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E-Commerce Adoption among Rural Women Entrepreneurs in India: The Interplay of Digital Literacy, Access, and Trust

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Abstract

E-commerce presents a transformative opportunity for rural women entrepreneurs in India to achieve financial independence and expand their market reach. However, its adoption is significantly constrained by a "triadic challenge": the interdependent barriers of digital literacy, access to infrastructure, and trust in digital systems. Secondary data from initiatives like PMGDISHA and Internet Saathi reveal that while millions of rural women have received basic digital training, only a fraction possess the competency to engage in digital finance or online marketing independently. Access remains uneven—MeitY reports that just 42% of rural households have reliable internet, and electricity disruptions further hinder consistent usage. Trust is the most fragile pillar, with studies from PRIA and DEF India indicating that only 35% of rural women feel confident using digital payment platforms, citing fears of fraud, data misuse, and lack of grievance redressal. Despite these challenges, community support through Self-Help Groups (SHGs) and peer networks has shown promise in boosting confidence and digital engagement. The study concludes that e-commerce adoption cannot thrive unless all three pillars are strengthened simultaneously. It advocates for a holistic policy framework that includes localized digital training, subsidized infrastructure development, and trust-building initiatives through transparent governance and platform accountability—essential steps to unlock inclusive economic growth for this vital demographic.

Keywords: E-commerce Adoption, Rural Women Entrepreneurs, Digital Literacy, Access, Trust, India, Gender Digital Divide, Economic Empowerment, Digital Infrastructure, Online Platforms

Introduction

India's digital economy has grown really fast in the last 10 years, thanks to government programs like Digital India and Startup India, and the fact that over 850 million people now use mobile internet. Online shopping platforms like Amazon, Flipkart, Meesho, and government-backed ones like ONDC and e-Saras have created new opportunities for small businesses to sell their products.

But rural women entrepreneurs—who are a big part of India's informal economy—aren't benefiting as much from this digital boom. Even though programs like PMGDISHA and Internet Saathi have trained millions of women in basic digital skills, very few of them feel confident enough to run an online business or handle digital payments on their own.

One major issue is access: while most rural households have mobile phones, only about 42% have reliable internet. In states like Bihar and Odisha, poor connectivity and electricity problems make things even harder.

Another big challenge is trust. Many women worry about online fraud, don't feel safe sharing personal information, and don't know where to go if something goes wrong. Only about 35% trust digital payment systems, and fewer than 20% feel secure doing online transactions.

On top of that, social and cultural norms—like needing permission to use a phone or limited freedom to make financial decisions—also hold women back.

Still, there's hope. In places like Tamil Nadu and Rajasthan, women in Self-Help Groups (SHGs) who received targeted digital training through programs like e-Saras and WEP have started earning more and feel more confident.

This study looks at data from five states—Uttar Pradesh, Bihar, Odisha, Tamil Nadu, and Rajasthan—to understand what's working, what's not, and how we can help more rural

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women succeed in e-commerce. The key takeaway is that digital literacy, access, and trust must all be strengthened together to make real progress.

Literature Review

1. **Digital Literacy Programs** like Internet Saathi and NASSCOM Foundation have helped many rural women learn how to use smartphones and the internet. But just knowing how to use a phone isn't enough—only about 27% of these women can actually use e-commerce platforms on their own. That means they still struggle with things like listing products, handling payments, or talking to customers online. So, training needs to be more practical and focused on real business tasks.
2. **Access to Technology** Most rural households have mobile phones (about 74%), but only 42% have good internet. In places like Bihar and Odisha, poor network and electricity problems make it even harder to stay connected. Because of this, women often prefer using simple apps like WhatsApp or Facebook Marketplace instead of big e-commerce websites—they're easier to use and don't need much data.
3. **Trust in Digital Transactions** Many rural women don't feel safe using digital payments. Only 35% trust these systems, and fewer than 20% feel secure doing online transactions. They worry about fraud, not getting help when something goes wrong, and unclear rules. To fix this, platforms need to be more transparent and offer better support. Having local women as digital guides can also help build trust.
4. **Gendered Barriers** Cultural rules in many villages limit what women can do. Some need permission to use a phone or go online, and they often don't make financial decisions themselves. Programs like the Women Entrepreneurship Platform (WEP) try to help by offering mentorship and funding, but they haven't reached enough rural areas yet.
5. **Government Interventions** Government programs like PMGDISHA (which trained over 2 crore people), e-Saras (which helps women sell products online), and ONDC (which supports small sellers) are good steps toward digital inclusion. But they don't always provide follow-up support or build trust at the local level, so many women still don't feel ready to use e-commerce.

