AI- Enabled Digital Skill - Real Empowerment for Rural Communities in India - A Case Study of Telangana State

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Abstract

Rural India is at an important situation where it is found that demographic, raising of economic ambitions and rapid technological changes are occurring. In recent year, notable changes are prevailing in the case of infrastructure and digital connectivity. However, skill development to rural communities still lags behind. The conventional skill programs are not full-filling the changing demands of labor market which in turn leads economic fluctuations. Due to this, Skill India Mission, the flagship program of central government, was launched 15th July, 20215 which includes the revamped Pradhan Mantri Kaushi Vikas Yojana(PMKVY4.0) which is focusing on emerging technology such as AI, Cybersecurity and digital markets. PMKVY 4.0 providing short term training to employment outcomes. Along with, the schemes like National Apprenticeship Promotion Scheme (NAPS), Jan Shikshan Sansthan (KSS) provided benefit to 2.27 crore people in which 25 percent of rural households and 75 percent of urban people. This gap shows millions risk being excluded from the AI- driven economy. Moreover, a recent Google.org- ADB report warns that only 1 in 5 Indian youth participated in AI skill program which reveals a significant opportunity gap.

The state government Telangana, a flagship program of AI based skill development, launched on September 1,2025, by focusing on Artificial Intelligence, IT, Robotics, and Health care. Each district was sanctioned skill development centers offering free training, industry projects and placement support. The state government tied up with Microsoft, Infosys, TCS, Deloitte and III-Hyderabad to provide practical training to the need of Industries. In addition to this, state government providing stipend of Rs2000 per month during the training period. The state government has taken steps to become preferred hub for Multinational Companies. However, in the survey it reveals that only 1 out of 6 Telangana youth participated in AI skill program which shows significant gap in this scenario, state government has brought a policy which includes private and public partnership, NGOs and civil society have to invest sustained investment on infrastructure and local languages AI tools which brings true success not in terabytes or algorithms but in the number of lives it uplifts.

Keywords: *Cyber Security; PMKVY; NAPS; KSS; Artificial Intelligence; NGOs* .

1. Introduction

Rural India is having special situation where vast demographic potential, raising economic ambitions and rapid technological changes are happening. However, in recent year, notable improvement is taking place in infrastructure

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and digital connectives. Today, AI- based skill development became access to social security but still this skill lags behind for rural people. The conventional skill programs are unable to full-fill the changes the demands of labor market. Due to this, large rural workforce vulnerable to economic crisis.

These changes are not just statistics but they are affecting living of rural workforce. Asha, 22-year-old, living in a small village of West Bengal. Once she was struggling for lively hood in the village. However, she joined AI-based skill development program which was started by state government, learning basics skills of Artificial Intelligence. Later, she stated her own handcraft store, earning a stable income for her better future. This situation became inspiration for large number of rural youths.

This became a broader transformation for rural youth. Over the past decade, social security reached 64 percent in 2025 which was 19 percent in 2015. The digital identity plat forms can be seen in the form of Aadhar cards, communication (Reliance Jio inspiration) and communication (Optical Fiber Cable). Today, nearly half of all internet users, reside in rural areas, creating fertile ground for AI- enabled digital learning and skill development, targeted for rural youth as like Asha. The Ministry of AI- based skilled development and entrepreneurship has taken responsibility to increase Skill Indian Digital Hub which is spreading AI- based personalized education to deliver through the regional languages which became barriers for understanding the AI-based skill learning.

The Bharat Net project became backbone for expansion of internet felicities to rural population. As on December 2024, internet connections are given around 2,18,000 Gram Panchayat and provided 6,92,000 km with optical fiber cable which is helping f or 4G and 5G felicities for the villages. Today, 5G towers covering 99. 6 percent and internet accessible to 1.16 million people in the country. The growth of internet is faster in rural rather than urban areas. The technology like fixed wireless access and satellite services are spreading to remote areas. The facilities of Wi-Fi and hot-spots are extending to the villages. National Broadband Mission has been launched 2.0 which is bringing high-speed broadband internet services to remote villages. Whenever the state government, NGO and telecommute operators helping to bring technology-friendly environments where internet services is no longer luxury but became basic necessity.

