THE DIGITAL ECONOMIST

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Making Work Work – For All Stakeholders

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Executive summary

Beyond gaining an overview of the forces driving change, a vital part of preparedness for the future of work is assessing the time horizon, as detailed in a paper published by the International Labour Organization (ILO 2017).[1] The United Nations 2030 Agenda for Sustainable Development provides the framework for inclusive global sustainable development efforts for the coming decade. Among the 2030 targets of Goal 8 of the UN Sustainable Development Goals, "Decent work and Economic Growth," are to

[1] Inception Report for the Global Commission on the Future of Work (2017), International Labor Organization.

achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value.

When reflecting on the world of work and the future, differences in economic and social development between and within countries must not be overlooked. Employment opportunity is influenced by factors like digitalization, demographic transition, environmental change and globalization. Digitalization and globalization, for example, have sparked radical shifts in how we live and work. The coronavirus crisis has accelerated these beyond anything we could have imagined, as detailed in a publication by the OECD.[2]

This paper provides perspectives into the future of work in terms of incremental and disruptive changes to the workplace. It also presents key insights and policy implications to promote sustained, inclusive, full and productive employment. The methodology employed is robust and evidence-based approach, involving an extensive literature review and an analysis of trends, innovations and disruptions. The findings point to an inclusive approach that fosters global collaboration and flexible working arrangements coupled with regenerative and lifelong learning.

The Future of Work is Now

Innovative technologies have continued to expand in scope, with ever-shorter innovation cycles over the past decades, bringing work efficiency to unprecedented levels. Termed the “fourth industrial revolution,” “the age of automation” or “Industry 4.0,” we are witnessing a time of profound change. Work is becoming more flexible, more independent and more tech-enabled. With these shifts, issues around sustained, inclusive and full employment become more acute.

But no discussion of the future of work would be complete without a look at the current state of labor and attitudes about professional life. The concept of work as separate from private life and linked to a specific workplace is in fact relatively new. As historian and essayist Jill Lepore recently wrote in an article titled “We Work – Labor without end”,[3] French mathematician Gaspard-Gustave de Coriolis first used the word “*travail*” in the early 1800s to describe an action that produces a further action. Soon, the English equivalent, “work,” came into use to describe, for example, how a steam engine converts steam pressure into motion. By the end of the 19th century, work was widely

[2] The Future of Work (2020), OECD.
[3] Jill Lepore (2021) What’s wrong with the way we work, The New Yorker.

understood to mean the labor spent to meet human needs – especially when such labor was performed for monetary compensation. It is to this development that we owe the tendency in industrialized countries to define activities not confined to the workplace, such as childcare, care for the elderly, housework etc., as something other than work.

Clearly, an inclusive, forward-looking definition of work must be flexible in this respect, including work that is neither linked to a traditional workplace nor remunerated. This is one of the findings of a publication by the International Labour Organization (ILO 2017).[4] A further fundamental aspect that was highlighted by the ILO is that whenever work creates value (including in the gig economy, task work or platform work), it should be considered as employment and duly regulated.

Alongside the decentralization of work and technological advances, the ILO and others have identified parallel megatrends, such as demographic transition, environmental change and globalization, that are rapidly redefining the nature of work and jobs.[5] Globally, these megatrends interact with different features of the labor market, including large informal and rural economies, that will continue to shape the future of work.

Source: Biometrics, mood sensors,and green spaces by Bloomberg

[4] Inception Report for the Global Commission on the Future of Work (2017), International Labor Organization.
[5] Technological changes and work in the future: Making technology work for all (2016), The Future of Work Centenary Initiative.

No. 1 Change Driver: Technology

There can be no doubt that the main driving force changing work as we know it is technology. In its global commission report on the future of work, the ILO predicts that new technologies will create new jobs, while rendering others obsolete. A rift in the world of work is expected to open due to a lower demand for mid level qualifications and a higher demand for low and high-level expertise. Digitalization, artificial intelligence, the use of biometrics, automation, robotics and big data are revolutionizing the labor market. Different skillsets from those of today will be in demand. In a society where knowledge will be easier to acquire, transversal skills will become much more relevant, as content and know-how will be updated on an ongoing basis.[6]

The most immediate risk is large-scale unemployment due to a skill-demand mismatch. Concern over displacement of labor by machines is not new. However, some scholars argue that past interactions between automation and employment cannot be a reliable guide to the future.[7] Debates tend to oscillate between two positions: that new technologies are rendering workers redundant faster than they are creating new employment or that aggregate gains in productivity brought on by technology will enable job creation in the long run, along with new forms of value creation and social protection. These universalizing narratives assume that the uptake, diffusion and impact of technological change will be similar across peoples, geographies and professions. In reality, effects are – and are likely to remain – heterogeneous. While emerging technologies are being developed and deployed globally, technological trajectories and their impact will be shaped by and mediated through local social, cultural and economic systems.

