



Young Scholar Research Paper

Digitization and its Effects on Female Labour Force Participation in India

May 2024

Young Scholar Research Paper

Digitization and its Effects
on
Female Labour Force
Participation in India

Kuhuo Bajaj

About IWWAGE

Institute for What Works to Advance Gender Equality (IWWAGE) aims to build on existing research and generate new evidence to inform and facilitate women's economic empowerment agenda. IWWAGE is an initiative of LEAD, an action-oriented research centre of IFMR Society (a not-for-profit society registered under the Societies Act). LEAD has strategic oversight and brand support from Krea University (sponsored by IFMR Society) to enable synergies between academia and the research centre.

About this paper

This report has been prepared by Kuhuo Bajaj, Undergraduate Student, Ashoka University. It has been reviewed by Mitali Nikore, Nikore Associates and Dr. Sona Mitra, Director- Research and Policy, Institute for What Works to Advance Gender Equality. This document is not a priced publication.

Copyright @ 2024

Institute for What Works to Advance Gender Equality (IWWAGE), an initiative of LEAD at Krea University. Reproduction of this publication for educational or other non-commercial purposes is authorised without prior written permission, provided the source is fully acknowledged. For further information, please write to communications@iwwage.org.

Author

Kuhuo Bajaj

Editorial Support

Ananda Swaroop

Design Team

Designer: Puneet Mehra

Supervised by

Pallavi Duggal Khaira

Table of Contents

Abstract	7
1. Introduction	8
2. Digitisation in India	9
3. Female Labour Force Participation in India	10
4. Digitisation and Female Labour Force Participation	12
5. Opportunities for Women due to Digitisation	14
6. Conclusion	18
References	19

Abstract

Abstract

India has witnessed a manifold increase in awareness and accessibility of job opportunities thanks to an increase in digitisation in all sectors. Technology has created new jobs and has made old jobs more accessible and convenient. Remote work opportunities, online training modules, and networking have become easier due to the internet, but its benefits are skewed. This paper explores the impact of increasing digitisation on female labour force participation (FLFP). Digitalisation is associated with improving gender outcomes, alongside various socio-economic factors. Research highlights how increasing the use of digital finance, improved digital infrastructure and digital awareness has a strong positive and significant correlation with FLFP. The paper investigates opportunities provided by digitalisation for enhancing women's economic contribution and empowerment in both rural and urban settings.



Introduction

Despite the Internet's arrival in India in 1995, true digitisation of the economy didn't begin till 2015. The new century started with the dotcom bubble burst in the West, but at the same time India began to see the rise in the usage of the internet. Digitisation in India commenced with public and private sector firms updating their systems and policies to include online services, and diversifying into more IT and e-commerce heavy businesses. The proliferation of internet providers and mobile phone companies also indicated the first steps towards digitisation.

IRCTC launched its online ticketing system, followed by airlines doing the same. Google opened its office in India in 2004; BSNL also launched broadband services in the same year. The social networking phenomenon, introduced in India in 2005 with Orkut, Facebook, and so on was warmly welcomed. In 2008, 2G spectrum was allocated followed by 3G a year later. In 2012, Bharti Airtel became the first operator to offer dongle-based 4G services and later in 2014, mobile 4G services were offered by the operator. In 2016, Reliance Jio services were launched. The same year, free Wi-Fi services at Railway stations were made available.





Digitisation in India

The gradual increase in access to the internet contributed heavily to the digitisation of jobs in various sectors. The IT and BPO sectors were the highest employment generating sectors, closely followed by e-commerce. Digitisation also made existing jobs more accessible thus generating additional employment. For example, technology-enabled aggregator business models like cab services, food delivery, hotel bookings and home services created jobs for both, the mediators and the service providers. Digitisation also provided a boost to the MSME sector by easing the financing and distribution process and increasing awareness.

But even with continuous efforts and a dense population, the internet penetration in India was quite slow. The Household Social Consumption Education Survey, part of the 75th round of the National Sample Survey (NSS) shows that only 35.8 percent households (24.8 percent rural and 51.3 percent urban) had access to the internet in 2017-18. In rural parts, these figures were as low as 11 per cent in Odisha, 12 per cent in Assam and 13 per cent in Karnataka and West Bengal. India crossed the important milestone of 500 million internet users only in 2019. After the covid pandemic, India saw a steep growth in internet access with 48.7 percent internet users in 2022. Despite the paradigm shift in employment opportunities in the digital landscape, the old bias against female workforce still persisted. The data for internet and mobile phone access for women is even more bleak. National Family Health Survey-5 data [from 2019-2021] assessed men's and women's 'internet use for the first time' and found that only one in three women in India (33 per cent) have ever used the internet, compared to more than half (57 per cent) of men. Indian women are 15 per cent less likely to own a mobile phone than men (ORF Report, 2021). This divide is wider in rural areas: in rural India, women are 27 per cent less likely to own a basic mobile phone. In the case of smartphones, the digital gender divide is even more pronounced: women in rural India are 72 per cent less likely to own a smartphone (GSMA, 2018a). Oxfam's India Inequality Report 2022: Digital Divide said that India accounts for half the world's gendered digital divide given that only a third of all internet users are women (Oxfam India, 2022).

