PRESIDIUM MODEL UNITED NATIONS CONFERENCE 2018

"Assessing Future Trends in Employment in the face of Automation"

PRESIDIUM MODEL UNITED NATIONS

PRESIDIUM *for*
YOUTH EMPOWERMENT

HIGH LEVEL POLITICAL FORUM ON SUSTAINABLE DEVELOPMENT (HLPF)

TOPIC STUDY GUIDE PREPARED FOR PMUN 2018

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Introduction

None of us can know with any certainty what the world will look like in future, but it's very likely that soon, machines will increasingly match or outperform human performance in a range of work activities, including ones requiring cognitive capabilities. The present time is defined as the new age of automation, driven by unprecedented technological advances.

The International Society of Automation (ISA) defines automation as 'the creation and application of technology to monitor and control the production and delivery of products and services'. Automation involves a broad range of technologies including robotics and expert systems, telemetry and communications, electro- optics, cyber security, process measurement and control, wireless applications, system integration, test measurement, and many, many more. Automation crosses all functions within the industry from installation, integration, and maintenance to design, procurement, and management. Automation even reaches into marketing and sales functioning of these industries.

The pace of automation and its scope continues to grow exponentially. We are living in a new automation age in which robots and computers can not only perform a range of routine physical work activities better and more cheaply than humans, but are also increasingly capable of accomplishing activities that include discernment capabilities. These include making tacit judgments, sensing emotion, or even driving—activities that used to be considered too difficult to automate successfully.

Employment Challenges Presented By Automation

As in the past, the current wave of technological change will bring immense economic opportunities, but transition and adaptation to the new technologies will create challenges for individuals, businesses, and governments. While the precise impacts of current technological advancements are uncertain, by acting now to assess opportunities and challenges, the world will be better placed to further the objectives both individually and collectively of achieving growth that is strong, sustainable, balanced and inclusive.

Automation and 'thinking machines' are replacing human tasks and jobs, and changing the skills that organizations are looking for in their people. These momentous changes

raise huge organizational, talent and HR challenges – at a time when business leaders are already wrestling with unprecedented risks, disruption and political and societal upheaval.

Overall, technological change has generally been associated with growing real wages, and net job creation has kept up with population growth. This is because new technologies usually create demand for new and complementary types of employment. The higher income resulting from technological gains also increases the demand for other products and the growth of other industries particularly in services.

However, the transition period during which an economy adopts and adapts to new technologies can be disruptive for workers. As new employment opportunities emerge, other jobs may be eliminated or altered. Often in the past, adaptation has required some policy changes that lasted well beyond the transition period. Compared to the previous generation, current and future workers could face more changes in the workplace and experience greater job displacements and regional and skills mismatches over the course of their careers. Some of this negative impact could be offset by new occupations and jobs directly related to new technologies as well as enhancing labor mobility.

Nevertheless, budgetary, financial, institutional, and individual factors will affect the scope and pace at which up-skilling and reskilling can occur. Uncertainty about future skill demand remains, and it could lead to a mismatch between investments in education and training, and evolving demand. In addition, digitalisation is expected to lead to an increase in non-standard forms of employment (NSFE) including temporary, part-time, and self-employment. While NSFE come with greater flexibility and opportunities for workers and firms, which could be desirable in the context of population ageing in many countries, they also raise questions about the quality of work, employment protections and regulations, informality, benefits and more broadly the sustainability of fiscal, pension and welfare systems.

As technological progress accelerates, the need to protect people rather than jobs may become increasingly important. As innovation, notably through machine learning and artificial intelligence, has raised the ability and prospect of businesses to automate cognitive tasks, the range of jobs requiring various levels of skills which are at risk of being altered, reduced or even eliminated has widened. In fact, some studies suggest that an important share of current worker tasks may be potentially automatable with existing technology in both AEs and EMEs.

Going forward, the impact of technological change on specific jobs and employment may be determined by the extent to which a particular job is routine and efficiently

automatable, rather than whether the job is manual or cognitive, or low skill or high skill. Regardless of which kinds of jobs, tasks or skills are the most vulnerable, the impact of the adjustment will be uneven across workers, country regions and sectors.

