Feminist Perspectives on the Future of Work in India

Zothan Mawii

FRIEDRICH EBERT STIFTUNG

Feminist Perspectives on the Future of Work in India

September 2019

Contents

Foreword

Despite economic growth and declining poverty levels across Asia, inequality continues to grow, with large groups of society remaining marginalized in economic and social terms.

Women in Asia continue to experience massive structural disadvantages, from early childhood education through their retirement from work – if they wanted and were allowed to work – and into their older age. It is mainly women who are exploited as cheap labour in Asia's export industries and low-skill sectors, especially agriculture, textiles and the footwear and electronic industries. They are paid subsistence wages and experience increasing precariousness of their working as well as living conditions.

On the heels of all the economic progress now comes rapid technological transformation that is altering the present and future nature of work in ways that offer a multitude of opportunities but also add new levels of risks for social groups across the Global South.

Women are particularly vulnerable and disproportionally affected by these changes, both in the context of the Fourth Industrial Revolution and in the ever-expanding care work across the formal and informal sectors.

Unfortunately, the predicted productivity gains through automation and digitalization in many sectors possibly will not give women much hope for fundamental improvements of their prospects. Due to their poor access to education, skills development and professional know-how, Asia's women are at risk of slipping deeper into unemployment or resorting to migration far from their home for jobs they can manage.

The goal for them and for us in development cooperation work is to find socially just and gender-equal responses to these challenges. Solidarity and coalitions across a range of progressive movements in Asia are essential.

Through our regional networks, Friedrich-Ebert-Stiftung (FES) brings together diverse voices from social movements, civil society organizations, trade unions, political parties and academia to work together in developing progressive ideas and narratives for advancing social justice. Among the most innovative platforms is the newly established FES Asia project Women's Perspectives on the Future of Work. With insights from distinguished researchers in nine Asian countries, FES and its partners aim to further promote gender equality in the world of work, with emphasis on enhancing women's participation in public and political life and promoting decent work for all along with gender-just and human-centric economic models.

The FES India Office is thankful to Zothan Mawii of Tandem Research for preparing this research paper. Tandem Research is an interdisciplinary research collective that generates policy insights at the interface of technology, society, and sustainability. This paper is part of an on-going collaboration between the FES India Office and Tandem Research's Technology Foresight Group (TFG) who bring together multiple stakeholders to collectively and iteratively diagnose issues and challenges pertinent to technology and society futures in India.

We hope that this paper contributes to a fruitful discussion and provides valuable insights for future initiatives.

Mirco Günther and Lea Gölnitz
FES Office for Regional
Cooperation in Asia

Patrick Rüther and Damyanty Sridharan
FES India Office

Introduction

The promise of the Fourth Industrial Revolution and emerging technologies to the world of work has triggered somewhat equal amounts of jubilation and anxiety in India. Business interests in India are keen to reap the benefits of increased efficiency and productivity, while the government sees the adoption of new technologies as a means of leapfrogging current societal and developmental barriers.

Other accounts have a more measured response:[1] they point to potential large-scale job displacement, the need for re-skilling that will arise, the uneven distribution of technology gains and the resulting socioeconomic inequities and the difficulties that southern countries may have adopting new, expensive technologies.

Predictions of radical shifts in the world of work have been around for a few years now, thanks to rapid developments with the digital technologies. These dominant narratives, however, focus on industrialized economies in the Global North and largely ignore the socioeconomic realities of the Global South.

The future of work trajectories in India will be influenced by local conditions in the labour market, economic activity, socio-cultural norms and domestic policy decisions.

The emergence of the future of work as a policy issue in recent years has been spurred by the technological advances and shifts in the socioeconomic conditions. India is in a unique position—it has the largest young workforce in the world,[2] with nearly 4.8 million workers joining the workforce annually.[3] Yet, labour force participation has fallen—it was 49.8 per cent in 2017–2018.[4] During that same period, the female labour force participation rate was at an abysmal 27 per cent. This is especially pertinent in light of the predictions of job displacement in the future as a result of technology adoption.

Although experts agree that emerging technologies will cause displacement, there is no consensus to what extent. Certainly, the Fourth Industrial Revolution will mark a shift from labour-intensive production to capital-intensive models. The adoption of emerging technologies

and adaptation to new forces of productivity will determine economic growth for years to come. The high cost of adopting the new technologies could be a deterrence to its uptake in India,[5] thereby departing from global trends in the future of work and instead creating unique trajectories.

In areas where emerging technologies are adopted, women are predicted to be disproportionately impacted because the low-skill, manual jobs that they occupy will be the first to be automated.[6] One report estimates that up to 12 million Indian women will be displaced due to automation by 2030.[7]

As tempting as it is to think of technology as cold, hard machinery, in reality, technology is inherently political and has a vital role in social and gender relations. Technologies are embedded with biases and subjectivities that could further perpetuate discriminatory practices. Their design, deployment and adoption are informed by specific socio-political realities, thereby imbuing them with immense influence.[8] A future of work, steered largely by technology, will likely have wide societal impact, determined by access to and distribution of technological gains. This presents an opportunity to address existing social inequities and the condition of vulnerable groups, like women, sexual minorities, marginalized communities (Scheduled Castes, Scheduled Tribes, Other Backward Classes) and people with disabilities.

