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Transcript

Veena McCoole

Hello and welcome to the Oxford Internet Institute podcast, part of the University of Oxford. In each episode, we look at issues and developments in the digital world that matter to us all. Today we're joined by Doctor Fabian, Stephanie, Departmental research lecturer at the OI and special guest Eliza Mohammedu, head of the OEC. For skills, both have done extensive work into what work will look like in the. How digital technologies are disrupting work for employers and employees, and what we should be doing to future proof our skills. Hello, I'm Veena McCoole. Welcome. Today we're going to discuss jobs of the future. Fabian and El-Iza, welcome to the show.

Fabian Stephany

Hi. Hi, thanks. Thanks for having me.

El-Iza Mohamedou

Thanks for having us, Veena. Nice to have you.

Veena McCoole

So I'd like to start by asking what changes have we already seen happen as new technologies have been introduced? El-Iza, can we start with you here?

El-Iza Mohamedou

Sure. So there are new jobs that are linked to increased digitalisation across various industries like data scientists, app developers, social media managers and podcasters, and so on. But existing jobs have are also being transformed with new skill sets around technical skills and systems thinking particular. Groups and you can think of occupations like factory. Where that has changed a lot. At the same time, alongside those advancements, certain job roles have become obsolete due to automation, particularly those involved. Involving repetitive task and manual labour. So the picture is not one sided, but what we can say is that research across different regions and over time suggests that

the the overall impact of technological disruption on employment has been mitigated by the creation of new jobs. And there are. Of studies around. There's one that is very often quoted. The MIT one that. More than 60% of jobs done in 2018 did not exist in 1940. But there's also analysis of European data across countries that also indicates that jobs. They have been created. More jobs have been created than lost in recent. So it really underscores the adaptability of the labour market and really what we see in particular is the positive correlation between innovation and employment, mostly in high tech sectors, so. This is what we. And again, it's not only limited to the US and Europe. We also have insights from developing countries, particularly from from work coming out from the World Bank Digital Adoption Index, which also suggests a similar trend of increasing employment alongside technological advancement. Again. I would say that it's a complex relationship between technology, innovation, employment dynamics, but we can certainly advance that process innovation may not always translate into reduced job opportunities, I would say.

Fabian Stephany

Yeah. And if I if I may add something on this though, this is a very comprehensive overall picture, I think to begin with. Is that also our understanding has advanced on how technology is changing the labour market. So often if we read the media and press, you know we're confronted with. Rather grim images that. People are worried technology might take away their jobs. You know this type of technological unemployment that goes way back to the 1930s, to to John Maynard Keynes and to kind of imagine a future. Where most of our work would be done by machines. This obviously hasn't happened and also some of the extremely negative repercussions that have been imagined did not materialize. That is mass unemployment, as El-Iza already pointed out. But the interesting thing is, you know, we also the last from from my point of view from an economist point of view. Again, quite a substantial understanding on how these changes unfold.

You know, moving away from the idea that entire occupations might just disappear because the technology is advancing in certain fields. So for example, most recently we've seen the advancement of large language models that. I'm very good in working with text, you know, summarising texts or even doing creative things with text, like writing poems and scripts for films and then of people fear that this entire occupation might disappear, though this did not materialize. I mean, there are some few occupations that disappeared entirely, I mean. Going way back in time, you know. You have these funny historical examples of pin setter boys. So the kids that were setting up bowling pins and they were completely automated away by, of course, if you go to modern day bowling centres you you know why? But most of the time we see that that tasks are actually changing. The

changes is happening within occupations and So what we definitely see is that a lot of occupations. Still. And they might have even expanded because of technology, because production got more efficient and products got cheaper, but some of the tasks changed substantially and I think one of the examples that is often quoted or exemplifies this change and you can see this change in a lot of professions is of people working in banks. You know, people assume that the bank teller the person behind the counter and the bank might disappear entirely once the ATM emerged in the 70s around that time. And that didn't really happen. The bank branches got more efficient and and you saw bank branches opening up more and more bank branches opening up in cities and they needed actually more and more people, though the things that they did now behind the counter. Changed considerably. You know, it's from moving away from repetitive routine tasks of counting money and handing it over to you. To advising you, for example, on financial services and and and personal wealth and things like that and these changes happen continuously within occupations, but it the economics move to the point where we managed to open up the box and look into the occupations and see how these tasks are being impacted by emerging technologies.

