,82	32,18	100	11,90	27,77	60,13	100
University	86,53	13,47	100	3	11,53	85,46	100
Range of Age							
16-18	42,80	57,20	100	28,16	22,54	49,30	100
19-24	64,41	35,59	100	17,02	27,77	55,22	100
25-30	59,40	40,60	100	18,22	25,77	56,01	100

Source: BPS, 2019

Dividing business field classifications into three sectors is useful for looking at the structure of the economy based on natural resources (agriculture), the production process (manufacturing), and human resources (services). Table 6 shows that the services sector dominates youth employment by age, area and gender. Meanwhile, youth in 16-18 years age group (school age) who are working in agriculture sector is greater compared to other age groups. If we link the level of education and the business field of youth workers, most youth with elementary education and below are dominating the agriculture sector; and in contrast, only 3 % of youth graduated from tertiary education are in the sector.

Unemployment

Open Unemployment Rate (TPT) is the percentage of the total unemployed (8.08 %) against the total labor force (61.97 %). BPS (2019) noted that the TPT of Indonesian youth in 2019 was 13.03 %, indicating that out of every 100 youth in the workforce, there are around 13 youth who are not working and are preparing a business or looking for work.

Figure 5. Indonesian Youth Open Unemployment Rate (%), 2019

Source: BPS, 2019

Figure 5 shows that the TPT of youth in urban areas was higher than in rural areas (14.22 % compared to 11.39 %), and by gender, the TPT for female youth was slightly higher than that of male youth (13.37 % compared to 12.82 %). Based on education level (see Table 7), the 2019 TPT score of youth with secondary school education was the highest (16.27%), followed by tertiary education (12.18 %), then junior high school (9.83 %).

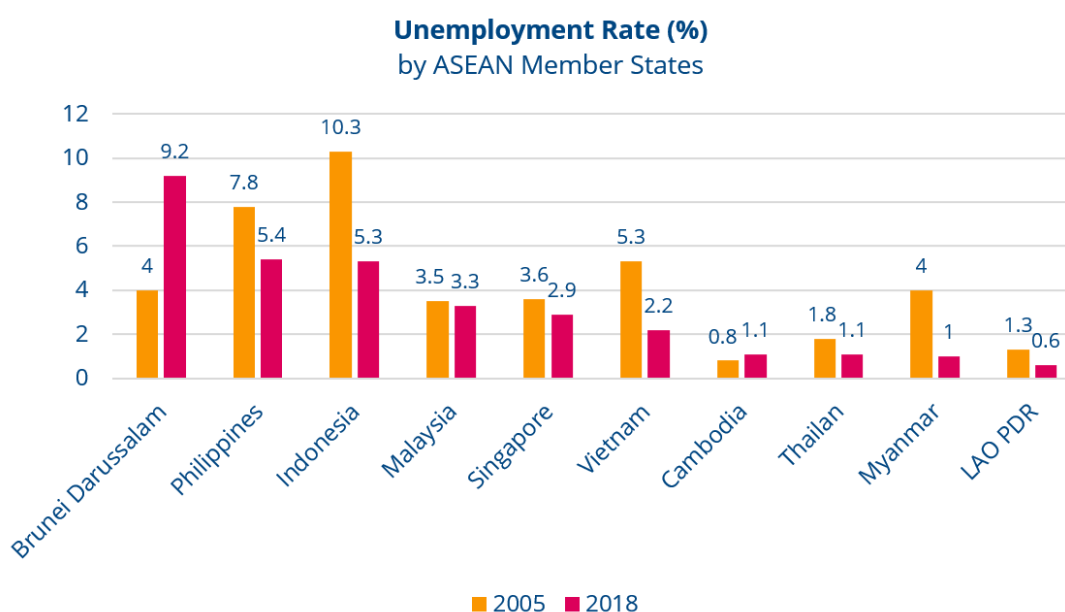**Table 7.** Indonesian Youth Open Unemployment Percentage based on Educational Attainment in 2019

Demo-graphic Characte-ristic	Education Level					
	No graduated from Primary School	Primary School (SD)	Junior High School (SMP)	Senior High School (SMA)	University	Total
Total	7,36	8,66	9,83	16,27	12,18	13,03

Source: BPS, 2019

The ASEAN Secretariat (2018) reported that compared to other Southeast Asian countries, the unemployment rate in Indonesia is still considerably higher. As we can see in Figure 6, Indonesia's unemployment rate (5.3 %) is still in the top three, after Brunei Darussalam (9.2%) and the Philippines (5.4%).

