ASEAN IN TRANSFORMATION

HOW TECHNOLOGY IS CHANGING JOBS AND ENTERPRISES

The Philippines Country Brief | June 2017

INTRODUCTION AND OVERVIEW OF THE PHILIPPINES

The Philippines is a fast growing economy with competitive service and manufacturing sectors.[1] In 2015, its gross domestic product (GDP) was US$292.4 billion, of which services and manufacturing represented 59 per cent and 20 per cent, respectively.[2] Two of the country's key economic sectors are business processing outsourcing (BPO) and electronics and electrical products (E&E).[3]

The BPO sector in the Philippines has grown rapidly since the early 2000s. The sector's annual average growth rates have been estimated at 17 to 18 per cent.[4] Further reflecting this growth, between 2000 and 2015, BPO's contribution to total GDP increased from less than 1 per cent to 6 per cent.[5] The sector's rapid development has been driven by an abundant pool of service-minded and English-speaking workforce, supportive government policies and business associations.[6]

In terms of the E&E sector, the Philippines is the fifth largest exporter among the Association of Southeast Asian Nations (ASEAN), totalling US$35 billion in 2015 and equivalent to about 24 per cent of the leading ASEAN E&E export leader, Singapore.[7] Between 2010 and 2015, E&E exports increased by 72 per cent and represented over 50 per cent of the Philippines' total exports in 2015. The country's main E&E export destination market is Hong Kong, China totalling 16 per cent of the E&E export value in the same year.

The Philippines has a total labour force of 43.2 million women and men.[8] The service and manufacturing sectors provide 56 per cent and 8 per cent of total jobs, respectively. While the BPO sector employs about 1 million workers, representing 5 per cent of total service employment, the E&E sector provides 13 per cent of manufacturing jobs (421,200 jobs) (figure 1).

Figure 1. Total employment in the BPO and E&E sectors (thousand) and share of total services and manufacturing employment (per cent), The Philippines, 2013 and 2014
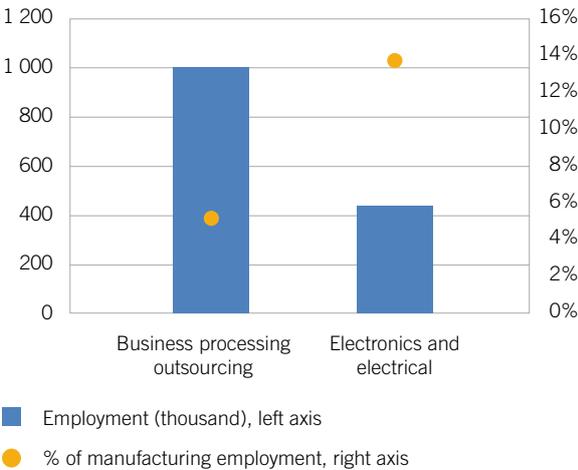
Note: Employment in the E&E and BPO sectors as of 2013 and 2014, respectively.

Source: Adapted from ILO: *ASEAN in transformation: How technology is changing jobs and enterprises*, op. cit.

Gender disparities in employment in the Philippines are significant, as men comprise 61 per cent of the total workforce. The average age of workers is 38 years and young workers (aged between 15 and 24) account for 19 per cent of employment. Educational attainment in the Philippines is relatively high compared to other ASEAN countries. Of total workers, 43 per cent are primary school graduates, while 27 per cent and 29 per cent are secondary and post-secondary graduates, respectively. In terms of workforce skill levels, of total Filipino workers, 44 per cent are medium-skilled, and 33 per cent are low-skilled.[9] The remaining 24 per cent of workers is high-skilled.[10]

This country brief highlights the key findings relevant to the Philippines from the series of ILO reports *ASEAN in transformation*, which examines current technological trends and how they are transforming enterprises and skills requirements across five major manufacturing and services sectors in the region.[11] The regional research was complemented by surveys conducted with 4,076 enterprises and 2,747 university and technical vocational education and training (TVET) students in the ten ASEAN Member States. This country brief focuses on technology dynamics in the Filipino BPO and E&E sectors as they are two key economic sectors that are being impacted by advanced technology that is transforming jobs and enterprises.
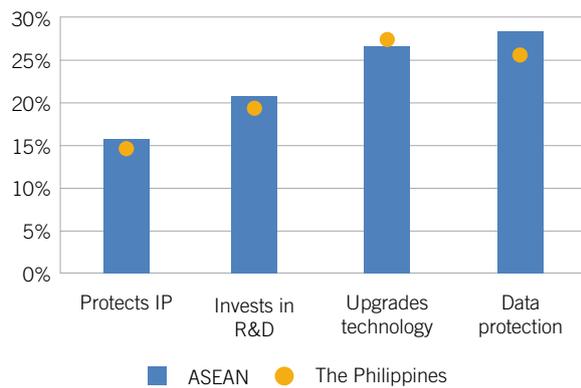
ENTERPRISE AND STUDENT SURVEY RESULTS