On an encouraging note, there are several examples to show concerted efforts for enhancing digital literacy and financial support for accessing devices for women, at the community, private and government level, especially during the pandemic. Low-cost EMI programmes were started specially for women to purchase smartphones. Digital literacy camps and training sessions were organised at the community level to help women navigate online platforms and digital marketplaces.

Female Labour Force Participation in India

With an increase in internet access and digitisation during the 2015-2022 period, FLFP saw a gradual positive trend which was welcomed after a period of continuous decline till 2013. A detailed study was conducted by Shuangshuang et al. (2023) on the impact of education and digitalisation on female labour force participation in BRICS. The study's empirical results illustrate the existence of a positive interconnection between digitalisation and FLFP in sample countries. Suhaida et al. (2013) illuminate that ICT acts as a driving force in escalating a woman's decision to work, permitting workers to do their job more productively, owing to greater flexibility and allowing them to work from home.

3.1. Rural-Urban Analysis

With digitisation, women are more empowered than before to enter the workforce, yet their participation is still very skewed. There have been some positive changes in the Female Workforce Participation Rate (FWPR) both in rural and urban areas. In the former, there has been a notable increase by 9.8 percentage points from 8.1 to 17.9 per cent between 2017-18 and 2020-21, respectively. In the urban areas, there is a marginal improvement by 2.3 percentage points from 11 to 13.3 per cent in the same reference period. Interestingly, the male-female gap in workforce participation has reduced by 3.4 percentage points in the urban region while the reduction has been significant in rural areas at 6.8 percentage points. These positive trends however, cannot be significantly attributed to digitisation.

The recent increase in Female Laborforce Participation Rate (FLFPRs) is being driven by the rise in women's increased participation in low-skill low-income jobs. It is observed to be driven by an increase in the proportion of rural women under the broad category of "self-employed", which has risen from 55.9 per cent in 2017-18 to 70.1 per cent in 2022-23.

However, the real gross earnings of rural self-employed women have declined over the six years for each quarter. For the April-June quarter, the ratio of their 2022-23 earnings relative to 2017-18 is almost unchanged at 99.8 per cent. For all other quarters, we see a clear decline. The ratio is 93 per cent (January-March); 91 per cent for July-September and 89 per cent for October-December (World Economic Forum, 2022).

The proportion of women in regular salaried work with no social security benefits has increased from 54.9 per cent to 58 per cent in rural areas and from 49.8 per cent to 51.1 per cent in urban areas. Although women with salaried work have seen some improvements, they barely constitute 20 per cent of the 34 per cent women in the labour force (Deshpande, 2023). Tüzemen et al. (2021) analyses the interrelation between ICT and FLFP and recommends that developing countries require to prosper in other aspects to gain from the opportunities that ICT provides to empower society.

Further, scholars find that the adoption of Information and Communication Technologies has a positive effect on the total share of women in the workforce but a deeper analysis reveals that the positive effect of ICTs on female employment is limited to the share of females in the highly skilled workforce. In contrast, it does not affect the female share in the low or unskilled workforce (Jain, 2021). This indicates that ICT adoption has a semi-polarisation effect on women.

3.2. Sectoral Analysis

Among major industries, only one—‘Wearing apparel’—had an equal share of men and women. The tobacco industry is the only one that employs a higher share of women. In all the other major industries, men outnumbered women significantly.

In five out of 22 major industry groups as shown in figure 1, women’s employment registered an absolute fall in the preceding decade (2009-2019). Food products had seen the largest fall in female employment with employment dropping by 16 per cent in 2019 as compared to 2009. Other industries that saw a decline in the number of women workers were chemicals, computers and opticals, printing and reproduction of media and motor vehicles. In contrast, industries like fabricated metals, leather products, machinery, repair of motor vehicles and other transport saw a doubling of the number of female workers in this period (IDR, 2023; CEDA, 2023).