Figure 6. ASEAN unemployment rate (2005-2018)

Unemployment Rate (%)
by ASEAN Member States

Source: ASEAN Secretariat, ASEANstats database (2005-2018).

Worse, the current prolonged economic downturn due to the COVID-19 pandemic did impact the rate of unemployment in Indonesia massively. The National Development Planning Agency (Bappenas) announced that 3.72 million people have been laid off since the pandemic outbreak started in March 2020.[10]

Income Level

In general, Table 7 below show that the average income of working youth is around 2 million rupiah per month. Based on the type of area, it can be seen that the pattern of income distribution is uneven between rural and urban areas. More than half of youth workers in rural areas earn an income of less than 2 million IDR per month, while more than half of youth workers in urban areas earn more than 2 million IDR per month.

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10   *The estimate does not include workers whose wages are cut due to reduced working hours.*

Table 7. Income Level for Indonesian Working Youth per Month, 2019

Demographic Characteristic	Income (%)				
	Below 1 Million IDR	**1 Million – 1,9 Million IDR**	**2 Million – 2,9 Million IDR**	**3 Million IDR and More**	**Total**
Working Youth	19,88	31,05	23,45	25,61	100,00
Area					
Urban	13,96	28,60	24,33	33,11	100,00
Rural	30,23	35,34	21,91	12,52	100,00
Gender					
Male	14,93	31,94	25,91	27,22	100,00
Female	28,46	29,52	19,19	22,83	100,00
Education Level					
No graduated from Primary School	31,99	37,65	21,25	9,12	100,00
Primary School (SD)	28,21	38,82	22,76	10,21	100,00
Junior High School (SMP)	24,19	37,76	24,37	13,67	100,00
Senior High School (SMA)	15,55	30,08	25,17	29,20	100,00
University	19,09	20,11	18,71	42,09	100,00

Source: BPS, 2019

The 2020 Global Gender Gap Index (GGGI)[11] shows that Indonesian women earn less than the men's estimated income. Consistent with GGGI, Table 7 also shows that for salary above 3 Million IDR/ month, most female youth workers (22.83 %) also earn less than male youth workers (27,22 %). Further, according to the highest education completed, it can be seen that most of the youth with the qualifications of tertiary education are able to earn more than 3 million per month. However, there were still 19.09 % of youth with the same educational qualifications, earning less than one million. This means that there are still workers who do not receive a reciprocal income in accordance with their educational qualifications. This shows a gap for income and education mismatch in graduates competency and job demand. This gap eventually forces youth to be willing to do any work even with an income that does not match their educational qualifications.

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11   *World Economic Forum, 2020 Global Gender Gap Index (January 2020).*

Dream Job and Recruitment Trend

LinkedIn (2017)[12] released its first Childhood Dream Jobs survey findings. Based on the survey, close to 60% of young professionals in Indonesia are in completely different roles from their dream jobs. More than 55% of them highlighted that they do not have the opportunity to follow their childhood dreams due to their education qualification and skill sets. The other obstacles for not following their dream jobs are not having the right financing and access to the right network.

Below, Figure 7 shows the ten most desirable jobs based on recruitment trends in Indonesia. As a result, the most desired job in the country as of August 2020 is in retail sale jobs. The second most desired job is in relation to Information and Technology (IT), with accountant and marketing jobs following in the third and fourth place, respectively.

Figure 7. Ten most desirable jobs in Indonesia based on survey by Jobstreet.com

Recruitment Trend in Indonesia
10 most desirable jobs on Jobstreet.com

Source: Pre-employment card's web portal, Feb 2020.

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12   Lee, Linda, "What was your childhood dream job?" (2017) Retrieved from https://www.linkedin.com/pulse/what-your-childhood-dream-job-linda-lee/.

III. Future of Work

Data, decentralisation and automation are the defining concepts of the future of work.[13] Further, Deloitte (2019) defines the future of work as "the growing adoption of Artificial intelligence (AI) in the workplace, and the expansion of the workforce to include both on- and off-balance-sheet talent".[14] Automation and AI are different concepts and will have varying impacts on the future of work.