In India, prevailing socio-cultural norms, the conditions behind declining labour force participation among women, the demographic distribution and the reconfiguration of the labour market are issues that will profoundly impact how women and marginalized groups access work in the future and the opportunities that will be open to them.

In looking at how women will fare in the future of work, a feminist perspective is helpful for investigating power structures and processes of marginalization that may impact vulnerable groups' access to the workforce and the working conditions they are exposed to. The dominant discourse in India on women's work centres around the gendered division of labour, the double

burden of undertaking paid work and domestic, caring responsibilities and the relegation of women to largely informal sectors of work in agriculture, domestic work, cleaning services, cottage industries or the manufacturing sectors. There is no literature on women and the future of work, if only because existing problems in the current world of work persist and remain unaddressed. What literature is available is useful for identifying potential gaps in the future of work and in flagging vulnerabilities.

Women and work in India

Women from lower socioeconomic groups work largely in the unorganized sector. Agriculture, manufacturing and the textile industry have a large proportion of women workers in rural India. Domestic work is one of the larger employers of women from lower economic groups in urban areas, but the lack of official data makes it hard to estimate precise figures. What is known is that in 2017–2018, 59.3 per cent of rural women and 51 per cent of urban women were in informal employment.[9] During that same period, 6.8 per cent of rural women and 11.4 per cent of urban women were in regular salaried employment.[10]

Perhaps the most pressing issue related to women and work in India is the persistent decline in female workforce participation. A report from the International Labour Organization indicates that women's workforce participation dropped to 27 per cent in 2015-2016, from 31 percent in 2013-2014.[11] Girls are staying longer in school and women's enrolment in higher education has risen in recent years, but this does not seem to be translating to women's access to work. Increased enrolment in education may account for some fall in labour force participation, but it cannot account for the breadth of the problem.

Caste and class background are big factors in the kind of work women can access. For women of higher caste and class background, it can be assumed that they have a relatively high level of education and fewer dependants and thus do not necessarily have to work if the choices open to them do not meet their aspirations or standards of respectability.[12] On the other hand, women from poor, rural families likely engage in work that is not recognized as work and remain unpaid. Meena Gopal argues that caste and gender are inextricably intertwined in the division of labour.[13] Lower-caste women have long been relegated to roles of midwives and child caregivers or to the leather tanning industry, where women must work in the most hazardous processes with little to no protection. Dalit (lower-caste) feminists have long argued against reinforcing women's caste identity systems so that women are allowed to break away from low-end labour.

Jayati Ghosh has written extensively about women's work in India and the implications of the gendered division of labour. Women are expected to undertake unpaid, socially unrecognized work—domestic responsibilities, care for older persons and child care—outside of paid work. If these activities were outsourced and commercialized, they would be paid for, but women are expected to forgo this potential commercial transaction due to traditional gender roles. In Ghosh's opinion, the recognition of women's work is essential to recognizing women's contribution to the economy and society[14] and that the gendered division of work has been in place to preserve male power over women and to suit capital.[15] Ghosh sees unpaid work as a huge subsidy to the recognized economy and the formal sector and calls for the need to reduce and redistribute unpaid labour.[16] Schemes that promote women's participation are not enough but must necessarily extend to offering childcare support if women are to meaningfully participate in the labour force.[17]

Where women work there is disparity in wages with what men are paid. Women's wages are, on average, two-thirds of men's wages, and occupations where women work are usually paid less because women are willing to work for lower wages. Ghosh argues that gender-segmented labour markets have allowed public services to be provided on the cheap. For instance, accredited social health activists workers who are community health workers and, similarly, *anganwadi* volunteers are paid well below the minimum wage. They are categorized as volunteers and receive a small honorarium, although the work they perform is vital and the responsibilities entailed sometimes go beyond the scope of volunteers.

Figure 1: Gender wage gap in India, 1993–94 to 2011–12 (percentages).

Source: ILO estimates based on National Sample Survey Office data; India Wage Report: Wage Policies for Decent Work and Inclusive Growth, ILO. 2018 .
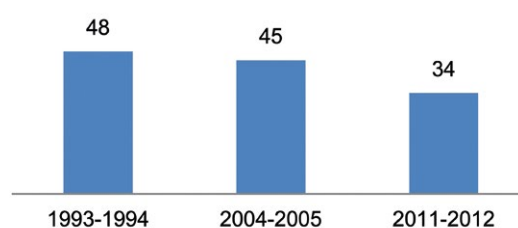
Even in the organized sector, women are relegated to low-end, low-skill, manual jobs for which the pay is usually low. In special economic zones in northern India in the garment manufacturing sector, women are employed in tasks involving packing, trimming and checking, whereas men are employed as tailors or cutters.[18] This segregation of tasks is not evident in southern India, however, where there are equal number of women employed as tailors and cutters. Where men are willing to work under the conditions offered by investors, women's access to work is reduced.