The Artificial intelligence, Block chain and IoT which are not for a way to village people. The central and state governments are working with academic institutions and IT industries to find solutions for rural challenges. Today, digital agriculture platforms providing tell medicine and e-governance to village people. The government of India developed UMANG app which is providing 1,200 government services on their mobile phones. In the same way, Government of Andhra Pradesh developed e-Pen ta app which is providing services to farmers to register crop insurance and even seek help to prevent diseases of agricultural crops.

The content that are using in different apps and platforms developing in region languages which help even for non-English speakers. Today, the rural people are able to get agriculture advises and market information through What up. The startups are finding solutions for local needs. The Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDSA) scheme, providing digital literacy to rural household. As of January 2025, it has trained 6.30 crore rural people. Digital access to government and private services helping online courses and registration for examinations which have benefited to rural students in large extent. Due to this, educational facilities reaching remote areas, schemes such as National Digital Library, SWAYAM and PM e-vidya are helping millions of children to study online. Digital platforms helped much during the period of COVID-19. Bhshini, scheme, providing voice-based services in different languages without typing. Through this, the rural people are able to get access of government digital services. For example, 70 crore and 70 lakh UPI transactions were held on single day i.e. 2 August 2025 which helped large sections of small traders. Today, Government of India taking the help of technical professionals, service centers and work-operators for extending digital services to rural people.

2. Review of Literature

- Balendu Sharma Dadhich (2025) 'The success of digital in rural India' in which he said that digital India has transformed rural India considerable in the form of connectivity in villages, innovation, skill development and educational improvement which are empowering rural people.
- Dr. Arti &Sayantani De (2025) 'AI- Enabled digital skill for rural India' in which they said that when the communities gain access to skills, they also gain bargaining power, financial stability and the ability to secure their own future.
- Dr. Jagdeep Saxena (2025) 'Conservation agriculture 'in which he says that CA help to endure more sustainable and efficient farming practices that help present and future generations.
- Dr. Harinder Raj Goutham (2025) 'Gene editing technology - transforming agriculture 'in which he said that the helps digital technology helps farmers with better returns without any further stress on land.
- Prof. S.V. S . Raju & Pankaj Kumar Ojha (2025) 'Agri Startups' in which they said that architect startups are poised to led the charge, redefining global agriculture.
- Sunne Schwabe and Monika Grabowska (2022) 'Online marketing strategies 'in which they revealed that an organization cannot exist without digital marketing which became necessary for every institution.
- Dr. Amit Sigh Rathore, Mr. Mohit Pant, and Mr. Chetan Sharma (2021) 'Emerging trends in digital marketing in India' In which they said that use of social media has created new opportunities for digital market to attract the customers.
- Niharika Satinder (2021) 'A study on internet marketing in India - Challenges and opportunity' in which they mentioned that online marketing is the best opportunities rather than traditional method which strengthens the customers to choose the shopping habits for the people to purchase world class products.
- D.K. Gnaneshwar (2019) ' E- Commerce or internet marketing - A Business Review Indian contest' in which he mentioned the importance of online marketing which is playing vital role in the 21th centuries. It is accessible for large corporations and small companies also.
- Vladislav Yurovsky (2018) 'Pro and Cons of internet services' in which he said that some of advantages of elbowing effect, elimination in geographical barriers and target reaching.

Research Gap: In India, digital technology was launched in 2015. The period from 2015 to 2024 was taken in to consideration in which the changes that are taking place in the field of information and communication technology particularly AI-Based skill development are being studied.

