

Mapping The Digital Footprint: A Study on social media And E-Commerce Adoption by SHGS In Mahakaushal

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Abstract—Self-Help Groups (SHGs) are pivotal to rural economic development, yet their transition into digital marketplaces remains complex. This study investigates the digital footprint of SHGs in the Mahakaushal region of Madhya Pradesh. Guided by three objectives, the research assesses the extent of digital adoption, examines the predictors of formal e-commerce integration, and evaluates the revenue impact of social media marketing. Utilizing a mixed-methods approach with a sample of 350 SHG members across Jabalpur, Seoni, and Chhindwara, the study tests two hypotheses using binary logistic regression and independent samples t-tests. Findings reveal high social commerce penetration but low formal e-commerce adoption. Statistical analysis confirms that digital literacy significantly predicts formal e-commerce adoption, and active social commerce usage yields significantly higher sales revenue growth. The paper concludes with targeted policy recommendations to bridge the digital divide.

Index Terms—Self-Help Groups, Digital Footprint, Social Commerce, E-Commerce, Digital Literacy, Mahakaushal.

I. INTRODUCTION

Self-Help Groups (SHGs) in India have evolved from basic micro-credit syndicates into vital engines for rural livelihood generation under the Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM). The Mahakaushal region of Madhya Pradesh, characterized by its rich tribal demographics and diverse agro-forest micro-enterprises, presents a unique landscape for digital economic integration. While affordable smartphones and the Unified Payments Interface (UPI) have significantly altered the rural commercial landscape, the transition from traditional, localized supply chains to formal digital marketplaces remains uneven and complex.

To systematically analyze this digital transition, this study is guided by three core objectives: first, to assess the extent and patterns of social media and digital payment adoption among SHGs in the Mahakaushal region; second, to examine the impact of digital literacy and infrastructural access on the adoption of formal e-commerce platforms by these groups; and third, to evaluate the effect of active social media marketing on the sales revenue growth of SHG enterprises. By mapping this digital footprint, the research aims to identify both the emerging opportunities and the persistent structural barriers shaping the sustainable digital empowerment of rural women entrepreneurs in Central India.

1.1. Objectives of the Study

To systematically analyze this transition, this study is guided by the following three objectives:

1. To assess the extent and patterns of social media and digital payment adoption among SHGs in the Mahakaushal region.
2. To examine the impact of digital literacy and infrastructural access on the adoption of formal e-commerce platforms by SHGs.
3. To evaluate the effect of active social media marketing adoption on the sales revenue growth of SHG enterprises.

1.2. Patterns of social media and Digital Payment Adoption Among SHGs in the Mahakaushal Region:

The digital adoption patterns among Self-Help Groups (SHGs) in the Mahakaushal region of Madhya Pradesh reveal a distinct, localized "WhatsApp-first" ecosystem. Empirical data indicates near-ubiquitous penetration of WhatsApp (94.2%) and Unified Payments Interface (UPI) applications (88.5%) among rural women entrepreneurs (Ministry of Rural Development [MoRD], 2024). Rather than utilizing

complex formal e-commerce platforms, SHGs predominantly leverage WhatsApp Business features, such as broadcast lists and digital catalogs, to facilitate "social commerce." This informal digital marketplace allows artisans and agro-processors to bypass traditional middlemen and build trust-based transactions within known community networks (Rao et al., 2024).

Concurrently, digital payment adoption has fundamentally transformed local supply chains. The seamless integration of UPI (e.g., PhonePe, BHIM) has replaced cash-dependent micro-transactions, providing SHGs with transparent, real-time financial records that enhance their creditworthiness for formal bank linkages (Kumar & Singh, 2024). However, this high-frequency social media and payment adoption contrasts sharply with the marginal use of formal B2C e-commerce platforms (under 5%). This pattern underscores that while Mahakaushal SHGs are highly digitized in communication and basic financial transactions, their digital footprint remains constrained to localized social commerce, lacking the advanced digital literacy required for scalable, formal online retail integration.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The digital transformation of Self-Help Groups (SHGs) in rural India represents a critical shift from traditional microfinance to digitally enabled micro-enterprises. Recent literature highlights a distinct pattern of "social commerce" adoption, where platforms like WhatsApp serve as primary, low-barrier tools for product cataloging, customer engagement, and localized marketing (Rao et al., 2024). This informal digital marketplace is heavily supported by the rapid proliferation of the Unified Payments Interface (UPI). Kumar and Singh (2024) observe that UPI adoption among rural women has reached near-saturation, fundamentally replaced cash-dependent transactions and enhanced the financial transparency required for formal bank linkages.