A study conducted by the World Economic Forum and the Observer Research Foundation found that businesses may not be as enthusiastic about ensuring the equitable distribution of wages among women. Some 37 per cent of the businesses surveyed for that study in India stated that they were disinclined to hire more women and preferred to hire male employees.[19] And 30 per cent of the businesses did not have a single female employee, while 71 per cent had a 1:10 female-to-male employee ratio.[20]

The findings in other surveys indicate that personal biases of employers with regard to marital status, age, gender and family background are barriers to women finding decent jobs.[21] A 2010 Pew Research Center study found that 84 per cent of Indians believe that men have more of a right to work in times of job scarcity, indicating deep-seated patriarchal conditioning.[22]

The privileging of male employees over women due to employer preferences or social norms has relegated women largely to the informal sector. Differential opportunities are available to women in rural and urban settings, and this is framed in a larger societal environment in which women's primary location is in the realm of domesticity. Workers in the informal sector have little to no access to social protection and are not covered under the existing labour laws. For instance, large numbers of rural women migrate to urban areas and turn to domestic work. While no reliable statistics are available, there are approximately 4.2 million domestic workers in the country, and their contribution is rarely computed within the economy.[23] They work without a formal contract and legislative protection, with little to no bargaining power or job security, no paid holidays or maternity leave and are vulnerable to sexual harassment.

Two draft bills have been brought forward at the national level to protect domestic workers. At the state level, the Maharashtra Domestic Workers Welfare Board Act (2008) and the inclusion of domestic workers in the Tamil Nadu Minimum Wages Act (1948 in 2018 are equally crucial steps towards formalizing domestic workers in the country.

In the absence of formal protections for women in the informal sectors, workplace violence and harassment are commonplace. For the formal sector, the Sexual Harassment of Women at the Workplace (Prevention, Prohibition, Redressal) Act (2013) seeks to protect women in their place of work.

Discourse and schemes on the future of work in India

The current discourse around the future of work in India can be clustered under two themes: (i) buoyant business and commercial interests that focus on productivity gains; and (ii) an opportunist government anxious to stimulate economic growth while protecting against shocks.

Much of the current discourse around the future of work in India is informed by the global narratives, most prominently those from multilateral bodies like the World Economic Forum, the International Labour Organization and the Organisation for Economic Co-operation and Development, which have featured India's burgeoning digital economy, IT expertise and economic performance as one of the fastest growing economies in the world.

Business outlook on the future of work

Businesses in India have largely focused on increased efficiency and productivity gains that the technological adoption will bring. The digital economy in India, which will be the site of many new employment opportunities, are projected to be worth 1 trillion US dollars by 2025.[24] A report by EY India, in collaboration with National Association of Software and Services Companies and the Federation of Indian Chambers of Commerce and Industry indicates that technological adoption will create new jobs, although they will require new skills.[25] Emerging job roles will include cyber security specialists, data brokers, fitness counsellors (as middle-class people lead increasingly sedentary lifestyles) and human-machine collaborators who will use robots to enhance their skills or add a human touch to machines.[26]

Government view on future opportunities

In line with the business and industry view on the future of work, the government of India sees the Fourth Industrial Revolution and emerging technologies as a moment of opportunity to propel the country to dominance in the digital economy. As noted, India has a large, young population, and careful policy steering will be required to unlock the full potential of that demographic dividend.

A large section of the population remaining below the poverty line will cause wages to remain depressed and have an adverse impact on consumption power. With an eye on creating opportunities for marginalized communities and young people entering the workforce, the government has been vigorous in promoting entrepreneurship through numerous schemes. Stand Up India, for example, facilitates bank loans between 100,000 rupees and 10 million rupees to women and people from marginalized communities to set up an enterprise.

The Pradhan Mantri Mudra Yojana is a flagship programme to extend affordable credit to micro and small enterprises and has so far benefited close to 90 million borrowers, 76 per cent of whom are women. Under this scheme, women also receive a 0.25 per cent rebate. The emphasis on entrepreneurship signals a clear move away from traditional jobs in the organized sector and encourages self-employment and non-traditional jobs in the informal sector. This line of thinking, heavily influenced by neoliberal values and the American Silicon Valley's glorifying of the entrepreneur may not offer fair opportunities in India, where inequality and discrimination due to patriarchal norms, the caste system and class are systemic and structural. Success as an entrepreneur depends heavily on existing social capital, socialization and other so-called soft skills, which may not be accessible via India's dilapidating public institutions or public education system. Additionally, women, especially those from marginalized groups, may be further disadvantaged because their access to knowledge and institutions is sometimes severely restricted due to the power asymmetry in society.

A third view of the future of work in India

A third narrative from think tanks and research organizations emphasizes specific social, cultural and economic factors that are likely to influence the conditions of the future of work in India. The uptake of emergent technologies may not come as rapidly as businesses predict. The high cost of technological adoption, from

the cost of the technology to the cost of training workers or hiring new employees, will likely be a hindrance, allowing only large companies in the organized sector with sufficient capital to undertake the costs.[27] Around 90 per cent of the workforce will remain unaffected because they work in the informal, or unorganized, sector, with its small potential for technological adoption.[28]

In India, the adoption of new technologies will depend on variables like the cost of labour, the cost of upgrading and the nature of tasks. For example, the automobile industry can easily be automated and has been; but industries that require higher levels of dexterity, like textile, footwear manufacturing or paper production, are less likely to be automated at scale at this point because of the costs involved.[29] The service sector, on the other hand, will experience a rapid rate of technological transformation as certain work processes in accounting, human resources, logistics and transport are leveraged by the emerging technologies. Jobs that require affective labour, or those that produce feelings of contentment, reassurance and satisfaction and that require a specific set of emotional or social skills, will not be as highly affected by automation.[30] Women will be disproportionately impacted by automation because the low-skill, manual jobs they tend to occupy are ones most susceptible to automation.

