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Does Gender Define Access to Microcredit? Evidence from India

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ABSTRACT

The aim of this research is to examine the influence of gender on the accessibility of microcredit for small and informal business owners in Nagaland, India. In addition, the study conducts a region-wise comparative analysis of the loans disbursed to self-help groups (SHGs) by banks. Using primary data obtained from a cohort of 205 small business proprietors within the state, the study used the **methods** of descriptive statistics and econometric analysis. Furthermore, the paper employed the logit model to examine key factors such as firm size, SHGs and the qualifications of the entrepreneurs, along with gender. The secondary data, obtained from the Centre for Monitoring Indian Economy and the National Bank for Agriculture and Rural Development, allow the study to conduct a comparative analysis using the percentage share approach. **The results** reveal that public sector banks disbursed the highest amount of loans to SHGs, and the comparative analysis indicates that SHGs in the North-Eastern Region of India have the lowest share of savings with banks. Based on the empirical analysis, the author **concluded** that firm size, financial services provided through SHGs, educational qualifications, and gender of small business owners play a significant role in the accessibility of microcredit from financial institutions.

Keywords: microcredit; microfinance; women entrepreneurship; gender; banks; firm size; access to finance; econometrics; India

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ОРИГИНАЛЬНАЯ СТАТЬЯ

Определяет ли гендерный фактор доступ к микрокредитам? Эмпирический анализ из Индии

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АННОТАЦИЯ

Целью данного исследования является изучение влияния гендерного фактора на доступность микрокредитов для владельцев малого и неформального бизнеса в провинции Нагаленде, Индия. Кроме того, в исследовании проводится сравнительный анализ кредитов, выданных банками группам взаимопомощи (ГВП) в зависимости от региона. Используя первичные данные, полученные от группы из 205 владельцев малого бизнеса в штате, в исследовании использовались **методы** описательной статистики и эконометрического анализа. Кроме того, в исследовании использовалась логит-модель для изучения таких ключевых факторов, как размер фирмы, наличие ГСП и квалификация предпринимателей, а также их пол. Вторичные данные, полученные от Центра мониторинга экономики Индии и Национального банка сельского хозяйства и развития сельских районов, позволили провести сравнительный анализ с использованием метода процентных долей. Результаты показывают, что банки государственного сектора выдали наибольшую сумму кредитов ГСП, а сравнительный анализ показал, что ГСП в Северо-Восточном регионе Индии имеют самую низкую долю сбережений в банках. На основе эмпирического анализа автор пришел к выводу, что

размер фирмы, финансовые услуги, предоставляемые через ГСП, образовательный уровень и пол владельцев малого бизнеса играют значительную роль в доступности микрокредитования от финансовых учреждений.

Ключевые слова: микрокредит; микрофинансирование; женское предпринимательство; пол; банки, размер фирмы; доступ к финансам; эконометрика; Индия

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1. Introduction

The vitality of microcredit in propelling the growth of small businesses, particularly among marginalized segments, underscores its profound importance as a transformative financial tool. Originating from the visionary efforts of Professor Muhammad Yunus in the 1980s, notably through the Grameen Bank, microcredit stands as a beacon of hope for aspiring entrepreneurs, particularly women, globally and across the South Asian landscape. Its revolutionary impact not only facilitates the evolution of businesses from informal to formal sectors but also acts as a catalyst for economic advancement [1]. However, within its narrative of success lies a darker face [2]. Scholars and human rights advocates have raised criticisms, shedding light on ethical crises within microfinance institutions (MFIs), pointing to exploitative lending practices that create a vicious debt trap, particularly impacting marginalized women [3].

Various studies and evidence suggest that government oversight plays a pivotal role in establishing ethically responsible microfinance institutions and other financial services in the country. Gender discrimination remains an unsolved puzzle in various sectors, and the financial sector is no surprise either. The rising downtrodden and discriminated women populations in education, business and services further contribute to poverty and a lack of awareness of the services, emphasizing the urgent need to dissect gender-based disparities in accessing financial services, specifically microcredit [4].

Moreover, the study underscores the crucial role of self-help groups (SHGs) in empowering women entrepreneurs and facilitating their access to microcredit¹. This study focuses on the interconnectedness between financial literacy,

gender dynamics, and economic empowerment [5].

The study concentrates on Nagaland, India, because it is urgently necessary to eliminate gender-based disparities and recognize the impact of financial literacy on microcredit accessibility. The region is politically, commercially and demographically isolated from other regions in India. The research problem aims to understand the profound impact of gender and financial awareness on microcredit accessibility in this region. This investigation aims to fill a significant gap in the existing literature by exploring the complex relationships among gender dynamics, financial awareness, and the accessibility of microcredit, providing broad insights into the challenges faced by small business owners in Nagaland, India.

Synthesizing existing literature with empirical analysis, the study endeavors not only to reveal the theoretical implications surrounding gender disparities and financial literacy but also to offer practical implications for policymakers and financial institutions. Theoretical implications include a deeper understanding of the versatile nature of microcredit access, contextualized within the societal and economic landscape of Nagaland. The practical implications should help guide targeted interventions, policy formulations, and regulatory measures that aim to create gender-inclusive financial environments, giving entrepreneurs in the region more power. This comprehensive approach seeks to bridge the gap between academia and actionable strategies, paving the way for equitable financial landscapes and inclusive economic growth in Nagaland.

