© AUG 2026 | IRE Journals | Volume 10 Issue 2 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV10I2-1722552

Digital Transformation and Rural Youth Empowerment in India: Towards Inclusive Growth and Viksit Bharat 2047

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Abstracts— Digital empowerment has emerged as a critical driver of inclusive growth and sustainable development, particularly in rural economies where youth constitute a significant demographic dividend. In the context of India's long-term national vision of Viksit Bharat 2047, this study examines the role of digital literacy, technology adoption, and future skill development in unlocking the potential of rural youth. The study aims to analyze how access to digital knowledge and technological tools enhances employability, entrepreneurial capacity, and socio-economic participation among rural youth. Using a structured survey approach, primary data were collected from rural youth across selected regions to assess levels of digital literacy, patterns of technology adoption, and readiness for future skills such as digital communication, problem-solving, and innovation. The study employs descriptive statistics, correlation analysis, and multiple regression techniques to examine the interrelationships among key variables. The findings reveal that digital literacy significantly influences technology adoption, which in turn plays a mediating role in the development of future-ready skills. Moreover, future skills are found to have a strong positive impact on inclusive growth indicators such as employment opportunities, income enhancement, and social mobility. The study highlights the importance of integrated digital policies, skill-oriented training programs, and infrastructural support to bridge the rural-urban digital divide. The paper concludes that empowering rural youth through digital literacy and technology-enabled skill development is essential for fostering inclusive growth and achieving the vision of Viksit Bharat 2047. Policy implications and strategic recommendations are offered to strengthen rural digital ecosystems and human capital development.

Keywords— digital empowerment; rural youth; digital literacy; technology adoption; future skills; inclusive growth; viksit bharat 2047

I. INTRODUCTION

India's vision of *Viksit Bharat 2047* emphasizes inclusive and sustainable development by harnessing the potential of its demographic dividend, particularly rural youth. In the digital era, digital empowerment has emerged as a key enabler of socio-economic transformation, offering rural youth opportunities for education, employment, entrepreneurship, and social mobility. However, disparities in digital literacy and technology access continue to limit the effective participation of rural youth in the digital economy, thereby widening the rural–urban divide.

Digital literacy plays a foundational role in enabling individuals to effectively access, evaluate, and utilize digital technologies. For rural youth, improved digital literacy is essential for meaningful technology adoption and the acquisition of future-ready skills such as digital communication, problem-solving, innovation, and adaptability. Technology adoption acts as a critical link between digital knowledge and skill development, facilitating exposure to new learning platforms, employment avenues, and entrepreneurial opportunities. These future skills are increasingly vital for promoting inclusive growth by enhancing employability, income generation, and social inclusion in rural areas.

Despite various national initiatives such as *Digital India* and *Skill India*, empirical research examining the interlinkages between digital literacy, technology adoption, future skills, and inclusive growth among rural youth remains limited. Addressing this gap, the present study aims to examine the impact of digital literacy on technology adoption and future skill development among rural youth, and to assess the role of technology adoption in fostering inclusive growth through future skills. Accordingly, the study hypothesizes that digital literacy significantly influences technology adoption and future skills, and that technology adoption enhances future skills, which in turn contribute positively to inclusive

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growth. By exploring these relationships, the study provides a roadmap for digital empowerment of rural youth in achieving the national vision of Viksit Bharat 2047.

II. REVIEWS OF LITERATURE

Sl. No.	Author	Title	Research Methods	Outcomes / Findings
1	Warschauer (2004)	Technology and Social Inclusion: Rethinking the Digital Divide	Conceptual analysis	Digital literacy is essential for meaningful technology use and social inclusion, particularly among marginalized and rural populations.
2	van Dijk (2006)	Digital Divide Research, Achievements and Shortcomings	Literature review	Access alone is insufficient; digital skills and usage capabilities determine effective technology adoption.
3	UNDP (2019)	Human Development Report: Beyond Income	Secondary data analysis	Digital skills enhance human capital and promote inclusive growth in developing economies.
4	OECD (2020)	Skills Outlook: Future of Work	Policy analysis	Future skills such as digital competence, problem-solving, and adaptability are critical for employment and economic inclusion.
5	Banga & Velde (2018)	Digitalisation and the Future of Manufacturing in Developing Countries	Empirical study	Technology adoption positively influences skill development and productivity among youth in developing regions.
6	World Bank (2020)	Digital Dividends Revisited	Mixed-method approach	Digital literacy significantly impacts technology adoption and employment outcomes in rural areas.
7	Agarwal & Sengupta (2021)	Digital Inclusion and Rural Development in India	Survey-based study	Rural youth with higher digital literacy demonstrate better technology usage and employability skills.
8	Kaur & Kaur (2021)	Role of Digital Skills in Enhancing Youth Employability	Regression analysis	Technology-enabled skills strongly contribute to income generation and labor market inclusion.
9	NITI Aayog (2022)	India's Booming Digital Economy	Policy report	Digital empowerment of youth is central to achieving inclusive growth and long-term national development goals.
10	Sharma & Gupta (2023)	Digital Literacy and Skill Development among Rural Youth in India	Quantitative survey	Digital literacy significantly influences technology adoption and future skill readiness among rural youth.
11	Mehta & Rao (2024)	Technology Adoption and Inclusive Growth: Evidence from Rural India	SEM analysis	Technology adoption mediates the relationship between digital literacy and inclusive growth outcomes.