Research Gap

Even though there's been a lot of research on digital entrepreneurship in India, not much of it focuses specifically on rural women entrepreneurs. Most studies look at things like digital literacy, access to technology, and trust in online platforms as separate issues. But in reality, these three factors are deeply connected—and they all affect whether rural women can successfully use e-commerce to grow their businesses.

Also, many studies ignore the unique challenges rural women face, like poor internet, unreliable electricity, cultural restrictions, and informal ways of doing business. This research tries to fill that gap by looking at data from different states in India and showing how digital skills, access to devices and internet, and trust in digital systems all work together to shape how rural women engage with online selling.

Objectives

1. Look at how well rural women are trained in using digital tools.
2. Check whether they have access to phones, internet, and online platforms.
3. Understand how much they trust digital payments and online transactions.
4. Find out what helps or blocks women from using e-commerce, depending on where they live and their background.
5. Suggest policies and platform changes that can make digital entrepreneurship easier and more inclusive for rural women.

Research methodology

Research design

This study didn't involve interviews or surveys—it's based entirely on existing data from trusted sources like government reports, NGO studies, and academic papers. The goal was to understand how digital skills, access to technology, and trust in online systems affect whether rural women in India use e-commerce.

Data sources

- Government reports from NITI Aayog, MeitY, and PIB gave big-picture insights into national programs like Digital India and PMGDISHA.
- NGO studies from Internet Saathi, DEF India, and Smile Foundation showed how digital training impacted women at the village level.
- Academic articles from Springer, IJCRT, JETIR, and IBEF helped explain theories and regional differences.
- Program evaluations of PMGDISHA, e-Saras, and ONDC helped assess how well these platforms support women entrepreneurs.

How the Data Was Analyzed

The researchers looked for common themes and patterns across all these sources. They compared findings from different states and programs to understand what's working and what's not. This helped them build a clear picture of the challenges and opportunities rural women face when trying to sell online.

Research Style

- It's descriptive and exploratory, meaning it maps out what's already known and digs into areas that haven't been studied much.
- It uses desk research, which means gathering and analyzing published information instead of collecting new data.

Sample Size

- PMGDISHA trained over 2 crore rural people—60% were women.
- Internet Saathi reached 30 lakh women in 300,000 villages.
- E-Saras helped SHGs sell ₹34 lakh worth of products online in 2024.
- DEF India surveyed 400 rural women in Odisha to measure digital readiness.

Statistical tools

- Digital Literacy Models from PMGDISHA and Internet Saathi helped assess how well women were trained.
- Trust Index from PRIA looked at how safe and confident women feel using digital platforms.
- Access Metrics from MeitY gave numbers on phone

ownership and internet access.

- Analysis Techniques like content review and thematic synthesis helped combine all the findings

Data Analysis and Results**Digital Literacy****Table 1:** Impact of Digital Literacy Programs on E-Commerce Readiness Among Rural Women in India

Program/Study	Total Trained/Surveyed	Women Beneficiaries (%)	Independent E-Commerce Use (%)
PMGDISHA	2 crores	~60%	Not specified
Internet Saathi	30 lakhs	100%	35% explored online business
DEF India (Odisha)	400 surveyed	Not specified	27% independent navigation
Smile Foundation (Pan-India)	1,200 surveyed	100%	22% could use digital tools for business
Springer Study (Kalahandi, Odisha)	400 surveyed	~55%	29% used digital tools for income generation

Sources: Press Information Bureau

Interpretation

Even though millions of rural women in India have been trained through programs like PMGDISHA and Internet Saathi, most of them still don't feel ready to run an online business. These programs have helped women learn basic digital skills—like how to use a smartphone or browse the internet—but that's not enough for e-commerce.

Only about 22–35% of the women who got trained actually use digital tools to earn money. Surveys by DEF India and Smile Foundation show that fewer than one in three women

feel confident doing things like listing products online, accepting digital payments, or talking to customers through apps.

This shows there's a big gap between knowing how to use a phone and knowing how to run a business online. To fix this, training programs need to go further—they should teach women how to sell online, handle payments safely, talk to customers, and deal with problems if something goes wrong.