Scenario of Digital Technology in India: - India emerges as the eights position among the G32 for CHIPS combined. The seven countries that United States, Singapore, South Korea, Denmark, United Kingdom and Germany which are enjoying significant of digital technology. The strong intensity can be seen in the case of Singapore, Korea and Denmark. Emerging market can be seen in Brazil, Nigeria and Indonesia. The performance of well in CHIPS can be seen in India.

Impact of Digital Technology: The digital program in India was launched in July 2015 which is a flagship program of central government that transforming the younger youth into digital empowered society and knowledge economy. India has a massive opportunity to expand further scale of digital economy.

3. Objectives of digital technology

- Expanding high-speed internet connectivity across the rural India.
- Converting government platforms into digital platforms for faster and
- Transparent process for rural areas.
- Promoting digital literacy to empowering rural people.
- Ensuring the easily availability of government information and Services.

4. Hypothesis

- High-speed internet connectivity is not happening across the rural Areas.
- Promoting digital literacy to rural population is not happening.
- Converting government platforms into digital platforms are not happening.

Challenges of Digital Revolution: - Even through central and concerned state government are taking steps for expansion and implementation of digital technology, still facing poor network access and different regional languages restrict effective utilization digital devices. Along with, high cost of digital tools and inadequate infrastructure obstructing expansion of internet felicities to remote areas.

Digital transformation of India has been rapid and path-breaking. India occupied third largest digital economy in the globe. It has made significant strides in empowering individual users and delivering services to large section of population in urban as well as rural areas. The Government's digital India program laid the foundation for building the world's largest digital identity programs which can be seen from the following table.

Table-1 Global Ranking

Country	CHIPS Economy	CHIPE	CHIPS Combined
USA	68.5	61.4	64.5
CHN	62.5	52.0	56.1
IND	35.9	33.6	34.7
SNG	28.5	58.0	41.9
UK	26.4	48.1	36.1
SKO	25.4	53.8	39.6
FRA	24.9	41.1	32.9
GER	24.6	45.7	35.1
JAP	24.4	38.9	31.8
BRA	24.1	402	32.0

Source: ICRIER- Pros us Centre (IPCISE)

From the table-1, it is understood that USA occupied first place CHIPS 68.5, CHIPE 61.4 and CHIPS combined percentage of 64.5. which is followed by China CHIPS economy 62.5, CHIPE 52.0, CHIPS combined 56.1 percentage. India has CHIPS Economy 35.9, CHIPE 33.6, CHIPS combined percentage of 34.7. However, in the case of overall, India occupied eighth position in the global level.

Rural India has vast demographic potential, raising of economic ambition and rapid technological change intersect. Recently, notable changes are occurring in the case of infrastructure and digital connectives. Skill development, access to social security and economic empowerment, still lack behind. The present skill programs are unable to match local needs which are replaced by modern methods in which digital technology one. The Ministry of Skill development and

Entrepreneurship has taken steps to create digital hub to connect rural learners. Due to this, AI-based used to deliver education through the regional languages. The digital technology generating meaningful employment opportunities for different section of people such as manufacturing, services and construction in the rural areas which can be seen in the following table.

Table-2, Employment Growth in key sectors Post skilling (2021-2025)

Category	Employment %
1) Manufacturing	15
2) Services	20
3) Instruction	25

Source: Joy, 2025

From the table-2, it is understood that digital technology helps to increase employment opportunities in rural areas. Increasing of 15 percent can be seen in the case of manufacturing while 20 percent can be seen in the case of services. In the same way, construction sector providing 25 percent job opportunities in the rural areas.

The professional people who are having AI- based knowledge are increasing day by day to help the rural people which can be seen from the following table.

Table-3 AI-Based Skill professionals in Rural Areas (Lakhs)

Years	No of professionals
2023	4,16,000
2024	6,00,000
2025	8,00,000
2026	10,00,000

Source: (Dwivedi et al, 2025)

From the table-3, it is understood that increasing AI- based professionals who help converting vulnerable rural population into enhancing of livelihood stability and strengthening social security. There were 4,16,000 professionals in 2023 which increased to 8,00,000 in 2025 which may go to the level of 1 million in 2026.