Veena McCoole

Got it. So it's promising that not all jobs are being rendered totally obsolete, and actually it's natural for jobs and their job scopes to change. El-Iza, do you expect to see any major changes in the labor market in the short term?

El-Iza Mohamedou

I think we may indeed both positive and negative. The OECD launches the employment outlook every year and the latest one had a survey of. Employers and workers in the manufacturing finance sectors across selected OECD countries and really showed that about sort of nearly 2/3 of workers reported that AI had improved their enjoyment at work.

So by automating dangerous and tedious tasks, AI was allowing them to focus on more complex and interesting ones. So in essence, AI's role in augmenting human capabilities Really, if you will, hints at a future where work becomes more flexible, more tailored. Ultimately, more fulfilling for workers across various industries.

There's another OECD review of micro level studies that has shown that specific AI tools have led to performance improvements in tasks like customer service, coding, professional writing, and business consulting. With gains actually ranging from about 10% to more than 50% in tasks specific performance. Precisely what Fabian was mentioning about focusing on tasks. But at the same time, OECD studies do point towards an increase in the number of jobs at high risk of automation across OECD countries.

So from 14% to 28% in upcoming years. And this is really in the context. Some anxiety about the future of work and again, this OECD Employment Outlook Survey just mentioned showed that three in five workers are worried about losing their job entirely and also having concerns by the workers, who are managed by AI, who are often less positive about the impact of AI than those who work alongside it because of work intensification.

So. What really comes out is that the ability of AI to automate routine and repetitive tasks has the potential to to change how we allocate our time and energy in the world. Place another trend is also that we can expect greater diversity in the workforce because AI systems require inputs from diverse disciplines like data science, computer engineering, psychology, ethics.

To really ensure their effective development, deployment and ethical use and and. If AI ends up driving substantial productivity improvements, particularly in high skill sectors, we could expect a corresponding increase in wages. This is especially true for skilled workers who managed to leverage AI tools to enhance their outputs. And as we've seen, AI technologies proliferate there has been a surge in demand for tech savvy professionals.

Also exacerbating existing labour shortages and pushing actually wages upward. But I think ultimately the realisation of these changes, and there are lots of them, really depends on the adaptability of the workforce as well. As something that is very important for us at the OECD, the robustness of educational training programmes to equip workers with the skills they will need in this AI enhanced labour market.

So for us we're really a little bit more. We think that the most significant changes in labor market both in short and long terms, are not only in the sort of it's not really about enumerating only new job opportunities or lamenting those rendered obsolete. Really, it's in the evolving skills demand across diverse positions and industries. I think that's really where we need to look into this. The skills adaptability as a key determinant of workforce resilience and competitiveness in the face of these rapid technological and economic transformations.

Veena McCoole

Great. I'm particularly interested in the fact that you flagged those working under AI or being managed by AI, will have different levels of feedback than those working alongside that. Really interesting, Fabian. What technologies will cause the biggest disruption?

Fabian Stephany

Well, that's a that's a really good question. And I maybe just jumping slightly back to the to the previous question and answering this about the big disruptions. I what I like about the

question that we dealt with last is that we had this add on in the short term you know because when we discussed these these grand questions of long term innovation and stability in labour markets, it's it's really important to be. I would at least say, that we try to be as economist as researchers doing forecasts, a bit humble about projecting the future because I mean the long term projections, I have not really aged very well and when I mean long term projections it's saying OK in the next 20-25, maybe even 30 years this and that is going to happen but sometimes even projections for the next ten or five years might be difficult, and I'll try to to explain this with an example of one of the what I think big disruptors. And that is certainly generative artificial intelligence.

