

Opportunities for Women in the Digitalized Indian Economy

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Abstract

India has seen a significant increase in awareness and accessibility of job opportunities due to the rise in digitalization across all sectors. Technology has not only created new jobs but also made existing ones more accessible and convenient. The internet has made remote work opportunities, online training modules, and networking easier, but its benefits are not evenly distributed. Digitalization is linked to improving gender outcomes, alongside various socio-economic factors. This study explores the impact of increasing digitalization on women's opportunities in both formal and informal sectors of the economy. Further, the study emphasizes the use of digital finance, improved digital infrastructure, and digital awareness among women in India. The paper investigates the opportunities provided by digitalization to enhance women's economic contribution and empowerment in the Indian economy. The main aim of the study is to review the digitalization of Indian economy and to diagnose the opportunities for the women in the digitalized Indian economy.

Keywords: Digitalization, Technology, Women, Indian economy

Introduction

The process of digitalization involves using various technologies and methods to transform business processes. It entails converting things into digital form and integrating digital technologies into everyday life. India is the world's fastest growing economy, and the fluctuations in its economy can be attributed in part to digitalization. Over the past decade, digital platforms have become increasingly popular and has led to the rapid growth of the gig economy.

Digitization in India began with both public and private sector firms updating the systems and policies to include online services, as well as expanding into IT and e-commerce. The increase in internet providers and mobile phone companies marked the initial steps toward digitization. The digitalization of India's economy has resulted in a significant

increase in intermediary platforms, which are often seen as disruptive and transformative agents in the informal economy. However, despite long-held beliefs, platform work and digital labour have not led to the formalization of informal work. In fact, existing challenges have been exacerbated within the categories of platform and digital labour, particularly impacting women. These inequities affect women across various aspects of work and life. Women now find themselves navigating between formal and informal sectors, with platform companies externalizing market risks onto them, leaving them without the benefits of formal employment. Thus, digitalization has positive impact on income generation, labour power regeneration in women working across different cultures, further exacerbated by the dynamics of the digital economy. In the backdrop of this an attempt is made in this

paper to diagnose the opportunities for the women in the digital era.

Objectives

Main purpose of this paper is to analyse the various opportunities for women in the digitalized Indian economy. The specific objectives are:

1. To review the digitalization of Indian economy
2. To diagnose the opportunities for the women in the digitalized Indian economy

Methodology

The paper is descriptive and analytical in nature. Descriptive in the sense that the literature of earlier research done on this area is reviewed or by way of reviewing the literature on ongoing research on women in digitalization is discussed. Further, analytical because it analyses the trend and growth of internet adoption, smartphone adoption, type of handset owned, Digital Literacy among Women in India, opportunities for Women in various sectors, and online shoppers in India through time has included the use of annual growth rate and percentage approaches.

Review of Literature

In recent years, digital transformation is a key focus for governments and businesses in India. In India, women have seized the opportunities of digital transformation to promote economic development. Digital transformation has provided women with pathways to increased financial autonomy. By leveraging e-commerce platforms, women entrepreneurs have established businesses and reached international markets. Women's engagement in digital transformation encompasses strategic consulting, specialized project design, execution, and management, as well as tailored capacity-building and training programs (Sumant Sinha, 2023). In India, the digital divide is becoming a significant barrier to social and economic inclusion after

Covid-19, with a gender gap in women's access to the usage of mobile phones among rural women. Although many initiatives have been launched to enhance women's digital literacy, no established or documented body of knowledge outlines which approaches have been effective or evidence supports their effectiveness (Alexandra Tyers, Catherine Hight, Sara Chamberlain and Arjun Khanna, 2021). The rise in internet usage enhances opportunities for hybrid and remote employment, financial activities, education, and video conferencing have gained significance after Covid-19. However, widespread gender disparities hinder women's ability to seize these opportunities. The digital divide serves as an obstacle to financial inclusion, education, access to information, and social connections for women and girls. Achieving equality in digital and financial inclusion is crucial for empowering women to reach their full potential (Lotus McDougal, Anita Raj, and Abhishek Singh, 2022). With digitization, there have been positive changes in the Female Workforce Participation Rate (FWPR) in both rural and urban areas. However, there is a significant gender disparity in digital usage, with men utilizing a wider range of digital platforms and services compared to women, and showing a higher usage of internet. This inequality in digital access and usage suggests that without improved digital adoption, women face fewer employment opportunities and additional barriers to workforce integration, further exacerbating existing inequalities (Kuhuo Bajaj, 2024). In recent years, the various sectors like agriculture, industry and service sector experienced impressive growth, leading to many challenging job prospects for women. The flexibility in working pattern remotely through the Internet, enhance women's involvement even in economic decisions (P. Sasikumar, Paramasivan. C and Ravichandiran. G, 2024).