In the Philippines, the enterprise survey was conducted with 575 enterprises, accounting for 14 per cent of the total surveyed enterprises in ASEAN. The student survey was conducted with 173 university students and 125 TVET students in the Philippines, which together represented 10 per cent of the surveyed students in the region. Key survey findings applicable to the Philippines are highlighted and compared to ASEAN regional findings below.

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[7] UNCTAD: UNCTADStat Database (2017).

[8] Philippine Statistics Authority: *Labour Force Survey July* 2016 (Manila, 2016).

[9] Low-skilled workers do elementary occupations and medium-skilled workers work as clerks, sales workers, skilled agricultural workers, plant and machine operators, among others.

[10] High-skilled workers occupy positions as managers, professionals, technicians and associate professionals.

[11] The five manufacturing and services sectors analysed were: automotive and auto parts; electrical and electronic parts; textile, clothing and footwear; business process outsourcing; and retail.

Technology uptake by Filipino enterprises

ASEAN enterprises in general tend to imitate already existing technologies, rather than innovate through the creation of new technologies. Likewise, enterprises in the Philippines tend to follow this overall regional trend (figure 2).

Figure 2. Which of the following does your enterprise currently do?
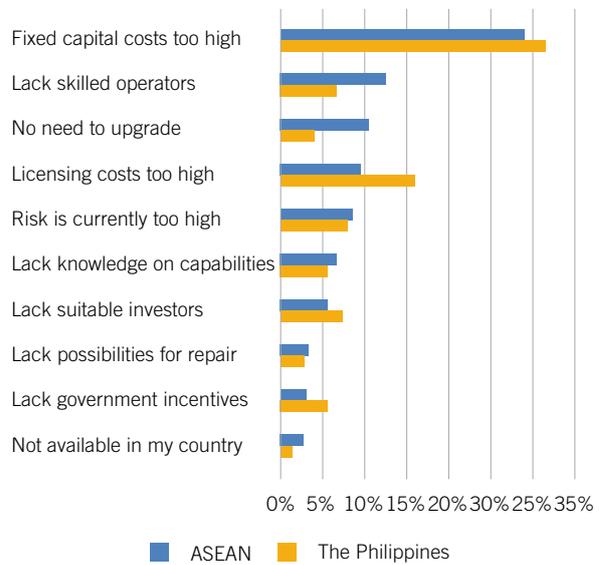

Source: Adapted from ILO: *ASEAN in transformation: Perspectives of enterprises and students on future work* (Geneva, 2016).

The ILO enterprise survey revealed that 25 per cent of enterprises in the Philippines delegated responsibility for protecting data, slightly lower than the regional average of 28 per cent. In addition, 27 per cent of Filipino firms upgraded technology, almost equal to the ASEAN trend. A lower share of Filipino enterprises reported investing in research and development (R&D) and protecting intellectual property (IP), accounting for 19 per cent and 14 per cent, respectively.
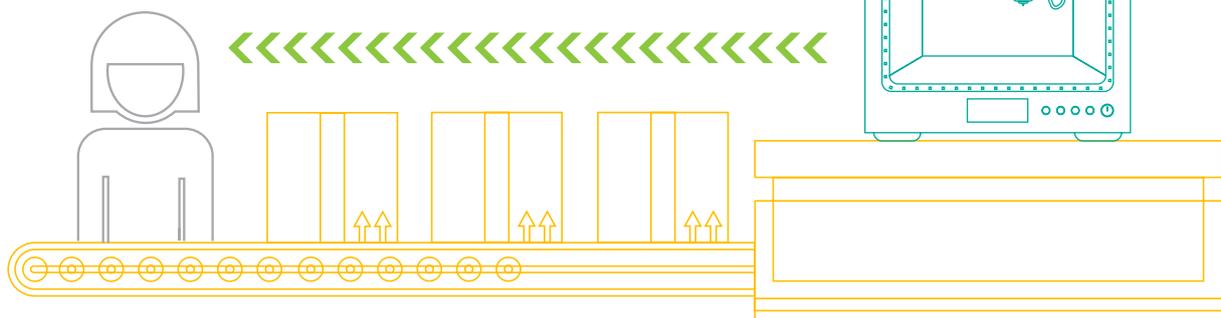
Figure 3. What is currently the single biggest barrier your enterprise faces to upgrade its technology?
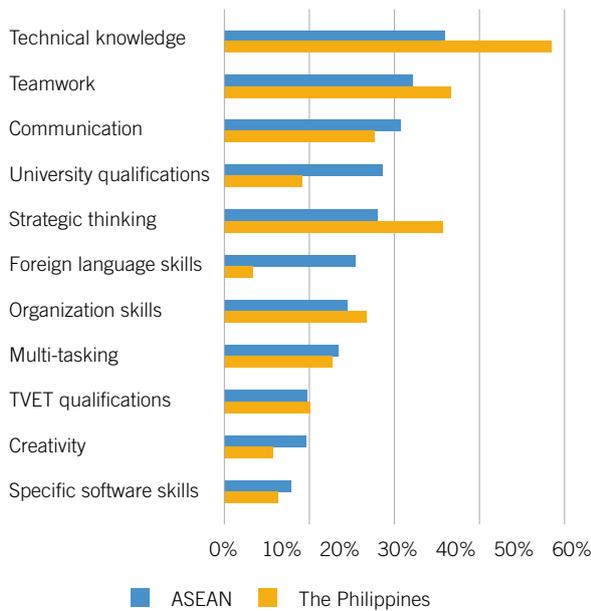