Automation is a broad category describing an entire class of technologies rather than just one. A report from Brooking Institute (2020) mentioned that AI is part of automation, like robotics and software.[15] Automation substitutes human labor in both physical and cognitive tasks, especially those that are predictable and routine like machine operators, food preparers, clerks, or delivery drivers; and activities that seem secure including management and development of people, applying expertise to decisionmaking, planning and creative tasks, interfacing with people, and the performance of physical activities and operating machinery in unpredictable physical environments.

AI on the other hand focuses on machine learning, or using algorithms to find patterns in large quantities of data. The technology's relevance to the workplace is less about tasks and more about intelligence. AI theoretically substitutes more interpersonal duties such as human planning, problem-solving, or perception, instead of the routine tasks mentioned in automation. That said, some topline occupations exposed to AI's effects are related to planning and creative tasks, interfacing with people, management and development of people, applying expertise to decisionmaking. Although much of AI technology is still in development, tasks that involve human cognition can theoretically be replaced in the future by AI.

Our socioeconomic system is entering a phase of accelerated transformation. Automation and AI will bring changes to the nature of work. However, it is important to distinguish that the impact of automation will vary across occupations, and unemployment may increase among low wage, low education roles in occupations characterized by rote work. On the other hand, AI's potential economic disruption may be felt by better-paid and better-educated white-collar workers in the formal sector.

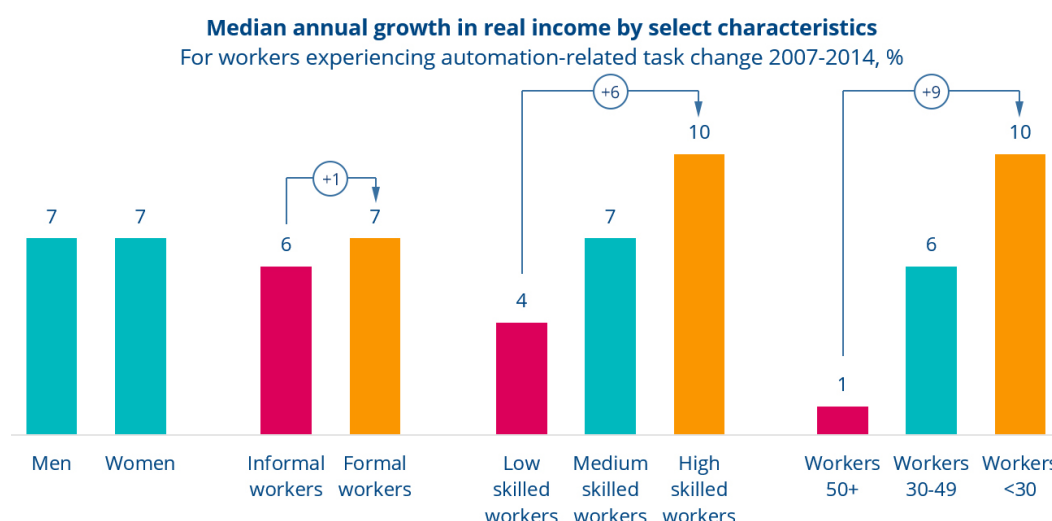13 *Rijmenam Mark, 3 Concepts that Define the Future of Work: Data, Decentralisation and Automation, (2020)* *https://vanrijmenam.nl/3-concepts-that-define-future-of-work/*

14 *Deloitte, Future of Work (2019)* *<https://www2.deloitte.com/us/en/insights/focus/technology-and-the-future-of-work.html>.*

15 *Gaynor Michael, Automation and AI sound similar, but may have vastly different impacts on the future of work, (2020) <https://www.brookings.edu/blog/the-avenue/2020/01/29/automation-and-artificial-intelligence-sound-similar-but-may-have-vastly-different-impacts-on-the-future-of-work/#:~:text=Artificial%20intelligence%20can%20be%20a,the%20automation%20report%20focused%20on.&text=In%20the%20more%20recent%20AI,in%20large%20quantities%20of%20data>*

A. Potential for Indonesia

The public debate about automation in Indonesia, as elsewhere, often focuses on the risks for the future of work. However, Indonesia is actually poised for growth. The Indonesian youth are among the most confident in facing automation (OECD, 2019), McKinsey (2019) reported that automation can create twice as many new jobs than jobs lost. The creation of new jobs will primarily be driven by automation in infrastructure and consumer spending.[16] From an income level perspective, Figure 8 shows an additional positive effect of automation in Indonesia. It shows that income growth can be seen in automation task change, especially for younger, higher skilled and formal workers.

