

## Digitization and the Future of Work: Building a development-oriented research agenda

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### *CONFERENCE REPORT<sup>1</sup>*

On June 15-16, 2017, IDRC hosted an event titled “Digitization and the Future of Work: Building a development-oriented research agenda”. The purpose of this event was to convene key stakeholders and thought leaders from across academia, government, industry and multilateral organizations to examine the social, economic, and ethical implications posed by two interrelated trends: 1) the increasing automation of routine jobs, and 2) the emergence of online platforms that facilitate part-time, non-standard labor arrangements.

There has been considerable discussion about these trends and their impact on the nature of work in developed countries. However, the implications for developing countries have received considerably less attention. One of the few studies was co-authored by Dr. Carl Frey, who delivered the keynote speech that inaugurated the workshop.<sup>2</sup> Dr. Frey started his presentation by proposing that the questions posed by artificial intelligence and robotization are not new, but rather exemplify the complex interaction between technological progress and labor that has characterized human history.

Recent technological progress in artificial intelligence, robotics and related areas, however, does pose challenges that were unforeseen even a few years ago. Many routine, middle-skill occupations in manufacturing and service that were considered too complex for non-human execution are now being automated, creating considerable distress in many traditional occupations. These trends, described by some as the 4<sup>th</sup> industrial revolution, have contributed to the polarization of labor markets, hollowing out traditional middle-class jobs. As a result, average wages have been stagnant for many years in most OECD countries, resulting in increased wealth inequality.

How far is automation likely to advance? Where will human workers hold a comparative advantage? According to Dr. Frey, these are key questions that remain unanswered. Some research suggests that creativity, empathy and social intelligence will remain beyond the capabilities of robots, and thus favor humans in occupations that significantly depend of these skills (ranging from health care to IT development). Some of these characteristics tend to be associated with women, which raises

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<sup>1</sup> This summary attempts to broadly capture the issues discussed at the workshop. Not all attendees were involved in every part of the conversation, nor does this document necessarily reflect the views and opinions of individual attendees.

<sup>2</sup> Frey, C., & Osborne, M. (2016). The future of employment: How susceptible are jobs to computerisation?. Retrieved from <http://www.oxfordmartin.ox.ac.uk/publications/view/2279>.

important questions about differential gender impacts. Recent research suggests that men without college degrees have been particularly affected by these trends in the US context.<sup>3</sup>

Dr. Frey estimates the risk of automation to be significantly higher in developing countries. The reason being simply that, in emerging regions, the share of routine, low-skilled work is higher than in more developed countries. For example, he estimates that 85% of the jobs in Ethiopia (many of them tied to the agricultural sector) are susceptible to automation. Even for more advanced economies such as China, which relies heavily on its export-oriented manufacturing sector, the risk of automation affects as many as 77% of existing jobs. This raises concerns about future development paths for countries that have historically depended on the availability of cheap labor. Premature industrialization is already a reality in many middle-income countries, where the pace of new job creation has slowed significantly in recent years.<sup>4</sup>

The presentation raised a number of questions among workshop participants. First, what is likely to be the pace of automation in developing countries? Some participants pointed to structural factors that have historically slowed technology adoption in the developing world, which may help smooth the transition and provide room for policy adaptation. Others raised questions about how differences in the national political-economic environment (such as levels of unionization and labor laws) are likely to affect these trends across countries. Yet others raised concerns about a race to the bottom in which labor standards and wages trend downward as workers face the threat of automation. It was agreed that significant more attention needs to be paid to policy adaptation and mitigation strategies, from worker retraining programs to the enforcement of existing labor standards in non-traditional work arrangements.

Following the keynote speech, the first panel continued the discussion about the implications of automation for developing countries. Panelists raised several important issues, including the dearth of reliable data on occupations and wages in many countries, which prevents the replications of studies conducted in OECD countries. This is critical because participants agreed that the effects of automation and shifts in labor markets will be context dependent. Nonetheless, there was general agreement that countries in the Global South are ill prepared for these changes.

For example, automation in Latin America is taking place at a slower pace than in other regions, though there is recognition that, in the longer term, new skills will need to be developed among large portions of the labor force. The IADB is promoting a regional discussion about worker reskilling and changes to K-12 education, which participants identified as a key area for future research. In particular, there needs to be more evidence about how schools and technical training institutions can help prepare

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<sup>3</sup> Case, A., & Deaton, A. (2017). Mortality and morbidity in the 21st century. Retrieved from <https://www.brookings.edu/bpea-articles/mortality-and-morbidity-in-the-21st-century/>.

<sup>4</sup> Rodrik, D. (2015). Premature deindustrialization. NBER Working Paper No. 20935.

the next generation of workers and small entrepreneurs for non-routine jobs. Similar trends were identified in the case of India, a country that has greatly benefited from business process outsourcing in the past two decades. There was agreement that many of these gains are in jeopardy as automation displaces routine service workers.

The second panel turned attention to the so-called gig economy. Panelists took a more case-study approach to discuss current changes associated with microwork and online labor platforms. One of the key issues raised was that of protecting workers' rights (including the right to unionize and negotiate collectively). There was agreement that current employment trends threaten these rights, partly because new labor arrangements take place under the radar of current labor law. Other panelists pointed to the complexity of labor arrangements in the gig economy, in which workers themselves are utilizing online platforms to outsource work to others, creating complex networks that defy traditional modes of industrial organization.

A key point of discussion referred to strategies to avoid a race to the bottom in labor standards and wages. One panelist proposed the creation of a system for the authentication of "fair wage" paid to gig workers, similar to the "fair trade" system that has been in place for several decades. There were several questions raised about its practical implementation, but the general idea garnered support among workshop participants. For example, one of the questions raised was the difficulty in identifying who is in fact doing the work and where workers are located, given the complexities in the disintermediation of labor discussed above. This was identified as a promising area for future research.