Now's the Time for Tomorrow's Skills

While experts continue to debate the exact impact of technology and other megatrends, there can be no doubt that policymakers, educators and employers must pay close

[6] Making the future of work inclusive of people with disabilities (2020), ILO GBDN and Fundación ONCE.
[7] D.H. Autor (2015) Why are there still so many jobs? The history and future of workplace automation, The Journal of Economic Perspectives.

attention to the skills needed in the future – now. We urgently need to understand how those skills should be acquired and how training programs need to adjust.[8]

The rising importance of a highly skilled workforce means that there will be a growing income gap between less educated, relatively unskilled workers and highly educated, highly skilled workers. This threatens to increase existing social and economic gaps within and between countries. The OECD's Survey of Adult Skills (PIAAC) provides evidence related to this tendency. Also, organizations are facing skill shortages and skill mismatches.[9]

This scenario requires companies, educational institutions and governments to provide employees and the workforce with the training required to cover the skills in demand.[10] But the challenge of skill development for the future of work does not stop there. The UN Sustainable Development Goals also include aspects like realizing inclusive growth and shared prosperity, with skills expected to assume a major role in achieving this aspiration. The importance of skill development is articulated especially clearly in SDG 4, while at the same time promoting skills is a key element in achieving the other goals like decent work (SDG 8), eliminating poverty (SDG 1) and achieving gender equality (SDG 5).

Source: Community Learning Center by Boston Public Library

[8] ILO Regional Office for Asia and the Pacific (2018) Skills and the Future of Work Strategies for inclusive growth in Asia and the Pacific, International Labour Organization.
[9] Green Paper (2015), Federal Ministry of Labour and Social Affairs of Germany.
[10] ILO Regional Office for Asia and the Pacific (2018) Skills and the Future of Work Strategies for inclusive growth in Asia and the Pacific, International Labour Organization.

As challenging as it is to predict which specific skillsets will be in demand in tomorrow's job market, one undisputed overarching theme is digital literacy – a technology-rich society requires that individuals acquire skills in the use of digital technologies. As a baseline requirement, populations should be equipped with necessary cognitive, practical and socioemotional skills related to the use of IT to enable full participation in society.[11] The concept of digital literacy has shifted from a more technical and restricted orientation based on the mastery of computer applications toward a broader perspective that includes critically using these tools to solve daily cognitive problems.

Computational thinking – formulating problems and solutions in a way that they can be solved by computers[12] – and programming – design of algorithms and codes that are implemented in computer language – are increasingly considered key competences. The argument is that understanding and controlling digital technologies to solve problems is relevant not only in the technology industry, but in the vast majority of professions and economic activities.

Education goes global

This raises the question of how and where these skills can be acquired. In many countries, universities and colleges offering recognized degrees in digital technology fields like computer science and data analytics may not be available. In addition, many top universities in Asia, for example, are extremely difficult to get into. As a result, pressure is on to enable young people to study at costly universities abroad, typically in the US or UK – a path that privileges those who can best afford the expense. At the same time, entire less-affluent families often invest all available funds and/or go deeply into debt to finance foreign studies. As economies and workforces become more globally interdependent, this unequal practice must be re-examined. Here, forward-looking digital education ecosystems can play an important role. "What is less well-known is that there are world-class study programs in European colleges and universities that cost virtually nothing to complete," says Nga Le, founder and CEO of EDUBAO, a FinTech that provides support for people wishing to study abroad. Its Web-based services cover university selection and application processes, acquiring required health insurance, setting up a bank account and guidance in finding a place to

[11] Ester van Laar (2017) The relation between 21st-century skills and digital skills: A systematic literature review, Computers in Human Behavior.
[12] J. M. Wing (2010) Computational Thinking: What and Why? Thelink - The Magazine of the Carnegie Mellon University School of Computer Science.