After reviewing the articles understood that there are few articles on women in technology or digitalization, and less is known about the various opportunities in sector such as agriculture, healthcare, and education, and how digitalization impacts these sectors differently.

Digitalization in India

The digital transformation impacts all aspects of the socio-economic system. Advanced information technologies have a significant influence on both the economy and society, altering the prevailing economic structure and the lives of individuals. The digital revolution reached a critical stage, with half of the world's population being connected to the Internet. However, digital growth positively impacts areas including economic performance, employment, innovation (including research and development), privacy and security, education, health, and the environment.

The Digital India initiative is promoting the way for widespread internet and mobile phone usage, but remains a significant disparity in access to these resources for women. In India, 26.0 percent gender gap in mobile phone ownership and 56.0 percent gender gap in mobile internet usage, indicating that women are less likely to own a mobile phone and use mobile internet compared to men. Further, digital payments provide entrepreneurs with access to quick, low-cost money transfers. India's digital payments market has expanded significantly with the introduction of new mobile-based platforms like Bharat Interface for Money (BHIM) Unified Payment Interface (UPI), PayTM, PhonePe, and Google Pay. The Government of India has also implemented several measures to promote women's financial inclusion, such as the Prime Minister Jan Dhan Yojana, which has resulted in increased women's bank account ownership. However, gender norms, low levels of digital

literacy, lack of awareness, and distrust in technology continue to hinder women from using digital payments.

The adoption of digital payment platforms expanded across India where, customers shift from physical to digital forms of payment, particularly in urban areas. Urban, organized women entrepreneurs reported increased usage of digital payments during the pandemic, especially through net banking and mobile payment applications. However, for urban, unorganized entrepreneurs, the cost of data and services emerged as a barrier to adoption. Several associations of informal women entrepreneurs noted that financial constraints during the pandemic led to a decrease in the use of digital devices, as families found it difficult to afford basic necessities, prioritizing them over mobile phones and internet connectivity.

Table-1: Mobile internet adoption in India during 2017-2022 (Value: in percentage)

Year	Men	Women
2017	26	8
2018	30	16
2019	42	21
2020	45	30
2021	51	30
2022	52	31

Source: GSMA Consumer Survey, 2017-2022

It is observed from the table-1 that adoption of mobile internet in India during 2022 was 52.0 percent was men and 31.0 percent was women where, it is maximum compared to other years.

Table-2: Smart Phone ownership in India during 2019-2021 (Value: in Percentage)

Year	Men	Women
2019	36	14
2020	41	25
2021	49	26

Source: GSMA Consumer Surveys 2019, 2020 and 2021

From the table-2 analyses gender wise distribution of smartphone ownership in India during 2019-2021. Further, 26.0 percent of women and 49.0 percent of men was owning smartphone in India during 2021.

Table-3: Share of population in India by type of Hand Set owned during 2019-2020 (Value: In Percentage)

Handset owned	Year			
	2019		2020	
	Men	Women	Men	Women
Basic Phone	29	3	27	23
Featured Phone	9	6	7	7
Smart Phone	37	14	41	25

Source: GSMA Consumer Survey 2019 and 2020

It is observed from the table-3 that, 25.0 percent of Indian women reported owning a smartphone in 2020. Further, it is interesting to note the changes in handset types owned by men and women in India from 2019 to 2020. Overall, device ownership has remained flat among Indian men, but it has increased among women, driven primarily by smartphone ownership. In addition, the proportion of women who own a basic phone has declined substantially, from 31.0 percent in 2019 to 23.0 percent in 2020.

The increasing access to the internet has significantly contributed to the digitalization of jobs across various sectors. The Information Technology (IT) and Business Process Outsourcing (BPO) sectors were the largest employment generators, closely

followed by e-commerce. Digitization has also made existing jobs more accessible, creating additional employment opportunities. Digitization has also boosted the Micro, Small and Medium Enterprises (MSME) sector by simplifying the financing and distribution process and raising awareness. In 2019, India reached the milestone of 500 million internet users. Thus, India experienced a significant uptick in internet usage, highlighting the growing importance of digital technologies.

