Micro to Macro: How SHGs Trigger Rural Development in Kandhamal, Odisha

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Abstract: *This research employs an integrative framework, combining structural, measurement, and analytical perspectives to explore the intricate relationships among Micropreneurial Impact (MI), Rural Development (RD), and Self-Help Groups (SHGs) Support. Through the use of a 5-point Likert scale, the study applies robust structural equation modelling to reveal significant outer loadings, demonstrating the unique effects of MI, RD, and SHGs Support on their respective constructs. Although MI and RD items exhibit moderate to high Variance Inflation Factors (VIF), the inner model collinearity statistics confirm acceptable model stability. Comprehensive psychometric evaluations ensure the constructs' reliability and validity. Analytically, effect size measurements, particularly f-square values, underscore the practical importance of the relationships, emphasizing the significant influence of MI and SHGs Support on RD. The study provides actionable insights for promoting sustainable rural development in Kandhamal district by integrating these dimensions,*

Keywords: *Micropreneurship, SHGs, Rural Development, Entrepreneurship and Structural Equation Modelling.*

1. Introduction

Micropreneurship, driven by technological advancements, represents a shift from traditional business models, with the internet and digital tools lowering entry barriers for small businesses, leading to its global rise (Imjai et al., 2023). This entrepreneurial approach, typically led by individuals or small teams, focuses on small-scale ventures targeting niche markets. In Kandhamal District, Odisha, where rural challenges and agricultural dependency are prevalent, micropreneurship offers an alternative path for entrepreneurship development. The district's numerous Self-Help Groups (SHGs) consist of micropreneurs in small-scale manufacturing and services, contributing to sustainable, community-driven rural development (GOI, 2019).

1.1. Research Rationale

In the context of the socio-economic dynamics and the widespread presence of Self-Help Groups (SHGs) in Kandhamal District, this research aims to examine the relationship between micropreneurship and rural development. The study focuses on how micropreneurs, who are often SHG members, contribute to local economic growth and sustainable livelihoods in the region. Additionally, it seeks to uncover the ways in which SHGs support and foster the development of micropreneurial ventures (Ukanwa, 2021). By delving into this specific context, the research has the potential to offer valuable insights into the role of micropreneurship in rural development within the unique socio-economic and cultural landscape of Kandhamal District in Odisha.

2. Review of Literature

Micropreneurship refers to entrepreneurship that focuses on very small-scale business ventures, typically managed by an individual or a small team. A micropreneur is someone who starts and runs a small enterprise with minimal investment, often employing fewer than five people or possibly none at all. This individual takes full responsibility for marketing, budgeting, and production. Sometimes referred to as "nano" entrepreneurs, micropreneurs, such as those in Kandhamal District, are vital to rural development, providing livelihoods and operating intentionally at a small scale with defined goals and limited scope (Chaudhry & Paquibut, 2021).

Micropreneurs, known for their innovative approach, introduce new solutions, products, or services with a focus on sustainability and long-term financial viability (Randerson et al., 2020). The reach of micropreneurship covers various industries, including online businesses, creative arts, consulting, and e-commerce. The role of Self-Help Groups (SHGs) in rural development is especially significant in empowering women and addressing gender inequalities (Dokku et al., 2023; NABARD, 2017). In rural India, micropreneurship is aligned with local resources, addressing community issues, fostering innovation, and contributing to economic growth and poverty reduction (Sharma, 2019; Ukanwa, 2021).Micropreneurship, characterized by small-scale entrepreneurial activities that emphasize independence and niche markets, is particularly important for rural development. Micropreneurs, as noted by O'Donnel (2023) and Barnes (2016), play a crucial role in job creation and income generation in rural areas, meeting specific local needs. Welter (2011) highlights their potential to stimulate local economies, especially in regions with limited resources.

SHGs are instrumental in supporting micropreneurs by providing essential assistance, training, and networking opportunities, which enhance the likelihood of success for aspiring entrepreneurs (Morduch, 1999; Pradhan, 2022).However, micropreneurs face several challenges, including limited access to resources and markets, regulatory obstacles, and competition (Weerawardena et al., 2020; Davidsson, 2015; Oosthuizen, 2020). Addressing these challenges is crucial for the growth and sustainability of micropreneurial ventures in rural areas.