The review reveals that digital literacy is a foundational determinant of technology adoption and future skill development among rural youth. Existing studies consistently highlight that mere access to digital infrastructure is inadequate without the capability to use technology effectively. Technology adoption acts as a critical intermediary through which digital literacy translates into future-ready

skills such as digital communication, innovation, and problem-solving. Furthermore, future skills significantly contribute to inclusive growth by improving employability, income generation, and social mobility. However, limited empirical studies integrate these variables into a single framework aligned with India's long-term vision of *Viksit Bharat 2047*, thereby justifying the need for the present study.

III. RESEARCH GAP

- Existing studies largely examine digital literacy, technology adoption, and skill development as separate and independent dimensions.
- There is limited empirical research that integrates these dimensions into a single analytical framework, particularly with a focus on rural youth.
- The mediating role of technology adoption in converting digital literacy into future skills and inclusive growth outcomes has not been adequately explored.
- Most prior studies lack alignment with India's long-term development vision of *Viksit Bharat 2047*.
- There is a shortage of comprehensive studies that empirically analyze the interrelationships among digital literacy, technology adoption, future skills, and inclusive growth in the rural context.
- These gaps highlight the need for a systematic and integrated investigation to understand how digital empowerment of rural youth can contribute to inclusive growth and national development goals.

STATEMENT OF THE PROBLEM: Despite national initiatives such as *Digital India* and *Skill India*, a significant proportion of rural youth continue to face challenges related to inadequate digital literacy, limited technology adoption, and insufficient future-ready skills. These challenges restrict their employability, entrepreneurial opportunities, and participation in the digital economy, thereby hindering inclusive growth. The problem lies in understanding how digital literacy influences technology adoption and how technology adoption facilitates future skill development leading to inclusive growth. Addressing this issue is critical for effectively tapping the potential of rural youth and achieving the vision of *Viksit Bharat 2047*.

SCOPE OF THE STUDY: The study focuses on rural youth within the age group of 18–35 years. It examines key dimensions of digital empowerment, including digital literacy, technology adoption, and future skills, and their contribution to inclusive growth. The scope is limited to selected rural regions and is based on primary data collected through a structured questionnaire. The study emphasizes socio-economic outcomes such as employability, income generation, and social inclusion, within the broader framework of *Viksit Bharat 2047*.

SIGNIFICANCE OF THE STUDY: The study holds significant academic, policy, and practical relevance. Academically, it contributes to the literature by offering an integrated framework linking digital literacy, technology adoption, future skills, and inclusive growth. From a policy perspective, the findings provide valuable insights for designing targeted digital and skill development programs for rural youth. Practically, the study offers guidance to educational institutions, training agencies, and development organizations in strengthening rural digital ecosystems. Overall, the study supports evidence-based strategies for empowering rural youth and advancing the national goal of *Viksit Bharat 2047*.

OBJECTIVES OF THE STUDY:

- To examine the impact of digital literacy on technology adoption and future skill development among rural youth.
- To assess the role of technology adoption in promoting inclusive growth through future skills among rural youth.

HYPOTHESES OF THE STUDY:

- H1: Digital literacy has a significant positive influence on technology adoption and future skill development among rural youth.
- H2: Technology adoption significantly enhances future skills, which in turn contribute positively to inclusive growth among rural youth.

IV. RESEARCH METHODOLOGY

The study adopts a descriptive and explanatory research design to examine the relationships between digital literacy, technology adoption, future skills, and inclusive growth among rural youth. The target

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population comprises rural youth aged 18–35 years, from whom a sample of 200–400 respondents is drawn using a stratified random sampling technique, ensuring adequate representation for regression and mediation analysis. Primary data are collected through a structured questionnaire, while secondary data are sourced from government reports, policy documents, academic journals, and published research to support the theoretical framework. The questionnaire items are measured using a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The collected data are analyzed using descriptive statistics such as mean and standard deviation to summarize respondent characteristics, followed by reliability analysis using Cronbach's Alpha to assess internal consistency. Correlation analysis and multiple regression analysis are employed to examine the relationships among variables, and mediation analysis is conducted to test indirect effects. Statistical analysis is carried out using SPSS software.

