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The Rural Employment in India: By Promoting Digital Literacy and Providing Access to Technology

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Abstract

The integration of technology, particularly digital literacy and e-commerce, has demonstrated a significant potential for transforming rural employment opportunities in India. Digital literacy enables rural residents to participate in the digital economy, access remote work opportunities, and enhance productivity in the traditional sectors. The adoption of e-commerce platforms expands the market reach for rural artisans and producers, potentially increasing their income and preserving traditional craft. However, challenges persist in realizing the full potential of technology for rural employment, including the limited digital infrastructure, low digital literacy rates, language barriers, and cultural resistance. Addressing these challenges requires a multifaceted approach that involves government initiatives, private sector participation, and community engagement. Future avenues for enhancing the role of technology in rural employment include expanding digital infrastructure, developing tailored digital literacy programs, enhancing e-commerce ecosystems, promoting rural entrepreneurship, integrating technology in traditional sectors, implementing policy interventions, conducting further research, and fostering public-private partnerships. By focusing on these areas, India can harness the potential of technology to create more inclusive, diverse, and sustainable employment opportunities in rural areas, thereby contributing to the overall rural development and economic growth.

Keywords: Rural Development, Rural Employment, Digital Literacy, E-commerce, Technology Integration, Rural Entrepreneurship

1.0 Introduction

Rural employment refers to the work opportunities and economic activities available in rural areas, encompassing both the agricultural and non-agricultural sectors. It includes farming, livestock rearing, forestry, fisheries, rural industries, handicrafts, and other services. Rural employment is characterized by its informal nature, seasonal fluctuations, and often lower wages than urban jobs. Rural employment is a crucial aspect of India's economic landscape, as a significant portion of the country's population resides in rural areas and relies on agriculture and other rural activities for livelihood (V.S. & Katta,2022). The 2011 Census of India reveals that nearly 68.8 percent of the population resides in rural areas, predominantly engaged in agriculture and related activities. The past decade has seen significant changes in the dynamics of rural employment, driven by structural transformations in the economy, technological advancements, and policy interventions.

Over the years, the Indian government has implemented various policies and programs aimed at eradicating poverty and enhancing employment opportunities in rural areas (Agarwal, 2018). However, rural employment continues to face multiple challenges, including underemployment, seasonality, wage disparities, and a lack of social security. Many rural inhabitants struggle with job instability, leading to migration and in some cases, engagement in informal or unethical activities because of economic distress (NITI Aayog, 2020). Rural

employment encompasses all forms of work undertaken in rural areas, including agriculture, livestock rearing, forestry, fisheries, rural industries, and non-farm employment such as handicrafts and rural services (NSSO, 2019). The definition extends to both the formal and informal sectors, although informal employment dominates rural labor markets.

Trends and patterns in rural employment

Data on employment and unemployment were collected through the Periodic Labour Force Survey (PLFS), conducted by the Ministry of Statistics and Programme Implementation (MoSPI) from 2019-20. The survey period was from July to June every year. According to the latest available Annual PLFS Reports, the estimated Worker Population Ratio (WPR) on usual status for those aged 15 years and above during 2022-23 was 56%, and in rural areas, the WPR was 59.4%. as shown in fig-1.