The question of discrimination in online hiring and wages was also raised. Evidence was presented which suggests that gender, race and location affect opportunities for workers in the gig economy. For example, workers located in developing countries are consistently found to be less likely to obtain contracts from employers in developed countries. Case study research has uncovered strategies whereby workers intentionally mask their location or other individual characteristics in order to improve their odds of securing work. It was also pointed out that, when acting as employers, women tend to receive higher bids for work than men, which penalizes them in terms of entrepreneurship opportunities.

In addition, the need to differentiate work that is purely digital (and henceforth easily tradeable) from work that requires a physical presence (i.e., non-tradable) also emerged. For example, in the transportation sector competition is geographically bound, and regulatory authorities have a number of options at their disposal (which they have exercised to moderate success in several cases). In addition, the ability of workers to organize is facilitated by physical co-location and shared labor laws. By contrast, when the work is purely digital, the ability of workers to organize as well as the regulatory tools at the disposal of governments are greatly reduced. Participants acknowledged some of these issues are not new, but rather relate to the problem of national (or local) law enforcement on Internet platforms more generally.

Another set of issues relates to the architecture of online labor platforms, in particular the lack of interoperability between platforms (which, for example, prevents workers from transferring reputation from one platform to another) and the design features of reputation systems (which to a large extent determine employability). There were also questions raised about the lack of transparency in the algorithms used by online platforms to determine prices and match labor demand and supply. This relates to the ongoing discussion regarding ethics and transparency in algorithms more generally.

Participants also pointed out the need to better understand how online labor platforms adapt to (or emerge in) local contexts. For example in the case of China, the local ride app Didi has helped organize informal taxi drivers and is collaborating with the government for safety and tax collection. There are also hacking strategies such as when workers utilize bots to counteract the algorithms that result in lower wages, register with multiple platforms, or create backchannels for discussion and labor organizing. There was consensus about the need to better document and understand these worker resistance strategies across sectors and countries.

There was also discussion whether online labor platforms can serve as stepping stones for skill-development into more formal job occupations. Some evidence was presented about this potential transition, for example in the case of IT workers in the US. This relates back to the question of reputation building, and the extent to which skills and reputation in an online environment can be transferred to traditional work settings. This was also identified as a promising area for future research.

Finally, participants engaged in conceptual discussions about the use of the term “sharing economy” and how it may conceal both physical work as well as the emergence of new types of intermediaries. Along these lines, panelists discussed how regulations can or should be adapted to accommodate technological innovations without further degrading labor standards or increasing wage inequality. Some participants pointed at the more general problem of weak enforcement of labor laws in the Global South, which is only exacerbated in the gig economy. Others warned that excessive rules may do more harm than good, particularly those that favor cartelized sectors (such as in the transportation sector). Ultimately there was agreement about the need to better understand what regulatory tools are available to governments, at what level (e.g., local vs. federal), and the challenges involved in practical implementation.

The next panel turned attention the question of 21<sup>st</sup> century skills development and changes in education. There was agreement that private sector investments in worker training have been decreasing in the past decades, and have not been compensated by increases in similar public investments. This has negatively impacted workers’ bargaining abilities, and thus contributed to wealth inequality. Yet the question of how to promote investment in skills development for existing and future workers was not resolved. Should companies be forced to reinvest in worker training? Should higher corporate taxes be levied to increase public spending in skills development programs?

Another set of questions relates to the identification of the skills that need to be promoted. There was agreement that, beyond general concepts, this is a challenging area given the uncertainty about which jobs will be available in the future. Some participants questioned the overemphasis on programming skills, while others raised the question of whether investment in tertiary education should favor a small cadre of highly educated people with entrepreneurial potential or attempt to raise average skills among the general population. In other words, should the emphasis be on educating the few who could potentially create disruptive and successful enterprises?

Demographic trends were also brought to bear, as participants acknowledged that the demographics of developing countries are favorable for developing skills among younger. This contrasts with the more challenging task of retraining existing workers in aging economies.

The role of governments in smoothing these trends also raised several questions. It was agreed that one of government's main role should be to generate relevant data. Circling back to the macro perspective, participants acknowledged the lack of official statistics about current labor trends in the Global South. This hinders the identification of skills that will be required for the jobs of the future. Participants also raised questions about the lack of attention to 21<sup>st</sup> century skills development outside traditional educational institutions.

The last panel emphasized the need to rethink safety net systems for the digital economy. The general premise was that work is not just a question of income generation but also one of human dignity. This is a challenging area for research given the differences in the pace of automation, in labor laws and institutions, and in the architecture of social programs across countries. It was agreed that there is no one-size-fits-all approach, but rather general guidelines that need to be adapted to local contexts.

In general, there was recognition that both governments and the private sector are not doing enough to mitigate the impact of these trends on the livelihoods of workers. For example, companies have the responsibility to build basic labor standards and worker protection into the architecture of online work arrangements (referred to as “fairness by design” and “human-centered technological design”). Coming full circle to data collection, the issue of how data is collected, what is collected, and how it is used governments and the private sector was also brought to bear.

Finally, the discussion touched on the question of whether these trends open opportunities for developing countries to leapfrog traditional development paths. The analogy used was that of the mobile phone, which allowed developing countries to bypass investments in fixed telephony. Are there new opportunities for small-scale entrepreneurship tied to AI and automation? Do online labor markets provide better career paths to young workers in the Global South? Can these trends promote gender equality in countries with large gaps in labor force participation and wages? Overall, there was recognition that the impact of automation and the

digitization of work is likely to be different in the Global South, and that further research is needed to correctly identify the threats and opportunities to development associated with these trends.