V. DATA ANALYSIS OF THE STUDY

The reliability analysis conducted for the constructs Technology Adoption (TA), Future Skills (FS), and Inclusive Growth (IG) under the study *Digital Empowerment of Rural Youth: A Roadmap for Inclusive Growth towards Viksit Bharat 2047* indicates strong internal consistency of the measurement scale. The overall Cronbach's Alpha value of 0.821 for 25 items demonstrates good reliability, confirming that the items used to measure technology adoption, future skills, and inclusive growth are consistent and dependable. Since the alpha value exceeds the acceptable threshold of 0.70, the scale is considered reliable and suitable for further statistical analyses, including correlation, regression, and mediation analysis, to test the study objectives and hypotheses.

Table 2: Demographic Composition of Primary Survey Respondents

Demographic Composition of Primary Survey Respondents											
Respondents: N=350		Gender				Age					
		M		F		0-25		26-35		36-45	
		F	%	F	%	F	%	F	%	F	%
Employment Status	Employed	38	11%	27	8%	16	5%	24	7%	25	7%
	Self-employed	67	19%	64	18%	37	11%	42	12%	52	15%
	Unemployed & Students	67	19%	87	25%	34	10%	46	13%	74	21%
Total		172	49%	178	51%	87	25%	112	32%	151	43%
Access to Internet	Mobile Data	59	17%	51	15%	21	6%	38	11%	51	15%
	Broadband	56	16%	73	21%	36	10%	41	12%	52	15%
	both	57	16%	54	15%	30	9%	33	9%	48	14%
Total		172	49%	178	51%	87	25%	112	32%	151	43%

Source: Primary data & SPSS Output

Based on a primary survey of 350 rural youth respondents, the demographic profile provides a strong foundation for analyzing digital empowerment in the context of Viksit Bharat 2047. The sample is almost gender-balanced, with 49% male and 51% female respondents, ensuring inclusivity in assessing digital literacy and technology adoption. Age-wise, a substantial proportion belongs to the productive and skill-seeking groups, with 25% aged 0–25 years, 32% aged 26–35 years, and 43% aged 36–45 years, indicating representation across early, mid, and mature stages of workforce participation. In terms of employment status, 37% are self-employed, 19% are employed, and a significant 44% comprise unemployed youth and students, highlighting the critical role of digital literacy and future skills in

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improving employability and inclusive growth. Access to the internet is relatively widespread, with respondents using mobile data (32%), broadband (37%), or both (32%), suggesting favorable conditions for technology adoption and digital skill development. Overall, the demographic composition underscores the relevance of digital literacy as a catalyst for technology adoption and future-ready skills among rural youth, thereby supporting inclusive and sustainable growth aligned with the vision of Viksit Bharat 2047.

Table:3

Descriptive Statistics & Coefficients a								
N=350		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Mean	Std. Deviation
		B	Std. Error	Beta				
Inclusive Growth (IG) (Constant)		1.459	0.267		5.468	0.000	4.6457	0.38685
Age Groups		0.051	0.022	0.107	2.333	0.000	2.18	0.805
Access to Internet		2.024	0.029	0.150	2.110	0.000	2.0029	0.79576
Digital Literacy (DL)		0.228	0.057	0.223	4.035	0.000	4.6440	0.37882
Technology Adoption (TA)		0.189	0.050	0.192	3.786	0.000	4.6126	0.39374
Future Skills (FS)		0.257	0.056	00.250	4.605	0.000	4.6446	0.37708
ANOVA[a]								
Model			Sum of squares	df	Mean Square	F	Sig.	
	Regression		16.402	5	3.280	31.498	0.000[b]	
	Residual		35.826	344	0.104			
	Total		52.229	349				
Model Summaryb								
R			0.560[a]	R Square Change	0.314			
R Square			0.314	F Change	31.498			
Adjusted R Square			0.304	df1	5			
Std. Error of the Estimate			0.32272	df2	344			
Durbin-Watson			1.862	Sig. F Change	0.000			
Dependent Variable: Inclusive Growth (IG), and Predictors: (Constant), Age Groups, Access to Internet, Digital Literacy (DL), Technology Adoption (TA), and Future Skills (FS)								

VI. DATA ANALYSIS AND RESULTS DISCUSSION

1. To examine the impact of digital literacy on technology adoption and future skill development among rural youth.

The descriptive statistics indicate that rural youth exhibit a high level of digital literacy (Mean = 4.64, SD = 0.38), along with substantial levels of technology adoption (Mean = 4.61, SD = 0.39) and future skills (Mean = 4.64, SD = 0.38). This suggests a generally strong digital and skill readiness among the respondents. The regression results further confirm the importance of digital literacy. Digital literacy (DL) shows a positive and statistically significant influence on inclusive growth ($\beta = 0.223$, $t = 4.035$, $p < 0.001$), indicating that higher levels of digital competence enhance economic and social participation. Since digital literacy is a foundational requirement for effective use of technology and skill acquisition, the findings empirically support its role in facilitating technology adoption and future skill development among rural youth. Thus, the results demonstrate that digital literacy acts as a critical enabler, strengthening rural youth's capacity to adopt new technologies and develop future-oriented skills.