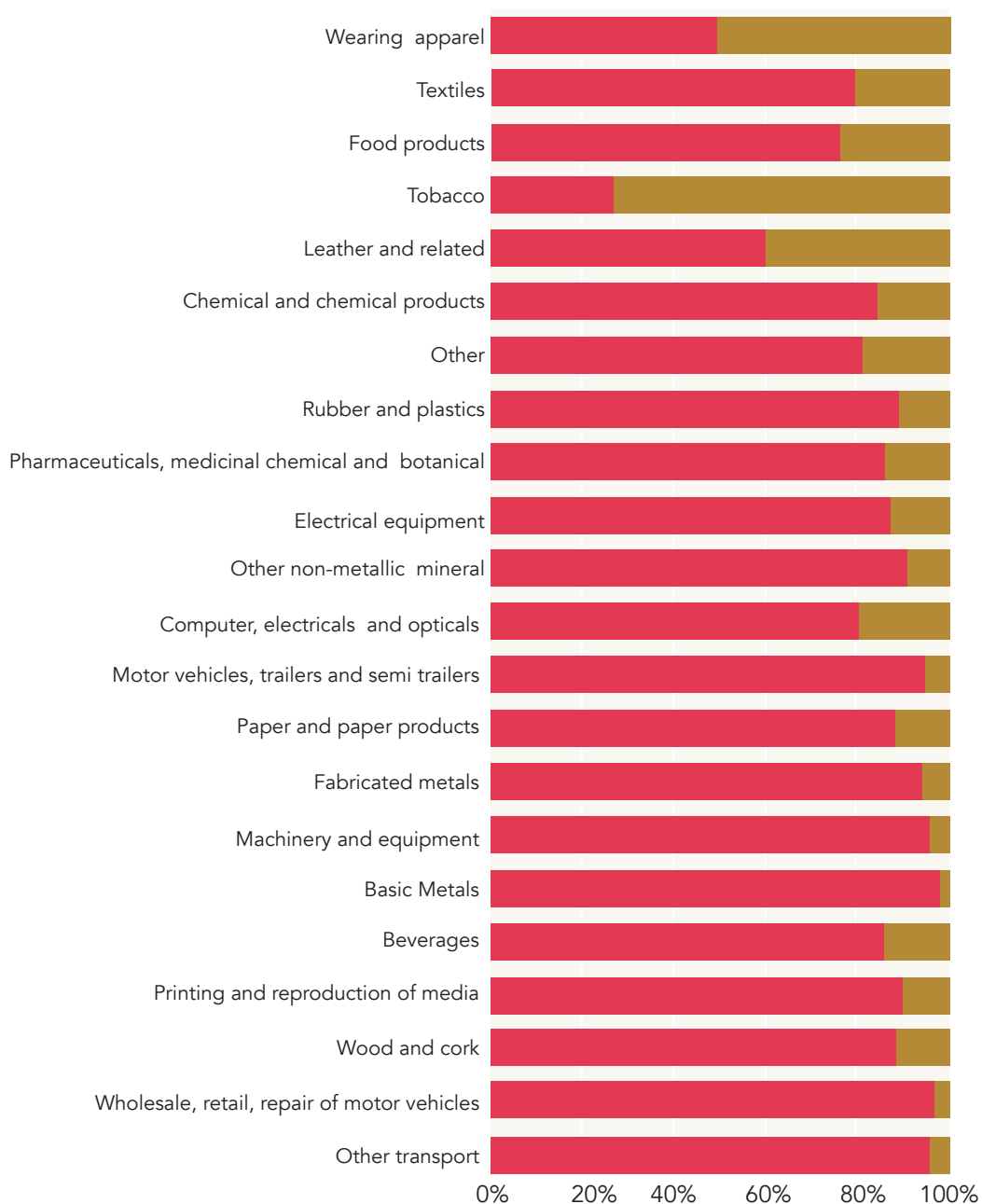


Figure 1: Share of Male and Female Workers in Major Industries in 2019-20

Digitisation and Female Labour Force Participation

4.1. The Digital Divide

OECD (2001) has defined “digital divide” as the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities. UN Women (2005) further defines the term “digital gender divide” as the types of gender differences in resources and capabilities to access and effectively utilise ICTs within and between countries, regions, sectors and socio-economic groups.

As economies continue to undergo digitisation, the ability to utilise technology will become increasingly crucial for both economic and social advancement. While certain occupations demand advanced digital skills, basic digital literacy is essential for most jobs and daily tasks in a digital economy (UNESCO, 2019). There is a notable gender disparity in digital usage, with men utilising a wider array of digital platforms and services compared to women, and demonstrating a higher likelihood of internet usage (UNICEF, 2021). This inequality in digital access and usage implies that without improved digital adoption and utilisation, women encounter fewer employment prospects and additional barriers to workforce integration, thus exacerbating existing inequalities.

Scholars have identified a triple disadvantage for women in India at the root of the digital gender divide (Nikore, 2021), (Mossberger et al. 2003). First, there is a rural-urban digital divide, such that rural broadband penetration is only 29 per cent against a national average of 51 per cent. Second, there is an income-based digital divide between households where low-income and lower-middle income households often share devices and internet resources. Finally, intra-household discrimination and norms associated with “modern technology” prevent women from equitably accessing digital devices. Various other factors like caste, class and geopolitical differences between states further widens the gender-based digital divide. Thus, a woman from a rural, low-income household in Bihar belongs to one of the most disadvantaged groups on the digital divide spectrum with extremely less equitable chances of upskilling herself with digital tools, accessing online resources and participating in digital financial transactions.

4.2. Workforce Transitions

Generally, women are less represented in sectors that require high digital skills. But we see a severe under-representation of women, at a global level, in sectors that require disruptive technical skills. Despite at least two decades of interventions, the digital skills divide appears to be growing, with the largest gap in parts of South Asia and Sub-Saharan Africa. In India, despite the emergence of a promising digital era, gender gaps are likely to be driven by occupational segregation in emerging roles. The absence of chances for women to find new employment and transition into evolving roles may lead to a further decline in their representation in the labour market. As certain sectors experience a decline in demand for male workers due to digitisation, displaced men may increasingly vie for employment opportunities alongside women, potentially causing a decrease in wages. In such circumstances, women might be more inclined to exit the labour market compared to men (Charles et al., 2022).

As job dynamics evolve, both women and men will face the need to navigate transitions across various occupations and skill levels. However, women encounter greater challenges in making such shifts (McKinsey Global Institute, 2019). Deep-seated obstacles like unpaid care work, safety concerns, infrastructure limitations, legal challenges and reduced access to digital technology further impede a successful transition for women. Failing to make these occupational shifts could result in a significant likelihood of women exiting the labour market, exacerbating gender inequality in the workforce.