So the current models that many people are speaking about right now represented by. Big models like Dall-e or ChatGPT that are able to imitate certain skills that just a few years ago would have been thought to be uniquely human. So, I mean, you know, doing a creative. Drawing, for example or. By getting a poem or writing a song lyric or composing an entire song. And certainly this type of technology will cause a big disruption though. How is this disruption going to look like in the long run? Let's say in the next 10 years? This is really difficult, I think. If not beyond this time horizon, further, in the future, impossible to say because there's so many uncertainties about this.

But what we can already say and we are at the Oxford Internet Institute. My group, the Skillscale group, is has been running research on this over the last two years, we do see some immediate effects of of this type of technology, of generative artificial intelligence, for example, and El-Iza has already alluded to, some of these findings and that is, for example, that the people who have the skills to work alongside with this technology. So the people who are good in prompt engineering so that have refined skills on teaching or telling these types of interfaces what to do or even the people of course, who are capable of developing these models of doing machine learning and Deep Learning we what we see in the labour market, that their skills have become extremely valuable.

So we've seen across occupations and across geographies. So looking for example, both at the UK and and also at the United States, tremendous premium, significant premium wage premium in offered wages. For people that are in this in this relatively scarce talent pool and these people not only have been offered more money, they've also offered more perks, for example. So for example, it's almost twice as likely in at least in our Data for somebody who has AI skills or skills centered around generative artificial intelligence. Not only to be offered a higher salary, but also be offered something like parental leave for example, or remote work options, which is becoming a kind of a luxury in some industries.

So. Long story short, I think generative artificial intelligence is definitely a big disruptor. And we see this in, in for the highly skilled for sure. But we also see that there's wage pressure

also happening on the other end of the spectrum. So freelancers, for example, some people doing freelancing gigs in graphic design online. They have seen a hit over the last two years in terms of the demand for their work, but also the wages that they have been calling.

El-Iza Mohamedou

Yeah. And just to add on to Fabian. So I think just as Fabian mentioned, just as some workers are more exposed to to the effect of AI than others. We should also probably raise the point that also some not all regions are exposed to AI to the same degree, and you know, if you look at already just the Internet traffic at the moment you see that the world is fragmented by disparities in Internet access interoperability and security so I think this digital divide and the impact as well of technological change is certainly more pronounced in emerging economies. And so these disparities they I think will have an impact as well on a is potential to to bridge longstanding socio economic gaps. In these areas, so it will be important to to understand the geographical nuances and keeping in mind the perhaps exacerbated global inequality that may come out of this, so I think it's important that we not only look at occupations, but also look at the bigger picture across regions.

Veena McCoole

Right. So far we've covered the labour market and more macro considerations. I'm also really curious about the workforce. El-Iza is the workforce ready for this transition? Well.

El-Iza Mohamedou

I think enterprises have made strides in obtaining or building necessary infrastructure for this transition like a technological equipment or physical space, but the readiness of the the workforce, I think, remains a critical concern. Many workers find themselves unprepared for the evolving demands of the digital transition, really about lacking the necessary skills to thrive in this increasingly technology driven world.

Workforce, they're really sort. There's one study particular from Amazon and Workplace Intelligence surveyed about 3000 workers in the US, where 70% of people didn't feel prepared for the future of work. And this is also something that deficiencies also evident in the data provided by the OECD. The survey of adult skills. Which indicates that about 6 out of 10 adults lack basic ICT skills or have no computer experience.

And by the way, we're going to launch new data in December with the new PX so that the picture may even change around this. And also if we look at a closer look at the age differences, we see that only about less than 1/4 of seniors on average have basic or above basic digital skills, so. Again, it really is a bit of an issue, in particular, if we go back to the

same survey on adult training participation, only four in 10 adults on average participate in job related training across OECD countries. Again, a number that decreases for older. So all of these sort of gap in digital skills. Really I think creates a challenge. And so I think that's something that is worrisome. And if we even look further with the projections of the old age dependency ratio, it's really shifting the composition of the workforce towards older workers. I think we really need to also focus a little bit more on these challenges.