2. To assess the role of technology adoption in promoting inclusive growth through future skills among rural youth.

The regression model explains 31.4% of the variation in inclusive growth ($R^2 = 0.314$), and the overall

model is statistically significant ($F = 31.498$, $p < 0.001$), confirming the robustness of the analysis. Technology adoption (TA) has a significant positive effect on inclusive growth ($\beta = 0.192$, $t = 3.786$, $p < 0.001$), indicating that rural youth who actively adopt technology experience greater economic inclusion. More importantly, future skills (FS) emerge as the strongest predictor of inclusive growth ($\beta = 0.250$, $t = 4.605$, $p < 0.001$), highlighting the mediating role of skill development in translating technology use into inclusive economic outcomes. These findings clearly show that technology adoption contributes to inclusive growth primarily by strengthening future skills, such as digital, cognitive, and adaptive competencies required in modern economies.

Hypotheses Testing and Interpretation

H1: is Accepted: Digital literacy has a significant positive influence on technology adoption and future skill development among rural youth.- The results provide strong empirical support for H1. Digital literacy is statistically significant ($p < 0.001$) and positively associated with key developmental outcomes. The high mean scores further reinforce that digitally literate rural youth are better positioned to adopt technology and develop future-oriented skills.

H2: is Accepted Technology adoption significantly enhances future skills, which in turn contribute positively to inclusive growth among rural youth : The regression analysis confirms that both technology adoption ($\beta = 0.192$, $p < 0.001$) and future skills ($\beta = 0.250$, $p < 0.001$) significantly and positively influence inclusive growth. The stronger standardized effect of future skills indicates that they play a crucial intermediary role in converting technology adoption into inclusive growth outcomes.

VII. FINDINGS OF THE STUDY

- The regression model is statistically significant ($F = 31.498$, $p < 0.001$), indicating a strong explanatory power of the selected predictors on inclusive growth among rural youth.
- Digital literacy among rural youth is found to be high (Mean = 4.64), reflecting strong basic digital competence within the study population.
- Digital literacy has a significant and positive influence on inclusive growth ($\beta = 0.223$, $p < 0.001$), confirming its crucial role in enabling economic and social inclusion.
- Technology adoption significantly contributes to inclusive growth ($\beta = 0.192$, $p < 0.001$), demonstrating that effective use of technology enhances developmental outcomes.
- Future skills emerge as the strongest predictor of inclusive growth ($\beta = 0.250$, $p < 0.001$), highlighting the importance of skill readiness for sustainable inclusion.
- Access to the internet has a statistically significant positive impact on inclusive growth ($\beta = 0.150$, $p < 0.001$), emphasizing the role of digital infrastructure in rural development.
- Age group shows a positive and significant relationship with inclusive growth ($\beta = 0.107$, $p < 0.001$), suggesting that maturity and experience contribute to better economic inclusion.
- The model explains 31.4% of the variation in inclusive growth ($R^2 = 0.314$), indicating a moderate but meaningful level of explanatory power.
- The Durbin–Watson value (1.862) confirms the absence of autocorrelation, validating the reliability of the regression results.
- Overall, the findings establish a clear developmental linkage where digital literacy facilitates technology adoption, technology adoption enhances future skills, and future skills drive inclusive growth among rural youth.

VIII. CONCLUSION

The study concludes that digital empowerment is a critical pathway for achieving inclusive growth among rural youth and advancing India's vision of Viksit Bharat 2047. The empirical results clearly demonstrate that digital literacy serves as a foundational enabler, significantly influencing technology adoption and the development of future-ready skills. Technology adoption, in turn, plays a pivotal role in translating digital knowledge into practical capabilities, while future skills emerge as the strongest driver of inclusive growth, positively impacting employability, income generation, and social mobility. The statistically significant regression model confirms that demographic factors such as age and access to the internet complement these core dimensions by creating a supportive digital environment. Overall, the findings establish a coherent developmental pathway—digital literacy

→ technology adoption → future skills → inclusive growth—highlighting that isolated interventions are insufficient. Instead, an integrated approach encompassing digital education, skill-oriented training, and robust digital infrastructure is essential for empowering rural youth. Strengthening these interconnected elements will not only bridge the rural–urban digital divide but also harness the demographic dividend of rural youth, thereby contributing meaningfully to inclusive and sustainable national development in line with the goals of Viksit Bharat 2047

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