Figure 8. The impact of automation depends on the age group, gender, job type, industry or sector type, and skill-set

Median annual growth in real income by select characteristics
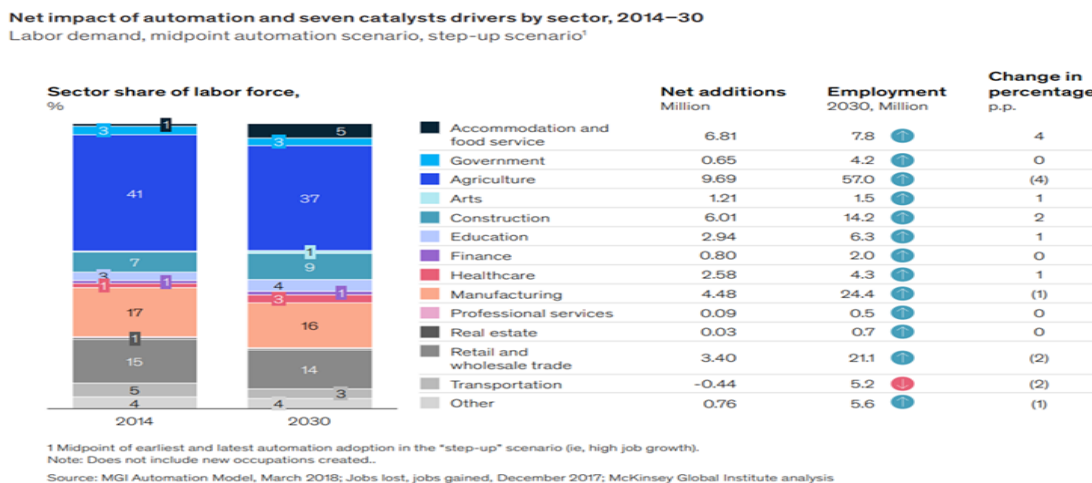For workers experiencing automation-related task change 2007-2014, %

Source: Prospera & AlphaBeta, 2019.

From an employment sector perspective, we can see in Figure 9 that automation is predicted to increase employment in mostly all sectors. The highest employment benefit is seen to impact services sectors the most.

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16   *Jakarta Globe, Automation to Create More Jobs for Indonesia Than It Destroys by 2030: McKinsey, (2019) <https:// jakartaglobe.id/news/automation-to-create-more-jobs-for-indonesia-than-it-destroys-by-2030-mckinsey/>*

Figure 9. Net Impact of Automation and Seven Catalysts Drivers by Sector, 2014-2030

Net impact of automation and seven catalysts drivers by sector, 2014—30
Labor demand, midpoint automation scenario, step-up scenario[1]

Sector share of labor force, %		Net additions Million	Employment 2030, Million	Change in percentage p.p.
Accommodation and food service		6.81	7.8	4
Government		0.65	4.2	0
Agriculture		9.69	57.0	(4)
Arts		1.21	1.5	1
Construction		6.01	14.2	2
Education		2.94	6.3	1
Finance		0.80	2.0	0
Healthcare		2.58	4.3	1
Manufacturing		4.48	24.4	(1)
Professional services		0.09	0.5	0
Real estate		0.03	0.7	0
Retail and wholesale trade		3.40	21.1	(2)
Transportation		-0.44	5.2	(2)
Other		0.76	5.6	(1)

1 Midpoint of earliest and latest automation adoption in the "step-up" scenario (ie, high job growth).
Note: Does not include new occupations created..
Source: MGI Automation Model, March 2018; Jobs lost, jobs gained, December 2017; McKinsey Global Institute analysis

Source: McKinsey (2019)