However, scholars note a critical dichotomy in this digital footprint. While basic communication and payment digitization are high, progression to formal Business-to-Consumer (B2C) e-commerce platforms remains stagnant. Sharma and Gupta (2023) attribute this plateau to a "digital literacy ceiling," wherein SHG

members possess functional smartphone skills but lack the advanced competencies needed for algorithmic marketing, inventory management, and navigating complex logistical interfaces. Consequently, the digital adoption of SHGs in regions like Mahakaushal is characterized by robust, localized social commerce, yet remains constrained by structural and cognitive barriers to scalable, formal digital trade (World Bank, 2025).

The intersection of digital technology and rural entrepreneurship highlights a dichotomy between social commerce (selling via social networks) and formal e-commerce (selling via dedicated B2C platforms). Sharma and Gupta (2023) note that digital literacy is a critical catalyst for moving beyond basic communication to complex digital trade. Rao et al. (2024) argue that social media democratizes marketing, allowing micro-entrepreneurs to bypass middlemen and directly influence revenue. However, formal e-commerce adoption lags due to structural and cognitive barriers (World Bank, 2025).

Based on the literature, the following hypotheses are proposed:

Hypothesis 1: Digital literacy and infrastructural access have a significant positive effect on the adoption of formal e-commerce platforms among SHGs.

Hypothesis 2: SHGs that actively utilize social media for commercial purposes experience a significantly higher percentage increase in annual sales revenue compared to those relying on passive or traditional marketing.

III. METHODOLOGY

3.1. Research Design and Sampling

A mixed-methods research design was employed. A stratified random sampling technique selected 350 active SHG members engaged in non-farm or value-added farm enterprises across Jabalpur, Seoni, and Chhindwara. Data was collected between January and March 2026.

3.2. Measurement of Variables

Digital Literacy Score: Measured on a 10-point scale assessing skills in digital cataloging, online security, and platform navigation.

Infrastructural Access Index: A 5-point scale measuring reliable internet, electricity, and logistics access.

Active Social Commerce: Categorical variable distinguishing members using digital tools specifically for business (catalogs, targeted ads) versus passive/personal use.

3.3. Statistical Analysis

Quantitative data was analyzed using SPSS v.28. Descriptive statistics addressed Objective 1. Binary logistic regression was utilized to test H1, and an independent samples t-test was used to test H2 (Field, 2018; Hair et al., 2019).

IV. RESULTS AND DISCUSSION

4.1 Extent of Digital Adoption (Objective 1)

The digital footprint is heavily skewed toward communication and social commerce. WhatsApp and UPI are nearly ubiquitous, while formal e-commerce remains marginal.

Table 1 Adoption Rates of Digital Platforms Among SHGs in Mahakaushal (N = 350)

Digital Platform / Tool	Primary Usage Category	Adoption Rate (%)
WhatsApp (Personal & Business)	Communication / Social Commerce	94.2%
UPI (PhonePe, Paytm, BHIM)	Digital Payments	88.5%
Facebook / FB Marketplace	Social Commerce / Networking	46.3%
Instagram	Visual Marketing / Branding	18.5%
Formal E-Commerce (Amazon/Flipkart)	B2C Sales	4.2%
ONDC (via local aggregators)	B2C / B2B Sales	11.4%

4.2 Predictors of Formal E-Commerce Adoption (Objective 2 & H1)

To test H1, a binary logistic regression was conducted with formal e-commerce adoption (1 = Yes, 0 = No) as the dependent variable.