Source: Adapted from ILO: *ASEAN in transformation: Perspectives of enterprises and students on future work* (Geneva, 2016).

Enterprises in the Philippines reported a number of barriers to upgrading technology (figure 3). Of Filipino enterprises, over 30 per cent reported fixed capital costs as the leading obstacle, and 16 per cent reported high licensing costs associated with technology upgrading as the second largest impediment. By comparison, the majority of ASEAN enterprises (29 per cent) reported fixed capital costs as the leading obstacle. The second largest obstacle for ASEAN enterprises was the lack of a skilled workforce to operate the technology (13 per cent). This latter result compares to only 7 per cent Filipino enterprises that said that lack of skilled operators was an obstacle to technology upgrading. This difference in results could be associated to the relatively larger pool of medium and high-skilled workers in the Philippines compared to other countries in the region.

Critical skills and enterprise future outlook

The survey gathered insights into the most critical skill requirements for enterprises (figure 4).

Figure 4. Which type of skills are currently the most critical for your enterprise?
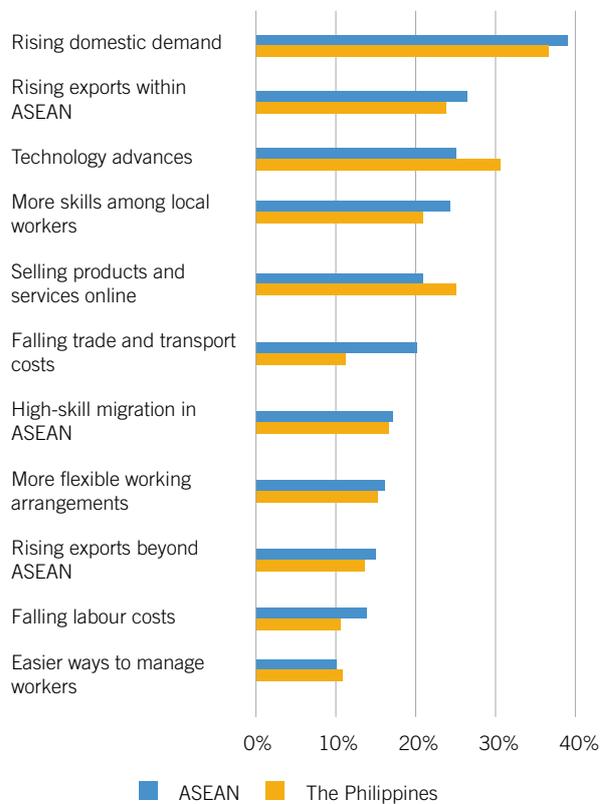

Source: Adapted from ILO: *ASEAN in transformation: Perspectives of enterprises and students on future work* (Geneva, 2016).