2.1. **Statement of the Problem**

In Kandhamal District, Odisha, a predominantly rural region facing significant socio-economic challenges, Self Help Groups (SHGs) have been established to promote socio-economic development, particularly among women in marginalized communities (NABARD, 2017). Alongside this, micropreneurs running small-scale businesses have emerged as potential catalysts for local economic development. However, the relationship between micropreneurship, SHGs, and rural development has not been thoroughly explored. This study aims to quantitatively examine the role of micropreneurs and SHGs in fostering rural development in Kandhamal District, utilizing a 5-point Likert scale to address the following research questions.

RQ1: What is the nature and strength of the direct relationship between Self-Help Groups (SHG) Support, micropreneurial activities, and Rural Development (RD) in Kandhamal District, and to what extent does Micropreneurial Impact (MI) mediate this relationship?

3. **Hypotheses of the Study**

Hypotheses play a vital role in research, acting as testable propositions that direct the investigation and offer a foundation for deriving significant conclusions from the gathered data. The hypotheses outlined below are proposed for this study, and a corresponding hypothesized research model (Figure 1) has been developed to reflect these propositions.

Hypothesis (H1): There is a direct and substantial positive relationship between Self-Help Groups (SHG) Support and Rural Development (RD).

Hypothesis (H2): There is a significant positive relationship between Self-Help Groups (SHG) Support and Micropreneurial Impact (MI).

Hypothesis (H3): There is a positive and statistically significant relationship between Micropreneurial Impact (MI) and Rural Development (RD).

Hypothesis (H4): Micropreneurial Impact (MI) mediates the relationship between SHG Support and Rural Development (RD) significantly.

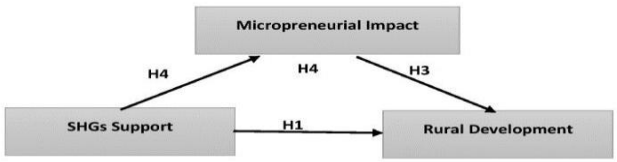

Figure 1. Hypothesized research model.

4. **Research Methodology**

This research adopts a quantitative methodology to explore the connections between micropreneurs, Self Help Groups (SHGs), and rural development in Kandhamal District. Data is gathered through surveys that contain 18 items, using a 5-point Likert scale to capture respondents' views. The study's target population and sampling strategy

produce a representative sample of 332 participants. Various statistical techniques, including correlation analysis, regression analysis, and structural equation modeling (using software such as AMOS), are applied to analyze the 5-point Likert scale responses. This analysis is conducted using statistical software to rigorously test and examine the research hypotheses.

4.1. Measurement Instruments

To develop the measurement scale, an eighteen-item instrument was created to assess three dimensions of entrepreneurship, utilizing a five-point Likert scale where participants could express their level of agreement or disagreement. The scale was divided as follows: six items for SHGs Support, five items for Micropreneurial Impact, and seven items for Rural Development. To ensure the validity of the scale, items were carefully selected from existing research that closely matched the variables under investigation.

4.1.1. SHGs Support

The SHGs Support was measured using a six-item scale rated on a 5-point scale, ranging from "1: strongly disagree" to "5: strongly agree." This scale assessed the level of entrepreneurial support provided by Self-Help Groups (SHGs) in Kandhamal District. Higher scores indicated stronger support for entrepreneurship, while lower scores suggested less support. Sample questions included inquiries about the financial assistance provided by SHGs to rural entrepreneurs and the frequency of capacity-building programs they conducted. The scale demonstrated good internal consistency, with a Cronbach's alpha value of 0.889.

4.1.2. Micropreneurial Impact

Micropreneurial Impact was assessed using a six-item scale on a five-point Likert scale. The scale included questions focusing on the impact of SHG support on profitability and sustainability, as well as the role of micropreneurial activities in improving community access to basic amenities. The scale showed strong internal consistency, with a Cronbach's alpha value of 0.932.

4.1.3. Rural Development

Rural Development was measured using a 5-point Likert scale, which included seven items. Sample questions addressed the direct benefits of micropreneurial activities to the district's rural development objectives and the role of micropreneurial impact in enhancing SHG support for overall rural development effectiveness. The scale exhibited high internal consistency, with a Cronbach's alpha value of 0.904.