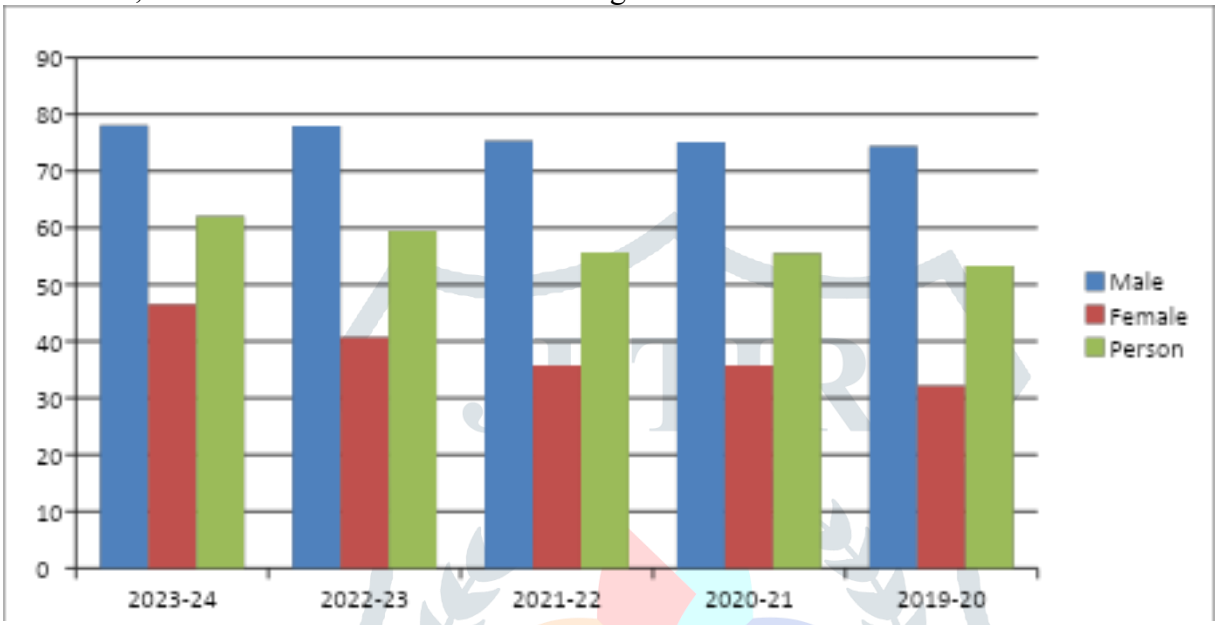

fig-1: worker population ratio

Employment generation coupled with improving employability is a government priority. Accordingly, the Government of India has taken various steps to generate employment in the country, including in rural areas. The top 5 state wise details of worker population ratio (WPR) in the country on usual status of persons of age 15 years and above for the year 2022-23 in percentage as shown in Table-1.

table-1: top 5 states/UT's wise details of worker population ratio

Sl. No.	States/ UTs	Rural persons (%)
1	Sikkim	77.9
2	Himachal Pradesh	76.5
3	Nagaland	74.7
4	Chhattisgarh	74.7
5	Dadra & Nagar Haveli and Daman & Diu	70.1

Source: Annual Report-2022-23, MoSPI, GOI, New Delhi.

The rural employment scenario has witnessed significant transitions over the years. Traditionally, agriculture has been the primary source of employment, but the sector's contribution to overall employment has been declining due to mechanization and diminishing land holdings (World Bank, 2021). The estimated distribution of workers on usual status (in percentage) by broad industry division during 2022-23 as shown in

Table-2.

table-2 industrial division as per nic 2008

Sl. No	Industry division as per NIC 2008	2022-23 Rural
1	Agriculture	58.4
2	Mining and quarrying	0.3
3	manufacturing	8.2
4	Electricity, water, etc.	0.4
5	Construction	13.9
6	Trade, hotel & restaurant	8.3
7	Transport, storage & communications	3.5
8	Other services	7.0
	Total	**100.0**

Source: Annual Report-2022-23, MoSPI, GOI, New Delhi.

According to the Periodic Labour Force Survey (PLFS, 2022), there has been a shift towards non-farm employment, including construction, manufacturing, and rural services. However, informal employment remains predominant, with approximately 90 percent of rural workers engaging in informal jobs with minimal social security benefits (ILO, 2021). Agricultural productivity plays a vital role in determining rural employment opportunities. Low productivity due to fragmented landholdings, inadequate irrigation facilities, and climate change-related challenges reduces labor demand in agriculture (Sharma & Singh, 2020). Technological interventions such as precision farming, mechanization, and improved seed varieties can enhance productivity and create employment opportunities in agro-processing and allied industries.