B. Challenges for Indonesia

Despite Bappenas (2020) prediction of demographic bonus from 2020 to 2035- as Indonesia working age group is expected to reach 70 % of the total population by 2030- there is a growing concern about the sluggish economic growth in the last few years. As mentioned in the previous chapter, Indonesian labor has low productivity and low added value[17]. The combination of low labor productivity and low value added labor can lead to the middle income trap. To avoid the middle income trap, economic growth of at least 5 percent each year (until 2045) need to be mantained and supported by improving human capital and boosting infrastructure development in Indonesia.
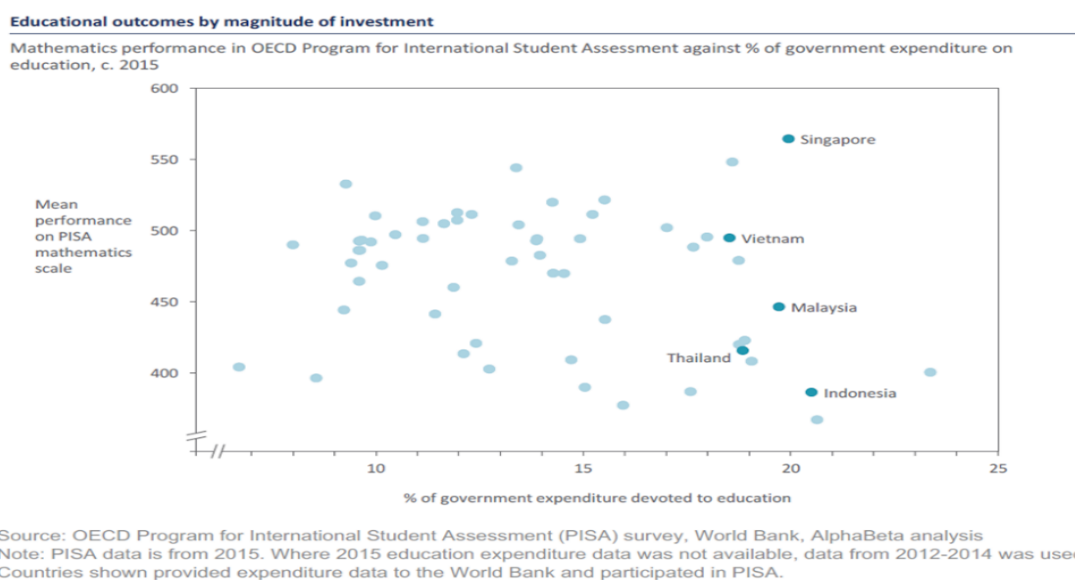
Further, as the world and the nature of work are increasingly reshaped by technological changes, related skills development and human capital are playing an even greater role in the country's future economic development. Unfortunately, human capital remains an issue in Indonesia. LinkedIn (2019)[18] mentioned that creativity and critical thinking skills are very much needed in advancing technology and automation. However, as shown in Figures 10 below, Indonesian youths are lacking some basic skills, especially in mathematics and logic, which are fundamental in developing an ability for critical thinking in adopting technology.

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17   *Middle Income Trap: a situation in which a country suffers economic slowdown after achieving middle-income status and is unable to move to a high-income level*

18   *Marr, Bernard, The 10 Vital Skills You Will Need for the Future of Work (2019), https://www.linkedin.com/pulse/10-vital-skills-you-need-future-work-bernard-marr/.*

Based on the OECD Pisa Report (2018)[19] Indonesian students score among the lowest, ranked 73rd in mathematics, 74th in reading and 71st in science among 79 assessed countries. These rangkings were even lower than in 2015. According to the report, the Indonesian students' mean reading performance score of 371 in 2018 marks a 21-point decrease from the 2015 score and puts Indonesians far below the OECD average of 487. In mathematics, meanwhile, the study gives Indonesian students a score of 379, a 7-point decrease from 2015, while the mean science score decreased slightly, dropping to 396 points from 403 achieved in 2015. Both scores were also significantly below the OECD average of 489.[20] Figures 10 demonstrates that Indonesia's PISA (2015) score in mathematics is also among the lowest in ASEAN.

Figure 10. Education Outcome in ASEAN by Investment, 2015

Source: OECD Program for International Student Assessment (PISA) survey, World Bank, AlphaBeta analysis
Note: PISA data is from 2015. Where 2015 education expenditure data was not available, data from 2012-2014 was used. Countries shown provided expenditure data to the World Bank and participated in PISA.

Source: Prospera & AlphaBeta (2019)

Indonesian young people need to improve its level of educational attainment to be successful in facing the future of work. As previously shown in Table 2, there are only 9.98 % youth who have completed tertiary education. Unfortunately, Figure 11 below demonstrates that in 2030, the greatest opportunities will be way higher for people with college or advanced education (66 %). Employment growth will probably change the sector

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19   The triennial 2018 OECD Program for International Student Assessment (PISA) report is a triennial study of the world's education systems carried out by the Organisation for Economic Co-operation and Development (OECD). It assesses 15-year-olds from 79 countries in maths, science and reading.