live. “Education abroad helps young people acquire the hard and soft skills they need for the future of work. It’s important not to underestimate the importance of language and intercultural skills, for example. While in the past, studying abroad led to brain drain, as a large proportion of graduates went to work in their host countries, we now talk about brain circulation. Even those who do spend some time working outside their home countries tend to return home, bringing the skills and intercultural knowledge with them.” This is backed by research: in the paper “Brain Circulation: Theoretical Considerations,” [13] authors Rasa Daugėlienė, and Rita Marcinkevičienė argue that brain circulation is replacing brain drain in a globalized, knowledge-based world. The paper states that highly qualified individuals are moving between different countries and institutions, acquiring sharing, and spreading their knowledge. “Brain circulation is one of the most important factors influencing countries’ economic growth and competitiveness,” the paper claims.

In addition, lifelong learning is more and more important as work demands are constantly changing. This means a paradigm shift in learning, from “learning things” to “learning to learn” – the basis of lifelong learning.[14] For this, educational systems need to find a better balance between emphasis on content and the development of skills. An important concept that has emerged to address the need for continuous upskilling in response to changing demands is “regenerative learning.” The term “regenerative,” which is used to describe systems in areas like thermodynamics, sustainable agriculture and the Circular Economy, represents a decisive departure from traditional education. As explained in a recent whitepaper published by Stanford University[15] (Ade Mabogunje et al. 2020), in typical education cycles students learn and then go to work. The regenerative approach, in contrast, integrates students in a work environment where they learn from experienced professionals. The paper cites SnapIT Solutions, a US-based company that offers IT services to companies as well as training for career entrants and those seeking to reskill. Regenerative learning creates ongoing feedback loops of learning in response to real-life needs. Nowhere is the value of this concept more apparent than in the fast-moving IT industry. “If it’s not regenerative learning, it’s not adaptive,” says Neelima Parasker, President and CEO of SnapIT Solutions. “The regenerative model means that trainees and employees acquire the microcredentials the industry demands on a timely basis and without major financial commitment. This opens the door to better employment opportunities for career entrants and people needing to reskill or skill up – paving the way even for young people without a traditional

[13] Rasa Daugėlienė and Rita Marcinkevičienė (2009) Brain Circulation: Theoretical Considerations, Kaunas University of Technology.

[14] Ronald E. Anderson (2008) Implications of the information and knowledge society for education, J. Voogt & G. Knezek (Eds.) International handbook of information technology in primary and secondary education.

[15] Ade Mabogunje et al. (2020) White Paper, Stanford University.

university degree.” This last point is particularly significant: according to research conducted by the Kauffman Foundation, only three out of seven students in the US are able to pursue a college education.

Source: MIT Resource Development by Massachusetts Institute of Technology

The regenerative approach effectively addresses the general trend in which technological advancement is driving demand for higher-level skills and greater flexibility. A further aspect is that jobs related to sustainable industry will demand new skills in the future of work. Public policy can take advantage of this new demand to push for green economies as vehicles to support the inclusion agenda. To achieve needed reorientation and address climate change, there is a need for coherent strategies that cover employment, education and training as well as the environment, the energy sector and finance. In other words, the looming crisis can be used to help transform society for the better.

Winners and Losers

Technological change has different impacts on different groups. We need to understand how this will affect our already high levels of inequality and understand what policies and mechanisms can reduce the costs to the most vulnerable sections of population (those unable to absorb these shocks) as well as how technology can lead to greater levels of equality. In the future of work, technological innovation can provide opportunities for more equal distribution of employment, on the one hand, and leisure, family and community time on the other. Technology is already making it much easier for employers and employees to design win-win solutions to scheduling and the location of work – a trend that the COVID-19 pandemic has clearly boosted to a new level.

Also, as a result of technological innovation and its adoption both at home and work, the future of work will lead to a reduction in the office footprint. Remote work will cut down the need for high-rent and high-mortgage offices, as well as traffic congestion, pollution and overcrowding. With more people working remotely, companies are collaborating to open regional hubs or provide access to co-working spaces wherever their workers are concentrated rather than having most of their workforce at one central office.