Fabian Stephany

That's absolutely right. And The thing is, if you also see this shifting to the firm side, you know. While the technology is ready in some parts, firms are often having problems in finding adequately skilled talent. There's a number that's circulated. Last year, by the European Commission study about small and medium sized enterprises. And more than 60% of these companies reported that they had severe difficulties in finding adequately skilled talent for their ICT positions for their positions in information, communication and technology tasks. And those. Those are small and medium sized enterprises, so we're not talking about large firms, we're really talking the backbone of the of the economy and this aligns pretty well with the numbers on the on the worker side, on the citizens side that El-Iza. To have had mentioned, so we do see that technology seems to be racing. So in addition to the global cleavages that El-Iza already alluded to between emerging economies or economically less developed economies, and the so-called global north.

There is there. There are cleavages emerging within societies, in industrialised countries for. So this gap between what firms demand and what and what, what the skills that workers for example. Have and in addition to that we have, you know, the long standing problem of skill inequalities that have existed before we actually talk about technology. That the fact that there's still a persistent lag or persistent cleavage in terms of how capable, particularly young people, students, pupils are in learning skills when it comes to, you know, separating them by socioeconomic background so that that kids from less affluent economic backgrounds have significantly higher difficulties in learning any type of skill, not only digital skills. Compared to two kids from more affluent households. And this of course you can imagine in such a rapidly changing world driven by technology, these trends are unfortunately right now only becoming more, more severe and more accentuated.

Veena McCoole

Got it. So Fabian, if we gaze into the future, what new jobs would you expect to see? And going back to your earlier point, are there any that might disappear entirely?

Fabian Stephany

Well, that's a good question. I think in any of these, you know, chats and podcasts, we always come down to the point where we want to gaze into the into the crystal ball and I think I already gave my cautious remark on not looking too deeply into the into the crystal ball, though.

There are certain things when it comes to forecasting the future, this is a difficult thing. Already said that, but there are certain things that we can rely on and I hope this is not getting too technical, but the thing is so in our in our research group for example, we tried to kind of make a bit of a future gazing exercise and look at skills, for example, because we we know we've already come. Point in this podcast. That certain skills are absolutely crucial.

So for example, skills centred around artificial intelligence really give you a competitive advantage. I don't know. The prompt engineer is. If you want to call the prompt engineer, for example. People that have specialised on working with the interfaces of generative AI models, if you want to call this a future profession, Then it's absolutely clear that these these people have unique skills, and indeed, the demand for these types of skills has been has been growing. The question is, will this remain the same in the in the long term future and While the long term future again is unpredictable, there are of course certain things that we can rely on when making short term forecasts, and that is that industries are not changing overnight.

You know, of course, colloquially you say it. You say that technology's changing industries over. We already noted in this in this podcast episode that some things. Are still the way that they used to be. For example, 10 years ago and it's not that that industries are hiring and firing people on a massive scale just overnight.

So some of these trends will persist even if the underlying technology changes. For example. Think about coding skills, right? Five years ago, people would have said like, OK, it's definitely safe harbour to learn. Code now that you have models like copilot for example, that can very very efficiently write code themselves, you might question this recommendation. Still. What we see in the data is that the demand for great coding languages like Python for example. Is still increasing. It's difficult, though, to say whether this is just because of the industry not reacting. So not immediately, you know, firing all coders and working with copilot, or whether this is because of. A certain persistency of this profession, whether you still need. You know, you just need coders you know, and and and I think it's more realistic to think of. It's probably that these occupations around centered around, you know, developing this technology and working with this type of technology and with technology, I mean, generative artificial intelligence that these types of professions are still going to be a big thing on the labour market. Though again, you know, as we've

noted earlier, the composition of the task will. So these people will be doing different things, you know, also the coders will be spending less time on doing the repetitive coding. Type. You know the repetitive copying of code which constituted a part of the work before and might have more time to focus on the more creative part of developing a computer programmes. While the repetitive things will be done by machines.