20   Tehusijarana Karina, Not even mediocre? Indonesian students score low in math, reading, science: PISA report (2019), https://www.thejakartapost.com/news/2019/12/04/not-even-mediocre-indonesian-students-score-low-in-math-reading-science-pisa-report.html.

composition of Indonesia's economy as a whole, with nearly half of all Indonesian workers in need of reskilling.[21]

Figure 11. An Increasing Percentage of Jobs will Require College and Advanced Degrees

An increasing percentage of jobs will require college and advanced degrees.

Net change in total employment by education required, 2014—30, midpoint automation,[1] step-up scenario

Education level	Employment in 2014, million	Projected net change in employment, million	Change in jobs, 2014—30, %	Employment in 2030 step-up, million
Less than secondary	31.6	11.2	36	42.8
Secondary	56.4	15.0	27	71.4
Associate	17.1	6.8	40	24.0
College	9.3	4.9	52	14.2
Advanced	1.7	1.1	66	2.8

[1]Midpoint of earliest and latest automation adoption in the step-up scenario (ie, high job growth).
Source: "Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages," November 2017, McKinsey Global Institute, McKinsey.com;
O*NET OnLine; US Bureau of Labor Statistics; McKinsey Global Institute analysis

McKinsey & Company

Source: McKinsey (2019

IV. Policy Responses and Recommendations

Under President Joko Widodo, the government is determined to transition to the Industry 4.0 economy. Below are some government initiatives and programs, also some recommendations that can improve the proposed strategies and ongoing programs.

A. Government Initiatives

Government Strategies

As mentioned by the previous Minister of Labor, Hanif Dhakiri (2019), the Indonesian government has developed six strategies for the future of work:[22]

1. Implementing a massive **vocational training** (in the form of hard and soft skills) based on industry needs, and is planned to be provided regardless of age and educational

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21 *World Economic Forum (WEF), Future of Jobs (2019), http://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf.*

22 *JPNN.com, Menaker Hanif Dhakiri Beber 6 Strategi Indonesia Hadapi Future of Work, (2019) https://www.jpnn.com/news/menaker-hanif-dhakiri-beber-6-strategi-indonesia-hadapi-future-of-work.*

background to ensure skilling, upskilling, and reskilling for Indonesian human resources to increase the employability of the Indonesian workforce.

2. Ensuring that all workers (including Indonesian migrant workers in all placement countries) are protected through **social security and health insurance**.

3. Expanding **a flexible labor market** that is still able to absorb Indonesian human resources to work productively and contribute to inclusive and sustainable economic development.

4. Minimizing the work participation gap between women and men in Indonesia's labor climate through the promotion and implementation of **equal employment opportunity (EEO)** at the provincial, district and city levels to ensure that there is no gender discrimination in the workplace at all levels.

5. Providing **domestic and international scholarship** schemes in supporting young people to enhance their innovation, creativity and productivity skills, which are needed in this digital economy era.

6. Strengthening the implementation of **occupational safety and health (OSH)** in all industrial sectors, to ensure that the realization of labor law is in compliance and is aligned with the principles of decent work and labor standards, both domestic and international standards, in supporting a conducive employment climate for foreign investment in Indonesia.

Government Programs

Nationwide training programs are necessary to better prepare the country's workforce for a changing job market in the future of work. Table 8 summarizes the Indonesian government programs that support the future of work.

