Accelerating inclusion and access to work for refugees in the digital economy

By Mihretab Gebru

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EXECUTIVE SUMMARY

The combined impact of digitalization, Covid19, and other megatrends is rapidly changing the world of work. Advancements in technological automation and innovation will create new job opportunities and destroy jobs in vulnerable sectors. This changing nature of work has a significant implication for refugees and other marginalized groups.

This report is a mapping review of key global and regional literature on the future of work and digital accessibility barriers for refugees. It identifies the major trends shaping the nature of work, the impact of automation, growing and declining jobs across different sectors, and the future of skills. Additionally, this report was informed by first-hand insights from focus group discussions with refugees and youth leaders from DOT's network of Youth Leadership Advisory Boards on digital accessibility barriers for refugees.

Despite the growing opportunities brought by the digitalization, digital accessibility barriers at different levels continue to hinder refugees inclusion in the digital economy. Low skilled and low paid workers have been disproportionately impacted by Covid19 pandemic and are at high risk of job displacement due to automation. Capitalizing on 21st human skills and transferable digital skills are essential steps to build more resilience among refugees.

ABOUT THE AUTHOR

Mihretab Gebru is a masters student at the Institute of Societal Resilience at Vrije University in Amsterdam. Mihretab is a former DOT youth community facilitator from Ethiopia where he facilitated digital and 21st-century skills for youths in his community. Mihretab completed this internship research as part of his masters with DOT on 'accelerating inclusion and access to work for refugees in the digital economy'. He is a firm believer in the power of digital skills to create more resilient communities amid fast-paced technological disruptions. He is interested in digital inclusion, refugee studies, and addressing the digital divide.

ABOUT DIGITAL OPPORTUNITY TRUST

DOT is a youth-led movement of daring social innovators who have the tools, knowledge, and networks to create opportunities and transform their own communities.

We mobilize and inspire all underserved and disadvantaged young people with digital literacy, 21st-century skills and the self-confidence that will enable them to thrive in an inclusive digital economy. We support youth to become innovators and leaders, and to create and apply digital solutions that have a positive impact in their communities.

DOT UK's focus is to increase the digital skills of displaced youth across the UK.

INTRODUCTION

Digital technologies are transforming the traditional conceptualization of work, how work is done, and the skills required for jobs. Recent technological transformations along with other megatrends i.e. demographic change, climate change, urbanization, and Covid19 are reshaping the world of work. The World Economic Forum defined this global shift towards the future of work as *'an ever-expanding cohort of new technologies, by new sectors and markets, by global economic systems that are more interconnected than in any other point in history, and by information that travels fast and spreads wide'* (WEF, 2020). This changing nature of work is defined in terms of the changing skills, the rise of digital platform-based markets, and a shift of employment from manufacturing industries to the service and IT sectors (World Bank, 2019).

Advancements in technology - automation, digitalization, and artificial intelligence - have brought about new opportunities and challenges for jobs of the future (McKinsey, 2021; OECD, 2019). On the one hand, these changes mean massive job loss and skills shortages as a result of the everchanging skills demand (WEF, 2020). One of the defining features of the changing nature of work is the changing skill types a job requires. Analysts suggest that the transformations in the world of job are changing the life span of employees' current job skills and have widened the gap between existing and required skills (Kirschner & Stoyanov, 2018; McKinsey, 2017). The technological advancements coupled with the recession as a result of the pandemic have left millions of employees less prepared for jobs of the future (Coursera, 2021).

Technological disruptions have also globally brought about massive job loss and skill shortages (WEF, 2020), and aggravated existing inequalities with a record of growth in high-paying jobs and a decline in low-paying jobs globally (Taylor et al., 2022). On the other hand, technology is providing new opportunities to enhance productivity, and through innovation, it is creating new sectors and new jobs (World Bank, 2019).

Commentators are calling for increased investment in human capital to harness the potential of the emerging digital economy (World Bank, 2019). As a result of these recent developments, the leading trends today are a shift towards remote work, e-commerce, and a growing online market (WEF, 2020).

Globally, governments, international and regional organizations, non-governmental organizations, and companies have started adopting digital strategies and incorporating digital skills in their policies and strategies. For example, 28 members of the OECD (73%) have adopted a national digital strategy (ILO, 2022), the African Union adopted Digital Transformation Strategy for Africa in 2020 (IFC, 2021), and the European Union's digital strategy are among others. These strategies seek to harness digital technologies for sustainable economic development and for the digital transformation of economies. In addition to those strategies, big tech companies like Meta, IBM, and Google are supporting digital skill initiatives in many countries (IFC, 2021).

Technological transformation and the changing nature of work have significant implications for refugees and other marginalized groups. On the one hand, as refugees are most often excluded from mainstream employment opportunities, the digital economy and its attractive motto i.e. everyone can work from anywhere considering they have the skills and internet connectivity, brought with it a promise for refugees' economic empowerment and digital inclusion. On the other hand, due to the myriad of digital accessibility challenges refugees face, ranging from limited connectivity to formal restrictions, the digital economy may reinforce existing inequalities (Hackl, 2021). The report aims to provide insights into the future of work and accessibility barriers for refugees.

METHODOLOGY

This report mainly used a desk review of key global and national reports on the digital economy, digital skills, and refugee digital livelihoods. In addition to the secondary data, focus group discussions were conducted to get first-hand insights into accessibility barriers refugees face. The first focus group was conducted with refugees resettled in the UK as part of DOT UK YLAB co-design sessions. The second focus group was conducted with DOT's YLAB leaders in the Middle East and East Africa. The youth leaders are active community facilitators who have direct experience working with refugees and other marginalized groups. Accordingly, the report is organized into two main sections:

01	The first section will explore the digital economy, megatrends shaping the world of work, the growing and declining jobs of the future, and the demand for digital skills.
02	The second part of the report investigates what the changing nature of work means to refugees. Areas covered in this section include; digital livelihood opportunities for refugees, digital accessibility barriers refugees face, and refugees' contribution to host economies.

THE DIGITAL ECONOMY

The digital economy encompasses a range of work and business activities. Hence, definitions of what comprises the digital economy or digital labor vary. Broadly, the digital economy is defined as, "*...an economy based on digital technologies (sometimes called the internet economy)*" (European Commission, n.d). According to OECD, the digital economy "*incorporates all economic activity reliant on, or significantly enhanced by the use of digital inputs, including digital technologies, digital infrastructure, digital services, and data. It refers to all producers and consumers, including government, that are utilizing these digital inputs in their economic activities*". In the digital economy, traditional 'brick and mortar' economic activities are being reshaped by computers, the internet, and other technologies. In the wider context of the digital economy, digital platforms are internet-based establishments that provide services and products serving as intermediaries between two or more interdependent actors (Hackl & Gardiner, 2021). Digitalization is thus facilitating a non-traditional and non-standard form of employment which is characterized by flexible schedules, working for multiple employers simultaneously, and short-term work contracts (Charles et al, 2022).

The ILO defines digital labor as, "*all work that uses, or is made possible by, information and communication technologies (ICT) may be considered "job in the digital economy", or "digital job*". Digital jobs encompass on-demand services like Bolt and Uber and outsourcing platforms like Fiver and Upwork. Due to the fast digitization of all sectors, digital jobs are not just confined to the ICT sector. Thus, digital jobs are broadly divided into three types (Charles et al, 2022).

- First, digital-intensive jobs - jobs that are in the ICT sector and rigorously use digital technologies, for example, software development and computer engineering.
- Second, digital-dependent jobs - jobs that are mediated by some kind of digital technology and cannot be executed without it. Examples include e-commerce platforms, and online freelance and works on digital labor platforms (e.g. Bolt, Gorillas, Fiver).
- The third type of digital jobs is digitally-enhanced jobs, jobs that could be executed without ICT yet incorporate digital technologies. Examples in this category include the use of ICT in office management, businesses, agriculture, and tourism.