Analysis of the future of work from the Observer Research Foundation and Tandem Research point out the increasing casualization of work in the organized sector and growing precarity. The organized sector will increasingly look towards contracting jobs as a means of offsetting labour costs and retaining an easily adaptable workforce. Government and business narratives have praised the gig economy and platforms as avenues of employment; however, the conditions under which gig workers operate are far from ideal. Highly skilled workers, like software engineers, designers or consultants, may look towards the gig economy because it allows for flexible scheduling, but low-wage workers, like drivers for cab aggregators or hired service workers on platforms like Urban Clap, will be left with little social protection, job stability or bargaining power.

Although platforms and the digital economy have organized previously unorganized sectors, they have created new modes of informality in which workers are classified as "self-employed," thereby absolving the platforms and employers of granting any social protection. Workers' well-being in the future of work is of strong concern to these narratives. Women's participation in the platform economy is still much smaller than the men's presence, owing to the digital gender divide.

A report on online freelancing and microwork in India by the Indian Council for Research on International Economic Relations highlighted the crucial role freelancing and gig work could have in increasing productivity.[31] Employers in India have been slow to recognize the value of freelance workers due to the mindset that they are low-skilled workers, making it an unviable choice for workers.[32] The report also found a wide gender gap in online freelancers Bihar, Rajasthan, Gujarat and Andhra Pradesh states have recorded high male participation, of 86–88 per cent, and abysmal participation from women. This gender gap is likely due to the digital access divide and patriarchal norms and socio-cultural factors that hinder women's access to work.

Feminist perspectives on work and digitalization

Feminist scholarship on work in India has so far focused on current issues in work, and although the literature on the future of work is absent, the existing literature can be used to extrapolate issues that may reveal themselves in the future of work, such as the gendered division of labour, unpaid and unrecognized work performed by women, declining workforce participation, wage disparity and women's relegation to the informal sector.

Some estimates suggest that if women's workforce participation became on par with men's, the gross domestic product value would rise by 20 per cent.[33] The increasing digitalization of life and work brings to the fore the existing issues and problems. Freelancing and flexible online work have been presented as avenues for women to find employment because they can balance work with child care and domestic chores. However, research cited previously shows that this has not been the case.[34] The introduction of new technologies and new opportunities cannot automatically solve the existing problems, like low levels of education; social norms that hinder women's mobility; child care, care for older persons and domestic responsibilities that have traditionally fallen on women; and the disparity in opportunities available to men and women.

The following features some of the feminist perspectives on work and digitalization and its impact on Indian women.

Women and digitalization

If the digital revolution was a precursor to the Fourth Industrial Revolution, it has demonstrated how emergent technologies can exacerbate inequalities. According to a World Economic Forum report, of the 4 billion people without access to the Internet, most are from developing countries in the Global South.[35] The absence of infrastructure (Internet and electricity) and the high cost of mobile devices and data in southern countries are major deterrents to digital access.

Although improving, the disparity in digital access between urban and rural areas in India also curbs equal access to opportunities. The digital gender divide is grave—women account for only 30 per cent of Internet users in India, impacting their ability to participate in the digital economy.[36] The biggest reported barrier to accessing the Internet is the cost of devices, followed by socio-cultural norms and patriarchal conditioning that dictate that women be safeguarded from "immoral" influences. The low rates of literacy among rural Indians also inhibits digital access, compounded by the lack of content available in vernacular Indian languages. Women's low levels of access to the Internet and digital tools will hinder their access to the digital economy.

Women with access to digital tools are subject to harassment, abuse and discrimination in a reflection of real, physical spaces. Online harassment and cyber bullying are serious risks to participating in the online public sphere. Social media and online spaces have become new spaces for self-realization; marginalized groups have been using them to foster community, while others have used it for political activism. Social media and digital technologies have also inherently changed the way people communicate, interact and socialize. WhatsApp has more than 200 million users, Facebook has more than 241 million users and Twitter has a little more than 7 million users in India. As Internet penetration grows, this number will only increase. Digital technologies have made it easier to access financial and government services, keep in touch with family and friends and be entertained. As it continues to permeate through most parts of life, women's digital access will also impact their participation in the workforce, educational institutions and public life.

Privacy, data misuse and surveillance are also cause for concern when accessing digital technologies. Women are especially vulnerable to surveillance and cyber stalking. Location services on apps and digital trails make tracking of movements and online activity all too easy to access. In lower-income households, women access devices owned largely by male family members, affording them little privacy. Different social groups experience privacy differently and ownership of a device and moral policing by other members of a family or community impact the way women use technology. Even features and applications designed for women's safety sometimes tend to do more harm than good. Safety apps, for instance, collect reams

of information like contact information, media files and location history, which can be used to compromise the user's data privacy and even physical well-being.[37]

If the future of work is going to be increasingly dependent on technology and digital skills, women in India who already have limited access to digital tools will fare badly. They will be left with limited access to work opportunities, and the gender gap will only grow. The disruption to the labour market as a result of emerging technologies will impact women disproportionately because the kind of jobs women occupy, characterized by little skill and manual, repetitive tasks will be the first to be automated.