While the recent trends discussed here indicate that net job growth is likely to remain positive in the near future, major changes are underway in terms of skills in demand. At the aggregate level and within many industries, job polarization is taking place, with an increased demand for both skilled and unskilled workers – at the expense of semi-skilled workers.

Entrepreneurial Thinking

A study published by the World Economic Forum[16] shows that the jobs most in demand in the coming years will be related to data, AI and machine learning, where problem-solving capacities will become essential. The new employment paradigm is also expected to place a premium on social and personal skills as opposed to specific expertise. Skills such as critical thinking, analytical capacity, emotional intelligence and cognitive flexibility can be expected to become essential in this new reality.

[16] Saadia Zahidi (2016) The gig economy is changing the way we work. Now regulation must catch up, World Economic Forum.

In addition, entrepreneurial mindsets and skill sets will be in demand from organizations around the world. In a fast-changing work environment, taking responsibility by thinking and acting like an entrepreneur contributes to success.

A recent article stated, “Solving societal problems is becoming an investable proposition – missions, moon shots and ‘big bets’ are the talk of policymakers, philanthropists and venture capitalists alike”.[17] Spurred on by the UN Sustainable Development Goals, there is a growing flow of investment into and from social impact funds that invest in technologies that aim to solve the world’s most pressing problems.[18] Many dedicated social enterprise accelerators are fueling this trend. Today, smart economic development aims to support entrepreneurship and stimulate the kind of job growth that young firms bring to a healthy regional economy. In the US, for instance, nearly all net job creation comes from innovative firms less than five years old, making entrepreneurship a regional growth priority (http://economyleague.org).

Policy Responses

We can expect the current trend, in which technology and disruptive innovations are reshaping work, to continue: people on the wrong side of the digital divide will keep losing out. The global labor market in 2030 is likely to be highly competitive. New attitudes and behaviors will be needed on the part of both employees and employers. Above all, flexibility, resilience, collaboration, entrepreneurism and creativity will be in demand. The ability to respond to continuous change will be critical. To ensure no one is left behind in the future of work, policymakers and stakeholders can help here by facilitating alternatives in areas that are suffering from incremental and disruptive innovations. Policy should encourage innovation and technological change that increases the employability of workers.

The focus must be on innovative ways to ensure that technology serves to support, rather than replace, workers. In addition, countries will have to consider more social policy measures to offset the shocks and manage the risks that are likely to flow from changes that technologies like artificial intelligence are causing in employment patterns. For instance, conversation around technological advances must also look at work in the informal economy, given that workers in the informal economy typically have very low earnings and are among the most vulnerable stakeholders. We should, however, also

[17] Unleashing Philanthropy’s Big Bets for Social Change (2019) Stanford Social Innovation Review
[18] Adam Connaker and Saadia Madsbjerg (2019) The State of Socially Responsible Investing, Harvard Business Review

recognize that technology has the potential to increase incomes for informal workers and to improve their working conditions.

Source: Augmented Reality in the Workplace by My Tech Decisions

Beyond the general requirement of digital skills, forecasting future specific skill demands is at best speculative. In light of this inherent uncertainty, policymakers are well advised to ensure availability of flexible education and upskilling options. Programs to provide paid time for employees to upgrade their skills as technology changes are also crucial, especially in terms of inclusivity.

A better future of work depends on adaptive, portable skills acquired through a range of new methods. These include regenerative learning, workplace training and recognition, online learning, massive open online courses (MOOCs) and digital badges. A better future is one where gig workers have more control over their working hours, have access to platforms for learning and development and can achieve their entrepreneurial aspirations.

Extensive overwork and overtime should also be discouraged. Providing workers with a right to refuse overtime and ensuring mandatory rest times between shifts will reduce scheduling conflict and improve health. Updating overtime earnings thresholds and ensuring that a larger number of women and men are covered by overtime regulations will discourage employers from making long hours an expected component of employment. For older workers, revaluing skills is critical. At the same time, identifying transferable skills already possessed by experienced workers is important as a signal of employability.

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Conclusion

As automation continues to advance in various industries based on the adoption of incremental and disruptive innovation, humans focus on innovation, creativity and problem solving. The transformation of the work we perform as well as where and how we do it will continue. A changing workforce may lead to new converging trends as remote workers and gig workers start to look more alike, offering companies and employees new opportunities and challenges.