MAJOR TRENDS SHAPING THE FUTURE OF WORK

While megatrends like increased automation are reshaping the nature of work, refugees are at risk of lagging behind if appropriate measures and responsible solutions are not taken (Brown et al., 2017). These megatrends are "creating pressure for people to develop new and higher levels of skills, as well as to continue upskilling throughout life and to use their skills more effectively" (OECD, 2019). Major trends that are shaping and continue to shape the future of jobs are: technological changes, demographic changes, climate change, urbanization, and Covid19 (Taylor et al., 2022; Bakhshi et al., 2017; Brown et al., 2017; WEF, 2020).

Technological Changes such as increasing connectivity, automation, robotics, and artificial intelligence. This is further discussed in the next part.

Demographic Changes mainly population growth and changes in population composition (aging population) will continue to affect the labor market, job skills, and business models (Bakhshi et al; Brown et al., 2017). Europe, for example, will face a shortage of skilled workers mainly because of the diminishing workforce as a result of population aging which according to analysts is estimated to be 4 percent (around 13 million workers) by 2030 (Smit et al., 2020).

Climate change by 2030 energy demand is estimated to increase by 50 percent, the demand for water is estimated to increase by 40 percent (NIC, n.d.). While climate change could force 1.2 billion to move by 2050 (IEP, n.d.), there has been a growing consensus on climate change and the concomitant global warming and scarcity of resources. In line with The Climate Act's call for a 49% reduction in greenhouse gas emissions by 2030, there is growing pressure for alternative sources of energy and investments in green technology. The traditional energy sector and jobs will see restructuring as new types of green jobs emerge (Brown et al., 2017). According to ILO (2018), globally 24 million green jobs will be created by 2030.

Urbanization according to the UN 4.9 billion people of the world will be living in urban areas by 2030, and cities will be the primary centers and drivers of the future of work (UN, n.d.)

Covid19 pandemic for the most part Covid19 has accelerated the speed of technological adoption. The impact of covid19 on the labor force, and jobs is long-term with the new trends' continuing to shape the world of jobs. According to analysts at McKinsey, Covid19 has accelerated three major trends namely remote work with 25-30% of employees in developed countries shifting towards working from home, digitization with 2-5 times growth in e-commerce, and automation with an upsurge in robotics and artificial intelligence (McKinsey Global, 2022). Researchers estimated that over 100 million workers may need to change jobs by 2030 as a result of the disruptions caused by the pandemic-induced work trends (Lund et al., 2021). This is especially true for workers at the lowest rung on the labor ladder i.e. least educated and less skilled workers who will be vulnerable because of the skill gap.

AUTOMATION AND THE FUTURE OF WORK

The fear of machines rendering human labor redundant is not an entirely new phenomenon. Historically in the previous waves of technology, several economists have been warning about the implications of technology for the labor force. Robert Heilbroner in 1965 for example asserted that "*as machines continue to invade society, duplicating greater and greater numbers of social tasks, it is human labor itself—at least, as we now think of 'labor'— that is gradually rendered redundant*" (Acemoglu, 2018). The Luddite protest movement of the industrial revolution, where workers protested against mechanization is a popular phenomenon of the fear of technology-driven job loss (Archer, 2000).

Automation technologies encompass various technologies like industrial robots, artificial intelligence, driverless cars, voice and facial recognition systems, and customer service chatbots (Miller, & Miller, 2017; Bhaumik, 2018). The technological advancements over the last decades have enhanced the abilities of automation technologies and reduced their costs leading to their application in various sectors including agriculture (Ivanov et al., 2020). Researchers at PwC (Hawksworth et al., 2018) identified three waves of the automotive impact of technology (see figure 1):

i. Algorithmic wave of the early 2020s this phase is characterized by the automation of simple data analysis and computational tasks. The financial sector is said to be affected by this wave of automation.

ii. The augmentation wave, to the late 2020s Dynamic interaction with technology automating clerical support tasks and robotic tasks such as moving objects in stores.

iii. **The automotive wave to the mid-2030s** this wave is characterized by the automation of physical labor and manual dexterity affecting the manufacturing and construction sectors.

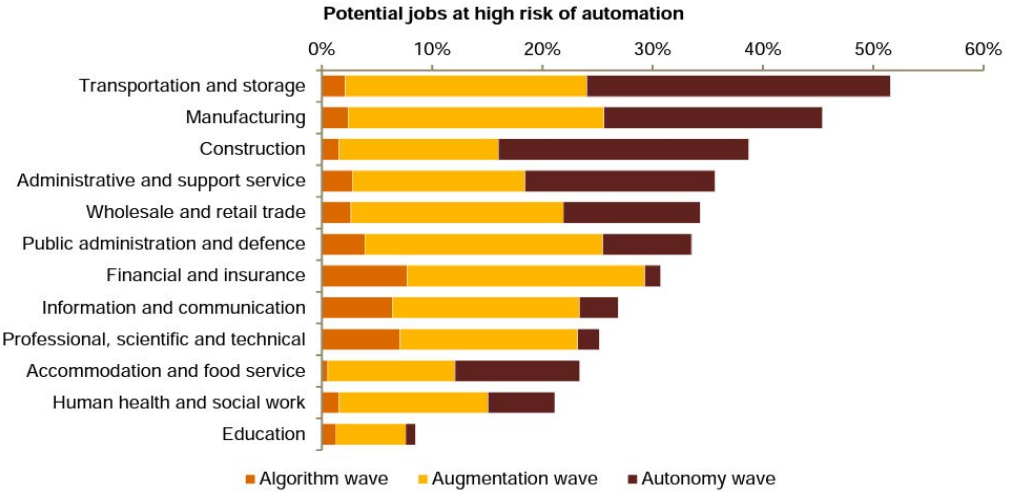


Figure 1: Jobs at high risk of automation, Source: PwC (Hawksworth et al., 2018)

Jobs with a low risk of automation have the highest estimated growth rate (Taylor et al., 2022). As outlined in figure 6 above, education and health care are sectors with the lowest automation and evidence from World Economy Forum, National Foundation for Educational Research and McKinsey have identified these sectors as having a higher potential for growth.

Globally, about 50 percent of existing jobs could be automated by 2030 (McKinsey, 2017). In the EU for example, 1.5% of the manufacturing workforce has been displaced by technology since 2000 (Taylor et al., 2022). The pace of automation by the year 2030, however, is estimated to be 22% (about 53 million jobs) of current jobs and activities in the EU (Smit, 2020; Smit et al., 2020). Workers who are at the highest risk of displacement by automation are those who were highly affected by the pandemic-induced disruptions (Smit et al., 2020).

Even though automation and artificial intelligence will impact all jobs and sectors in the future, the level of impact varies across sectors. The risk of job displacement by automation varies across different sectors and different groups of people. For example, compared to the service sector, the manufacturing industrial sector is expected to have a high level of automation (Hawksworth et al., 2018). The main predictors of automation vulnerability are the type of tasks, the level of payment, skill and education level, and demographic composition (Taylor et al., 2022). As with Covid19, advancements in automotive technologies are predicted to disproportionately affect those workers who are less educated/skilled and less paid (Cedefop, 2021; Hawksworth et al., 2018) (see figure 2). For example, in the US, workers with a high school education or less are more at risk of job displacement as a result of automation. 12 million workers of African Americans and Hispanic backgrounds, 15 million young workers, and 11 million workers over the age of 50 are groups at the most risk of job displacement due to automation (Lund et al., 2019). Routine and administrative tasks mostly consist of work in 'predictable environments' which makes them highly exposed to automation (Brown et al., 2017). In the US these activities consist of 51% of activities in the workforce (McKinsey, 2017) they are mostly found in retail trade, accommodation, food service, and manufacturing. Examples include collecting and processing data (Taylor et al., 2022). The impact of automation will mainly be on customer service, office support, transportation and logistics, and food service jobs (Lund et al., 2019). Simultaneously new jobs are expected to be created in sectors like healthcare and business services. However, the biggest challenge will be the skill gap (the mismatch between workers' existing skills and demanded skills).