As entry-level jobs, like tele-callers in the business process outsourcing industry, disappear due to automation, managerial positions largely occupied by men will remain and continue to be occupied by men, limiting women's opportunities even further. Business process outsourcing has allowed many educated, upwardly mobile Indian women to enter the workforce and what was hitherto a predominantly male space. The IT boom in India in the early 2000s coincided with the rise of the business process outsourcing sector, which provided employment to millions of persons entering the workforce in middle-income groups. Although women in the business process outsourcing sector have had to fight social stigma, patriarchal regimes of surveillance and safety issues, the financial freedom it has afforded them has allowed gender norms to be challenged to a small degree. Positive economic reward defied negative stigmatism, pointed out Gail Forey.[38] Many who entered the sector did so to earn money to advance their studies or as a stop gap while looking for an alternative career. Others found the work to be more satisfying and better paid than traditional institutions, like secondary and tertiary schools. The business process outsourcing sector facilitated social mobility and offered women in that demographic a choice beyond traditionally expected roles, like teaching or clerical work. However, the decline of the business process outsourcing sector as a choice for middle-class women in urban and semi-urban areas will be a limiting factor in their participation in the workforce.

The platform economy could possibly increase opportunities for low-skill, low-wage women workers and highly skilled women and allow them the flexibility to balance domestic responsibilities with work. However, current evidence shows that this is not the case in India, as women's participation on the platform economy still remains low.

Future research priorities

It is unlikely that technology or the future of work will solve age-old issues of gender inequality, wage disparity or equal access to work. Old issues rooted in socio-cultural norms, patriarchal conditioning, economic growth and social hierarchies will continue to exist. Careful policy steering rooted in rigorous research, with the aim of equitable distribution of opportunities and meaningful participation of women, will be required to ensure the equitable distribution of technological gains and opportunity.

Organizations like Feminist Approach to Technology, Internet Democracy Project and Point of View have raised pertinent issues around digitalization and feminism, including surveillance, online harassment and safety, and access to digital technologies. If one were to use feminist theory as a lens to critique and investigate issues around power and marginalization, it would be valuable to identify other groups that would also be concerned about the issues, like "platformization", job displacement and the increasing precarity of work. Labour unions, small-scale craftsmen, policy-makers with an eye on improving employment numbers, and industries that are rapidly being replaced or transformed, would likely also be interested in addressing these questions collaboratively.

Future research direction could include issues pertaining to:

1. New models for social protection, delinked from formal employment, will need to be imagined to protect women workers and afford them better opportunities. This should include new models for collective bargaining and labour unions and possibilities for different models of ownership, like cooperative platforms.

2. Old factors that hinder women's meaningful participation in work will continue to exist. Structural issues regarding women's place in the old economy and transitions to the new world of work need to be questioned. What kind of coalitions between civil society, technologists, businesses and policy-makers should be fostered to form tools and strategies to address these issues?

3. Market-driven solutions to women's participation in the workforce or in the online world should be examined for their social implications, such as the specific role that women have in the value chain and how they may be impacted by digitalization and the future of work. For example, safety buttons and apps and how they may actually enable stalking or the positioning of freelance or gig work as an opportunity for women when the reality is not so.

4. Taking a long view of the impact digital technologies have had on women. Although digital technologies have had an empowering impact in some cases, they can also be used to track and monitor a woman's movement or activities, posing a risk to both cyber and physical safety. Violence against women online is rampant, and digital tools are being used to perpetuate harassment. Strategies for safeguarding women's rights in a digital world need to be studied and implemented.

Endnotes

1.	Pranjal Sharma, "What the Fourth Industrial Revolution Means for India," World Economic Forum. Accessed May 27, 2019. https://www.weforum.org/agenda/2017/10/kranti-nation-india-and-the-fourth-industrial-revolution/.

2.	Samir Saran and Vivan Sharan, *The Future of the Indian Workforce: A New Approach for the New Economy* (New Delhi: Observer Research Foundation, 2018). Accessed March 23, 2019. https://www.orfonline.org/research/the-future-of-the-indian-workforce-a-new-approach-for-the-new-economy/.

3.	Sabina Dewan, "Only 4.75 Million Join India's Workforce Annually, Not 12 Million As Claimed," *Indiaspend*. Accessed April 22, 2019. https://www.indiaspend.com/only-4-75-million-join-indias-workforce-annually-not-12-million-as-claimed-70548/.

4.	ET Online, "50% India's Working-Age Population Out of Labour Force, Says Report," *Economic Times*, February 4, 2019. Accessed March 23, 2019. https://economictimes.indiatimes.com/jobs/50-indias-working-age-population-out-of-labour-force-says-report/articleshow/67830482.cms.

5.	Urvashi Aneja et al., *Emerging Technologies and the Future of Work in India* (Goa: Tandem Research, 2018). Accessed April 22, 2019. http://tandemresearch.org/assets/Tandem-FoW-Web-2018.pdf.

6.	ibid.

7.	Suneera Tandon, "Up to 12 mn Indian Women May Lose Their Jobs to Automation by 2030: Study," *Livemint*, June 4, 2019. Accessed March 23, 2019. https://www.livemint.com/news/india/up-to-12-mn-indian-women-may-lose-their-jobs-to-automation-by-2030-study-1559669338838.html.

8.	Langdon Winner, "Do Artifacts Have Politics?" *Daedalus* 109, no. 1 (1980): 121-36. http://www.jstor.org/stable/20024652.