Enterprises across ASEAN cited a mix of technical skills combined with soft skills including teamwork and communication as the most critical skills for their enterprises. Overall, enterprises in the Philippines highlighted the same skills, and overwhelmingly reported technical knowledge and strategic thinking as the first and second most important skills in their enterprises. These results highlight the importance of advancing both hard and soft skills regardless of upcoming technological advances in the workplace.
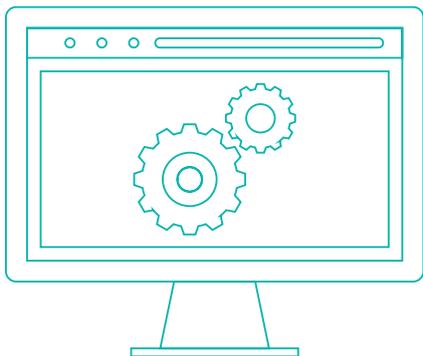
Figure 5. Which do you perceive are the biggest opportunities facing your enterprise up to 2025?

Source: Adapted from ILO: *ASEAN in transformation: Perspectives of enterprises and students on future work* (Geneva, 2016).

Looking ahead towards 2025, enterprises across ASEAN foresee the biggest opportunities arising from expanding markets, both domestically and within the region, as well as technological innovations (figure 5). Enterprises in the Philippines highlighted rising domestic demand and technological advances as the first and second biggest opportunities up to 2025. Additionally, Filipino enterprises emphasized the ability to sell their products and services online as an important opportunity for their enterprises up to 2025. The perceived potential of online commerce in the Philippines is associated with the prevalence of the service sector in its national economy.

Figure 6. What is your main field of study?

- Business, commerce, finance
- Engineering, building, architecture
- ICT
- Other
- Humanities, arts, education
- Science, maths, statistics
- Health, medicine
- Social sciences
- Law

0% 10% 20% 30% 40%

■ ASEAN ■ The Philippines, women ■ The Philippines, men

Respondents to the student survey in the Philippines came from a diverse range of academic fields (figure 6). The leading disciplines were business and commerce for women (27.8 per cent), and information, communications and technology (ICT) for men (35.5 per cent). These results compare to 29.5 per cent and 15.1 per cent of ASEAN students that studied business and commerce, and ICT, respectively. For Filipino women, other popular fields of study included ICT (18.5 per cent), and humanities and arts (12.5 per cent). Among Filipino men, other prominent areas of study were engineering (16.4 per cent), and business and commerce (14.5 per cent). It is worth noting that only 10 per cent of Filipino women were enrolled in science, technology, engineering and mathematics (STEM) degrees, compared to nearly 18 per cent of Filipino men. Gender disparities in STEM are prevalent in the Philippines and across ASEAN, as relative high shares of women study social sciences, business and law, while other fields including science, engineering and manufacturing tend to be male-dominated.

Figure 7. In which economic sector would you ideally want to work when choosing your first employment after graduation?

- ICT services
- Financial or insurance services
- Manufacturing
- Education
- Arts, entertainment or recreation
- Retail
- Human health or social work
- Construction
- Hotels or restaurants
- Scientific or technical research

0% 5% 10% 15% 20% 25%

■ ASEAN ■ The Philippines, women ■ The Philippines, men

Notes: nine economic sectors accounting for shares lower than 5 per cent across ASEAN were not included in figure 7. These sectors were agriculture, forestry or fishing; administrative or support services; mining and quarrying; public administration or defence; real estate activities; supply of electricity or gas; transport or storage services; water or waste management; and other service activities.

The student survey asked respondents to identify the sector in which they most wanted to work after graduation (figure 7). The most desirable sector for employment among Filipino women and men was ICT services accounting for 18.5 per cent and 25.7 per cent of respondents, respectively. Other desired sectors among Filipino women included hotels and restaurants (11.1 per cent) and education (10.6 per cent). Among Filipino men, manufacturing was the second most preferred employment sector (9.9 per cent) followed by hotels and restaurants (7.9 per cent). Most Filipino women and men demonstrated clear preference to work in the service sector, which is not surprising given its large contribution to GDP and employment in the country. However, it is worth highlighting that a high share of Filipino men wanted to work in manufacturing, which indicates that the manufacturing sector is growing and attracting young Filipino men, despite failing to attract young Filipino women to the same extent. Across ASEAN, the three most popular sectors for employment were ICT services (18.5 per cent), financial or insurance services (10.2 per cent) and manufacturing (7.8 per cent).

Figure 8. What is the most important factor for a company's reputation?