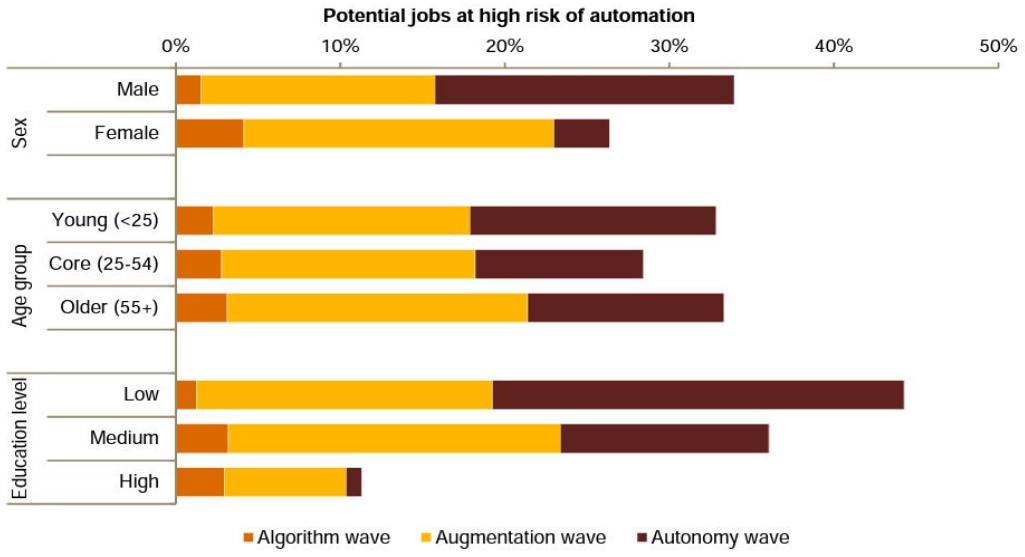


Figure 2: Potential job automation rates by type of worker across waves, Source: PwC (Hawksworth et al., 2018)

Much of the research on the effect of technological transformation has focused on automation and its negative effects i.e. job displacement. However, automation is not the only dimension brought about by technological changes. Evidence from previous technological waves suggests that job loss as a result of automation is counterbalanced by the new jobs created in new or existing sectors. For example, when employment in traditionally labor-intensive areas like textile and agriculture has shrunk, demand for labor has increased in other sectors like healthcare, finance, entertainment, tourism, electronics, and other areas (Autor et al., 2022). Many analysts estimated that the number of jobs created will outnumber the lost jobs producing net positive job growth (Lund et al., 2019; Verdi 2020). Another dimension of the effect of technological changes is augmentation innovations which are '*technologies that increase the capabilities, quality, variety, or utility of the outputs of occupations, potentially generating new demands for worker expertise and specialization*' (Autor et al., 2022).

Recent analysts have focused on the comparative advantages human labor has (Acemoglu 2018), the ways technology complements human labor, and augmentation innovations that create new job opportunities (Autor et al., 2022). Analysts are calling for accelerated reskilling of employees and redesigning education and training policies to better meet the demands of jobs of the future (Taylor et al., 2022). With a well-planned investment in human capital, skills, and training along with collaborative efforts of the private and public sectors technological change can be an opportunity for the workforce. In fact, 96 percent of workers at high risk of automation could find a better or similar job given adequate reskilling and upskilling training (European Commission, n.d).

GROWING AND DECLINING JOBS IN THE NEAR FUTURE

The World Economic Forum report on the Future of Jobs Report provides a comprehensive analysis of the global workforce, by focusing on 15 industries and 26 economies (WEF, 2020). The WEF study projected increasing employment prospects in areas such as cloud computing, data and AI, content production, engineering, marketing, people and culture, product development and sales (see figure).

Increasing Demand ▲	Decreasing Demand ▼
1. Data Analysts & Scientists	1. Data Entry Clerks
2. AI & Machine Learning Specialists	2. Administrative & Executive Secretaries
3. Big Data Specialists	3. Accounting, Bookkeeping & Payroll Clerks
4. Digital Marketing & Strategy Specialists	4. Accountants & Auditors
5. Process Automation Specialists	5. Assembly & Factory Workers
6. Business Development Professionals	6. Business Services & Administration Managers
7. Digital Transformation Specialists	7. Client Information & Customer Service Workers
8. Information Security Analysts	8. General & Operations Managers
9. Software & Applications Developers	9. Mechanics & Machinery Repairers
10. Internet of Things Specialists	10. Material-Recording & Stock-Keeping Clerks
11. Project Managers	11. Financial Analysts
12. Business Services & Administration Managers	12. Postal Service Clerks
13. Database and Network Professionals	13. Sales Rep., Wholesale & Manuf., Tech. & Sci. Products
14. Robotics Engineers	14. Relationship Managers
15. Strategic Advisors	15. Bank Tellers & Related Clerks
16. Management & Organization Analysts	16. Door-to-Door Sales, News & Street Vendors
17. FinTech Engineers	17. Electronics & Telecoms Installers & Repairers
18. Mechanics & Machinery Repairers	18. Human Resources Specialists
19. Organizational Development Specialists	19. Training & Development Specialists
20. Risk Management Specialists	20. Construction Laborers

Source: Future of Jobs Survey 2020, World Economic Forum

Figure 3: growing and declining jobs, Source: WEF 2020

These predictions of employment prospects are consistent with other estimates of jobs in the future. Building on data from 8 countries (China, France, Germany, India, Japan, Spain, the United Kingdom, and the United States), which together make up roughly half of the globe's population and over 60% of global GDP, analysts at McKinsey estimated emerging and declining jobs across the eight economies (McKinsey Global, 2022). They accounted for the effect of different trends such as automation, population aging, and climate change. Accordingly, they estimated that occupations in health care, science, technology, engineering, and mathematics (STEM) will highly increase in the share of total employment. Management, business, legal and creative, and art management will also exhibit a steady increase. On the other hand, occupations in office support, production and warehousing, agriculture, food services, customer service, and sales are estimated to decline by the 2030s (see figure 4 below).

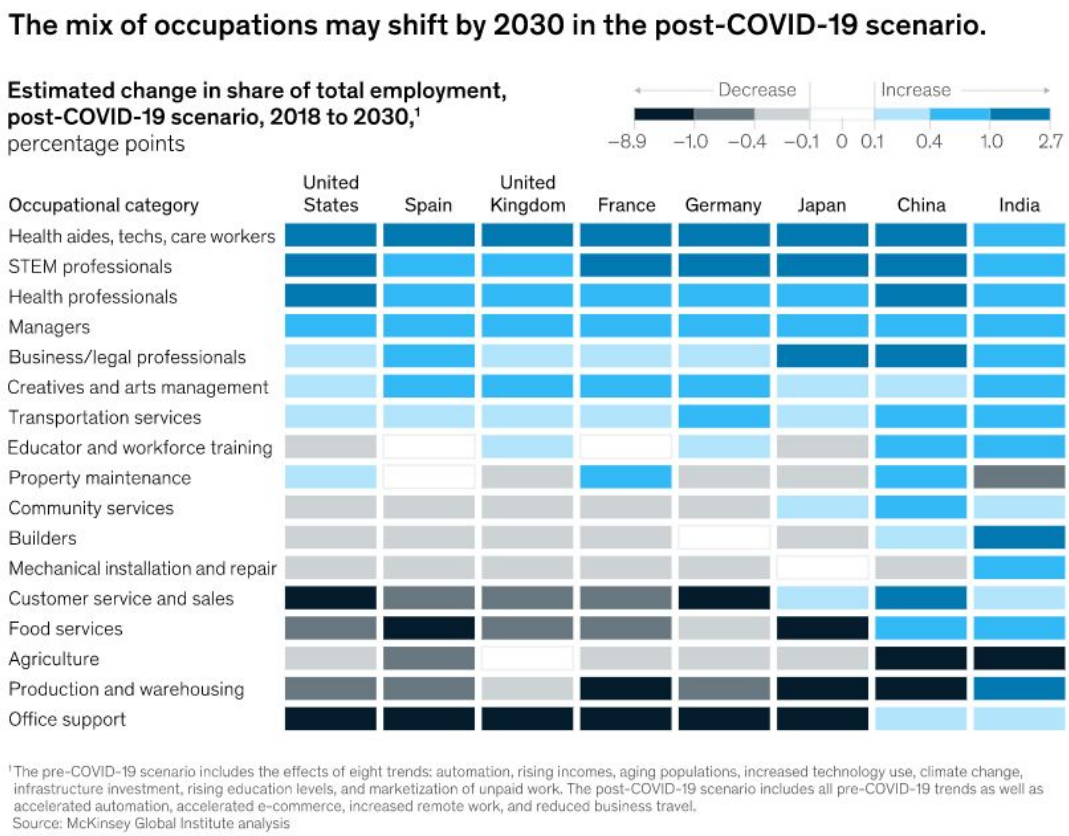


Figure 4: Estimated change in share of employment, Source: McKinsey (Lund et al., 2021)