5. Data Analysis: Results and Discussion

Data from the questionnaires were analyzed using Smart PLS4 software and SPSS Statistics 24.0. The construct values met the recommended threshold of 0.7 (Nunnally, 1978). The Cronbach's alpha values for the scales were 0.889 for Rural Development, 0.899 for SHGs Support, and 0.932 for Micropreneurial Impact, as displayed in Table-1. The scale was meticulously designed to collect comprehensive empirical data. The main objective was to predict the dependent variable, Rural Development (RD), using a two-stage Structural Equation Modeling (SEM) approach based on Hair, Ringle, and Sarstedt's model (2013).

5.1. Exploratory Factor Analysis

Kaiser-Meyer-Olkin (KMO) and Bartlett's Sphericity tests were conducted to assess the suitability of the factor analysis, yielding adequate results. The chi-square value was approximately 4510.288 with 153 degrees of freedom, significant at the 5% level. The KMO statistic was 0.901, exceeding the recommended threshold of 0.50 (Hair et al., 2013).

5.2. Measurement Model Assessment

The measurement model in the factor analysis illustrates the relationships between constructs and their indicators, incorporating Composite Reliability (CR) to evaluate internal consistency and reliability, and Average Variance Extracted (AVE) to assess convergent validity (Hair et al., 2012; Sarstedt et al., 2014).

Table-1: Convergent Validity test of Measurement Mode-Cronbach's alpha, Composite reliability (rho_c), and Average variance extracted (AVE)

Constructs	Cronbach's	Composite reliabili	Composite reliabili	Average varianc

	alpha	ty (rho_a)	ty (rho_c)	e extract ed (AVE)
Micropren eurial Impact	0.93 2	0.933	0.948	0.786
Rural Developm ent	0.88 9	0.895	0.913	0.601
SHGs Support	0.89 9	0.905	0.922	0.664
Source: Authors' estimation				

A model is considered excellent if AVE values exceed 0.5, and CR surpasses 0.7(to Gaskin and Lim, 2016). In Table-1, our study's CR and AVE values meet these criteria, affirming model reliability and validity. Convergent validity is assessed using AVE, and reliability is tested using CR.

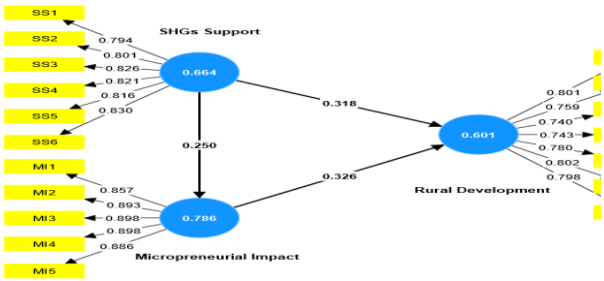

Figure-2: Three Factor Measurement model with AVE and Outer loading

To assess the reliability of individual items, the outer loadings of each item were examined, all of which exceeded the threshold of 0.70 (Sarstedt et al., 2014). For the Micropreneurial Impact (MI) construct, the outer loadings for items MI1 through MI5 ranged from 0.857 to 0.898, indicating a strong relationship with the MI construct. Similarly, items RD1 through RD7 for the Rural Development (RD) construct showed outer loading values between 0.740 and 0.802, reflecting a strong connection to the RD construct. The SHGs Support (SS) construct also exhibited significant outer loading values for items SS1 through SS6, ranging from 0.794 to 0.830, indicating a solid association with the SS construct. The fact that all items had outer loadings above 0.70 confirms that they meet the criteria for item reliability. Figures 3 and 4 provide visual representations of the three-factor measurement model and the structural model, respectively.

5.4. Discriminant Validity

Discriminant validity, which ensures that constructs in the study are distinct from one another, was established using the Heterotrait-Monotrait (HTMT) technique, as proposed by Fornell and Larcker (1981). This method involves assessing the correlations between each construct and the indicators of all other constructs in the model. In this study, all HTMT values for inter-construct correlations were below 0.85, as shown in Table 2, meeting the discriminant validity criterion. The HTMT ratio-coefficients for each latent variable, which ranged from 0.271 to 0.438, were well below the 0.85 threshold suggested by Kline (2015). The analysis, conducted following the guidelines of Gaskin and Lim (2016), did not reveal any significant issues or concerns regarding discriminant validity.

