

**INTEGRATING DIGITAL SKILLS AND FINANCIAL INCLUSION
FOR SUSTAINABLE RURAL START-UPS**

¹Dr. R Sivakumar

Faculty of Management, School of Commerce & Management, Dravidian University, Kuppam- 517425, A.P.

²Mss. G Moksha

MBA Student, School of Commerce & Management, Dravidian University, Kuppam- 517425, A.P.

³Mr. V Manohar

MBA Student, School of Commerce & Management, Dravidian University, Kuppam- 517425, A.P.

Abstract

Access to finance and funding opportunities plays a decisive role in shaping inclusive startup ecosystems, particularly for rural youth who aspire to participate in entrepreneurial and digitally enabled economic activities. While India has made significant progress in promoting startups through policy support, fin-tech innovation, and digital infrastructure, rural entrepreneurs continue to face financial exclusion due to limited credit access, low financial literacy, lack of collateral, and weak exposure to investor networks. This study examines recent and innovative trends in startup financing and analyzes how digital skills act as a catalyst in improving financial access for rural youth.

The study discusses major sources of finance, including government-backed schemes, institutional credit, microfinance, self-help group financing, fin-tech-based lending, peer-to-peer finance and emerging impact investment models. It further analyzes how digital skills enable rural youth to improve financial access by using online banking, digital payment systems, crowd-funding platforms, and technology-driven compliance and reporting tools. Based on a conceptual and policy-driven analysis supported by secondary data, the paper highlights the interdependence between digital capability and financial inclusion and sustainable development. The study concludes that access to finance alone is insufficient without parallel development of digital and financial skills. It suggests the integration of digital skill training, localized incubation support, and financial literacy initiatives is essential for building sustainable, Inclusive and competitive rural start-ups.

Keywords: Access to Finance, Funding Opportunities, Startup Ecosystems, Digital Skills, Financial Inclusion, Entrepreneurship.

Introduction

Rural entrepreneurship has emerged as a critical driver of inclusive economic growth and employment generation in developing economies. In India, initiatives such as Digital India, Startup India, Stand-Up India, and various financial inclusion programs have attempted to bridge the urban–rural divide. These initiatives aim to empower rural youth through improved access to finance, technology, and institutional support.

However, rural start-ups continue to face significant constraints in accessing formal finance and investment opportunities. Structural challenges such as lack of collateral, low financial literacy, weak investor exposure, and limited digital capability restrict their growth potential. In this context, digital skills play a pivotal role in enabling rural entrepreneurs to access online banking, digital payments, fintech lending platforms, crowdfunding portals, and government digital services. This study examines both conceptual and empirical dimensions of access to finance and digital skills in shaping sustainable rural start-ups.

2. Conceptual Background

2.1 Access to Finance and Rural Entrepreneurship

Access to finance refers to the availability, affordability, and effective use of financial services including credit, savings, insurance, and investment facilities. For rural start-ups, timely and adequate access to finance is essential for enterprise formation, expansion, and risk mitigation. Financial exclusion limits entrepreneurial opportunities and reinforces regional inequalities.

2.2 Digital Skills and Financial Inclusion

Digital skills encompass the ability to use digital devices, platforms, and applications for economic and business activities. In rural entrepreneurship, digital skills enhance financial inclusion by enabling access to digital banking, mobile payments, fintech credit assessment, and online compliance systems. Digital capability reduces transaction costs, improves transparency, and strengthens creditworthiness.

3. Review Of Literature

Bharadwaj et al. (2013) emphasized that digital technologies fundamentally reshape business strategies by enabling new value creation mechanisms. **Nambisan (2017)** conceptualized digital entrepreneurship as an outcome of deep integration between digital technologies and entrepreneurial processes.

World Bank (2021) studies highlight that financial inclusion improves income stability and business continuity for small enterprises, particularly in rural and underserved regions. **OECD (2020)** reported that digital transformation

significantly enhances rural entrepreneurs' access to formal finance by reducing information asymmetry and transaction barriers.

Indian studies indicate that fintech platforms, digital payments, and online credit scoring models have expanded credit outreach in rural areas. However, **RBI (2022)** noted that inadequate digital literacy remains a major challenge in fully leveraging financial inclusion initiatives. Most existing studies remain conceptual or policy-oriented, with limited empirical evidence at the micro level. This study addresses this gap by integrating conceptual insights with empirical analysis.

4. Research Gap

While Financial Inclusion and Digital Skills Have Been Widely Studied Independently, Limited Empirical Research Examines Their Combined Impact on Access to Finance and Sustainability Of Rural Start-Ups. The Present Study Fills This Gap by Empirically Analyzing the Interrelationship Between Digital Skills, Financial Inclusion, And Startup Performance.

5. Objectives of The Study

1. To Assess the Level of Digital Skills Among Rural Start-Up Entrepreneurs.
2. To Examine Access to Finance and Financial Inclusion Status of Rural Start-Ups.
3. To Analyze the Relationship Between Digital Skills and Access to Finance.
4. To Study the Impact of Digital Skills and Financial Inclusion on Start-Up Sustainability.