Digital Literacy Among Women in India

In digital age, digital literacy has become essential for participation in the economy, education, and social discourse. In India, the digital divide presents a significant challenge, particularly for women, who often face multiple barriers to accessing and utilizing digital technologies. The digital literacy allows women to engage in the digital economy, creating new possibilities for entrepreneurship and income generation. In India, with digital skills women can participate in e-commerce, online freelancing, and various digital work opportunities. By utilizing the various digital platforms, women can establish the businesses, market products and services online, and reach global markets, thus enhancing their financial independence and supporting household income. Digital literacy also significantly improves women's access to essential information and resources that contribute to their well-being. Social empowerment is another significant effect of digital literacy on women. The various digital networks provide a space for women to exchange knowledge, seek assistance, and advocate for their rights. Online activism, made possible by digital literacy, has become an effective means for women to raise awareness about gender-related issues and confront societal norms.

Table-4: Enrollment of Female students at Under-Graduate (UG) and Post-Graduate (PG) level in IT and Computer in India during 2017-2022

Year	Under Graduate		Post Graduate	
	Value	Growth rate (%)	Value	Growth rate (%)
2017-2018	303205	-	102730	-
2018-2019	306265	1.00	98978	-3.65
2019-2020	307865	0.50	96409	-2.60
2020-2021	344492	11.90	93899	-2.60
2021-2022	348928	12.86	100183	6.69

Source: All India Survey on Higher Education 2017-2022

From the table-4 analyses the enrollment of female students at UG and PG level IT and Computer in India. During 2021-2022, the growth rate of enrollment to UG in IT and Computer is 12.86 percent, whereas enrollment to PG has decreased from 2017-2021 further enrollment has increased to 6.69 percent during 2021-2022.

Thus, digital platforms help women with knowledge about their legal rights and entitlements, assisting them in addressing

Employment in different sectors

The participation of women varies across different industries, which significantly impacts their earning potential, level of involvement, skill development, economic vulnerability, and overall well-being. Their presence in various industries is influenced by a range of factors, including prevailing gender norms and the structure of the economy. Further, other industries like chemicals, computers and opticals, printing and reproduction of media and motor vehicles declined in women workers. In contrast, industries like fabricated metals, leather products, machinery, repair of motor vehicles, and other transport doubled

issues like domestic violence, property rights, and accessing government support programs.

Opportunities for Women in Digitalized Indian Economy

Digitization provides a unique opportunity to address the challenges by opening the economy to various systemic, social, and functional transformations. Over the last decade, digital infrastructure, digital finance, and digital awareness have emerged as the three crucial pillars of women’s empowerment. With proper policy adjustments and strategic interventions, these facets of digitization can serve as powerful tools to achieve our aim. By strengthening digital infrastructure can facilitate remote work, and benefit women in managing multiple responsibilities. Promoting digital finance can enhance financial independence, granting women greater control over their economic lives. Thus, leveraging digital awareness campaigns can disseminate information about job opportunities, career paths, and skill development, encouraging more women to participate actively in the workforce.

Annual Growth rate of Number of Women Workers (PS+SS) all ages) by Sector values are determined using formula:

$$AGR = \frac{\text{Current year value} - \text{Previous year value}}{\text{Previous year value}} \times 100$$

Table 5: Number of Women Workers (PS+SS) all ages) by Sector during 2017-2020 (Value: Rs. in crores)

Sectors	2017-2018		2018-2019		2019-2020	
	Value	Growth rate (%)	Value	Growth rate (%)	Value	Growth rate (%)
Agriculture	6	-	6.27	4.5	8.51	35.72
Mining & Quarrying	0.02	-	0.02	0	0.01	-50.0
Manufacturing	1.39	-	1.57	12.94	1.67	6.37
Electricity, Water, etc	0.02		0.03	50	0.03	0
Construction	0.6	-	0.64	6.67	0.80	25
Trade, Hotel & Restaurant	0.73	-	0.82	12.32	1.28	56.10
Transport Storage & Communication	0.11	-	0.14	27.27	0.16	14.28
Other Service	1.97	-	2.28	15.73	2.29	0.44
All	10.85		11.78		14.75	

Source: Economic Survey, 2020-2021 and Economic Survey, 2021-2022

It is observed from the table-5 that, the number of women workers of mining and quarrying was 0.02 crores during 2017-2018, 0.02 crores during 2018-2019 and further decreased to 0.01 crores during 2019-2020. Further, the growth rate of Trade, Hotel and Restaurant was highest during 2019-2020 with 56.10 compared to other sectors.