Worldwide, 40 million to 160 million women –7 to 24 per cent of those currently employed– may need to transition across occupations (the wide range reflects different paces of automation). For men, the range is comparable at eight to 28 per cent (McKinsey Global Institute, 2019). If women take advantage of transition opportunities, they could maintain their current share of employment; if they cannot, gender inequality in work could worsen. Governments and NPOs globally are taking initiatives to make this transition in the digital age more inclusive for women. With the implementation of policies addressing sexual harassment at workplaces, safety of women during commute, flexible work hours, maternity leave and child care, etc., the formal sector is becoming relatively more inclusive. However, the informal sector still remains at risk of becoming worse in terms of qualitative and quantitative female employment.



Opportunities for Women due to Digitisation

Nevertheless, the advent of digitisation presents a unique opportunity to address and rectify these challenges. Digitisation opens the economy to various systemic, social and functional transformations, which offer an opportunity for more women to enter the workforce and further bridge the digital gender divide. Digital infrastructure and resources, digital finance, and digital awareness have emerged as the three crucial pillars of women's empowerment in the last decade. With proper policy adjustments and strategic interventions, these facets of digitisation can serve as powerful tools to achieve our aim. Strengthening digital infrastructure can facilitate remote work, offering flexibility that is particularly beneficial for women managing multiple responsibilities. Promoting digital finance can enhance financial independence, granting women greater control over their economic lives. Additionally, leveraging digital awareness campaigns can disseminate information about job opportunities, career paths, and skill development, encouraging more women to participate actively in the workforce.

5.1. Infrastructure and New Systems

5.1.1. Work from Home

In the realm of digital infrastructure, the transformative potential lies in its ability to facilitate remote work, particularly beneficial for women managing multiple responsibilities. Deshpande and Kabeer (2021) find that more than 70 per cent of women are ready to accept work if it can be made available at or in the vicinity of their homes. With rising opportunities that allow "Work from Home", employers across industries are creating more flexible jobs. Research suggests that flexible work arrangements are effective at increasing women's employment; nearly half of the women who are not in the labour force at the beginning of the study take up the most flexible job (Ho et al., 2023).

However, the gap in technological skills continues to remain a challenge for workers transitioning to hybrid models, which can hinder women's effective participation in hybrid workplaces. In the report, Hybrid Models and Women's Work in India by IWWAGE, nearly a third of the women in the sample who reported difficulty in adapting to new technology used by their organisation for hybrid working were from the technology-intensive sector. Similarly, an absence of organisational culture that enables hybrid work was reported as a significant downside, especially by women in technology (63 per cent) and business and consulting (57 per cent) sectors. Disparity of resources at home as compared to the office set up were a major disadvantage for those based in non-metropolitan areas (55 per cent). Further, 50 per cent of hybrid workers were of the view that the hybrid model has an adverse effect on women's promotions, compared to their male counterparts, and 44 per cent of hybrid workers perceive a similar negative effect on networking opportunities available to female employees (Joshi et al., 2023). Additionally, since 90 per cent of India's workforce is employed in the informal sector, work from home isn't possible for many (Deshpande). Despite the efficacy of flexible work arrangements at increasing women's labour supply, employers may avoid offering job flexibility because of negative worker selection and effects on productivity. Thus, despite the internet creating remote work opportunities, the female labour force participation is still low.

This can be changed by implementing policies aimed at formalising the informal sector through pension, care and benefit schemes, enforceable legal and regulatory frameworks for employers and employees, and registration. Further, the inclusion of hybrid working arrangements in existing labour codes and regulating working hours, mandating fair pay, and strengthening legal safeguards for hybrid workers, especially

women, at an organisational level will reduce ambiguity regarding hybrid work and will provide fair growth structures for women who opt for hybrid working options.

5.1.2. E-Commerce

Digitisation has emerged as a powerful enabler of women's entrepreneurship and economic empowerment in the e-commerce space in India. Currently, women account for only 14 per cent of the total entrepreneurs in India and about only two per cent of the women entrepreneurs are able to raise capital. By providing access to markets, fostering flexibility, promoting skill development, and facilitating networking opportunities, digital platforms are reshaping women's participation in the economy and driving inclusive growth and prosperity. E-commerce platforms have democratised access to markets, allowing women entrepreneurs, especially those in remote or underserved areas, to showcase and sell their products to a global audience.

Digital marketplaces offer a level playing field where the quality of products and services, rather than physical location or traditional networks, determines success. Big players like Amazon have launched programmes like Amazon Saheli that enable women to become successful sellers on Amazon. The programme allows for subsidised referral fees, personalised training on how to enter the e-commerce markets, account management support, imaging and cataloguing support, and marketing support amongst others.