Table-2: HTMT Ratio-coefficients	**Coefficients of Heterotrait-monotrait ratio (HTMT)**
The latent variables	
Rural Development <-> Micropreneurial Impact	0.438
SHGs Support <-> Micropreneurial Impact	0.271
SHGs Support <-> Rural Development	0.436
Source: Author's estimation.	

5.4. Structural Model Assessment

The structural model examines relationships between variables, evaluating multi-collinearity through Variance Inflation Factor (VIF). For Micropreneurial Impact (MI) items, VIF ranges from 2.63 to 3.608, indicating moderate to high multi-collinearity. Rural Development (RD) items exhibit VIF from 1.906 to 2.394, suggesting a moderate degree of correlation, while SHGs Support (SS) items show VIF from 1.892 to 2.709. VIF values close to 1 for inner model constructs, indicating minimal multi-collinearity.

Standard bootstrapping (5000 samples) assessed path coefficients, p-values, t-values, and R2 values (Reinartz et al., 2009; Hair et al., 2014). For model fit, an SRMR value below 0.08 is considered good (Henseler et al., 2016; Hair et al., 2014). Here, SRMR is 0.058, below the threshold, indicating good fit. SRMR measures the discrepancy between

estimated and observed data, with lower values suggesting better fit. Both saturated and estimated models have an SRMR of 0.058, indicating good fit.

Table-3: Structural Model Fit Indices	Saturated model	Estimated model
SRMR	0.058	0.058
d_ULS	0.575	0.575
d_G	0.250	0.250
Chi-square	580.539	580.539
NFI	0.874	0.874
Source: Author's estimation.		

The d_ULS (Unweighted Least Squares) value of 0.575 assesses the difference between the observed and predicted matrices, with smaller values indicating a better model fit. Identical values across models suggest consistent fit. The d_G (GFI Incremental Fit Index) value of 0.250 evaluates the model's incremental fit compared to a baseline model. A value of 0.250 indicates a consistent fit. The chi-square value of 580.539 measures the model's overall fit to the data, with lower values indicating a better fit. The same chi-square values in both models suggest no significant deviation from the saturated model, though chi-square is sensitive to sample size.

The NFI (Normed Fit Index) value of 0.874 indicates how well the estimated model reproduces the observed data, with values closer to 1 representing a better fit. The identical NFI values across models suggest a good fit. While a value of 0.874 shows a reasonable fit, higher values are preferable. Overall, the model demonstrates a reasonable fit based on SRMR, d_ULS, d_G, and NFI metrics.

5.5. Hypothesis Testing

To determine the significance and relevance of the structural model relationships, t-values are compared to critical values at a significance level of 0.05 (refer to Table-4).

5.5.1. Hypothesis (H1): This hypothesis tests the significant positive relationship between Self-Help Groups (SHG) Support and Rural Development (RD). The path coefficient for "SHGs Support -> Rural Development" is 0.318, which indicates a significant positive effect. The t-value of 6.663 (p-value = 0) confirms this relationship's statistical significance (see Table-4).

5.5.2. Hypothesis (H2): This hypothesis examines the positive relationship between Self-Help Groups (SHG) Support and Micropreneurial Impact (MI). The path coefficient for "SHGs Support -> Micropreneurial Impact" is 0.250, showing a significant positive effect. The t-value of 4.802 (p-value = 0) supports the statistical significance of this relationship (see Table-4).

Table-4: Path Coefficients details of structural Model

Path coefficients-Mean, STDEV, t-Values, P-values	Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
SHGs Support -> Rural Development	H3	0.318	0.321	0.048	6.663	000
SHGs Support -> Micropreneurial Impact	H2	0.250	0.255	0.052	4.802	000
Micropreneurial Impact -> Rural Development	H1	0.326	0.328	0.05	6.537	000
SHGs Support -> Micropreneurial Impact -> Rural Development	H4	0.082	0.084	0.023	3.535	000
Source: Authors' estimation.						