9.	National Statistics Office, Ministry of Statistics and Programme Implementation, *Periodic Labour Force Survey 2017-2018*, New Delhi, May 2019. Accessed on April 22, 2019 from http://www.mospi.gov.in/sites/default/files/publication_reports/Annual%20Report%2C%20PLFS%202017-18_31052019.pdf

10.	Ibid.

11.	Sher Verick, "The Paradox of Low Female Labour Force Participation," (ILO, 2017) Accessed April 22, 2019 from https://www.ilo.org/newdelhi/info/public/fs/WCMS_546764/lang--en/index.htm

12.	Meena Gopal, "Ruptures and Reproduction in Caste/Gender/Labour," *Economic and Political Weekly* 48, no. 18 (2013): 91-97. http://www.jstor.org/stable/23527313.

13.	ibid.

14.	C.P. Chandrasekhar and Jayati Ghosh, "Where have All the Women Workers Gone?" Accessed April 22, 2019. https://www.researchgate.net/publication/315768570_Where_have_All_the_Women_Workers_Gone.html

15.	Arpita Banerjee and Saraswati Raju, "Gendered Mobility: Women Migrants and Work in Urban India," *Economic and Political Weekly* 44, no. 28 (2009): 115-23. http://www.jstor.org/stable/40279264.

16.	ibid.

17.	Surbhi Ghai, "How to Boost Women's Workforce Participation," *The Hindu Businessline*, January 27, 2019. Accessed April 22, 2019. https://www.thehindubusinessline.com/opinion/how-to-boost-womens-workforce-participation/article26104737.ece.

18.	Mayumi Murayama and Nobuko Yokota, "Revisiting Labour and Gender Issues in Export Processing Zones: Cases of South Korea, Bangladesh and India," *Economic and Political Weekly* 44, no. 22 (2009): 73-83. http://www.jstor.org/stable/40279060.

19.	Teri Chapman et al., *The Future of Work in India: Inclusion, Growth and Transformation* (New Delhi: Observer Research Foundation, 2018). Accessed March 23, 2019. https://www.orfonline.org/wp-content/uploads/2018/10/FoW-Digital.pdf.

20.	ibid.

21.	ibid.

22.	Michael Remez, *Indians Support Gender Equality But Still Give Men an Edge in Workplace, Higher Education* (Washington, D.C.: Pew Research Center, 2013). Accessed March 23, 2019. https://www.pewglobal.org/2013/01/04/indians-support-gender-equality-but-still-give-men-edge-in-workplace-higher-education/.

23.	Women in Informal Employment: Globalizing and Organizing, "Domestic Workers in India." Accessed April 22, 2019, http://www.wiego.org/informal_economy_law/domestic-workers-india.

24.	BS Reporters, "India Set to Become $1 Trillion Digital Economy by 2025: Report," *Business Standard*, last updated February 20, 2019. Accessed March 23, 2019. https://www.business-standard.com/article/current-affairs/india-has-potential-to-become-1-trillion-digital-economy-by-2025-report-119022001195_1.html.

25. EY India, *The Future of Jobs in India*: A 2022 Perspective (Delhi: 2017). https://www.ey.com/Publication/vwLUAssets/ey-future-of-jobs-in-india/%24FILE/ey-future-of-jobs-in-india.pdf.

26. Kathakali Chanda, "Work it out: Jobs that will emerge over the next decade," *Forbes India*, August 3, 2018. Accessed March 23, 2019. http://www.forbesindia.com/article/future-of-work/work-it-out-jobs-that-will-emerge-over-the-next-decade/50933/1.

27. U. Aneja, V. Mathur and I. Anwar, *Emerging Technologies and the Future of Work in India* (Goa: Tandem Research, 2018). Accessed March 23, 2019. http://tandemresearch.org/assets/Tandem-FoW-Web-2018.pdf.

28. ibid.

29. ibid.

30. ibid.

31. Rajat Kathuria, Mansi Kedia, Gangesh Varma, Kaushambi Bagchi and Saumitra Khullar, *Future of Work in a Digital Era: The Potential and Challenges for Online Freelancing and Microwork in India* (New Delhi: Indian Council for Research on International Economic Relations, 2017), http://icrier.org/pdf/Online_Freelancing%20_ICRIER.pdf.

32. ibid.

33. Ajit Ranade, "Reversing Women's Decline in the Indian Labour Force," *Livemint*, June 27, 2018. Accessed March 23, 2019. https://www.livemint.com/Opinion/v80I9EwDz6oyklST8ebqMM/Reversing-womens-decline-in-the-Indian-labour-force.html.

34. Supra note 27.

35. Emma Luxton, "4 Billion People Still Don't Have Internet Access. Here's How to Connect Them," World Economic Forum, 2016. Accessed March 23, 2019. https://www.weforum.org/agenda/2016/05/4-billion-people-still-don-t-have-internet-access-here-s-how-to-connect-them/.

36. S. Kini, "She is Offline: India's Digital Gender Divide," *Livemint*, 2018. Accessed March 23, 2019. https://www.livemint.com/Opinion/sD6mVqLAEa7cvfJtmdXXuO/She-is-offlineIndias-digital-gender-divide.html.

37. Nayantara Ranganathan, *A Handy Guide to Decide How Safe That Safety App Will Really Keep You*, Internet Democracy Project 2017, https://genderingsurveillance.internetdemocracy.in/safety-app/.