2.0 Review of Literature

The digital transformation in agriculture and rural areas has significantly contributed to enhancing productivity, improving market access, and promoting sustainable development. Several studies have explored the role of digitalization in transforming rural livelihoods and agricultural practices in India.

The research conducted by V S and Katta (2022) indicates that the digital transformation of agriculture has significantly enhanced productivity, lowered operational costs, and granted farmers in rural India access to real-time market data. By integrating digital platforms, a direct connection has been established between farmers and consumers, enabling producers to market their goods without the need for intermediaries. This shift has also spurred the rapid development of rural entrepreneurship. In their analysis of the impact of e-commerce on rural agricultural advancement, Vivekanand and Kumar (2024) noted that digital marketplaces have provided farmers with opportunities to reach broader markets, secure fair pricing, and access improved services. The proliferation of these digital platforms has not only boosted farm incomes but has also fostered financial inclusion within rural communities. Similarly, Mahapatra and Sharma (2020) highlighted the importance of digital skills and training initiatives in creating employment opportunities in rural settings. They observed that increased digital literacy among the youth in these areas has facilitated the adoption of technology in agriculture and related fields, thereby supporting sustainable rural development.

The International Labour Organization (ILO) (2021) reported that the advent of digital technologies has played a pivotal role in generating employment in rural regions by creating new job opportunities and providing access to global markets. The report elaborated on how the growing utilization of digital platforms has fortified rural economies through enhanced digital literacy, e-commerce, and digital financial services. Correspondingly, the National Sample Survey Office (NSSO) (2019) noted that the rise in internet access in rural India has accelerated the uptake of digital services for agricultural applications, positively influencing rural employment levels. Government initiatives have been instrumental in advancing digital inclusion in rural areas. As reported by NITI Aayog (2020), the Government of India has launched various digital initiatives, including the Digital India program, aimed at enhancing the digital landscape and fostering economic growth in these regions.

3.0 Digital Literacy in Rural India

Technology plays a transformative role in reshaping employment opportunities and in driving economic development in rural areas. By enhancing access to the digital infrastructure and promoting digital literacy, technology enables rural residents to participate in a growing digital economy. This facilitates remote work opportunities and allows individuals to access jobs beyond their geographical limitations. In addition,

technology improves agricultural productivity through precision farming techniques, weather forecasting, and market information systems, thus benefiting farmers and related industries. It also enables the growth of rural entrepreneurship by providing platforms for e-commerce, digital marketing, and online services (Vivekanand & Kumar, 2024).

Technology-driven skill development programs and online education platforms help bridge the urban-rural skills gap and prepare a rural workforce for emerging job markets. Digital financial services and mobile banking solutions improve financial inclusion and support small businesses and self-employed ventures in rural areas (Mahapatra & Sharma, 2020). Overall, technology acts as a catalyst for diversifying rural employment options, increasing productivity and creating new economic opportunities in traditionally underserved regions. This study aims to evaluate the impact of digital literacy on rural employment opportunities in India, focusing on e-commerce adoption among rural artisans and producers.

Digital literacy in rural India refers to an individual's ability to access, understand, and effectively use digital technologies and information. In the rural areas, it encompasses skills such as operating smartphones, navigating the Internet, using digital payment systems, and accessing online government services. Digital skills have become essential in a wide range of occupations across sectors (Kumar et al. 2021). The current state of rural employment in India faces challenges such as limited job opportunities and a significant skill gap. Many rural workers lack the digital competencies required for emerging roles, hindering their ability to secure better-paying jobs or participate in the growing gig economy. Addressing this digital divide and enhancing digital literacy in rural areas are crucial for improving employment prospects and fostering economic growth.