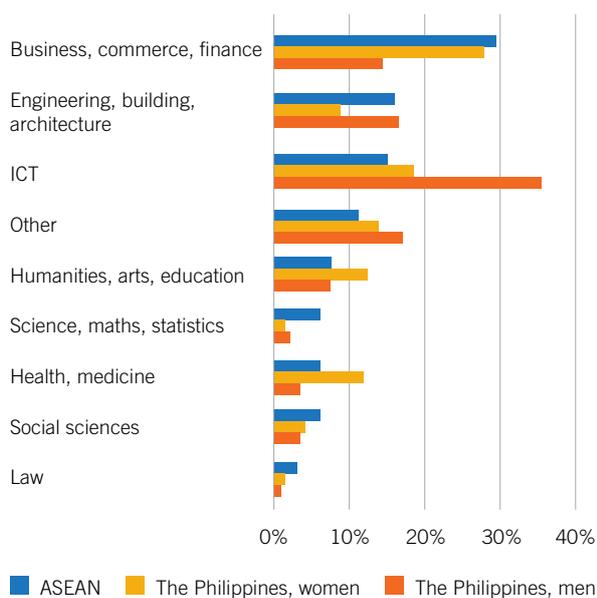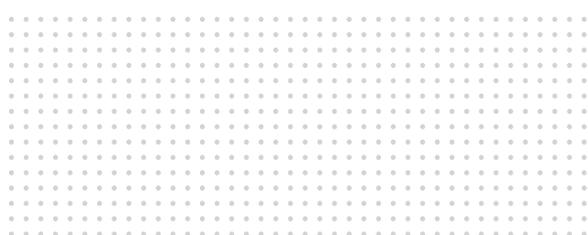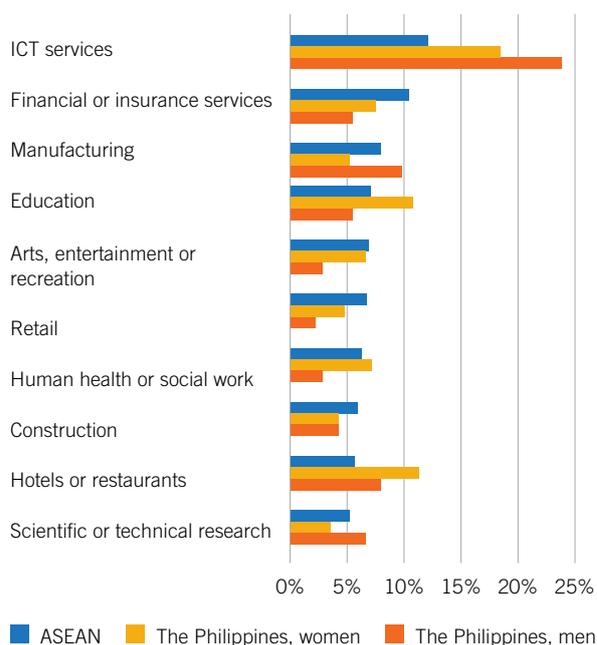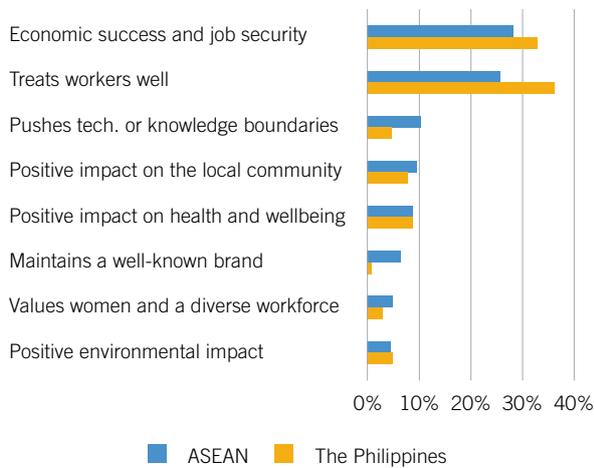

Source: Adapted from ILO: *ASEAN in transformation: Perspectives of enterprises and students on future work* (Geneva, 2016).

Students were inquired about the most important factor for a company's reputation (figure 8). Over 30 per cent of students across ASEAN reported that economic success and job security were the two most significant factors for a company's reputation. In the Philippines, over 25 per cent of students said that the aforementioned factors were the two most significant. Filipino students reported that having a positive impact on health and wellbeing was the third most important feature for a company's reputation. On average, across ASEAN, students also reported the same two most important factors, and highlighted that the third most important feature was the ability to push technological boundaries.
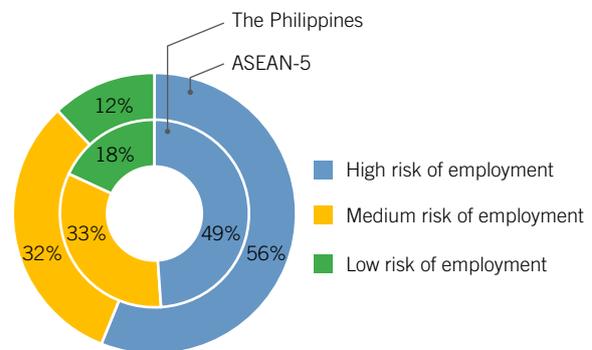
Jobs at risk of automation