The Direct to Consumer (D2C) space showcases potential for promising female founders. The growth of women entrepreneurs in the D2C space is not just reflected in the number of unicorns, but also in the overall number of startups emerging in the country. As per the data from the Department for Promotion of Industry and Internal Trade (DPIIT) on 15th May 2023, the number of women-led startups in the top three D2C sectors i.e., in Personal and Home Care, Food and Beverages, and Fashion, is 3644, which is ~52 per cent of all startups in these sectors. Women-led startups in these key D2C sectors have seen a growth of more than 2700 percent from 130 in 2017 to 3644 in May 2023 (Ghosh, 2023), (DPIIT, 2023).

In order to ensure that women-owned MSMEs are able to leverage e-commerce opportunities, initiatives like the e-Haat can potentially provide the much-needed impetus. But it is equally important to enhance the competitiveness of women's enterprises in the digital platform marketplace in general. Studies reveal that less than five per cent of SMEs in India have a web presence; out of these, a very small fraction are owned by women (Google and FICCI as cited in Khan, 2013). Efforts should be made to first promote female led start-ups and then equip them with the necessary tools to take advantage of e-commerce opportunities.

5.2. Skilling

Online resources and skill programmes have proved to be immensely beneficial for women. India has the second-highest number of women learners for online courses in the world. Women's enrolments in entry-level professional certificates have gone up from 22 per cent in 2019 to 30 per cent in 2021 and are steadily increasing. Out of all the women e-learners, the majority of them at 41 per cent were from tier-3 cities. Online courses have become instrumental in skill upgradation, making women more employable across various industries. Platforms like Coursera, edX, and LinkedIn Learning have democratised access to quality education, allowing women to acquire new skills or deepen existing ones, thereby increasing their competitiveness in the job market. Private sector initiatives like Microsoft's "Tech Saksham" and Tech Mahindra's "SMART" offer specialised training in digital marketing, coding, and other digital skills for women in India. These programmes aim to bridge the digital skills gap and empower women to thrive in the digital economy through industry-relevant training and mentorship support. In addition to technical and STEM based certifications, there has been a rise of vocational and skill courses by government subsidiaries and NPOs.

Skill India has been the government's flagship programme to train and upskill women and increase their employability. The programme, launched by the Ministry of Skill Development and Entrepreneurship, strives to promote increased participation of women in the workforce through appropriate skilling and gender mainstreaming of skills. Out of the total 56 lakh candidates who have benefited from the scheme, close to 50 per cent of the candidates enrolled and trained under the Pradhan Mantri Kaushal Vikas (PMKVY) are women; Efforts are made to continually revise job roles taking into account market demand and are cognisant of industry requirements for female professionals. Programmes under the Skill India Mission are

designed to not only train women in relevant skills that are sought by employers, but are also sensitive to their needs by providing safe transport, flexible schedules and childcare support. While women dominate sectors such as Apparel, Beauty & Wellness and Healthcare, there is significant presence in non-traditional roles such as those in Electronics and Hardware, with a large number of female enrolments (1.03 lakh) under the Field Technician - Computing and Peripherals job role in this sector (Ministry of Skill Development and Entrepreneurship).

Despite the increase in the number of skilled women, their employability has not seen a similar positive trend. The data of above-mentioned programmes and platforms is based on the number of enrolments, not on the number of completed courses and employment opportunities thereafter. This gives us a false picture of their contribution to increasing FLFP. The professional courses are offered at exorbitant rates and thus cater only to a selective female audience which already falls in the employed/educated category. The relatively low priced/free courses are not as rigorous and highly recognised. Additionally, there is very little unbiased data on the direct effect of these upskilling programmes on female employability.

5.3. Gig Economy

After training and upskilling, many women join the gig economy and work for platforms like Urban Company, Swiggy, Zomato, etc. but their participation is limited to only certain sectors. The gig economy heavily relies on technology and internet access, and this creates a barrier for those (women) who lack access to these resources. Furthermore, the concerns regarding women employees' safety, health and accessibility still remain a huge problem.

Iwwage conducted a study on Urban Company (formerly known as UrbanClap), one of India's largest online services platforms, offering end-to-end service delivery in the hyperlocal services segment. It operates in 14 cities in India, employs around 20,000 trained professionals and serves five million customers. The study aimed at testing the informalisation of the workforce through the emergence of gig work by using the Urban Company survey of women service providers working in the beauty and wellness segment. It revealed that women were most satisfied with the training and learning opportunity, flexible timings, input and raw material support from the company. They expressed most dissatisfaction from the current incentive structure, lack of opportunity for increasing incomes, dispute settlements, and penalty structures. The service professionals were not entitled to any benefits from the company, and around 48 per cent indicated not receiving any written contract (Chaudhary and Mitra, 2019).

Trade unions and scholars argue that for women employed in the gig economy, it is difficult to unionise against an employer which is governed by algorithms and technology (Ghosh et al., 2021). Besides, owing to their inability to understand the play of the algorithms, most women grappled with the ability to earn more in the incentive-model because of their care responsibilities, gender norms and safety and security concerns. Ghosh et al. (2021) highlights that women's ability to acquire new skills or upgrade their skills was also restricted owing to these determinants.

An increasing number of women in the gig economy also complain about sexual harassment during the course of their work (Rana et al., 2023). The absence of legal protections and formal employer-employee relationship leads to ambiguity as and when sexual harassment takes place and thereby exacerbating the harassment faced by female workers. The gendered power dynamics and inequality not only perpetuates a hostile working environment but also limits the economic potential of women, which makes up a significant portion of the gig workforce.