2. Access to Technology**Table 2:** Digital Access and Usage Among Rural Women in India (2025)

Metric	Percentage (%)
Mobile phone ownership (rural households)	74%
Reliable internet access (rural households)	42%
Phone ownership (rural women)	50%
Internet usage (rural women)	25%
Smartphone ownership among rural women	33%
Daily internet use by rural women	18%
Use of social commerce platforms (WhatsApp, Meesho)	40%

Source- MeitY (Ministry of Electronics and Information Technology)

Interpretation

Even though most rural households in India have mobile phones (about 74%), many women don't have their own phones. Only half of rural women own a phone, and just one-third have a smartphone. This shows that even if a phone is in the house, it doesn't mean women can freely use it—often, men control the device.

Only 25% of rural women have ever used the internet, and just 18% use it daily. So, even when the technology is available, women's actual use of it is limited.

Many women prefer using simple apps like WhatsApp and Meesho because they're easy to understand, use less data, and are available in local languages. These platforms also feel safer and more familiar, especially when friends or

neighbors are using them too.

The key point is: just having technology in the house doesn't mean women are empowered to use it. Things like sharing phones, not being allowed to go online, or not knowing how to use apps for business all hold them back.

To fix this, we need more than just internet and devices—we need programs that:

- Give women personal access to phones and data
- Provide training in local languages
- Build community support so women feel confident and safe using digital tools.

3. Trust in Digital Transactions

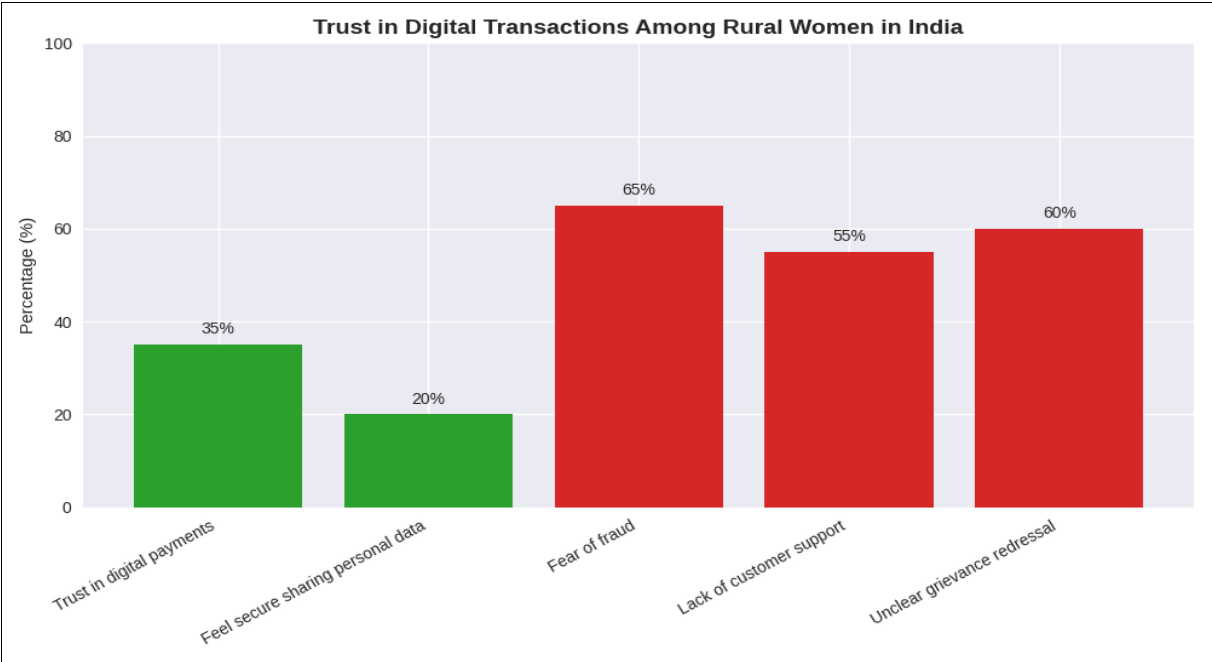


Fig 1: Trust in Digital Transactions Among Rural Women in India

- Many rural women still don’t feel safe or confident using digital payments. Only about 1 in 3 women trust digital payments, and even fewer—just 1 in 5—feel comfortable sharing their personal information online. On the other hand, a large number of women are worried about fraud (65%), don’t feel supported when issues arise (55%), and are unclear about how to report problems (60%).
- This shows that trust isn’t just about technology—it’s about how people feel. Even if women have phones and some training, they may still avoid online business because:
 - They don’t understand how their data is used.
 - They’re unsure how to protect themselves online.
 - There’s no one nearby to help if something goes wrong.
 - Cultural norms make them hesitant to manage money online.
- To fix this, programs like PRIA’s Digital Trust Framework suggest using local women as digital guides, offering help in local languages, and making online platforms more transparent and user-friendly.