The ILO assessed what types of occupations in ASEAN-5 have a high probability of being automated.[12] ASEAN-5 countries refer to Cambodia, Indonesia, Thailand, the Philippines and Viet Nam. These five countries combined comprise 80 per cent of the total workforce in the ten ASEAN member states.

In the next two decades, technological upgrade and innovations could have a significant impact on jobs in the Philippines. According to ILO estimates, 49 per cent of employment (over 18 million jobs) faces a high risk of automation in the Philippines (figure 9). This share is lower than the average of 56 per cent in ASEAN-5, and is the second lowest share of jobs at high automation risk after Thailand (44 per cent). In the Philippines, occupations at high automation risk include stall and market salespersons (14.3 million), office clerks (1.6 million) and street food vendors (1.8 million), among others.

Figure 9. Distribution of employment at risk of automation

Notes: The outer ring represents average risk of automation across ASEAN-5, the inner ring represents risk of automation in the Philippines.
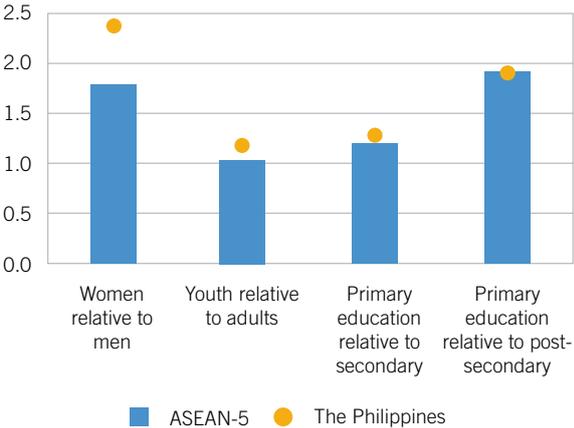
Source: Adapted from ILO: *ASEAN in transformation: The future of jobs at risk of automation*, op. cit.

Across all economic sectors in the Philippines, the construction sector and hospitality industry (hotels and restaurants) account for the highest shares of workers at high automation risk totalling 86 per cent and 68 per cent, respectively. Likewise, employment in the BPO and E&E sectors could significantly change due to technological advances. In the BPO sector, automation processes are increasingly replacing routine tasks with modern algorithms to enhance the productivity of back-office work. This trend could undermine the easy opportunities previously available in the sector where basic language and literacy were sufficient skills for a majority of workers. In fact, according to ILO estimates, 89 per cent of Filipino BPO workers are at high risk of automation.

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[12] ILO: *ASEAN in transformation: The future of jobs at risk of automation*, op. cit. This study was conducted by applying a research methodology developed by Carl Frey and Michael Osborne of the University of Oxford. The ILO did not attempt to predict the precise number of jobs that would be automated or displaced, rather it identified the occupations and types of workers facing a high probability of automation over the next couple decades based on the nature of tasks involved.

This could significantly impact women as they account for almost 60 per cent of total BPO workers.[13] In the E&E sector which is mostly low-value added and employs primarily low to medium skilled workers, 81 per cent of jobs are at high-risk of being automated.[14]

The ILO estimated that 33 per cent of total Filipino workforce faces a medium-risk of automation.[15] This compares to an average medium-risk of 32 per cent across ASEAN-5 workforce. Economic sectors at medium-risk of automation in the Philippines include transport and storage, service activities and mining and quarrying. Finally,18 per cent of the Filipino workforce faces low-risk of automation, compared to an average 12 per cent in ASEAN-5. Among ASEAN-5, the Philippines also has the largest share of workers at low automation risk from sectors such as education and training, and human health and social work. Occupations at low automation risk include general managers in wholesale and retail trade (2.4 million), elementary education teachers (539,500) and professional nurses (191,100).[16] Socio-demographic indicators including sex, age and level of education were analysed in the Philippines and across ASEAN-5 in order to further understand how workplace automation affects different segments of the workforce (figure 10).

Figure 10. Probability of occupying a high-risk, automatable job by gender, age and education levels

Source: Adapted from ILO: *ASEAN in transformation: The future of jobs at risk of automation*, op. cit.