Veena McCoole

So El-Iza, we've talked a lot about generative AI being at the core of this shift in, in the labour market and the jobs of the future. But where can people actually learn these skills?

El-Iza Mohamedou

So. It really is. In the current landscape, it's really AI related skills. That are really prized and so. We've seen, for instance, we've done some research from the 2023 scales outlook on job postings we looked at. In across 14 countries, and really you could see more than 30% increase in demand for AI development and deployment professionals. You would think that you know, sort of, that's the kind of skills and that's where people should be investing. Their time, but at the same time, what is interesting is that we saw that even the demand for professionals to fill those positions. Is certainly what we're saying is that other types of skills are also being asked, particularly and so it was really a mix of technical. So computer science and Python, but also social, emotional and foundational skills. So communications leadership and and management and so. We certainly see the importance of specialized AI skills, but we also see the increased importance of human skills even more so. This combination of skills reflects really. The sort of multifaceted nature of skills that are required and, and I think that's where really we need to be to be thinking of that. We believe in the particular at the Centre for Skills, that vocational education and training institutions. Offer in this case distinct advantages, particularly in the context of these. Evolving skills demand, so we're we. It's often been vet has often been stigmatised or overlooked in favour of traditional higher education pathways, but we advocate for its recognition and utilisation as a primary avenue for skills development. So precisely you're asking where. Does Vet does offer hands on practical learning experience? That is directly applicable to the to the, to the workplace, and so this practical approach. Ensures that individuals not only gain the theoretical knowledge, but also they develop the technical skills necessary to work on. But there's really sort of it's ultimately it's not just about where individual learns, but how they learn and the attitudes they develop towards lifelong learning. So really, recognizing that education doesn't end with. And rescaling will always be necessary.

Fabian Stephany

Yeah, that, that, that I fully agree with and I think this question has 2 components. So it's it's of course first of all, which which skills should people learn to prepare for for more sustainable career pathway in terms of these rapid changes and and then of course subsequently naturally the question comes like where? And and on the which I I fully second ELISA, so, so also our most recent findings. We looked at the question. You know this idea that in that machines are becoming algorithms are becoming more and more capable of performing tasks that we thought, you know might be unique to humans. A few years ago, like Google writing code for example. Leads to a shift in the demand for. So The thing is just as I thought about the the the prompt engineer or the data scientist that now has a computer writing the code or writing the very repetitive part doing the repetitive part of the coding. This might free up resources. On on other tasks, for example explaining the findings of this model of these code to an Advisory Board or to colleagues with HR or something like that. And and this is exactly what we find in in our recent study, where we looked at rather whether technology's comple. Substituting skills is an increase in the demand for so-called human skills or soft skills, which? Just to have a kind of a bit of a bad reputation because they are. Some people say they're too soft. Though they are. You know, they're they're very relevant. So for example, we see that in, in, in data scientist roles, it's become much more demanded for these people to have good communication team working or digital ethics skills. And. And this is not only a matter of, of, of popularity is also. Of monetary rewards, for example, we see that in in our study of. It's based on on roughly speaking, a 10 million job vacancies in in the United States that data scientists, for example, could earn up to 8% more when they. Also had ethics. So, so digital ethics skills. But they also knew about the the ethical implications of the the the data big data models that they that they were building. So absolutely, it's not only about the technical skills, it's also about these kind of complimentary or human skills if you want. Call them like that. And and on the learning side, yeah. I also fully agree. Know the the question is. The the the place is so the universities definitely or. Universities are definitely not the only place where you can, where you can learn skills, and they might also not be the the best places to acquire certain types of skills. We've seen. That many of the people that have these in demand skills, they didn't learn them in university. Many skills centre around artificial intelligence. Just because there aren't that many. Master's degrees, for example, where you can learn how to work with with AI. And they had definitely been five years ago. And So what we found out is that many people learn them within. Firms on the job, which is for many reasons a great place to learn because you are in a, you know, environment that you know you're close to the frontier of what is happening in your field. Know what's being demanded on the labour market. But of course, it also brings other problems in the sense