3.1 Current Digital Literacy Landscape in Rural India

The existing digital infrastructure in rural areas of India remains limited, with significant disparities in access to technology and Internet connectivity compared to urban centers. According to a report by the Internet and Mobile Association of India (IAMAI), rural internet access was at 37.1 percent in 2021, compared to 67.5 percent in urban areas. Although mobile phone usage has increased, many rural areas still lack reliable broadband internet access, hindering digital literacy efforts (IAMAI, 2021). The current digital literacy rates in rural India are considerably lower than those in urban areas, with a substantial gap in skills and usage patterns. Factors contributing to this disparity include limited access to devices, poor Internet connectivity, and a lack of awareness of the benefits of digital technologies.

The Government of India launched several initiatives to promote digital literacy in rural areas, such as the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) and Digital India program. These initiatives aim to provide digital skills training, improve infrastructure, and increase access to digital services (Ministry of Electronics and Information Technology, 2022). However, challenges persist in reaching remote areas and ensuring sustained engagement with digital technologies among the rural population. Overcoming these challenges is critical to expanding digital literacy and promoting inclusive rural development.

3.2 Impact of Digital Literacy on Rural Employment

Digital literacy plays a crucial role in rural employment by empowering individuals with the skills and knowledge necessary for participating in the digital economy. As technology has become increasingly integrated into various sectors, digital literacy has enabled rural residents to access a wider range of local and remote job opportunities. Digital literacy enhances productivity in traditional rural occupations such as agriculture by enabling farmers to access market information, weather forecasts, and modern farming techniques (Sharma, 2020). The adoption of e-commerce and digital marketing platforms has created new avenues for rural businesses, enabling them to reach wider markets and increase their revenue.

Digital literacy, as noted by Kshetri (2020), serves as a catalyst for inclusive economic growth by mitigating migration pressure and supporting sustainable rural development. The acquisition of digital skills unlocks opportunities for remote employment, particularly in gig economy sectors such as content generation, data input, and online education. By addressing the digital disparity between urban and rural areas, digital literacy can substantially reduce unemployment in rural regions and foster inclusive economic development in communities.

3.3 Challenges in Improving Digital Literacy

Improving digital literacy in rural areas is hindered by several challenges. Limited access to digital devices and unreliable internet connectivity are major barriers to digital inclusion. According to the IAMAI (2021), only 25 percent of rural households in India have access to broadband internet. Many rural residents lack affordable smartphones or computers, and the internet infrastructure is often inadequate or non-existent. The

language barriers further complicate digital literacy acquisition, as much online content and training materials are not available in the local languages or dialects spoken in rural communities (Kumar, 2021). This linguistic divide makes it difficult for non-English speakers to engage with digital resources and develop necessary skills. Additionally, factors such as low education levels, lack of awareness of digital technologies, and cultural resistance to technological change can impede the acquisition of digital literacy. Economic constraints may also prevent individuals from investing time and resources in digital skill training. Addressing these multifaceted challenges requires comprehensive strategies to improve infrastructure, provide culturally relevant training, and create localized digital content to foster digital literacy and inclusion in rural areas (Sharma, 2020).

4.0 Transition to E-Commerce

The increasing role of digital literacy in the rural employment generation naturally extends to the adoption of e-commerce platforms. With the growth of digital skills, rural residents are now better equipped to access and leverage e-commerce opportunities, particularly in sectors such as handicrafts, local produce, and microbusiness. The e-commerce acts as a vital link that connects rural artisans, farmers, and small entrepreneurs to broader markets, thereby stimulating economic growth. Their ability to navigate online platforms enables rural producers to engage in direct-to-consumer sales, eliminate intermediaries, and ensure fair pricing. This transition highlights the interconnected nature of digital literacy and e-commerce to foster sustainable rural employment. The increased use of digital payment systems, including mobile banking and UPI-based transactions, supports e-commerce growth. According to a report by NASSCOM (2022), the use of digital payment systems has increased by 45 percent in rural India post-2020, facilitating seamless online transactions and empowering small businesses.