High automation risk in the Philippines could disproportionately impact women, young workers and primary graduates across all industries. Firstly, women are 2.4 times more likely than men to work in jobs at high risk of automation. Secondly, Filipino workers aged 15 to 24 are 20 per cent more susceptible to having an occupation at high risk relative to adult Filipino workers. Thirdly, primary school graduates are about 30 per cent and 90 per cent more likely to be at high automation risk compared with secondary and post-secondary graduates, respectively. Automation probabilities in the Philippines by gender, age and education levels are in most cases slightly higher than in ASEAN-5. These automation probabilities further reinforce the idea that higher education and training contributes to developing the competencies needed for complicated tasks that require advanced levels of perception, manipulation and creative intelligence.

IMPACT OF TECHNOLOGY ON THE BPO AND E&E SECTORS

Highlights of main technological innovations and impacts on the Filipino BPO and E&E sectors are examined below.

BPO sector

The two key technologies impacting the BPO sector are cloud technology and robotic process automation (RPA). Cloud technology refers to the practice of using an online network of remote servers to store, manage and process data through standardized applications over a cloud platform. RPA uses software robots with artificial intelligence algorithms capable of performing both highly structured and ordinary tasks. Filipino BPO enterprises, are rapidly integrating these technologies into their processes and applications. This is the case for large enterprises and small and medium-sized enterprises alike due to the cost efficiency resulting from these investments. For instance, Kalibrr, a Philippine-based job-placement start-up, integrated cloud technology into its free online software to

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[13]   ILO: *ASEAN in transformation: The future of jobs at risk of automation,* op. cit.; ILO: *ASEAN in transformation: How technology is changing jobs and enterprises,* op. cit. The automation estimate for the BPO sector includes only employment in call centres.

[14]   ILO: *ASEAN in transformation: The future of jobs at risk of automation*, op. cit.

[15]   Ibid.

[16]   Ibid.

facilitate the search, training and recruitment of BPO workers.[17]

A key factor driving technological uptake in the Filipino BPO sector is clients and costumers' demands for better service provision. This has resulted in a generalised turn towards more specialized and knowledge-based BPO, commonly referred to as knowledge process outsourcing (KPO). KPO includes a range of services such as fraud analytics, data integration, project management, R&D, mergers and acquisitions valuation, and product profitability analysis, among others.

Technological advancements such as cloud technology and RPA optimize business efficiency, and improve costs, risk management, scalability and compliance. Over the medium-term, these technologies are expected to increase the value-added of services offered by BPO companies. The deployment of RPA, for example, has clear economic advantages over employing human agents. RPA cognitive agents can process information faster than the average human, work continuously, eliminate manual error and reduce the high turnover rates typically associated with human workers in the BPO sector.[18]

Given these trends, skill requirements in the Filipino BPO sector will significantly change. English proficiency and a service-oriented personality will not be enough to be employed in BPO. The availability of 'easy BPO' work consisting of labour-intensive, language-based call centre processes would be reduced due to automation. Nevertheless, skilled workers with specialised training and knowledge in engineering, finance, business, law and medicine, would be needed to handle complex situations requiring advanced levels of perception and critical thinking.

It is worth highlighting that call centres in the Philippines – the lower end of BPO activities– still dominate exports, revenue and employment of the sector. BPO clients, such as United States-based companies for example, could purchase RPA licenses and opt for do it yourself back-office processes, which would reduce the need to outsource back-office

tasks to the Philippines. In this way, it is critical that BPO companies, particularly those in the lower-end, diversify and expand their services into KPO and sector-specific areas. This further highlights the need to employ a higher skilled workforce, while optimizing processes and systems for KPO services in the Philippines.

E&E sector

Worldwide, two main technologies are impacting the E&E sector, namely, robotic automation and 3D printing.[19] Firstly, robots are being used to automate repetitive and simple assembly tasks, which do not require high precision. Most of these robots, also known as collaborative robots or "cobots", can work alongside human skilled workers and technicians who perform technical and supervisory tasks. In this way, robotic automation in the E&E sector has been 'human centric'. Secondly, 3D printing, a process to make physical objects under a computer's control, has been somewhat less prominent in the E&E sector compared to other manufacturing sectors.[20] However, according to industry experts 3D printing could significantly change E&E production processes, due to a potential shift from traditional assembly of E&E parts to one-time printing. Indeed, it is expected that 3D printed circuits will be commercially available by 2018.