Artificial Intelligence

A large part of the reason why job automation has become such a great threat is due to the rise of artificial intelligence. Once, the domain of myth and theory, the foundation of the field of AI research was laid in 1956 at Dartmouth College. Alan Turing, a code breaker and computer scientist serving in the Second World War, had already established the conditions for a truly intelligent machine. According to his 1950 paper "Computing Machinery and Intelligence", so long as a computer could act indistinguishably from a human, it would demonstrate the capacity for human-like cognitive thought (Turing). All that remained was implementation.

Unfortunately for those swept in the tide, the necessary technological advances for the development of true AI would only come in later decades. Progress was intermittent; academics would often cycle through booms and busts as investors raised the stakes but lost confidence when faced with a lack of returns. This phenomenon is known as an AI winter. Although the US government organizations such as DARPA and the NRC refused to continue funding the development of AI, progress in the private sector never truly stopped. In 1996, IBM's Deep Blue computer won a match against chess Grandmaster Garry Kasparov, sparking a new wave of investment. Improvements in both software design and hardware processing capability paved the way for even more applications of AI, which can now process vast amounts of data. Because many AI systems work on an input and output basis, with systems "learning" from up to 36 million examples, this processing power has driven recent success in the field. Confidence in AI research is now at an all-time high.

Indeed, AI technology is fast becoming one of the leading sectors in industry. The ability of AI to recognize voice and images as well as its ability to problem solve have improved drastically thanks to the introduction of big data. From Apple face recognition technology to Microsoft's efforts in voice-activated intelligent assistance, the use of AI is booming. Insurance companies in Singapore are using IBM technology to automate the claims process. Machine learning systems at Amazon help optimize inventory and make product recommendations is well known today. Far from being limited to driverless cars, AI has slowly integrated into our everyday lives.

Combined with the threat of automation, AI can expand into every corner of the market. While this may be beneficial for business, companies should not to be too optimistic. AI winters and future dips in confidence could still potentially stall the development and implementation of such technologies. The risks associated with the statistic-based learning system employed in AI mean that even if systems can improve with greater inputs of data, there still exists the possibility of failure and liability claims.

Finally, not everyone will be happy with such progress, if it means the loss of their own employment and livelihood. These and other questions on handling potential eventualities of AI development must be addressed through coherent, long-term planning.

Impact of Technology on Employment: The other side of the coin

The negative impact of automation on human employment, as stated above is considered as a short term phenomenon by certain group of economists. These economists believe that in the long run, automation will be a neutralizer between the number of people unemployed and the new employment created. They give the following arguments to support this view.

Firstly, rapid technological change may cause some short-term temporary unemployment. However, economic theory suggests that jobs lost as a result of technological change will be created in different, new industries.

When automated looms were built, it became cheaper to manufacturer clothes. Therefore, consumers buying clothes would have experienced lower prices, and therefore, after buying the same amount of clothes, they would have more disposable income to buy other goods. For example, they may now be able to afford a train ticket to go and buy a silk scarf in town.

With technological change, we see increased demand for new products; therefore new jobs are created on the railways and shops selling more luxury items, such as scarves and hats.
Also, there will be some jobs created in the building of the automated looms. With new technology, firms selling clothes will also be more profitable. This profit may be used to fund future investment and job creation.

Over time, improved technology would mean that even automated looms become outdated. New technology may enable clothes to be mass produced with even fewer workers. Again, this would cause a relative fall in the price of clothes, and consumers would have more disposable income to buy goods, but also spend on labor intensive services.

This is what has happened over the past 100 – 200 years – new Technology has enabled the economy to move towards a more service sector based economy. Lower costs of manufactured goods, enables us to be able to afford a wider range of goods and services.

Despite the above arguments, in the long-term, there has never been any evidence that technological advances have increased the overall unemployment rate. Even after the rapid technological change of the past 20 years, we can't say that technology has left thousands of unemployed skilled weavers. In 1920, there were 1.3 million coal miners, now there are less than 6,000. That doesn't mean we have 1.3 million unemployed coal miners. Those jobs get absorbed into new areas of the economy.