Table 8. Some Government of Indonesia Programs to Support the Future of Work

No	Programs	Information
1.	**Pre- employment card**	• The pre-employment cards aim to aid job seekers, laid-off workers and small businesses by granting them access and funding to a broad range of training. It aims to address skill shortages, which have become a real problem in the country's workforce, as the education system has fallen short of producing graduates with the skills needed by the industry.
		• The government has allocated Rp 10.3 trillion (US$752.24 million) this year for the program, targeting 2 million people to join it.
		• The government has also been seeking partnerships with education technology start-ups and e-commerce platforms to allow participants to take part in various training especially coding, marketing and hospitality.
		• The government launched the program on April 11, earlier than the initial schedule in November, to assist people laid off or furloughed because of the economic impacts of the COVID-19 outbreak.
		• As many as 223 training institutions are involved in the program, providing more than 2,000 courses on various subjects through eight online learning platforms.
2.	**Digital Talent Scholarship[23]**	• The Communications and Information Ministry (Kominfo) provides an annual Digital Talent Scholarship (DTS) program that aims to address the country's digital talent gap.
		• Recipients of the scholarship will get training on data analysis, artificial intelligence (AI), cloud computing and cybersecurity, as well as critical thinking, creativity and communication.
		• It is intended to cater to fresh graduates from universities and vocational schools, as well teachers and entrepreneurs.
		• To conduct the training, the ministry has partnered with more than 90 universities and polytechnics, local start-ups, as well global technology companies such as Cisco, Google and Microsoft, among others.
		• The first digital scholarship in 2018 was awarded to 1,000 recipients. The numbers increased into 25,000 participants in 2019 and it aims to train 50,000 participants this year.

23   *Jakarta Post, Ministry Offers Scholarships Program to Address Digital Talent Gap (2020),* https://www.thejakartapost. com/news/2020/06/16/ministry-offers-scholarship-program-to-address-digital-talent-gap.html.

3.	**HERfuture**[24]	• The Women's Empowerment and Child Protection Ministry in partnership with UK-Indonesia Tech Hub -a technology and innovation hub initiated by the British Embassy in Jakarta- initiated a training program for Indonesian women who own micro and ultra-micro enterprises, called HERfuture.
		• The program aims to increase digital literacy among women entrepreneurs and to help them maximize the use of technology to support their businesses through the two-month online training courses.
		• The program was launched to help small and medium enterprises (SMEs) cushion the economic impact brought by the coronavirus pandemic.

Source: Jakarta Post, 2019-2020.

B. Policy Recommendations

Below are some recommendations to ensure the effectiveness in the implementation of the government's responses:

1. **Technical Education and Vocational Training (TVET)**

   • Most government trainings and programs are implemented in central and urban areas. Rural areas also need to be included in the program implementation to ensure all young people will be given the same opportunities.

   • Additional training and reskilling programs supportinng the participation of more women,[25] disabled, and[26] old people also need to be implemented.

   • The trainings provided should meet the demands of industry. Close cooperation with industry and business is necessary.

   • The capacity of teachers and trainers also need to be strengthened and improved.

2. **Social Security and Health Insurance for Infomal Sector**

   The informal sector is an important part of the country's workforce amid the pandemic, accounting for 56.5 % of nationwide employment in February and hiring a total of 74.04 million workers in 2020 (there is a 0.77 % increase from the February 2019 estimates). Unfortunately, informal workers remain invisible to policymakers and are rarely included in social and health security policies. Policies addressing income

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24 *Jakarta Post, Indonesia Launching Program for Women, (2020) https://www.thejakartapost.com/news/2020/11/11/indo-nesia-ukteam-up-to-launch-training-program-for-women-entrepreneurs.html.*

25   *Asriani Desintha and Ramdlaningrum, Examining Women's Roles in the Future of Work in Indonesia, (2019) <http://library.fes.de/pdf-files/bueros/indonesien/15754.pdf>.*

26   *Fundación ONCE and the ILO Global Business and Disability Network, Making the future of work inclusive of people with disabilities, (2019) <http://www.businessanddisability.org/wp-content/uploads/2019/11/PDF_acc_FoW_PwD.pdf>.*

insecurity and and reducing poverty and occupational risks will be useful in managing the risks faced by this sector.

3. **Flexible Labor Regulations**

Indonesian regulations and policies, especially those related to the future of work need to be flexible, responsive and updated based on the current situation and dynamic.

4. **Increased Promotion of Government Initiatives and Programs**

The Government will need to promote its initiatives and programs to a wider audience, as many people are still not aware of them, and only several groups who normally get the same benefit.

5. **Ensuring Equal Participation for Women**

The ILO (2020) surveyed 400 companies in Indonesia and found that 80 % supported gender diversity in the workplace. However, there is still an unequal treatment between men and women in the labor market. There is also a lack of women in senior management and on boards of directors of Indonesian companies. In addition, the unsupportive work environment and employment practices tend to limit women's career progression. There is a high hope that future of work can give better treatment and more opportunities for women in work force if Government can really ensure the support is implemented effectively.

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