Technological change as a global phenomenon has its implications – positive and negative – which are felt across all countries of the world. While there will be winners and losers in all countries, the negative impacts are likely to be felt disproportionately in the southern hemisphere. We must prepare for the fact that some advancements – particularly in artificial intelligence – will replace human beings.

To sum up, policymakers worldwide are called upon to:

- Support lifelong learning in knowledge-related skills
- Enable brain circulation
- Foster regenerative learning
- Encourage entrepreneurship
- Bridge the digital divide
- Enable diversity and inclusion
- Empower autonomous and creative workstyles

In short, the new changes in technologies will bring about significant changes in employment trends by industry, with the primary drivers being digital connectivity and automation. Now is the time for governments and educational institutions to innovate and adapt to these changing realities.

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The Digital Economist is a global impact ecosystem dedicated to cultivating insights, products, services and programs toward human and planetary outcomes. The Knowledge Partnership offers a way to leverage our collective ecosystem of top scholars, entrepreneurs and industry leaders focused on emerging tech, economic science and data governance to build an *engaged and action-based* leadership in the global economy. For inquiries, please contact: info@thedigitaleconomist.com.

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References

Anderson, R. (2008). Implications of the information and knowledge society for education. In J. Voogt & G. Knezek (Eds.), International handbook of information technology in primary and secondary education. Volume 20, 1, 5-22, New York: Springer.

Connaker, A and Madsbjerg, S. (2019) The State of Socially Responsible Investing. Harvard Business Review. Available at: https://hbr.org/2019/01/the-state-of-socially-responsible-investing

D.H. Autor, Why are there still so many jobs? The history and future of workplace automation. The Journal of Economic Perspectives, 29(3):2015.

Green Paper, Federal Ministry of Labour and Social Affairs of Germany, 2015.

Hegewisch, Ariane and Halie Mariano. 2020. “Same Gap, Different Year. The Gender Wage Gap: 2019 Earnings Differences by Gender, Race, and Ethnicity.” Washington, DC: Institute for Women’s Policy Research.

ICT Leadership in Inclusive Employment of Persons with Disabilities: An Economic and Social Imperative. WITSA/SourceAmerica, 2018.

ILO (2016). Technological changes and work in the future: Making technology work for all. The Future of Work Centenary Initiative, Issue Notes Series.

ILO (2018): Skills and the Future of Work Strategies for inclusive growth in Asia and the Pacific. International Labour Organization

ILO GBDN and Fundación ONCE (2020): “Making the future of work inclusive of people with disabilities”. A joint publication by Fundación ONCE and the ILO Global Business and Disability Network, developed within the framework of Disability Hub Europe, a project led by Fundación ONCE and co-funded by the European Social Fund.

ILO (2017). Inception Report for the Global Commission on the Future of Work. International Labor Organization.

OECD (2016a). Skills Matter: Further Results from the Survey of Adult Skills. OECD Skills Studies, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264258051-en

OECD (2016b). Policy Brief on the Future of Work - Skills for a Digital World © OECD 2016

OECD (2020). The Future of Work, Organisation for Economic Co-operation and Development

Rolle, J.D., Billy I., Kisato J., Acevedo R. and Zarbabal K. (2017) “The Cultural Genogram: Experiential Entrepreneurship through a Global lens.” Presented at the 6th International Conference on Business & Economic Development (ICBED).

Stanford Social Innovation Review. (2019) Unleashing Philanthropy’s Big Bets for Social Change. Available at: https://ssir.org/supplement/unleashing_philanthropys_big_bets_for_social_change

Van Laar, E., van Deursen, A., van Dijk, J., & de Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. Computers in Human Behavior, 72, 577-588. doi: 10.1016/j.chb.2017.03.010.

Wing, J. M. (2010). Computational Thinking: What and Why? Thelink - The Magazine of the Carnegie Mellon University School of Computer Science. Retrieved from http://www.cs.cmu.edu/link/research-notebook-computational-thinking-what-and-why

Work for a brighter future. ILO Global Commission on the Future of Work, 2018.

World Economic Forum. 2016. The gig economy is changing the way we work. Now regulation must catch up. Available at: https://www.weforum.org/agenda/2016/06/gig-economy-changing-work/

WRF (2019). Key Findings: The future of jobs. World Economic Forum, 2019.