38. Gail Forey, "The Impact of Call Centre Employment on Women in India," *World Englishes* 32, no. 4, 2013.

Bibliography

"WEF launches Centre for Fourth Industrial Revolution in India." *Times of India*, 2018. Accessed March 23, 2019. https://timesofindia.indiatimes.com/business/india-business/wef-launches-centre-for-fourth-industrial-revolution-in-india/articleshow/66166216.cms.

Aneja, U., V. Mathur and I. Anwar. *Emerging Technologies and the Future of Work in India*. Goa: Tandem Research, 2019. Accessed March 23, 2019. http://tandemresearch.org/assets/Tandem-FoW-Web-2018.pdf.

Banerjee, A. and S. Raju. "Gendered Mobility: Women Migrants and Work in Urban India." *Economic and Political Weekly*, 44, no. 28 (2009): 115–123. Accessed March 23, 2019. https://www.jstor.org/stable/40279264.

Bhattacharya, P. "How Many Factory Workers in India Have Lost Their Jobs to Robots?" *Livemint*, May 20, 2018. Accessed March 23, 2019. https://www.livemint.com/Home-Page/tAZPQyqg8dhaagFWhpziNM/How-many-factory-workers-in-India-have-lost-their-jobs-to-ro.html.

BI India Bureau. "Male Workforce is Reportedly Shrinking in India, Reveals Job Survey by NSSO." *Business Insider*, March 20, 2019. Accessed March 23, 2019. https://www.businessinsider.in/male-workforce-is-reportedly-shrinking-in-india-reveals-job-survey-by-nsso/articleshow/68498030.cms.

BS Reporters. "India has Potential to Become $1 Trillion Digital Economy by 2025: Report." *Business Standard*, last updated February 20, 2019. Accessed March 23, 2019. https://www.business-standard.com/article/current-affairs/india-has-potential-to-become-1-trillion-digital-economy-by-2025-report-119022001195_1.html.

Chanda, K. "Work It Out: Jobs That Will Emerge Over the Next Decade." *Forbes India*, August 3, 2018. Accessed March 23, 2019. http://www.forbesindia.com/article/future-of-work/work-it-out-jobs-that-will-emerge-over-the-next-decade/50933/1.

Chandrasekhar, C. and J. Ghosh. "Where Have All the Women Workers Gone?" 2013. Accessed March 23, 2019. https://www.researchgate.net/publication/315768570_Where_have_All_the_Women Workers_Gone.html.

Chapman, T., S. Saran, R. Sinha, S. Kedia and S. Gutta. *The Future of Work in India: Inclusion, Growth and Transformation*. New Delhi: Observer Research Foundation, 2018. Accessed March 23, 2019. https://www.orfonline.org/wp-content/uploads/2018/10/FoW-Digital.pdf.

Dewan, S. "Only 4.75 Million Join India's Workforce Annually, Not 12 Million as Claimed." *Indiaspend*, 2018. Accessed April 22, 2019. https://www.indiaspend.com/only-4-75-million-join-indias-workforce-annually-not-12-million-as-claimed-70548/.

ET Online. "50% India's Working-age Population Out of Labour Force, Says Report." *Economic Times*, February 4, 2019. Accessed March 23, 2019. https://economictimes.indiatimes.com/jobs/50-indias-working-age-population-out-of-labour-force-says-report/articleshow/67830482.cms.

EY India. *The Future of Jobs in India: A 2022 Perspective*. Delhi: EY India, 2017. Accessed March 23, 2019. https://www.ey.com/Publication/vwLUAssets/ey-future-of-jobs-in-india/%24FILE/ey-future-of-jobs-in-india.pdf.

Frey, C. and M. Osborne. *The Future of Employment: How Susceptible are Jobs to Computerization*. Oxford, Oxford Martin, 2013. Accessed March 23, 2019. https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf.

Ghai, S. "How to Boost Women's Workforce Participation." *The Hindu Business Line*, January 27, 2019. Accessed March 23, 2019. https://www.thehindubusinessline.com/opinion/how-to-boost-womens-workforce-participation/article26104737.ece.

Gopal, M. "Ruptures and Reproduction in Caste/Gender/Labour." *Economic and Political Weekly* 48, no. 18 (2013): 91–97. Accessed March 23, 2019. https://www.jstor.org/stable/23527313.

ILO. India Wage Report: Wage Policies for Decent Work and Inclusive Growth. ILO 2018. Accessed April 22, 2019 from https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-new_delhi/documents/publication/wcms_638305.pdf

Kathuria, R., M. Kedia, G. Varma, K. Bagchi and S. Khullar. *Future of Work in a Digital Era: The Potential and Challenges for Online Freelancing and Microwork in India*. New Delhi: Indian Council for Research on International Economic Relations, 2017. Accessed March 23, 2019. http://icrier.org/pdf/Online_Freelancing%20_ICRIER.pdf.

Kini, S. "She is Offline: India's Digital Gender Divide." *Livemint*, February 27, 2018. Accessed March 23, 2019. https://www.livemint.com/Opinion/sD6mVqLAEa7cvfJtmdXXuO/She-is-offlineIndias-digital-gender-divide.html.