However, technological change can cause fairly significant levels of unemployment, especially amongst unskilled workers. For example, technological improvements led to the relative decline of heavy British manufacturing (e.g. coal industry). Many unskilled manual workers lost their jobs. At the same time, new jobs were being created in the service sector, and for more high tech skilled jobs. However, because coal miners and steel workers were often concentrated in certain geographical areas and had limited skills, it was often very difficult for them to get a new job.

LUDDITE FALLACY:

The Luddites were a group of English textile workers who engaged in violently breaking up machines. They broke up the machines because they feared that the new machines were taking their jobs and livelihoods. Against the backdrop of the economic hardship following the Napoleonic wars, new automated looms meant clothing could be made with fewer lower skilled workers. The new machines were more productive, but some workers lost their relatively highly paid jobs as a result.

A Luddite is a term used (usually pejoratively) to describe people who oppose the introduction of new technology. Yet, the idea that new technology leads to job losses has persisted, despite the fact that economists are almost universally united in stating that new technology will not increase the long-term unemployment rate.

The Luddite fallacy is the simple observation that new technology does not lead to higher

overall unemployment in the economy. New technology doesn't destroy jobs – it only changes the composition of jobs in the economy.

Policy Challenges Relating to Automation

While the impacts of automation on employment statistics on each country will vary, common elements in the dynamics of change exist. Policy coherence across all the countries, especially where there are spillovers, therefore, can strengthen the effectiveness of individual members' policy efforts, highlighting the benefits of international collaboration on this topic.

At the first glance, policy makers globally have a strong incentive to encourage and enable rapid adoption of automation technologies in order to capture the full productivity boost necessary to support economic growth targets. At the same time and more importantly, they will need to think through how to support the redeployment of potentially large numbers of displaced workers, since the full economic benefits of automation depend on workers continuing to work.

Early adoption of automation could benefit from policy support, both in regard to the technology development, and for its deployment. That will require investment in developing the technologies themselves, and also in digitally enabled infrastructure to support automation.

Labor redeployment will be one of the most important societal challenges. Governments are often not particularly adept at anticipating the types of jobs that could be created, or new industries that will develop. However, they could initiate and foster dialogues about what work needs doing, and about the grand societal challenges that require more attention and effort. Governments could also seek to encourage new forms of technology enabled entrepreneurship, and intervene to help workers develop skills best suited for the

automation age. For example, many economies are already facing a shortage of data scientists and business translators. Governments working with the private sector could take steps to ensure that such gaps are filled, establishing new education and training possibilities.

One of the challenges of the new era will be to ensure that wages are high enough for the new types of employment that will be created, to prevent continuing erosion of the wage share of GDP, which has dropped sharply since the 1970s. If automation does result in greater pressure on many workers' wages, some ideas such as earned income tax credits, universal basic income, conditional transfers, shorter workweeks, and adapted social safety nets could be considered and tested. As work evolves at higher rates of change among sectors, locations, activities, and skill requirements, many workers may need assistance in adjusting to the new age.

Five major themes about the future of jobs training in the tech age

HOPEFUL THEMES

Theme 1 **The training ecosystem will evolve, with a mix of innovation in all education formats**

- More learning systems will migrate online. Some will be self-directed and some offered or required by employers; others will be hybrid online/real-world classes. Workers will be expected to learn continuously
- Online courses will get a big boost from advances in augmented reality (AR), virtual reality (VR) and artificial intelligence (AI)
- Universities still have special roles to play in preparing people for life, but some are likely to diversify and differentiate

Theme 2 **Learners must cultivate 21st-century skills, capabilities and attributes**

- Tough-to-teach intangibles such as emotional intelligence, curiosity, creativity, adaptability, resilience and critical thinking will be most highly valued
- Practical, experiential learning via apprenticeships and mentoring will advance

Theme 3 **New credentialing systems will arise as self-directed learning expands**

- While the traditional college degree will still hold sway in 2026, more employers may accept alternate credentialing systems as self-directed learning options and their measures evolve
- The proof of competency may be in the real-world work portfolios