E-Commerce in India

In India, Digitization has emerged as a facilitator of economic empowerment in the e-commerce sector. Presently, women represent 14.0 percent of total entrepreneurs in India. By providing access to markets, promoting flexibility, encouraging skill development, and facilitating networking opportunities, digital platforms are transforming women's participation in the economy and driving inclusive growth and prosperity. E-commerce platforms have democratized access to markets, allowing women entrepreneurs, especially those in remote or underserved areas, to exhibit and sell their products to a global audience. Digital marketplaces are products and services determined by quality

rather than physical location or traditional networks.

Major players like Amazon have launched programs such as Amazon Saheli to empower women as successful sellers on Amazon. The program offers subsidized referral fees, personalized training on entering e-commerce markets, account management support, imaging and cataloguing support, and marketing support. The Direct to Consumer (D2C) space demonstrates potential for promising female founders. The growth of women entrepreneurs in the D2C space is not only reflected in the number of unicorns but also in the overall number of start-ups emerging in the country. The number of women-led start-ups in the top three D2C sectors are Personal and Home Care, Food and Beverages, and Fashion contributing to 52.0 percent (Department for Promotion of Industry and Internal Trade, 2023). Initiatives like e-Haat potentially provide the boost to ensure that women-owned MSMEs are able to leverage e-commerce opportunities. However, it is equally important to enhance the competitiveness of women's enterprises in the digital platform marketplace in general. Thus, by promoting women-led start-ups and provide them with the necessary tools to take advantage of e-commerce opportunities.

Gig Economy in India

The gig economy presents opportunities for women who have undergone training and upskilling to work for platforms such as Urban Company, Swiggy, Zomato, etc. However, these opportunities are limited to certain sectors and are heavily reliant on technology and internet access, creating barriers for women who lack these resources. Safety, health, and accessibility concerns for women employees remain significant issues.

The major challenging for women in the gig economy to unionize against employers governed by algorithms and technology. Women also face difficulties in understanding and maximizing earnings within incentive-based models due to their caregiving responsibilities, gender norms, and safety concerns. Additionally, acquiring and upgrading skills is restricted for women due to these factors.

An increasing number of women in the gig economy report experiencing sexual harassment during their work. The absence of legal protections and formal employer-employee relationships exacerbates this issue, perpetuating a hostile working environment and limiting women's economic potential. Further, the efforts should also be made to start professional courses more affordable and accessible and bridge the digital divide to enable women to participate. Robust legal protections and formalized employer-employee relationships are essential to address concerns surrounding women's safety, health, and accessibility in gig work. Thus, by promoting gender equality within the gig economy can create a more inclusive environment that harnesses the full economic potential of women in the workforce.

Digital Finance in India

India's microfinance programs have gained global recognition for promoting financial inclusion and creating livelihood opportunities for women in low-income households. In recent years, India has embraced digital financial inclusion by endorsing a national biometric identity program along with an open access digital financial transactions infrastructure. The shift toward digitization has also led to the proliferation of the Self-Help Groups (SHG) model, which is regulated and monitored using online platforms.

The digitization of Self-Help Groups (SHGs) has improved access to credit and financial services, enabling women to start businesses and contribute to the economy. Despite the increasing digitization, there remains a persistent gender gap in access to digital services, including Digital Financial Services (DFS). Furthermore, due to lack of financial literacy, even literate women who use DFS are more susceptible to scams by banking and third-party institutions. In rural and semi-urban areas with low overall literacy, there is resistance to financially educating women. Digital financing is an important tool where it leads to increasing digital literacy and awareness of DFS platforms could significantly impact women's use of digital financing to their benefit. To realize the potential of digital financial services, women need 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 encouraging women to use their accounts. Therefore, investments in building out the mobile ecosystem, allowing women to use mobile financial services in their communities, will enable greater use of accounts and help women access more advanced financial services such as insurance and investment opportunities in the stock market.

Conclusion

The digital transformation in India has seen significant achievements and obstacles, concerning gender imbalances and their effects on women's economic involvement. Digitization has created new opportunities and empowered women by increasing their access to education, training, and financial services, it has not fully unlocked women's economic potential due to persistent barriers such as the digital gender gap, job segregation, and safety issues. Overcoming these challenges requires a multifaceted approach involving

comprehensive data collection, gender-inclusive policy development, bridging the digital divide, and ensuring workplace safety and legal protection. Additionally, promoting digital financial initiatives can further empower women by granting them access to banking services and fostering financial independence. Thus, by prioritizing policies and measures that promote gender equality and inclusive economic progress, India can use the transformative potential of digitization to establish a fairer, more efficient, and more productive society.

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