Kumar, A., P. Shukla, A. Sharan and T. Mahindru. *National Strategy for Artificial Intelligence*. New Delhi: NITI Aayog, 2018. Accessed March 23, 2019. http://niti.gov.in/writereaddata/files/document_publication/NationalStrategy-for-AI-Discussion-Paper.pdf.

Luxton, E. "4 Billion People Still Don't Have Internet Access. Here's How to Connect Them." World Economic Forum, 2016. Accessed March 23, 2019. https://www.weforum.org/agenda/2016/05/4-billion-people-still-don-t-have-internet-access-here-s-how-to-connect-them/.

Murayama, M. and N. Yokota. "Revisiting Labour and Gender Issues in Export Processing Zones: Cases of South Korea, Bangladesh and India." *Economic and Political Weekly* 44, no. 22 (2009): 73–83. Accessed March 23, 2019. https://www.jstor.org/stable/40279060.

National Skills Network. "IBM to Train 200,000 Women in India for STEM-Related Careers." Accessed March 23, 2019. https://www.nationalskillsnetwork.in/ibm-to-train-women-for-stem-careers/.

National Statistics Office, Ministry of Statistics and Programme Implementation, *Periodic Labour Force Survey 2017-2018*, New Delhi, May 2019. Accessed on April 22, 2019 from http://www.mospi.gov.in/sites/default/files/publication_reports/Annual%20Report%2C%20PLFS%202017-18_31052019.pdf

Pradhan Mantri Kaushal Vikas Yojana. Accessed March 23, 2019. http://pmkvyofficial.org/.

PTI. "Indian Businesses Better Prepared for Industry of Future: Deloitte Survey." *Economic Times*, last updated January, 21 2019. Accessed March 23, 2019. https://economictimes.indiatimes.com/news/economy/indicators/indian-businesses-better-prepared-for-industry-of-future-deloitte-survey/articleshow/67620192.cms.

Ranade, A. "Reversing Women's Decline in the Indian Labour Force." *Livemint*, 2018. Accessed March 23, 2019. https://www.livemint.com/Opinion/v80I9EwDz6oyklST8ebqMM/Reversing-womens-decline-in-the-Indian-labour-force.html.

Ranganathan, N. "A Handy Guide to Decide How Safe That Safety App Will Really Keep You." 2017. Accessed March 23, 2019. https://genderingsurveillance.internetdemocracy.in/safety-app/.

Remez, M. *Indians Support Gender Equality But Still Give Men an Edge in Workplace, Higher Education*. Washington, D.C.: Pew Research Center, 2013. Accessed March 23, 2019. https://www.pewglobal.org/2013/01/04/indians-support-gender-equality-but-still-give-men-edge-in-workplace-higher-education/.

Saran, S. and V. Sharan. "The Future of the Indian Workforce: A New Approach for the New Economy." New Delhi: Observer Research Foundation, 2018. Accessed March 23, 2019. https://www.orfonline.org/research/the-future-of-the-indian-workforce-a-new-approach-for-the-new-economy/.

Sharma, P. "What the Fourth Industrial Revolution Means for India," World Economic Forum, 2017. Accessed May 27, 2019. https://www.weforum.org/agenda/2017/10/kranti-nation-india-and-the-fourth-industrial-revolution/.

Tandon, S. "Up to 12 mn Indian Women May Lose Their Jobs to Automation by 2030: Study." *Livemint*, June 4, 2019. Accessed March 23, 2019. https://www.livemint.com/news/india/up-to-12-mn-indian-women-may-lose-their-jobs-to-automation-by-2030-study-1559669338838.html.

Unnikrishnan, D. "Job Cuts Are a Wider Problem, Not Limited to Infosys, Techm: Is Modi Govt Waking Up To Challenge?" *Firstpost*, last updated May 11, 2017. Accessed March 23, 2019. https://www.firstpost.com/business/job-cuts-are-a-wider-problem-not-limited-to-infosys-techm-is-modi-govt-waking-up-to-challenge-3437524.html.

Women in Informal Employment: Globalizing and Organizing. "Domestic Workers in India." Accessed March 23, 2019. http://www.wiego.org/informal_economy_law/domestic-workers-india.

Winner, L. "Do Artifacts Have Politics?" *Daedalus*, 109, no. 1 (1980). Accessed March 23, 2019. https://www.jstor.org/stable/20024652.

About the author

Zothan Mawii is a researcher at Tandem Research. Her current work focuses on the platform economy and the intersection of gender and technology in the global south. She has been studying the impact of technology interventions in the world of work, conducting extensive field work in India, South Africa, and Myanmar. Key to her research are questions around changing employment conditions and relations, worker well-being, and worker rights in technology mediated work. Her research interests include digital labour, online social movements, and internet rights.

The views expressed in this publication are not necessarily those of Friedrich-Ebert-Stiftung.

Friedrich-Ebert-Stiftung is the oldest political foundation in Germany. The foundation is named after Friedrich Ebert, the first democratically elected president of Germany.

FES established its official country office in 1981 in New Delhi. The India office endeavours to build platforms of mutual trust and generate fresh ideas to shape India's future, specifically addressing the question of how India's economic development can be charted in a way that it becomes a socially-balanced, sustainable, and a resilient economy.

This publication is part of a series under "Women and the Future of Work", a regional project coordinated by the FES Office for Regional Cooperation is Asia based in Singapore.

www.fes-asia.org

EFQM
Committed to excellence