Using a novel mixed-methods approach Bakhshi and colleagues applied a model to predict growing and declining skills and jobs in the US and UK by 2030 (Bakhshi et al., 2017). They found that 9.8% of the labor force in the US and 8.0% in the UK are in jobs that will most likely increase in the share of the labor force in the future. On the one hand, 18.7% of the US and 21.2% of the UK's labor force are in occupations that will most likely shrink. According to their prediction, education, health, personal care, construction, green jobs, and sales occupations will have increasing demand. Examples of jobs in this category are skilled trades, construction occupations, food preparation, elementary services, hospitality, public sector, creative, digital, design, and engineering among others.

On the other hand, manufacturing production, administrative and secretariat jobs are predicted to decline in the future. Jobs with a higher prospect of future decline are the ones that are routine administrative tasks that are at high risk of automation.
In their review of the literature on jobs of the future analysts at the National Foundation for Educational Research found health, social and personal care jobs as the most widely mentioned areas of jobs of tomorrow (Taylor et al., 2022). At the opposite end, areas with top declining job prospects include administrative, manufacturing, retail, agricultural, and business administration sectors (Taylor et al., 2022).
The growing sectors and occupations in the literature illustrate that the jobs with growing employment prospects are driven by technology and human factors (Bakhshi et al., 2017). Even though jobs requiring digital and technological expertise are among the top emerging ones, the growing jobs in health care, education, and sales highlight the significance of skills in which humans have a comparative advantage.

DEMAND FOR DIGITAL SKILLS

UNESCO defines digital skills as, "*a range of abilities to use digital devices, communication applications, and networks to access and manage information*". With digital technologies and other social-economic mega trends disrupting the world of work, policymakers and analysts see digital skills as critical for the jobs of tomorrow (Djumalieva & Sleeman, 2018). *"Digital skills in particular are disrupting every aspect of how we work. The rising importance of digital disruptive skills will continue to reshape how we work"* (LinkedIn Economic Graph, n.d). Digital skills are considered crucial not only in terms of increasing employability but also their portable feature gives people career resilience. Employers have recognized the importance of digital skills and are seeking a workforce with up-to-date digital skills and the ability to adapt to changing work trends.

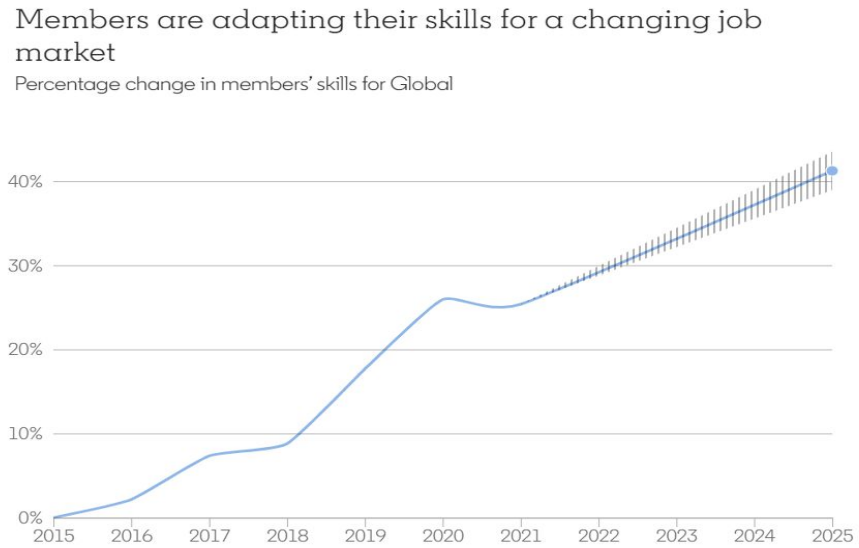


Figure 5: Skill change, Source: Linkedin economic graph

According to World Economy Forum's survey, skill gap in the workforce and the inability to attract skilled talent are among the top barriers in the face of technological adoption. In a similar survey, more than half (56%) of employers face challenges in hiring skilled talents, while 28 percent put skill mismatch and skills from current formal education as barriers (City & Guilds, 2021). In the UK, 61 percent of people of working age don't feel prepared with the necessary skills to help them harness job opportunities (City & Guilds, 2021). In Australia, one out of three employees lacks foundational digital skills, which is an indication that a considerable number of employees need upskilling and reskilling (Shahraki et al., 2022). According to Accenture's estimate, major economies of the globe can lose up to 11$ trillion by 2028 if they fail to bridge the skill gap (Rand Review, 2022). The United Nations predicted that 9 out of 10 jobs will require competency in digital skills in the near future (United Nations, 2018).

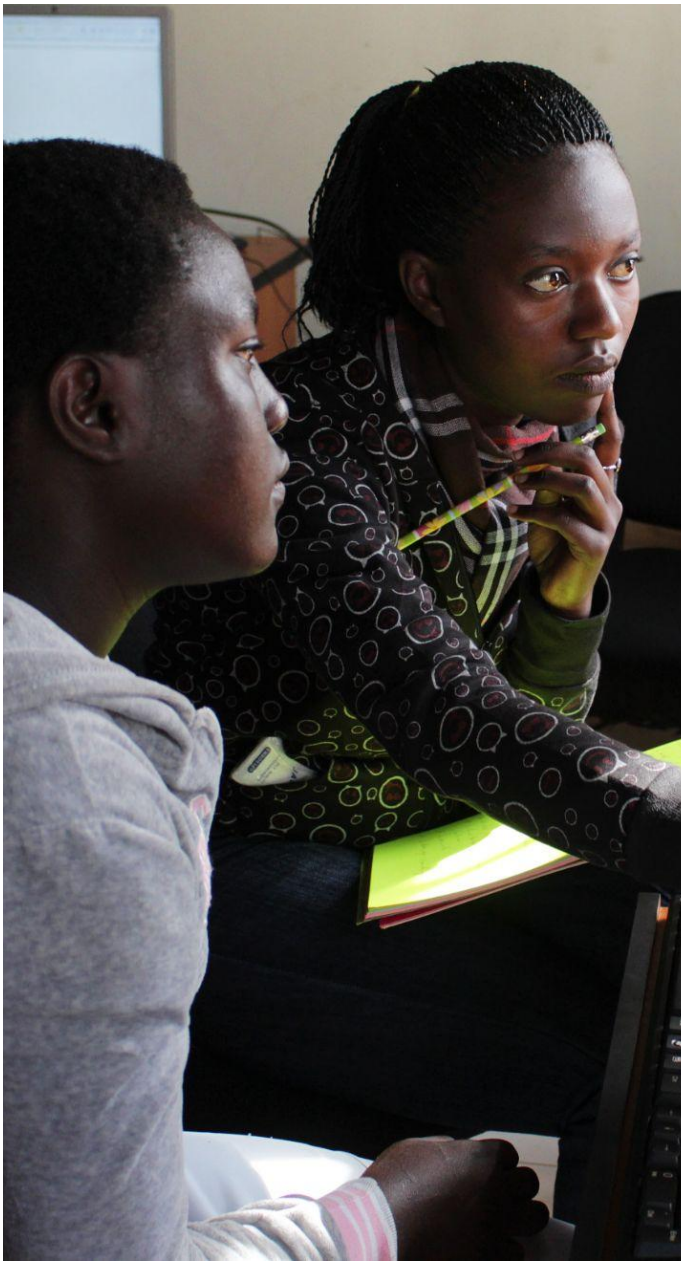
One of the defining features of the changing nature of work is the changing skill types a job requires. The top skills required for a job have also been changing. According to LinkedIn Economic Graph's analysis, globally the required skills for a job have been changing by 25 percent since 2015. For the most part, Covid19 accelerated the pace of skill changes. The change is different across different sectors. While some skills reshuffled and become less or more important some skills lost their relevance and some new skills make it to the top of the skills market. Given this pace of change, they estimated that the global percentage change in workers' skills, in the near future will be between 39 and 45% (see figure 5). World Economy Forum estimated that 44% of the skills workers require for their jobs will change by 2025 (WEF, 2020).