CONCERNS

Theme 4 **Training and learning systems will not meet 21st-century needs by 2026**

- Within the next decade, education systems will not be up to the task of adapting to train or retrain people for the skills that will be most prized in the future
- Show me the money: Many doubts hinge upon a lack of political will and necessary funding
- Some people are incapable of or uninterested in self-directed learning

Theme 5 **Jobs? What jobs? Technological forces will fundamentally change work and the economic landscape**

- There will be many millions more people and millions fewer jobs in the future
- Capitalism itself is in real trouble

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Case Studies

(i) The Case of Autonomous Vehicles

Autonomous vehicle or self-driven vehicle is a technological innovation that promises to be both disruptive and revolutionary in terms of its impact on human

autonomy and shaping the societies of tomorrow. The driverless car has predictably joined unmanned drones and digital surveillance as one of the advances and controversies that will impact our times. While some governments have already begun taking necessary policy initiatives in anticipation of the autonomous vehicle as a common mode of transport, only time will tell how others are able to prepare themselves in tackling issues relating to insurance, liability, cyber security, safety, ethics and performance standards.

Policy Issues Connected with Driverless Vehicles:

(i) Liability and Insurance: When autonomous vehicles get involved in accidents, the issue of liability may get complicated as resolving the question of fault will indeed require consideration of novel and challenging questions. A recent accident wherein an American citizen lost his life when he put his Tesla-S into its autopilot mode, and the car's sensors failed to distinguish an 18 wheel truck against a bright sky has brought attention to the lack of regulations surrounding autonomous cars. The Tesla car crash highlights the various issues that remain unresolved. The accident has raised ambiguities regarding ascertainment of liability and whether it ought to rest on the car manufacturer, driver or the third party.

(ii) Privacy, Data Protection and Cyber Security: The safety and security of personal information in autonomous vehicles, interconnected through a central server, is of utmost importance. With no provisions or regulations protecting the data collected by driverless vehicles, sensor-laden driverless cars have the potential for serious privacy violations. Primarily, all the information about the occupants can be derived — who they are, where they've been, where they're going and what their preferences are. Unauthorized parties such as hackers and terrorists could illegally access a person's regular travel route, alter records, instigate attacks on the system or invade privacy by tracking individual vehicles.

(iii) Standard of Performance and Care: Laws and regulations will have to be enacted accordingly, setting standards of performance for autonomous vehicles to abide by. Everything from speed, the requirement of a human operator in case of emergencies, licensing, roads, permissible infrastructure, penalties, and liabilities in case of damage to third parties or otherwise, level of automation permissible, inter alia, shall have to be accounted for in addition to ethical issues.

Response of the Governments: Canada & India:

Despite the idea of autonomous vehicles being opposed in various sections of Canada, the Canadian government has embraced this innovation. In fact, the Canadian Automated Vehicles Centre of Excellence has also released a white paper on preparing for autonomous vehicles for the government of Canada which lays down on how to smoothen the process of entry of these vehicles in Canada. The government is planning to constitute the Canadian Autonomous Vehicle Initiative (CAVI) to coordinate the deployment of Autonomous Vehicles in Canada and to promote R&D and testing to create an efficient ecosystem, with a significant level of funding. In addition to it recognizing the loss of jobs due to automation even though it will lead to a safer, efficient and environmentally sustainable transportation system, it also has taken up the idea of appointing of a senior level working group to directly coordinate autonomous vehicle activities across all federal departments and agencies.

On the other hand, while India has been toying with the driverless concept by carrying out tests, running a driverless metro in Delhi and plans to introduce driverless pods in Gurgaon, Haryana, the response of the Indian Government has been absolutely to the contrary. Mr. Nitin Gadkari, the Road and Transport Minister of India recently said that he won't allow Driverless cars in India as it will create joblessness.

(ii) Automation in the Healthcare Sector

There are many benefits to healthcare providers through automation. Not only will the end to end processing of customer records would be made easier, automation would also result in the actualization of efficiencies and synergies across the entire value chain of activities that healthcare organizations provide. When we mean healthcare providers, we include the entire gamut of service providers including day care providers, clinics, full-fledged hospitals and pharmaceutical outlets. The automation of the value chain would especially benefit large hospitals when they integrate the end-to-end activities that they undertake in a single, coherent, and unified set of software.