5.5.3. Hypothesis (H3): This explores the significant positive relationship between Micropreneurial Impact (MI) and Rural Development (RD). The path coefficient for "Micropreneurial Impact -> Rural Development" is 0.326, suggesting a notable positive effect. The t-value of 6.537 (p-value = 0) confirms the statistical significance of this relationship (see Table-4).

5.5.4. Mediating Effect

The mediation analysis assesses the relationships between the independent variable, mediating variable, and dependent variable using Baron and Kenny's (1986) method.

Hypothesis (H4): This hypothesis tests whether Micropreneurial Impact (MI) significantly mediates the relationship between SHG Support and Rural Development (RD). The analysis shows a highly significant result (p-value = 0) for the path "SHGs Support -> Micropreneurial Impact -> Rural Development" (see Table-4). The positive point estimate of 0.082 and the t-statistic of 3.535 highlight the strong statistical significance of this mediating effect.

5.6. R^2 and f^2 Effect Size

The R^2 values indicate moderate explanatory power, with Micropreneurial Impact (MI) explaining 6.3% and Rural Development (RD) explaining 26% of the variance. The f^2 effect sizes confirm the significant predictive role of Micropreneurial Impact and SHG Support in explaining the observed variability. Specifically, the f^2 value of 0.135 for the relationship between Micropreneurial Impact and Rural Development indicates a moderate impact, accounting for 13.5% of the variance in Rural Development.

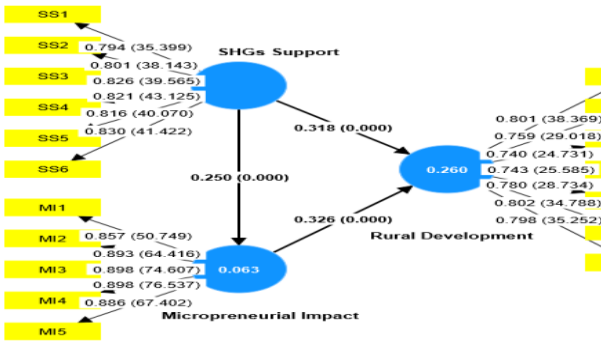

Figure-3: Three Factor Structural model with R^2

Source: Author's estimation

For the relationship between SHGs Support and Micropreneurial Impact, the f^2 value of 0.067 indicates a moderate effect, accounting for 6.7% of the variance in Micropreneurial Impact.

In the relationship between SHGs Support and Rural Development, the f^2 value of 0.128 reflects a moderate impact, explaining approximately 12.8% of the variance in Rural Development.

5. Research Findings

The study identifies strong positive relationships among Micropreneurial Impact (MI), Self-Help Groups (SHGs) Support, and Rural Development, demonstrating their practical significance. Economically, it highlights the crucial role of micropreneurship and SHGs in promoting rural development, which includes job creation, income generation, and overall economic growth.

From a managerial standpoint, it suggests that strategic measures to boost MI and support SHGs can significantly advance rural development. Investing in microenterprise ventures and enhancing support systems for SHGs are essential for maximizing their beneficial impact on rural economies.

For entrepreneurs, the study shows the significant contribution of microenterprises to rural development. Providing tailored support through self-help groups can enhance economic growth and sustainability.

On a societal level, the research indicates that the success of micropreneurs and self-help groups is closely tied to the well-being of rural communities, suggesting that societal progress is driven by grassroots efforts and community collaboration.

7. Cross-Cutting Recommendations

To promote micropreneurship and rural development, the following strategies are recommended: integrating technology by focusing on digital tools for skill development and online marketplaces; fostering a supportive ecosystem through cooperation among government agencies, NGOs, businesses, and local communities; and implementing robust mechanisms to measure impact across economic, managerial, entrepreneurial, and societal dimensions. Policy design should be inclusive, ensuring marginalized groups in rural areas have equal access to resources. Ongoing investment in capacity-building and training tailored to local needs will help individuals adapt to the evolving economic environment.

8. Conclusion

The study underscores important connections between Micropreneurial Impact, Self-Help Groups Support, and Rural Development, highlighting their economic, managerial, entrepreneurial, and societal relevance. The recommendations call for targeted policy actions, collaborative development of ecosystems, technology use, and inclusive capacity-building. Adopting these suggestions can drive comprehensive and sustainable development, promoting resilience and prosperity in rural communities.

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