In the Filipino E&E sector, technology adoption has been rather limited, as production of semi-conductors, integrated circuits and data processing electronics is low-value added. However, factors such as increased interconnection of E&E with other manufacturing sectors, and the Internet of Things (IoT) could drive technology uptake in E&E in the Philippines. The textile, clothing and footwear (TCF) sector, for instance, is developing smart clothes which integrate medical, fitness and wellness features into clothing and accessories through E&E. This could represent a growth opportunity for Filipino E&E enterprises which could drive technological uptake. Additionally, the IoT which connects objects across the value chain through electronic sensors could incentivize technology adoption as the IoT is forecast to stimulate demand for sensors worldwide. This could potentially drive technology adoption in the E&E sector as the

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[17]   Manila Times: "Starting up in the cloud", 25 Aug, 2013.

[18]   Attrition rates in call centres in the Philippines have been estimated at over 55 per cent (Lee Kuan Yew School of Public Policy: *Business process outsourcing in the Philippines* (Singapore, 2014)).

[19]   ILO: *ASEAN in Transformation: Electrical and Electronics: On and Off the Grid* (Geneva, 2016).

[20]   Ibid.

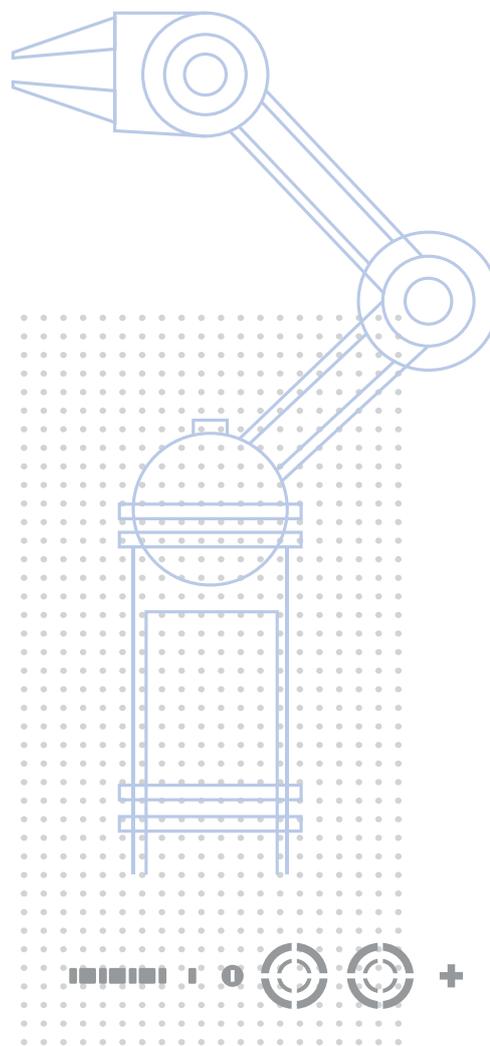Philippines supplies 10 per cent of total semiconductor manufacturing devices globally.[21]

In this context, over the medium-term, E&E enterprises in the Philippines could potentially adopt technology while accommodating higher-value production and higher-skilled assembly work to climb the E&E value chain. This would also require investment in science and technology and promotion of R&D in related electronics specializations and frontier research. As automation impacts certain E&E production processes, there will be a higher demand for workers with strong technical skills and backgrounds in STEM. Automation risk in the Filipino E&E sector is considerably high, but workers with higher skill sets would be required to work alongside cobots to promote growth of this sector. E&E enterprises would also need to make a bigger effort to attract talented graduates to work in this sector.

skills, strategic thinking as well as communication and teamwork among the workforce, particularly among young graduates. Promoting academic pursuits in STEM is important, as more specialised and technical knowledge will be increasingly demanded in technology-centred enterprises.

SUMMARY

Over the next two decades, 49 per cent of jobs in the Philippines are at high automation risk. Low-skilled workers, women, youth and less educated workers could disproportionately be impacted by automation in the Philippines. Workers in the construction and hospitality industry (hotels and restaurants) are at high risk of being automated. Additionally, over 80 per cent of workers in the BPO and E&E sector are at high automation risk due to technological innovations. In the BPO sector, enterprises are integrating cloud technology and RPA to optimize service provision. In the E&E sector, cobots would increasingly take on manual tasks and complement the work of highly skilled workers and technicians.

Technology adoption is transforming skill requirements. Enterprises in the BPO and E&E sectors are requiring high-skilled workers with strong STEM backgrounds. It is critical that policymakers, employers and training institutions work together in order to foster technical

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21   Invest in ASEAN: 'Electronics: Where to invest?' (2017).