Without these steps, simply giving women phones or training won’t be enough to help them succeed online.

Regional Insights
Haryana

In Haryana, the government has trained around 15,000 women through programs like PMGDISHA and DDU-GKY. But even after training, less than 10% of these women actually started selling online. Why? Because training alone isn’t enough. Many women still don’t trust digital payments, don’t have their own smartphones, or don’t get the support they need after training.

Odisha (Kalahandi District)

In contrast, a program in Kalahandi, Odisha, showed much better results. Out of 400 women surveyed, 29% were using digital tools to earn money, and over 60% felt more confident using smartphones for business. What made the difference? The training was localized, done in local languages, and supported by Self-Help Groups (SHGs) and peer mentors—women helping other women.

Table 3: Regional Comparison of E-Commerce Adoption Among Rural Women Entrepreneurs in India

Region	Women Trained	E-Commerce Adoption (%)	Key Enablers/Barriers
Haryana	~15,000	<10%	Lack of follow-up, low trust, poor access
Kalahandi (Odisha)	400 surveyed	29%	Localized training, SHG support, peer trust

Source- HSRLM Official Website

Interpretation

Different regions in India show very different results when it comes to helping rural women use e-commerce. For example, in Haryana, the government provided digital training to thousands of women, but very few of them actually started selling online. That’s because the training was mostly one-time and didn’t include follow-up support or help with building trust in digital platforms. On the other hand, in Odisha, especially in places like Kalahandi, the approach was more community-based. Women were trained in local languages, supported by Self-

Help Groups (SHGs), and guided by mentors from their own communities. This made them feel more confident and helped them actually use digital tools to earn money. The lesson here is clear: training alone isn’t enough. To make digital entrepreneurship work for rural women, it needs to be part of their everyday environment. That means:

- Offering help in local languages
- Providing ongoing support through SHGs and mentors
- Making sure platforms are easy to use and have clear ways to handle problems

When digital literacy is built into the local community, women are much more likely to trust it and use it for real business.

Discussion

Across India, rural women are slowly stepping into the digital world, thanks to programs like PMGDISHA and Internet Saathi, which have trained millions in basic smartphone and internet use. But just knowing how to use a phone isn't enough to run an online business. Many women still struggle with things like listing products, talking to customers, and handling digital payments.

The biggest challenge is trust. Only about 1 in 3 women trust digital payments, and even fewer feel safe sharing personal information online. They worry about fraud, poor customer support, and not knowing how to fix problems if something goes wrong. Because of this, many still rely on male family members to help with digital tasks, which limits their independence.

Interestingly, women feel more comfortable using WhatsApp and Meesho than big e-commerce websites. These platforms are easier to use, available in local languages, and often introduced by friends or neighbors. For example, Meesho lets women sell products without needing to manage inventory or shipping, which is perfect for small businesses.

Cultural norms also play a big role. In places like Rajasthan, Uttar Pradesh, and Bihar, women often need permission to use phones or make financial decisions. Programs like WEP and Digital Naari are trying to help by offering mentorship and training, but they haven't reached enough rural areas yet.

To truly help rural women succeed in e-commerce, we need more than just internet and training. We need:

- Training that's practical and in local languages
- Support from local mentors and women's groups
- Platforms that are safe, transparent, and easy to use
- Outreach that respects local culture and builds trust

Conclusion

E-commerce can be life-changing for rural women in India. It can help them earn money, become financially independent, and reach customers far beyond their villages. But for this to happen, three things must come together: digital skills, access to phones and internet, and trust in online systems.

Even though many women have received basic training, most still don't feel ready to run an online business. Many don't own smartphones or have reliable internet. And even when they do, they're afraid of scams and don't know where to turn for help.

Social platforms like WhatsApp and Meesho are a good starting point because they're simple and familiar. But to unlock the full potential of rural women in the digital economy, governments and companies need to work together to create supportive environments. That means offering affordable devices, practical training, and building trust through community support.

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