Using real-time LinkedIn data, analysts at World Economy Forum identified a set of specialized cross-cutting skills of the future (see figure 6). Those sets of skills are in demand in various roles and can easily be transferred across occupations. Leading among these skills are product marketing, digital marketing, software development life cycle (SDLC), and advertising. In a similar vein, Asian Development Bank and LinkedIn's analysis that covered seven economies found that Java Script, SQL, Adobe Photoshop, and Microsoft Office were among the digital skills most in demand (ADB & LinkedIn, 2022). Coursera job skills report identified Product Design, Plotting Data, User Experience Design, Statistical Visualization, and Security Strategy among the fastest-growing digital skills in 2022. According to them, the increasing demand for product and user experience design is associated with the growing e-commerce market in a highly globalized world.

Specialized skill	Emerging job clusters
1. Product Marketing	Data and AI, People and Culture, Marketing, Product Development, Sales (5)
2. Digital Marketing	Content, Data and AI, Marketing, Product Development, Sales (5)
3. Software Development Life Cycle (SDLC)	Cloud Computing, Data and AI, Engineering, Marketing, Product Development (5)
4. Business Management	People and Culture, Marketing, Product Development, Sales (4)
5. Advertising	Content, Data and AI, Marketing, Sales (4)
6. Human Computer Interaction	Content, Engineering, Marketing, Product Development (4)
7. Development Tools	Cloud Computing, Data and AI, Engineering, Product Development (4)
8. Data Storage Technologies	Cloud Computing, Data and AI, Engineering, Product Development (4)
9. Computer Networking	Cloud Computing, Data and AI, Engineering, Sales (4)
10. Web Development	Cloud Computing, Content, Engineering, Marketing (4)
11. Management Consulting	Data and AI, People and Culture, Product Development (3)
12. Entrepreneurship	People and Culture, Marketing, Sales (3)
13. Artificial Intelligence	Cloud Computing, Data and AI, Engineering (3)
14. Data Science	Data and AI, Marketing, Product Development (3)
15. Retail Sales	People and Culture, Marketing, Sales (3)
16. Technical Support	Cloud Computing, Product Development, Sales (3)
17. Social Media	Content, Marketing, Sales (3)
18. Graphic Design	Content, Engineering, Marketing (3)
19. Information Management	Content, Data and AI, Marketing (3)

Figure 6: Top specialized skills of the future , Source: WEF (2020)

Another significant development is in the realm of digital credentials. Digital credentials i.e. digital certificates, endorsements, open badges (badges that contain verifiable educational achievements), micromasters (online graduate level courses), and nanodegrees (certified online courses) are increasingly gaining accreditation from employers. In their survey of firms in Bangladesh, India, Indonesia, and the Philippines, with the US as a benchmark, analysts found that 59 percent of firms hired a candidate with digital certification (ADB & LinkedIn, 2022). Employers are most comfortable hiring junior workers with digital credentials, with 65% of surveyed firms indicating to have hired entry-level candidates based on digital certifications (ADB & LinkedIn, 2022). However, inequalities exist in access to digital skilling and gaining digital credentials. 64 percent of online training providers do not provide digital skill training packages tailored to the needs of marginalized groups such as women, lower income groups, disadvantaged youth, and people with little or no internet access (ADB & LinkedIn, 2022).



Covid19 pandemic brought about unparalleled growth in the demand for online courses and digital skills. Leading online learning platform Coursera for example reported a 444% increase in the number of enrollments. Short and medium-duration online courses and digital skills training (ranging from a few weeks to 3 and 6 months) are the most popular (ADB & LinkedIn, 2022). Short courses can help workers to adapt to changing skills demands (LinkedIn, n.d) and in some cases, they can also help employees get entry-level or part-time jobs in the digital labor platforms (Ben, 2018).

Asian Development Bank's study across seven economies found that 70 percent of employers see basic and foundational digital skills as essential in the workplace (ADB & LinkedIn, 2022). Similarly, in Sub-Saharan Africa, of the total digital skills demand in 2030, seventy percent will be for foundational skills in non-ICT sectors adopting technology (IFC, 2021). These foundational skills are basic digital skills necessary to make use of digital technologies and applications including but not limited to: web research, mobile communications, online government services, and e-banking services.

The unprecedented increase in cyber security threats has caused an upsurge in the demand for cyber security skills. A study of companies and IT decision-makers in eight countries found that 82% of companies report a shortage of cybersecurity skills (Crumpler & Lewis, 2019).

Globally, the cybersecurity workforce shortage is approximately 3.5 million people (Cyber Crime, n.d). Organizations are concerned that existing education and skills are way behind in filling the gap in the cybersecurity skills demand (Crumpler & Lewis, 2019). In the UK cyber security technician is the fastest-growing job with an overwhelming 19,000% increase between April 2020- April 2021 (City & Guilds, 2021). Some commentators also noted that a lack of digital skills among employees can increase an organization's cyber risks (PSE, n.d). A recent report by RMIT University, Australia emphasized the importance of enhancing the digital skills of workers for cyber security (Shahraki et al., 2022).

There is a general agreement on the increasing significance of digital skills for jobs of the future. However, not all sets of digital skill sets are equally important. In an exploratory analysis of demand for digital skills, analysts at Nesta showed that while some digital skills are associated with jobs that are expected to grow, others are in occupations that are estimated to decline. Their analysis reveals that digital skills associated with problem-solving, digital content creation, and non-routine tasks are estimated to have an increasing demand (Djumalieva, & Sleeman, 2018). The top five promising digital skills are Animation, Multimedia production, Design in engineering, Building and maintaining IT systems and networks, Research, and quantitative data analysis. In contrast, digital skills associated with the use of digital technology for administrative purposes will have a declining demand in the future. Examples include digital skills used in office administration, clerical duties, payroll and tax accounting, and accounting administration.

In addition to digital transferable skills, current literature also recognizes the growing significance of 21st-century skills (Bakhshi et al 2017; Taylor et al., 2022). Analysts identified a range of transferable human skills that are needed in a variety of jobs and with increasing demand even amid technological changes. These skills are uniquely human skills i.e. skills that cannot be reproduced by computers. Researchers at the National Foundation for Education Research (NFER), in what they classified as 'essential employment skills' identified the following categories of skills as the most frequently mentioned skills with growing demand in the future: a) analytical/creative; b) interpersonal; c) self-management; and d) emotional intelligence - with each category containing a set of specific skills (Taylor et al., 2022). The World Economic Forum (2020) has also identified critical thinking and analysis, problem-solving, self-management, and working with people as the top skills with growing demand.

To summarize, literature on the future of skills suggests that, in the face of technological advancements and other socio-economic disruptive trends, the need for digital transferable skills and uniquely human skills will continue to be highly demanded in the future.