Addressing the challenges faced by skilled women in securing meaningful employment requires a multifaceted approach. Firstly, there is a need for more comprehensive data collection and analysis that goes beyond mere enrolment numbers to assess the actual impact of upskilling programmes on FLFP. Efforts should be made to make professional courses more accessible by addressing their high costs, ensuring affordability for a broader demographic of women. Furthermore, bridging the digital divide by providing greater access to technology and internet resources is essential to enable more women to participate. Addressing concerns surrounding women's safety, health, and accessibility in gig work is imperative, necessitating the implementation of robust legal protections and formalised employer-employee relationships. By tackling

these systemic issues and promoting gender equality within the gig economy, we can create a more inclusive and conducive environment that harnesses the full economic potential of women in the workforce.

5.4. Digital Finance

India's microfinance programmes are well-known across the globe for achieving financial inclusion and generating livelihood activities for women living in low-income households (Kumar et al. 2021; Kochar et al. 2022). In the last few years, India has moved towards digital financial inclusion by promoting a national biometric identity programme together with an open access digital financial transactions infrastructure. This created the foundations upon which both public and private digital financial inclusion activities could be launched (Duvendack et al., 2023). With more women having their own bank accounts, they are able to avail Direct Benefit Transfers (DBTs) from government schemes and policies. Further, the wave of digitisation has seen a rise of the Self-Help Groups (SHG) model, regulated and tracked using online platforms. As women become financially independent, they are able to participate more actively in decision-making processes within their households and communities. This newfound financial autonomy not only enhances their socio-economic status but also empowers them to invest in education, healthcare, and entrepreneurship initiatives. Additionally, the digitisation of SHGs has facilitated better access to credit and financial services, enabling women to start their own businesses and become job creators within their local economies.

In their comprehensive research of rural Indian women, Field et al. conclude that strengthening women's financial control positively impacts labour supply and gender norms (Field et al., 2019). In the short run, with regards to women who have just been offered bank accounts, those who also received direct deposit and training increased their labour supply in the public and private sectors. In the long run, financial inclusion and independence led to gender norms being liberalised: women who received direct deposit and training became more accepting of female work, and their husbands perceived fewer social costs to having a wife who works. These effects were concentrated in households with otherwise lower levels of, and stronger norms against, female work. Women in these households also worked more in the long run and became more empowered. These patterns are consistent with models of household decision making in which increases in bargaining power from greater control over income interact with, and influence, gender norms.

However, while digitisation is increasing, there is a clear and persistent gender gap in access to digital services, including access to digital financial services (DFS). Women are more likely to be illiterate which hampers their use of DFS apps which require certain levels of literacy. Moreover, due to lack of financial literacy, even amongst the literate women, women DFS users are more prone to be scammed by banking and third-party institutions. In rural and semi-urban areas, where overall literacy is low there is resistance to women being made financially literate. A major technical challenge is the large number of failed or claimed-to-be-failed digital financial transactions through the online payment system. Raghavan (2020) reports that the average failure rate was 39 per cent in April 2020, which can significantly hinder effective services as well as make customers unsure of whether a transaction has gone through. Unawareness regarding this leads to multiple transactions and potential payment frauds. On a more fundamental level, women are less likely to own phones and are thus excluded from having a bank account and using DFS in the first place (Gammage et al. 2017; Lee et al. 2021; GSMA 2022).

Digital financing is a tool at the disposal of the user. Increasing digital literacy and awareness of DFS platforms would significantly impact women's use of digital financing to their benefit. To realise the potential of digital financial services, women will require training on its use, and tailor-made products and services to meet their needs. There is also a need for the financial inclusion community and government initiatives to focus more on getting women to use their accounts. Hence, investments to build out the mobile ecosystem, by allowing women to use mobile financial services in their communities, will enable greater use of accounts and will help women enter the space of more advanced financial services like insurance, investing opportunities, stock market, etc.

Conclusion

In conclusion, the trajectory of digitisation in India has been marked by significant milestones and challenges, particularly regarding gender disparities and their impact on women's economic participation. While the advent of digitisation has opened doors to new opportunities and empowered women through increased access to education, skills training, financial inclusion, thus contributing to increasing female labour force participation, women's full economic potential is still hindered by persistent barriers such as the digital gender divide, occupational segregation, and safety concerns. Addressing these challenges requires a multifaceted approach, including comprehensive data collection, gender-sensitive policy making, bridging the digital divide, and ensuring safety and legal protections in the workplace. Moreover, leveraging digital finance initiatives can further empower women by providing access to banking services and promoting financial independence. By prioritising policies and interventions that promote gender equality and inclusive economic growth, India can harness the transformative power of digitisation to create a more equitable, efficient and productive society.