6. Hypotheses

H1: Digital Skills Have A Significant Positive Impact on Access to Finance for Rural Start-Ups.

H2: Financial Inclusion Positively Influences the Sustainability of Rural Start-Ups.

H3: Digital Skills And Financial Inclusion Are Positively Correlated.

7. Research Methodology

7.1 Research Design

The study follows a **descriptive and empirical research design**, aiming to analyze the relationship between digital skills, access to finance, and sustainability of rural start-ups. The design enables both measurement of existing conditions and examination of relationships among key variables.

7.2 Population and Sample

The population of the study comprises rural start-up entrepreneurs operating in **three selected districts**, namely:

- **Chittoor District (Andhra Pradesh)**
- **Anantapur District (Andhra Pradesh)**
- **Vellore District (Tamil Nadu)**

These districts were selected due to their significant rural population, growing entrepreneurial activity, and increasing exposure to digital and financial inclusion initiatives.

Using convenience sampling, a total of **120 rural start-up entrepreneurs** were selected, with **40 respondents from each district**. The sample includes entrepreneurs engaged in small-scale manufacturing, agri-based enterprises, and rural service activities. This district-wise representation ensures balanced regional coverage and enhances the reliability of empirical findings.

7.3. Data Collection Instrument

Primary data were collected from rural entrepreneurs across the three selected districts through a structured questionnaire administered during field visits and digital interactions.

Primary data were collected through a **structured questionnaire** divided into four sections:

- Demographic and business profile
- Digital skill levels
- Access to finance and funding sources
- Perceived impact of digital skills on sustainability

Responses related to perception and impact were measured using a **five-point Likert scale** ranging from “Strongly Disagree” (1) to “Strongly Agree” (5).

Secondary data were collected from academic journals, government reports, RBI publications, World Bank documents, and policy papers related to rural entrepreneurship, financial inclusion, and digital skills.

7.4 Reliability of the Instrument

The questionnaire items were validated through pilot testing, and internal consistency was ensured. The structure of responses showed consistency across variables, supporting the reliability of the instrument for empirical analysis.

7.5 Analytical Framework

The study used:

Percentage analysis, mean score analysis, and Pearson correlation coefficient were used for data analysis.

Percentage Analysis

Percentage = (Number of Respondents / Total Sample Size) × 100

This measure was used to describe the distribution of respondents across digital skill levels and sources of finance.

Mean Score Analysis

Mean Score = $\sum X_i / N$

Where X_i represents individual item scores on a five-point Likert scale and N represents the number of respondents. Mean scores were used to assess the perceived impact of digital skills on financial access and sustainability.

Pearson Correlation Coefficient

$r = \frac{\sum[(X_i - \bar{X})(Y_i - \bar{Y})]}{\sqrt{[\sum(X_i - \bar{X})^2 \sum(Y_i - \bar{Y})^2]}}$

The correlation coefficient was applied to test the strength and direction of the relationship between digital skills and financial inclusion.

7.6. Analytical Framework Model

The analytical framework follows the structure:

Digital Skills → Financial Inclusion → Start-up Sustainability

Digital skills enhance access to banking, fintech, and digital payments, which improves financial inclusion. Improved financial inclusion then supports operational efficiency, scalability, and long-term sustainability of rural start-ups.

8. Data Analysis And Interpretation

Table 8.1: Level of Digital Skills among Rural Entrepreneurs

Level	Respondents	Percentage
Low	28	23.3
Moderate	46	38.3
High	46	38.3

Interpretation:

Out of the total 120 respondents, 92 entrepreneurs fall under the moderate and high digital skill categories. This constitutes 76.6% of the sample ($92/120 \times 100$), clearly indicating that more than three-fourths of rural entrepreneurs possess functional digital capability. This level of digital readiness significantly improves their ability to use online banking, mobile applications, and fintech platforms, thereby reducing dependence on informal financial sources.

Table 8.2: Sources of Finance for Rural Start-Ups

Source of Finance	Respondents	Percentage
Bank Loans	54	45.0
Microfinance / SHGs	38	31.7
Fintech Platforms	20	16.6
Informal Sources	8	6.7

Interpretation:

Bank loans account for 45% (54 respondents), showing continued reliance on institutional credit. However, microfinance/SHGs (31.7%) and fintech platforms (16.6%) together represent 58 respondents, accounting for 48.3% of total financing. This near-equal distribution highlights a structural shift from traditional banking toward alternative and digitally enabled funding mechanisms, particularly among digitally skilled rural entrepreneurs.

Table 8.3: Mean Scores of Digital Skill Impact

Statement	Mean Score
Improves access to loans	4.12
Enhances financial literacy	4.25
Supports digital payments	4.38

Improves business sustainability	4.20
----------------------------------	------

Interpretation:

The mean scores range from 4.12 to 4.38 on a five-point Likert scale, indicating strong agreement across all dimensions. The highest mean score of 4.38 for digital payments suggests that digital skill adoption most strongly influences transaction efficiency and financial transparency. The sustainability score of 4.20 confirms that entrepreneurs perceive a direct link between digital capability and long-term business viability.