For this, analysts are calling for a shift among companies, governments, workers, schools, and non-government organizations, to focus resources towards building a culture of 'lifelong learning' where people instill a mindset of developing and upgrading skills throughout their professional lives (City & Guilds, 2021). In a world of fast-paced changes and unforeseen shocks (like the covid19), lifelong learning can help people to better prepare themselves and become more resilient (OECD, 2021).

DIGITAL LIVELIHOOD OPPORTUNITIES FOR REFUGEES

Even though the United Nations 1951 Refugee Convention clearly dictates equal treatment of refugees in host countries, 70% of refugees are hosted in countries that put restrictions on their right to work (UNHCR, 2022). Refugees face a myriad of challenges in finding employment in host countries. Data from different countries show that refugees are more likely to work on short-term, low-paid, and informal jobs (Melnikova et al., 2019; Demir & Ozgul, 2019). Some of the obstacles refugees face in finding employment are formal hindrances (unable to work before a decision on asylum status and government work restriction for refugees that might take months or years), language barriers (opportunities available only in local languages, language is also a requirement to apply for a work permit), getting their work and education qualifications accepted, resistance from host societies, institutional barriers (obstacles in verifying their identity and unable to access financial platforms) (Abojourur et al., 2019; ILO, 2021).

The proliferation of digital technologies in the past decade has brought about opportunities for marginalized groups including refugees to widen their opportunities for employment (Abojourur et al., 2019). The International Labor Organization defines digital livelihoods broadly to include work in digital labor platforms, education and training in digital skills, and digital entrepreneurship (the use of digital tools and e-commerce for business) (Hackl, 2021). Many saw digital livelihoods as opportunities to address the multifaceted challenges refugees and displaced people face in their employment prospects (Bock et al., 2020). In response, tech-enabled projects like job matching platforms, digital skill and ICT training initiatives, coding schools, and digital entrepreneurship have started emerging as part of refugee integration initiatives in recent years (Rushworth & Hackl, 2022).

The shift towards digital initiatives has also been due to the recognition that digital livelihoods are convenient to the unique circumstances, needs, and skills of refugees (Ben, 2018).

This is rooted in the 'techno-optimism' belief which assumes that technology is enhancing our way of life and the spread of the internet has allowed people to literally work from anywhere given they are connected to the internet and possess the necessary skills (Kaurin, 2020). In addition to that, the unique situation of refugees can also make them apt to succeed in the digital sector (Ben, 2018). Refugees' experience of migration and displacement can be a head start to succeed in the fast-paced and commitment-driven digital sector (Rushworth & Hackl, 2022). This is because, as a software engineer who is mentoring refugees at ReDI coding school for refugees in Germany explains: "*your weakness - your lack of experience - is also your strength. You come with fresh eyes and a hunger. You come and want to find a job. Many of us get comfortable, we have a job and we get lazy. The industry needs people who are hungry*" (Rushworth & Hackl, 2022).

Refugees usually face legal barriers to social mobility in the labor markets of host countries and digital workspace seems to be a way to address this challenge. The remote work opportunities brought about by digitalization can help refugees work amid employment restrictions in host countries or even while they are on the move (UNDP, 2019). Digital work overcomes mainstream work barriers and local work restrictions, enabling them to work from anywhere in the world. In the online gig economy, refugees can work on a variety of tasks ranging from simple image categorization and data entry to software development and consulting services. The range of opportunities encompasses people of different skill levels. Many online gig jobs can also be completed on a smartphone with immediate mobile payment options which can help address the identification and banking service challenges refugees or displaced people face (Easton-Calabria, 2022). In addition, as the majority of refugees are hosted in developing countries with high unemployment rates and limited prospects of finding paid employment, digital livelihoods are seen as opportunities for refugees to transcend local labor markets and participate in the global labor market.

Moreover, one of the leading obstacles to refugees' labor integration is the language barrier. Digital opportunities seem to promote inclusiveness by minimizing barriers for refugee groups. For example, in Germany, where language skill is a barrier to entering the labor market, jobs in the IT sector are flexible for newcomers to get by (Ben, 2018). Refugees also face challenges in getting their educational and prior work credentials accredited in host societies. Digital work opportunities and their focus on skill sets and less on qualifications are promising for refugees who can easily take up a skill set to spark their journey (Ben, 2018; Rushworth & Hackl, 2022). In the United States, United Kingdom, and Germany for example, degrees are not the only ways towards employment in the tech sector, with increasing credentials from coding and software development camps opening employment gates (Ben, 2018). Additionally, in online learning platforms like Coursera by taking less than 10 hours a week learning path, a person can learn courses on digital marketing, IT support, and data analytics in 3 to 6 months which can help her apply for entry-level jobs (Coursera, n.d).

REFUGEES AND HOST COMMUNITIES

Besides the humanitarian (Fleischmann & Steinhilper, 2017) and moral responsibility (Enns, 2017) of welcoming refugees displaced for reasons like persecution, conflict, violence, human rights violations, or other catastrophes, there are also long-term economic benefits of including refugees in host economies. The following excerpt from the OECD forum explains the economic contribution of refugees in a nutshell:

> *"Refugees can contribute economically to the societies that welcome them in many ways: as workers, innovators, entrepreneurs, taxpayers, consumers, and investors. Their efforts can help create jobs, raise the productivity and wages of local workers, lift capital returns, stimulate international trade and investment, and boost innovation, enterprise, and growth."* (OECD, n.d).

Contrary to the mainstream narratives which assume refugees as imposing a burden on host economies, evidence from different countries shows otherwise. Even though initial investment for resettlement is needed, the long-term economic benefits of refugees outweigh those initial resettlement costs (Kancs and Lecca, 2018). Macroeconomic evidence from 15 Western European countries spanning the period between 1985-2015 shows that refugees are not a "burden" to the European economy (d'Albis et al., 2018). In fact, once permanently settled, refugees make a positive contribution to the economy (d'Albis et al., 2018). Similarly, in his fiscal analysis of the impact of refugees on the US economy, Clemens (2022) summarizes that: *"beyond claiming a need for protection, refugees and asylum seekers are economic actors. All are consumers, most are (or become) workers, and many are (or become) investors. All incur fiscal costs by using public services directly or indirectly, and all generate fiscal revenue either directly or indirectly."* New research by the National Foundation for American Policy (2022), found that more than half of the most valuable startups in the United States, worth 1 billion dollars or more were founded by immigrants. "*nearly two-thirds (64%) of U.S. billion-dollar companies (unicorns) were founded or co-founded by immigrants or the children of immigrants. Almost 80% of America's unicorn companies (privately-held, billion-dollar companies) have an immigrant founder or an immigrant in a key leadership role, such as CEO or vice president of engineering.*" Welcoming and supporting refugees and displaced people can have a substantial positive impact on the economies of host countries (Altındağ et al., 2020).

The imbalance in demand and supply of labor, shortage of skilled workers, technological advancements, and the impact of the Covid-19 pandemic combined are creating a workforce shortage in many developed countries. In light of population aging, this trend is expected to continue in the future. The working-age population in Europe, for example, is estimated to shrink by 4 percent in 2030 (Smit et al., 2020). The European Commission launched a new initiative to address the shortage of workforce in the region (European Commission, n.d). The so-called 'talent partnerships' initiative aims to cooperate with developing countries for the legal migration of workers (Rasche, 2021). Countries like Germany also designed policies for the migration of workers to meet the growing demand in the labor market (Knight 2019). By promoting better workforce experience through skills and training initiatives refugees can fill the skill shortages many countries are facing (World Bank, 2017). Initiatives working with refugees like Germany's REDI coding and other digital initiatives are seeing a potential to train refugees in Germany to take up a specialized skill that will help them find a job in the digital sector (Rushworth & Hackl, 2022). In this way, those initiatives serve as mediators to help refugee integration and fill the skill shortage in the hosting country.