References

- CEDA, "How Many Women Work in India's Factories?." *CEDA Visuals*, 5 Feb. 2023, ceda.ashoka.edu.in/show-chart?id=228. <https://ceda.ashoka.edu.in/how-many-women-work-in-indias-factories/#:~:text=Of%20the%201.6%20million%20women,Karnataka%2C%20Andhra%20Pradesh%20and%20Kerala>. Accessed 3 Apr. 2024.
- Charles, Lorraine, et al. *Digitalization and Employment: A Review*. 26 Aug. 2022, https://www.ilo.org/employment/Whatwedo/Publications/WCMS_854353/lang--en/index.htm. Accessed 26 March. 2024
- Chaudhary, Ruchika, and Sona Mitra. *Labour Practises in the Emerging Gig Economy in India: A Case Study of Urban Clap*. 22 Nov. 2019. <https://iwwage.org/wp-content/uploads/2020/02/Labour-Practises-in-the-emerging-gig-economy-in-India.pdf>. Accessed 10 Apr. 2024
- Deshpande, Ashwini . "Illusory or Real? Unpacking the Recent Increase in Women's Labour Force Participation in India." *CEDA*, 15 Dec. 2023, ceda.ashoka.edu.in/illusory-or-real-unpacking-the-recent-increase-in-womens-labour-force-participation-in-india/. Accessed 19 Mar. 2024.
- Deshpande, Ashwini, and Jitendra Singh. "Dropping Out, Being Pushed out or Can't Get In? Decoding Declining Labour Force Participation of Indian Women." *SSRN Electronic Journal*, 2021, <https://doi.org/10.2139/ssrn.3905074>. Accessed 19 Mar. 2024
- . "Dropping Out, Being Pushed out or Can't Get In? Decoding Declining Labour Force Participation of Indian Women." *SSRN Electronic Journal*, 2021, <https://doi.org/10.2139/ssrn.3905074>. Accessed 19 Mar. 2024
- Department for Promotion of Industry and Internal Trade (DPIIT). "Women Led Start-Ups in India." *DPIIT*, 5 May 2023. <https://www.startupindia.gov.in/content/sih/en/bloglist/blogs/retail-tech-sector.html#:~:text=As%20per%20the%20data%20from,all%20startups%20in%20these%20sectors>. Accessed 2 Apr. 2024.
- Duvendack, Maren, et al. *Gender Inclusivity of India's Digital Financial Revolution for Attainment of SDGs: Macro Achievements and the Micro Experiences of Targeted Initiatives*. 25 Apr. 2023, <https://doi.org/10.1057/s41287-023-00585-x>. Accessed 2 Apr. 2024
- Field, Erica, et al. "On Her Own Account: How Strengthening Women's Financial Control Impacts Labour Supply and Gender Norms." *SSRN Electronic Journal*, 2019, <https://doi.org/10.2139/ssrn.3456234>.
- Ghosh, Anweshaa, et al. "Women Workers in the Gig Economy in India: An Exploratory Study." *Papers.ssrn.com*, 1 May 2021, papers.ssrn.com/sol3/papers.cfm?abstract_id=3944205. Accessed 3 Apr 2024
- Ghosh, Oishika . "Women Entrepreneurs Propelling D2C in India." *www.startupindia.gov.in*, 2023, www.startupindia.gov.in/content/sih/en/bloglist/blogs/retail-tech-sector.html#:~:text=As%20per%20the%20data%20from. Accessed 3 Apr. 2024.
- GSMA. "2018 State of the Industry Report on Mobile Money | Mobile for Development." *Mobile for Development*, 2018, www.gsma.com/mobilefordevelopment/resources/2018-state-of-the-industry-report-on-mobile-money/. Accessed 3 Apr. 2024

Ho, Lisa, et al. *PROJECT POLICY BRIEF Bringing Work Home: Internet-Mediated Gig Work and Women's Employment Introduction and Policy Motivation*. Aug. 2023, <https://steg.cepr.org/sites/default/files/2023-08/PB004%20Ho.pdf>. Accessed 3 Apr. 2024

IDR, "How Many Women Does India's Manufacturing Sector Employ? | IDR." *India Development Review*, Mar. 2023, idronline.org/article/gender/how-many-women-does-indias-manufacturing-sector-employ/. Accessed 26 Feb. 2024.

Joshi, Aishwarya , et al. *Hybrid Models and Women's Work in India: Emerging Insights Learning Note*. IWWAGE, 2023, https://iwwage.org/wp-content/uploads/2023/03/Hybrid_Models_and_Womens_Work_in_India_Emerging_Insights_2023.pdf. Accessed 3 Apr. 2024

Jain, Ritika. "Information and Communication Technology Adoption and the Demand for Female Labour: The Case of Indian Industry" *The B.E. Journal of Economic Analysis & Policy*, vol. 21, no. 2, 2021, pp. 695-722. <https://doi.org/10.1515/bejeap-2020-0295>. Accessed 26 feb. 2024

Kochar A, Nagabhushana C, Sarkar R, Shah R, Singh G. *Financial access and women's role in household decisions: Empirical evidence from India's National Rural Livelihoods project*. *Journal of Development Economics*. 2022;155:102821. Doi:10.1016/j.jdeveco.2022.102821. <https://www.sciencedirect.com/science/article/pii/S0304387822000050>. Accessed 26 Feb. 2024

Kumar N, Raghunathan K, Arrieta A, Jilani A, Pandey S. *The power of the collective empowers women: Evidence from self-help groups in India*. *World Development*. 2021;146:105579. doi: 10.1016/j.worlddev.2021.105579. <https://www.sciencedirect.com/science/article/pii/S0305750X21001947>. Accessed 3 Apr. 2024

McKinsey Global Institute. *The Future of Women at Work Transitions in the Age of Automation*, 2019. <https://www.mckinsey.com/featured-insights/gender-equality/the-future-of-women-at-work-transitions-in-the-age-of-automation>. Accessed 3 Apr. 2024

Ministry of Skill Development and Entrepreneurship. "Press Release, Skill India Mission." [msde.gov.in, msde.gov.in/sites/default/files/2019-09/Women%20get%20a%20special%20focus%20under%20Skill%20India%20Mission.pdf](https://msde.gov.in/sites/default/files/2019-09/Women%20get%20a%20special%20focus%20under%20Skill%20India%20Mission.pdf). Accessed 17 Mar. 2024.