Rural artisans and producers play a vital role in India's economy and cultural heritage, significantly contributing to its diverse handicraft and handloom sectors. These skilled craftspeople preserve traditional techniques and cultural expressions, while providing livelihoods for millions of rural areas. The e-commerce presents a transformative opportunity for these communities, offering direct access to global markets, eliminating intermediaries, and potentially increasing income. By leveraging online platforms, rural artisans can showcase their unique products to a wider audience, receive fair prices, and adapt to changing consumer preferences (Mahapatra and Sharma 2020).

However, the current state of e-commerce adoption in rural India remains limited because of challenges such as inadequate digital infrastructure, low digital literacy, and lack of awareness. Although government initiatives and private sector efforts are working to bridge this gap, significant progress is still required to fully harness the potential of e-commerce to empower rural artisans and producers across the country. According to the Ministry of Rural Development (2022), e-commerce platforms, such as Amazon Saheli and Flipkart Samarth, have contributed to increasing the market reach for rural entrepreneurs, but there remains substantial untapped potential for further expansion.

4.1 Factors Influencing E-Commerce Adoption

The e-commerce adoption in rural areas is influenced by several interconnected factors. Digital literacy and skill training programs play a crucial role in equipping rural residents with the knowledge necessary to navigate online platforms and conduct digital transactions. Access to smartphones and reliable internet connectivity form the foundation for e-commerce participation, enabling users to browse products, compare prices, and make purchases (Kshetri, 2020). Trust-building measures and consumer protection policies are essential for overcoming skepticism, encouraging online shopping, and addressing concerns about fraud and product quality. The availability of local language interfaces and support services significantly enhances user experience and accessibility, making e-commerce platforms more inclusive for non-English speaking populations.

5.0 Concluding Remarks

The incorporation of technology, especially in the realms of digital literacy and e-commerce, holds considerable promise for reshaping employment prospects in rural India. Digital literacy has become an essential element that empowers rural inhabitants to engage in the digital economy, tap into remote job opportunities, and enhance productivity within conventional industries, such as agriculture. Moreover, the utilization of e-commerce platforms has broadened the market access for rural artisans and producers, which may lead to increased earnings and the preservation of traditional crafts. However, several obstacles hinder rural employment, including inadequate digital infrastructure, low levels of digital literacy, language barriers, and cultural resistance to technological advancements. Overcoming these challenges necessitates a

comprehensive strategy that encompasses government initiatives, involvement from the private sector, and active participation from local communities. The future scope for enhancing the role of technology in rural employment includes the following.

- Enhancing digital infrastructure: Strengthening Internet connectivity and access to digital devices in rural regions to reduce the digital gap between urban and rural areas.
- Customized digital literacy initiatives: Designing and executing digital skills training programs that are culturally appropriate and offered in local languages.
- Developing e-commerce frameworks: Establishing supportive environments for the adoption of e-commerce, including logistics, digital payment solutions, and customer service tailored to rural populations.
- Encouraging rural business development: Utilizing technology to promote entrepreneurship in rural areas through focused skill enhancement and access to online marketplaces.
- Incorporating technology into traditional industries: Investigating innovative methods to integrate digital technologies into agriculture, handicrafts, and other conventional rural sectors to boost productivity and market reach.
- Strategic policy measures: Formulating policies that encourage technology adoption in rural communities while safeguarding the rights of rural workers within the digital economy. Conducting comprehensive research on the long-term effects of digital literacy and e-commerce on employment trends and economic growth in rural areas.
- Fostering public-private collaborations: Promoting partnerships among government entities, technology firms, and rural communities to create sustainable, technology-driven employment opportunities.
- Supporting local innovation: Encouraging grassroots innovation in technology solutions that address specific challenges faced by rural communities. Establishing frameworks for assessing the effectiveness of digital initiatives in rural areas to ensure continuous improvement and adaptation.

By focusing on these areas, India can harness the power of technology to create more inclusive, diverse, and sustainable employment opportunities in rural areas, thereby contributing to overall rural development and economic growth.

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