To add to the contribution of refugees at the macro level, refugees' diverse socio-cultural backgrounds, experiences, and skills can also benefit organizations. A growing body of research has documented the causal relationship between diversity, productivity, and innovation (Verdi 2020; Saxena, 2014). The diverse socio-cultural, educational and life experiences of refugees are a source of new ideas and stimulate creativity in organizations. In fact, "*the more an organization is open to perspectives from people of different backgrounds, the more creative and resilient it becomes*" (WEF, n.d).

DIGITAL ACCESSIBILITY BARRIERS FOR REFUGEES

Marginalized groups are more likely to be excluded from the digital economy due to the digital divide. Chetty et al., (2017) have emphasized that marginalized groups "*with limited capabilities have fewer opportunities to gain the skills needed to advance within the rapidly transforming digital economy.*" Despite significant digital livelihood potential for refugees and displaced people, there are a multitude of accessibility barriers. This section discusses findings from the focus groups in relation to the existing literature on accessibility barriers. Accordingly, the findings are categorized into six main themes, which are discussed as follows.

Institutional and regulation barriers

Institutional and regulation barriers are procedures and regulations in host countries that restrain refugees and displaced people's digital accessibility. Leading among them are the employment restrictions in many of the countries hosting refugees, the lack of criminal record check documentation, the lack of acceptable identification mechanisms for refugees in host countries (due to long waits in asylum camps and moving between different countries), and the inability to open bank accounts in host countries (UNDP, 2019; Betts & Sterck 2022). The challenge in acquiring a criminal record check (a criminal history document required by employers) is well captured by B, a 29 years old Syrian refugee in the Netherlands:

> *"Before I was relocated to the Netherlands, I was in a refugee camp in Lebanon. I go on trying to apply for jobs now and then. I was always asked to provide a criminal record check, which I cannot do as I don't have a formal residence ID to request from the government and I can't request one from my hometown either. In one instance, I was qualified to do an online job, I had the skills and the language ability, and I passed the exam. But I was not hired just because of that [lack of the criminal record check]".*

Refugees' education and training credentials from their home countries are also most often not recognized in host societies (Abojarour, 2019). Behnaz, a refugee who is Code Your Future (an initiative delivering free software development courses for refugees) graduate talks about the challenge refugees face in getting their education and skills accepted:
"for most refugees the only job they can have is being a driver for Amazon, being a delivery person although some of them had degrees from their country. Some of them were even programmers but when they came here, they were not accepted." (CGTN, n.d)

Moreover, most of the countries hosting refugees have a mandatory SIM registration regulation i.e. a regulation that requires identity verification and an ID card to access a mobile SIM card (Reid, 2021). According to GSMA (2017) report, SIM registration is mandatory in 120 countries. Identification documents issued by UNHCR and INGOs working with refugees are not usually accepted by service providers, which further digitally excludes these groups (GSMA, 2017).

"A refugee who cannot legally activate a mobile connection, open a bank account or access a mobile money wallet in his or her own name may become further marginalized and disempowered as access to information, communication, and financial services, including cash assistance and transfers, is severely limited. What is at stake in enabling access for displaced persons includes self-reliance, resilience, financial independence, social inclusion, and protection." — (UNHCR, 2019)

Access to SIM cards is vital as mobile phones are the most widely used medium of internet accessibility (Maitland & Xu, 2015). Connectivity can enhance livelihood opportunities for refugees in many ways. Refugees can search for information on jobs and business opportunities, increase their social capital and connect with buyers and employers (Betts et al., 2017; UNHCR, 2019). In some cases, refugees can also work and receive payments using their mobile phones (Easton-Calabria, 2019).

Affordability

Affordability or cost is another challenge for marginalized groups' digital accessibility. Cost affects access to computers, WiFi internet, and mobile data (Hua, 2021, IFC 2021). According to UNHCR refugees most often spend a third of their income to stay connected, while 29 percent of refugee households have no access to mobile phones. GSMA's research on refugees in Uganda, Rwanda, and Jordan found that even though two third of the refugees have mobile phones, affordability and battery charging are the leading barriers hampering the digital accessibility of refugees (Casswell, 2019). Reflecting on the affordability challenge refugees face in Jordan, N, a DOT youth leader said:

> "*I worked with refugees as a training facilitator. Most of them do not have devices like a laptop. And they cannot afford the internet. They can't apply or practice what they learned if they don't have devices. They have to go to the training centers to use and practice on a computer device.*"

Similarly, Richardson and colleagues (2022), in their study of women refugees in Lebanon and Jordan, found the cost of digital devices and the internet as technical difficulties impeding refugees' ability to participate in the digital economy. Even in countries with better digital infrastructure like Newzealand and Australia, refugees' lower socioeconomic status affects their ability to afford digital devices other than mobile phones and home internet access (Hua, 2021; Alam & Imran, 2015). Groups with lower income levels, in which refugees and displaced people are in most cases part of due to displacement from their previous income sources, are also more likely to be hesitant when it comes to using the internet to access public services and online information (Ewing and Thomas, 2012).

Access to Digital Infrastructure

Marginalized groups particularly in developing countries experience accessibility barriers due to a lack of adequate digital infrastructure. While the percentage of the population with internet access in developing countries is 35% (with as low as 1% in Eritrea) the percentage is 80% in developed countries (with as high as 99% in Luxembourg) (World Bank, 2020). This is particularly important as the majority of refugees and displaced people are hosted in developing countries.

Refugees and youth workers in Kenya, Uganda, and Egypt face challenges such as a lack of adequate internet infrastructure, electric power outages, lack of digital devices, and lack of access to financial services (Hackl & Gardiner, 2021). In developing countries, even in areas with internet connectivity, the signals can be weak and electric cut-offs make the connectivity unreliable. As M, a Kenyan social worker working with refugees explained:

> *"Some NGOs operate here, providing trainings, digital trainings. Many young refugees learned how to code and software developments. But the internet access is not reliable, it goes on and off. And if the internet is good it is the electricity. Sometimes it happens many times in a single day, on and off. Working in the freelancing market is very competitive. You just cannot compete with others who have stable internet in their homes. I know one guy who goes to the internet cafe every day for good internet. Some internet cafes use generators for electricity. All in all infrastructure wise we face many challenges."*

(Digital) Skills

Lack of digital skills is frequently mentioned as a factor hindering the digital accessibility of refugees and displaced people (Alencar, 2020; Verdi 2020; Potocky 2021). A global GSMA survey found that a lack of digital skills was the main barrier to refugees mobile internet access, however, this can be different for different refugee groups in different contexts (Reid, 2021). Assessing the digital skills of refugees who own mobile phones and laptops in Germany Stiller and Trkulja (2018) found that even though basic information-seeking behavior like using search engines and social networks are common, lack of operational and formal digital skills like searching and applying for a job, and strategic searching, were observed. Lloyd (2020) research on refugee groups from different countries in Australia found that even though the frequency of technology consumption is high, refugees often lack the skills to make use of digital devices. In a similar vein, a study of Somali, Congolese, Iraqi, and Burmese refugees in the United States indicated that the use of digital technology for internet banking, job search, and application, and applying for public benefits was very difficult for the respondents to learn (Bletscher, 2020).