Ministry of Statistics and Programme Implementation. *Household Social Consumption on Education in India Government of India Ministry of Statistics and Programme Implementation*. 2017. https://mospi.gov.in/sites/default/files/publication_reports/Report_585_75th_round_Education_final_1507_0.pdf. Accessed 19 Mar. 2024.

Mossberger, Karen, and Caroline J. Tolbert. "Race, Place, and Information Technology." *Social Science Research Network*, 19 Sept. 2003, papers.ssrn.com/sol3/papers.cfm?abstract_id=2054125. Accessed 19 Mar. 2024.

Nikore, Mitali Nikore and Ishita Uppadhyay and Mitali. "India's Gendered Digital Divide: How the Absence of Digital Access Is Leaving Women Behind." *ORF*, 22 Aug. 2021, www.orfonline.org/expert-speak/indias-gendered-digital-divide. Accessed 19 Mar. 2024.

OECD. "BRIDGING the DIGITAL GENDER DIVIDE INCLUDE, UPSKILL, INNOVATE." [oecd.org](https://www.oecd.org/digital/bridging-the-digital-gender-divide.pdf), 2018, www.oecd.org/digital/bridging-the-digital-gender-divide.pdf.

Oxfam India, "India Inequality Report 2022: Digital Divide" www.oxfamindia.org, 2 Dec. 2022, www.oxfamindia.org/knowledgehub/workingpaper/india-inequality-report-2022-digital-divide. Accessed 19 Mar. 2024.

Rana, S. S., et al. "Sexual Harassment of Gig Workers in India." *Lexology*, 21 July 2023, www.lexology.com/library/detail.aspx?g=07218e8f-6362-44ef-b218-62196284c6ed#:~:text=Women%20in%20the%20gig%20economy&text=education%20and%20marriage.-. Accessed 17 Mar. 2024.

Shuangshuang, Yu, et al. "The Impact of Education and Digitalization on Female Labour Force Participation in BRICS: An Advanced Panel Data Analysis." *Humanities and Social Sciences Communications*, vol. 10, no. 1, 22 Sept. 2023, pp. 1–9, [www.nature.com/articles/s41599-023-02020-2](https://doi.org/10.1057/s41599-023-02020-2), <https://doi.org/10.1057/s41599-023-02020-2>.

Suhaida MA, Nurulhuda MS, Yap SF. *Access to ICT as a moderating factor to women's participation in the labour force: a conceptual framework*. *Int J Trade Econ Finance* 4(4):197, 2013. https://www.researchgate.net/publication/291219578_Access_to_ICT_as_Moderating_Factor_to_Womens_Participation_in_the_Labor_Force_A_Conceptual_Framework. Accessed 3 Apr. 2024

"The Mobile Gender Gap Report 2022." *#BetterFuture*, 2022, www.gsma.com/betterfuture/resources/the-mobile-gender-gap-report-2022. Accessed 20 Mar. 2024.

Tüzemen S, Barış-Tüzemen Ö, Çelik AK. *The relationship between information and communication technologies and female labour force participation in Turkey*. *Econ Bus Rev* 7(4):121–145, 2021. https://www.researchgate.net/publication/355184566_The_relationship_between_information_and_communication_technologies_and_female_labor_force_participation_in_Turkey. Accessed 20 Mar. 2024

Tyers-Chowdhury, Alexandra, and Gerda Binder. *What We Know about the Gender Digital Divide for Girls: A Literature Review UNICEF*, 2021, <https://www.unicef.org/eap/media/8311/file/What%20we%20know%20about%20the%20gender%20digital%20divide%20for%20girls:%20A%20literature%20review.pdf>. Accessed 20 Mar. 2024

UNESCO. "Digital Skills Critical for Jobs and Social Inclusion | UNESCO." www.unesco.org, 15 Mar. 2018, www.unesco.org/en/articles/digital-skills-critical-jobs-and-social-inclusion. Accessed 20 Mar. 2024

UNICEF. "Bridging the Gender Digital Divide." *UNICEF DATA*, 26 Apr. 2023, data.unicef.org/resources/ictgenderdivide/. Accessed 20 Mar. 2024

World Economic Forum. "Global Gender Gap Report 2022." *World Economic Forum*, 13 July 2022, www.weforum.org/publications/global-gender-gap-report-2022/. Accessed 10 Apr. 2024





IWWAGE

M-6, 2nd Floor, Hauz Khas, New Delhi 110 016

Phone: +91 11 4909 6529



www.iwwage.org