Policy Questions

(i) Job Polarization: Job Polarization has been feared as a probable consequence of the intervention of technology in the health care sector. It is a situation where middle-skill jobs (such as those in manufacturing) are declining but both low-skill and high-skill jobs are expanding. In effect, the workforce

bifurcates into two groups doing non-routine work: highly paid, skilled workers (such as architects and senior managers) on the one hand and low-paid, unskilled workers (such as cleaners and burger-flippers) on the other. The stagnation of median wages in many Western countries is cited as evidence that automation is already having an effect—though it is hard to disentangle the impact of offshoring, which has also moved many routine jobs (including manufacturing and call-centre work) to low-wage countries in the developing world.

(ii) Undue Advantage to Insurance Companies: The paradox is that the big beneficiaries from this drive for office automation won't be patients. In fact, automation will be a cost to them – they will still have to interact with the machines, performing tasks previously performed by front and back office staff. And doctors won't be the beneficiaries either, as they don't have bargaining power with the third part payees -- health insurance companies -- for their services. It's health insurance companies which will be the ultimate beneficiaries, as they will cut the pay to doctors to reflect the savings from getting rid of the back and the front office staff. In fact, health insurance companies, by cutting the fees they pay provides for patient visits, may leave doctors little choice but to run their office the new way. And that's why automation is music in the ears of insurance companies stockholders.

Global Response:

This is the practice in the United States and most of the developed world where the integrated patient management system ensures that each individual's information and health details are available to all the healthcare providers that are part of the insurers' network. Of course, the caveat here is that the patient must be insured and that too in a comprehensive medical coverage plan as otherwise, the information is not captured. Moreover, in the US, it is the case that the SSN or the Social Security Number be a valid and recorded one for the patients to have their information stored. The point here is that by having centralized databases, it becomes easier to track the treatment provided to the patients and helps subsequent visits to be smooth and efficient. Apart from this, in many developing countries, the provision of mandatory health insurance by the state has meant that these countries also have centralized records of the patients. For instance, Cuba and Russia are examples of communist and former communist countries that have actualized world class healthcare systems. Finally, the health care system in Europe is truly a cut above the rest as the

Scandinavian and West European countries do not have huge populations, which makes it easier for the health care providers to actualize better service.

Conclusion

Automation will play an essential role in providing at least some of the productivity boost that the global economy needs over the next half century as growth in working-age populations declines. It will contribute meaningfully to GDP per capita growth, even if it will not on its own enable emerging economies to meet their fast-growth aspirations. Given the range of scenarios around the pace and extent of adoption of automation technologies, there are sure to be surprises. We will see large-scale shifts in workplace activities over the next century. These trends are already under way.

By many accounts, the future of labor seems bleak. In the US alone, real earnings adjusted for inflation have not increased since 1975. This trend has been reflected in the economies of both Germany and Japan. To add on to the panic, a research study conducted at Oxford University has found that 47 percent of all employment is now under threat from automation. Coupled with the threat of new technologies that mimic human intelligence, there is more than enough cause for concern. Traditional thinking would argue that technologically advanced societies need to do as they have done in the past and adjust their labor markets to better suit the technological landscape of the present and of the future

Policy makers, business leaders, and workers themselves must not wait to take action: already today, there are measures that can be taken to prepare, so that the global economy can capture the opportunities offered by automation, even as it avoids the drawbacks.

Your Job as delegates is to build on this data that is available to you and bring about some interesting debate on means and methods to achieve this objective of making the inevitable process of automation lesser harmful than ever. Please remain reminiscent of the fact that the objective of the committee is to effectively find solutions to the agenda at hand.

This background guide has been crafted in a way as to only let you all gain some knowledge as to the functioning of the Robotics Industry and it's economical past. If you all will notice, there is no section in this document which deals with its effect on any

specific country. It is left upon you delegates to research and bring about true world data and schematics.