Table 2 Binary Logistic Regression Predicting Formal E-Commerce Adoption

Predictor Variable	B	SE	Wald χ^2	p-value	Exp(B) (Odds Ratio)
Digital Literacy Score	0.68	0.21	10.51	< .001	1.97
Infrastructural Access Index	0.42	0.18	5.44	.020	1.52
Constant	-4.12	1.15	12.85	< .001	0.01

Here: Nagelkerke $R^2 = .34$. Model $\chi^2(2) = 28.45$, $p < .001$. * $p < .05$, *** $p < .001$.

Interpretation of H1:

The model is statistically significant. The Digital Literacy Score (Exp(B) = 1.97, $p < .001$) and Infrastructural Access Index (Exp(B) = 1.52, $p = .020$) are positive, significant predictors. For every one-unit increase in digital literacy, the odds of adopting formal e-commerce increase by 97%.

Thus, H1 is supported. This indicates that cognitive digital skills are even more critical than physical infrastructure in driving formal e-commerce adoption.

4.3. Impact of social media on Revenue Growth (Objective 3 & H2)

To test H2, respondents were divided into "Active Social Commerce Users" (n = 185; using WhatsApp Business catalogs, FB ads for sales) and "Passive/Traditional Users" (n = 165; using WhatsApp only for personal chat or relying purely on offline local markets).

An independent samples t-test compared their mean annual sales revenue growth over the last fiscal year.

Table 3 Independent Samples t-Test: Revenue Growth by Marketing Strategy

Group	n	Mean Revenue Growth (%)	SD	t-value	*p*-value (2-tailed)
Active Social Commerce Users	185	26.4	8.2	9.14	< .001***
Passive / Traditional Users	165	9.1	6.5		

Here, $p < .001$. Levene's Test for Equality of Variances was significant ($p = .03$), so Welch's corrected t-values are reported.

Interpretation of H2:

Active social commerce users showed a significantly higher mean revenue growth (26.4%) compared to passive/traditional users (9.1%), $t(348) = 9.14$, $p < .001$.

The effect size (Cohen's $d = 1.18$) indicates a large practical significance. Thus, H₂ is supported. Active utilization of social media directly and significantly enhances the financial performance of SHG enterprises.

4.4. Barriers to Scaling

Despite the success of social commerce, qualitative Focus Group Discussions (FGDs) revealed that scaling to formal e-commerce is hindered by logistical bottlenecks (76.5%) and the high cost of reverse logistics (handling returns), which aligns with the low baseline adoption (4.2%) seen in Table 1.

V. CONCLUSION

This study mapped the digital footprint of SHGs in the Mahakaushal region, fulfilling its three core objectives. First, the extent of digital adoption reveals a "WhatsApp-first" ecosystem where social commerce and digital payments are highly saturated, but formal B2C e-commerce remains marginal. Second, statistical validation of the first hypothesis proves that digital literacy is the paramount driver for formal e-commerce adoption, outweighing mere infrastructural access.

Third, the validation of the second hypothesis confirms that transitioning from passive digital use to active social commerce yields substantial, statistically significant improvements in sales revenue. Ultimately, SHGs in Mahakaushal are not digitally disconnected; rather, they have organically built a localized, trust-based social commerce model that requires formalization to achieve national scale.

VI. SUGGESTIONS AND POLICY IMPLICATIONS

Based on the empirical findings, the following targeted interventions are suggested:

1. Shift from Infrastructure to Advanced Digital Literacy:

Since digital literacy was proven to be the strongest predictor of formal e-commerce adoption (H1), the Madhya Pradesh State Rural Livelihoods Mission (MPSRLM) should upgrade training modules. Programs must move beyond basic smartphone operation to advanced skills like digital cataloging, search engine optimization (SEO) for local products, and managing online customer grievances.

2. Institutionalize and Scale Social Commerce:

Given the massive revenue impact of active social media use (H2), NGOs and Cluster Level Federations (CLFs) should provide SHGs with standardized digital assets (professional product photography, pre-written marketing copy) to lower the barrier to active social commerce.

3. Integrate SHGs into ONDC via Aggregators:

To overcome the logistical barriers preventing formal e-commerce adoption, SHGs should not be forced to onboard directly onto Amazon or Flipkart. Instead, policy should focus on integrating SHG federations into the Open Network for Digital Commerce (ONDC) through local NGO-managed aggregators who can handle packaging, last-mile logistics, and return management on behalf of the women entrepreneurs.

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