In addition to a lack of technical (digital) skills, a lack of soft skills is also a barrier in the face of marginalized groups' digital accessibility. The Rocke Feller Foundation's analysis identifies a lack of soft skills such as communication skills and persistence affecting disadvantaged groups' digital accessibility in Africa (Rockefeller, 2018). Similarly, researchers at ILO indicated that a lack of 'personal traits' like risk-taking, motivation, and bargaining skills are among the factors affecting refugees' success in digital livelihood opportunities (Hackl & Gardiner, 2021). Most of the existing training and skills initiatives focus solely on technical skills. R, a DOT youth leader in Lebanon captures this in the following excerpt:

> *"Even if they have a hard digital skill like word press website development. I saw many of them struggling with basic skills. Skills to navigate through online opportunities, searching for opportunities and showcasing their skills are missing. I think efforts should also be made in giving communication and other essential skills."*

Inequalities and Negative Narratives

The lack of international and national regulations for e-commerce and digital labor platforms puts marginalized groups at risk of exploitation and further exacerbates economic inequalities. The categorization of digital platform workers as self-employed or freelancers has a twofold implication for refugees and other marginalized groups. On one side, it provides a legal grey area in the face of restrictive local employment laws (Vivian, 2021), on the other hand, this could mean recruiting refugees and marginalized groups into low-paid and poor-quality jobs considering their need for subsistence and survival (Lorenzo, 2020). Online gig workers in Sub-Saharan African countries face high competition to join digital platforms, lower rates, and even in some cases unequal payment for the same jobs in different countries (Pitso et al., 2018; TYDS 2022). Refugees and displaced people further experience unequal treatment and discrimination in the digital economy based on their refugee status (Shibli et al., 2021; Hackl & Gardiner, 2021). Even in the digital sector where people are hopeful to succeed with the necessary technical skills at hand, discrimination and racialization are obstacles on the way to their economic integration (Rushworth & Hackl, 2022).

D, a youth from Ethiopia mirrors his experience of unequal treatment of himself and his peers' experience in the digital labor platforms:

> *"I took some online courses and taught myself how to do freelancing jobs. I registered on Upwork and other platforms. It took me some time to land my first client, but gradually they started coming. However, I recently learned that payments differ for the same job in different countries. My observation is that freelancers in Africa are paid low. The sad part is since a lot of youth and refugees are desperate for jobs, they have no choice but to accept whatever jobs are available and no matter how below standard the payments are."*

Dominant narratives concerning refugees and displaced people are characterized by what Ponzoni et al., (2017) call the 'discourse of lack'. Refugees and displaced people are usually portrayed as lacking the qualification, sociocultural capital, knowledge, and skills to work and function in host societies as opposed to the 'added values' they can bring with them (Ponzoni et al., 2017). These negative narratives treat refugees as 'unskilled' and 'public burden'. The effect of these narratives is also seen in the treatment of refugees and displaced people as a homogeneous group ignoring diversity and individual differences. A, a Ukrainian refugee in the UK, relates her experience concerning the narratives of refugees in the UK and Ireland as follows:

> *"..... refugees are seen as charity cases rather than talent pools. .... usually, people struggle to see refugees' identities beyond being a refugee. There is a fixed label of refugees being dependent on the economy. Their contribution and talent are ignored."*

Several governments, non-government organizations, and the private sector plan and implement initiatives to help address refugee integration challenges with digital skills at the heart of their intervention plans. But one of the criticisms of those initiatives is that they operate under the one size fits all assumption (Kaurin, 2020). The dominance of these narratives ends up excluding these groups even if the intention is to include them (Ponzoni et al., 2017). In this way, these narratives further exclude refugees and displaced people from participating in the digital economy.

Language Barrier

Language barrier continues to be an obstacle to the digital accessibility of refugees, even among people with prior digital skills, the provision of digital services and jobs either solely in host countries' languages or a few major languages hinder digital accessibility (McCaffrey and Taha, 2019). Research has shown that a lack of English language proficiency and limited resources in other languages are long-term accessibility challenges for the digital inclusion of refugees and displaced people (Hua, 2021). Language barrier impedes refugees' aspirations to acquire advanced digital skills, as N, a youth leader from Jordan explains:

> "*If someone wants to learn more sophisticated software, for a better job, it is most often available only in English, you don't find it in Arabic. That makes many learners' journeys difficult.*"

Lack of Collaborative Efforts

Lack of coordination and collaboration among refugee integration initiatives is another challenge. Services and initiatives working with refugees are usually scattered across different places and actors creating 'informational havoc' for refugees (Abojarour et al,. 2019). The refugee integration ecosystem lacks a collaborative approach, with individual actors working independently. For example, even though, many skills initiatives exist most of them fail to link refugee talent with private companies or employers. M, a Kenyan social worker working with refugees supports this:

> *"In the last couple of years, a growing number of national as well as international NGOs have started training and skills initiatives for refugees in Nairobi. However, it seems unsustainable as they don't link the participants with those who can provide them with jobs. They get the skills but no jobs. Working closely with private companies should also be something training providers consider about…."*

Solutions aimed at addressing refugee digital accessibility challenges usually operate locally. Job matching platforms for example are confined to their respective local markets (Easton-Calabria, 2019).

CONCLUSION

As this report has revealed, the spread of digital technologies has radically transformed the world of work.

The future of work will be different as a result of technological changes (automation and artificial intelligence), demographic changes (population aging and population growth), climate change (resource scarcity and global warming), and the Covid19 pandemic that hit the globe in 2020. These disruptions are reshaping the nature of work, the skills required for a job, the life span of skills, and labor mobility. Education, health, and STEM are areas with growing jobs while manufacturing and transportation and logistics are areas with declining jobs. There is a consensus in the literature on the growing significance of digital transferable skills and 21st century human skills. Digital skills are vital in addressing the skills gap and in creating a more resilient workforce.

The future of work poses distinctive advantages as well as challenges to refugees and other marginalized groups. While the digitalization of work has brought opportunities that enable refugees to transcend local markets and access international markets, the digital divide and other accessibility barriers may leave refugees behind if appropriate interventions are not undertaken. A more collaborative approach between regional and international organizations, governments, and the private sector is required to address the accessibility challenges refugees face.

RECOMMENDATIONS

This section outlines a set of recommendations based on the review of the literature and findings from the focus groups to inform DOT's future interventions.

A

Individual (needs-based) training approaches **-** whether it is training/skills or employment/labor integration a lot of initiatives working with refugees in general, operate under the one size fits all assumption. This assumption fails to account for the individual differences, experiences, socio-cultural backgrounds, and learning needs of these groups. There is a potential for DOT to intervene with individual-based training approaches.

B

Cross-sector partnerships (learning partnerships and employment linkages) **-** many of the skills providers lack network linkages with potential employers or with online job platforms. Partnerships between the private sector (employment) development sector (development and market experience), humanitarian (protection and advocacy), and governments. DOT has to consider expanding its partnership with actors in different sectors. There is for example potential to combine existing high-quality skills training in online platforms (like Coursera and Udemy) with DOT's in-person trainings.

C

Integration of 21st-century human skills and digital skills trainings **-** many of the training initiatives focus on technical skills (coding, web development, ICT skills, software, etc) and less on 21st-century human skills, combining both skill sets could be important as both sets of skills are in high demand. Additionally, one set of skills without the other is not vital for success in the marketplace. In fact, the future of work demands more skills that are uniquely human and that can't be replicated by computers.

E

Focus on foundational skills **-** existing skills initiatives target those with prior skills, hence the focus on intermediate and advanced skills (coding and software development as examples). Foundational digital skills (online transactions, information search, internet safety, and security, accessing services online, storing information online, etc) are skills less targeted and in demand among refugees.

F

Scaling opportunities with a global lens **-** digital livelihood initiatives (skills training and employment) are mostly locally oriented. Job matching platforms for example are confined to their respective countries of operations (refugee talent hub in the Netherlands, BOT in Lebanon, RefugeeTalent in Australia, Workeer in Germany). Domestic training and employment initiatives lack linkage with the global economy (global market). Solutions need to work on scale. Cross-sector partnerships for scaling operations.

G

Harness and develop entrepreneurial potential through DOTs approaches and partnerships **-** the entrepreneurial spirit and potential of refugees even though remarkable (Copley, 2016; Parater, 2016) is a neglected dimension of the economic integration of refugees. Parallel to increasing the employability of refugees, efforts should be made to harness the entrepreneurial potential of refugees.

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dot.
UNITED KINGDOM

@DigitalOppTrust @DigitalOppTrust /DigitalOpportunityTrust

STAY IN TOUCH

Mihretab Gebru
mihretabsolomon@gmail.com

Digital Opportunity Trust UK,
20 Old Bailey,
London,
EC4M 7AN,
United Kingdom
jmisselbrook@dotrust.org