The central government has taken a strong policy to prepare rural youth to adopt AI- based digital technology for future development. The Ministry of Skill Development and Entrepreneurship (MSDE) has taken different programs for expansion of AI- based skill knowledge in the rural areas which can be in the following table.

Table-4 Government initiatives and Focus areas

Name of the Initiative	Target Beneficiaries (In Lakhs)	Focus Areas
1) PMGDSA	639	Digital literacy
2) Common services centers(CSCs)	530	Digital Services & AI Training
3) AI Pragya (UP)	10	AI & Data Analyst's Training
4) India AI Mission	5.6	AI Skill for CSC workforce.

Source: MSDE, 2025

From the table-4, it is understood that target employment 639 lakh was fixed under PMGDISHA for knowing AI-based digital knowledge under CSCs, for which target was allocated to 530 lakhs. However, in the case of AI Pragya (UP), target was given to the extent of 10 lakh whereas 5.6 lakh target was given for Indian AI Mission.

5. Case Studies

1) ASHA, 22-year-old, belongs to small village in West Bengal. Once she struggled for work in the village. When she joined a government -backed digital skilled program, her life changed. This course helped her to know the basics of artificial intelligence and online business skills. Now, Asha running online handcraft store which helping a stable income and supporting her family. With the help of digital knowledge, enrolled the health and pension schemes which are helping for better future.

2) YAKTEN, a small village, in Sikkim, which has become the country's first village adoption of digital technology. Now, villagers using higher-speed WI-FI felicities. Today, ever home has internet felicities through which learning online education.

3) AKODARA, a small village in Gujarat State, became first digital village where 100 percent transactions are happening digitally. In this village, digital payments, audio visual education equipment and CCTVs in schools can be seen.

4) HARISAL, a small village in Amravati District, Maharashtra state, became the first smart village where state government and Microsoft company jointly provided internet facilities through White-F technology for village people.

5) KARNATAKA government launched e-Shamata app which is helping farmers to send their crops information directly to the retailers, so that they can sell their products at better price.

Research Methodology: In India, Telangana State is taken for case study in which 100 respondents were selected spreading over three districts i.e. Mahbubnagar, Medak and Nizamabad. Out of 100, 60 percent young rural men and women are selected for study on the random basis. To collect AI-based skill knowledge awareness among the respondents. As per the survey, data was collected and analysis made on the basis of '7'point Likert scale system which can be seen from the following table.

Table-5 Likert Scale System

Response	Points
Strongly disagree	1
Disagree	2
Disagree to some extent	3
Undecided	4
Agree to some extent	5
Agree	6
Strong agree	7

Source: Author technique

This Likert Scale system is applied to gather AI- based skill knowledge from the respondents of educated rural youth who are having age in between 18-25 have been taken in to consideration which can be seen from the following table.

Table-6 Awareness of AI-Based Skill Knowledge

Category	Response in percentage.
1) Yong men	60
2) Young women	40
Total	100

Source: Survey

From the table 6, it I understood that out of 100 respondents, rural young men consisting of 60 percent and remaining 40 percent refers to young women which comes only 1 in 6 youth having AI-based skill knowledge in rural.

6. Conclusion

After analysis of data, it is found that first hypothesis is not accepted which reveals that digital market and internet facilitate are gradually increasing in the rural areas. Similarly, second hypothesis is not accepted which is revealing that central and state governments are taking different steps for increasing digital services through internet felicities. In the same way, third hypothesis is not accepted which is revealing that central and state governments converting traditional or convention platforms into digital platforms for enhancing the livelihood of rural population.

The AI-based skill knowledge transformed rural India considerably by showing in the form of increasing connectives, promoting innovations, skill development, improving educational, employment opportunities, promoting entrepreneurship etc. These changes are clearly visible in the form of infrastructure projects, targeted AI-based skill development programs and digital plat forms which are empowering rural population of India.

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