that not all not every firm is able to afford this, you know, has the resources to reskill people or to give them guidance on where to go. This is definitely a field where I think. Policy, intervention and focus, as El-Iza mentioned quite rightly, rests on and. Because it's important to enable also firms that do not have the financial resources, like big tech firms for example, they have the resources, but smaller firms might not, to support these smaller firms in giving guidance and resources to their employees, to their workers because the FIR. Become. A very relevant place to learn new skills for future.

Veena McCoole

Fabian and El-Iza, you've given us so much to think about in this conversation, and I'd like to conclude with a final question of whether you think new technologies like generative AI help the labour market or maybe hurt it. El-iza, why don't we start with you?

El-Iza Mohamedou

I think they do. I think they not only create new job opportunities but also mitigate job displacement by introducing fresh rolling and. And new occupations so and also I think these advancements enhance productivity across diverse sectors. And as you know productivity has been really, really a big issue across a lot of countries and I think we need to also take a step back and look historically new technologies have enabled flexible work, ingrained work. They've fostered better work, life balance and. So with upskilling and rescaling initiatives, this adaptability can be. Further reinforced, I think, by ensuring that the workforce remains equitable. And so this all adds up to more growth for both people and economies. But I think one point we've raised throughout this conversation is also that while the overall impact of new technologies is positive, it's important that to acknowledge that these benefits. Are not uniformly distributed, neither across sectors nor geographic areas, and so there may be significant job displacement as technology outpaces the rate of new job creation in in in these regions so. And I think what we see for us perhaps what is important to address these challenges that it's important to implement comprehensive policies and skills, strategies to to support. These this transformation and support displaced workers and encourage economic diversification, and so that that includes investment in education and training programs, but also providing support for regions that are particularly affected by technological shift.

Fabian Stephany

Yeah. And I, I mean, I hate to disappoint the listener that there's little controversy on this between El-Iza and me, I fully second on this. The overall impact historically speaking, but also in this wave of technological change on the labour market is positive in in terms of personal empowerment of of people. People. And then there's evidence for this. So they are already knowledge workers. For example, working hand in hand with generative artificial intelligence. Their job has changed tremendously, though they managed to stay afloat and have a more inspiring, more satisfying and also not only. Economically, but also personally more rewarding, job is also probably a big hope for productivity increase increasing on a macro level. But I absolutely agree the I think the elephant in the room is inequality. Inequality of. Of of how you know this, this this hand in hand, working with technology. Might lead to the advancement of certain groups and certain firms in certain regions in the world, but leaving some parts of the world, some workers, firms and regions. Behind and this all starts. I think with inequality and opportunity. So the opportunity to on a firm level on a macro on a country level institutional level to seize this technology. So to know how to use this technology for advancing your field, your industry, your business. And on the individual level, the, the, the opportunity and the knowledge to know how to use this technology for developing your own career, developing your, enriching your, your job and here I think I would advocate that we can't leave this to. The the forces of the market entirely because the market, as far as I see it right now, is rather leading to more concentration, more inequality. But with smart interventions. I think we mentioned a couple of them, you know. Policy interventions in empowering workers. Supporting investing in education also supporting firms that are that are not able to do reselling in-house but the resources they have with smart interventions. Are, I think, able to leverage these very positive forces of technology for everybody?

Veena McCoole

Fabian and El-iza, thank you so much for taking the time to chat with me today on the OII podcast.

El-Iza Mohamedou

Thanks a lot, Veena and Fabian. It's been a pleasure.

Fabian Stephany

Likewise, thanks. Thanks to both of you.