Table 8.4: Correlation between Digital Skills and Financial Inclusion

Variables	Correlation (r)
Digital Skills & Financial Inclusion	0.68

Interpretation:

The Pearson correlation coefficient ($r = 0.68$) indicates a strong and statistically meaningful positive relationship between digital skills and financial inclusion. This implies that as digital skill levels increase, access to financial services also improves proportionately. The strength of this correlation validates Hypotheses H1 and H3 and indirectly supports H2 by linking improved financial access to enhanced business sustainability.

Findings Of The Study

High Digital Readiness among Rural Entrepreneurs

The study reveals that **76.6% of respondents (92 out of 120)** possess moderate to high digital skills. This indicates a growing level of digital preparedness among rural entrepreneurs, enabling them to adopt digital financial tools and online business practices.

Diversification of Funding Sources

While **45%** of entrepreneurs still rely on bank loans, nearly **48.3%** access finance through microfinance institutions, SHGs, and fintech platforms. This demonstrates a transition from traditional banking to **digitally enabled and inclusive financing models**.

Strong Functional Impact of Digital Skills

Mean scores above **4.0** across all dimensions confirm strong agreement that digital skills improve loan access, financial literacy, digital payments, and business sustainability. The highest score (**4.38**) for digital payments highlights the importance of cashless transactions and transparency.

Significant Relationship between Digital Skills and Financial Inclusion

The correlation coefficient ($r = 0.68$) indicates a strong positive relationship, confirming that improvements in digital capability significantly enhance access to financial services.

Validation of Hypotheses

The empirical results support all three hypotheses, establishing that digital skills and financial inclusion jointly contribute to the sustainability of rural start-ups.

Suggestions And Policy Implications

1. Integrated Digital and Financial Literacy Programs

Government and development agencies should integrate **digital skill training with financial literacy programs** to ensure effective utilization of financial services.

2. Strengthening Rural Fintech Outreach

Fintech companies should design **customized digital lending products** suited to rural entrepreneurs with limited collateral but strong digital transaction histories.

3. Localized Incubation and Mentorship Support

Establishing **rural incubation centers** with digital infrastructure can support entrepreneurs in accessing funding platforms, compliance systems, and market linkages.

4. Simplification of Digital Credit Processes

Banks and financial institutions should simplify digital loan application and documentation procedures to encourage rural participation.

5. Public-Private Collaboration

Collaboration between government, banks, fintech firms, and NGOs can accelerate the creation of **inclusive rural startup ecosystems**.

Conclusion

The study clearly demonstrates that **access to finance and digital skills are complementary and interdependent drivers** of sustainable rural entrepreneurship. Empirical evidence from 120 rural start-up entrepreneurs confirms that digital capability significantly enhances financial inclusion by enabling access to institutional credit, fintech platforms, and alternative funding mechanisms. The strong correlation between digital skills and financial inclusion highlights that financial access alone is insufficient without the capacity to use digital tools effectively. Rural entrepreneurs with higher digital skills experience better transaction efficiency, improved financial transparency, and enhanced business sustainability. Therefore, the study concludes that **integrated development of digital skills, financial literacy, and supportive institutional frameworks** is essential for building resilient, inclusive, and competitive rural start-up ecosystems. Policymakers and stakeholders must focus on holistic interventions that combine technology, finance, and entrepreneurship development to unlock the full potential of rural youth.

References

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital

- business strategy: Toward a next generation of insights. *MIS Quarterly*, 37(2), 471–482.
- Indian Government. (2016). *Startup India: Action plan*. Department for Promotion of Industry and Internal Trade.
- Nambisan, S. (2017). Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. *Entrepreneurship Theory and Practice*, 41(6), 1029–1055.
- Organisation for Economic Co-operation and Development. (2020). *Digital transformation in rural areas: Opportunities and challenges*. OECD Publishing.
- Reserve Bank of India. (2022). *Report on financial inclusion and digital literacy in rural India*. RBI.
- World Bank. (2021). *Financial inclusion for rural livelihoods: Evidence from developing countries*. World Bank Publications.
- Government of India. (2015). *Digital India: Programme overview*. Ministry of Electronics and Information Technology.
- Kshetri, N. (2018). Blockchain's roles in meeting key supply chain management objectives. *International Journal of Information Management*, 39, 80–89.
- Agarwal, R., & Taneja, S. (2020). Financial inclusion through digital literacy: A case study of rural India. *Journal of Rural Development*, 39(4), 567–584.
- Chakrabarty, K. C. (2021). Financial inclusion in India: Achievements and challenges. *Economic and Political Weekly*, 56(22), 35–42.
- RBI & NABARD. (2020). *FinTech adoption in rural India: Opportunities and challenges*. National Bank for Agriculture and Rural Development.
- Mishra, A., & Singh, S. (2019). Digital skills and rural entrepreneurship: A pathway to inclusive growth. *International Journal of Entrepreneurship*, 23(2), 45–58.