The rest of the study is organized as follows: Section 2 provides a literature review; Section 3 discusses data and methods, including the econometric model estimation and comparative analysis using secondary data; Section 4

¹ Status of Microfinance in India, NABARD Report (2020–21), Government of India.

presents the empirical findings and provides a brief discussion of the results. Section 5 explores the importance of the theoretical implications, followed by the robustness of the study in Section 6. Finally, Section 7 concludes the study.

2. Literature review

Misconstrual of the terms ‘Microfinance’ and ‘Microcredit’ has been prevalent [6]. However, various researchers, government bodies, and policymakers have identified distinctions between their regulations and financial functioning [7]. The sustainability of the microcredit system has been a key concern in India [8–9]. Various studies emphasize that the sustainability of SHGs and microlending is dependent on their accessibility to local financial institutions [10]. Additionally, the allocation of loans disbursed to microfinance institutions by financial institutions plays a key role in the overall sustainability of lending services to SHGs and other beneficiaries [11].

Furthermore, SHG members also play a significant role in its governance and the functioning of its organization in the region [12]. Identifying the challenges in running group activities, including a lack of credit support from financial institutions, inadequate training programs, insufficient family support, and a lack of interest and cooperation from some members, is also a factor in sustainability [13, 14]. Moreover, it is evident that the affiliation of women entrepreneurs with SHGs reduces the gap between men and women [15, 16]. Therefore, SHG membership plays an important role in the crusade against gender disparity [17].

Despite continuous efforts through, policy suggestions and rigorous government schemes such as the Mahila Udyam Nidhi Schemes, Annapurna scheme, Udyogini scheme gender disparities still prevail in entrepreneurship, especially regarding access to credit. Women entrepreneurs encounter barriers in securing bank loans due to the discriminatory approach towards female entrepreneurs within financial institutions [18]. Empirical evidence shows that women-owned enterprises face challenges in accessing small-business credit and lack financial knowledge or awareness, compared with their male counterparts [19]. However, a sys-

tematic and unbiased credit system in some rural regions of India has a demonstrable positive impact on informal and small businesses, particularly encouraging women entrepreneurs [20, 21].

Various empirical findings reveal that female-headed households are more likely to take loans from numerous informal sources and are less likely to access formal financial institutions than male-headed households [22]. This disparity is a demonstration of the poor banking regulatory and biased credit system prevailing in India’s banking environment [23]. While initiatives such as SHG participation in programs promote financial literacy among women, evidence linking microcredit and women’s empowerment remains limited [24].

Although the existing literature addresses broader aspects of gender disparity in accessing microcredit in India, it fails to document the unique challenges and determinants faced by women entrepreneurs in the hilly regions of the state. Moreover, the findings of the proceeding paper cannot be generalized to the problems faced by women entrepreneurs in Nagaland because the state does not share the same socio-political, economic and demographic parameters as the rest of India. Therefore, acknowledging this research gap and the absence of comprehensive studies focusing on microcredit accessibility and its impact on women entrepreneurs, specifically in Nagaland and the hilly region in general, this study documented the crucial and significant factors faced by women entrepreneurs in accessing microcredit in the state.

Table 1 condenses the key insights from various studies, showcasing the diverse findings on gender disparities, discrimination, access to credit, the role of SHGs, and the impact of microfinance on different segments of entrepreneurs in India.

Formation of the hypothesis

To comprehensively investigate the role of gender in microcredit accessibility for women entrepreneurs, this study focuses on the influential variables of gender as well as other significant factors such as firm size and the support rendered by SHGs. Drawing from existing literature, the hypotheses are formulated to delve deeper into these dynamics:

Table 1
Overview of the existing literature

Authors	Findings
Mahato et al. (2023)	Participation of SHGs in collective discussions and programs has a positive impact on beneficiaries
Patel & Parida (2022)	Lower caste female business owners face barriers in accessing microloans compared to their higher-caste counterparts
Basumatary et al. (2022)	Limited evidence exists between microcredit and women's empowerment despite credit program participation
Midya et al. (2021)	SHGs members identify challenges in running group activities, including a lack of credit support from financial institutions, inadequate training programs, insufficient family support, and a lack of interest and cooperation from some members
Chaudhuri et al. (2020)	Women-owned firms encounter disadvantages in small-business credit compared to male-owned firms
Rehman (2023)	Loan disbursement shares to microfinance institutions shape the sustainability of the microcredit system
Vinod and Ghosh (2017)	Female-headed households are more likely to access informal loans, less likely to access formal financial credit
Dasgupta (2006)	Highlights differences in functions and characteristics between microfinance and microcredit.
Srinivasan (2008)	Sustainable SHGs linked to bank access underpin financial services' success
Lensink and Hermes (2007)	Microfinance and microcredit are often used interchangeably, but their regulatory differences are notable
Menon and Rodgers (2011)	Access to credit fuels growth and motivation among women entrepreneurs, aiding in expanding their ventures
Ferri et al. (2018)	Women entrepreneurs face challenges accessing bank loans due to prevalent discrimination in the banking sector
Anand et al. (2020)	Women participating in the self-help program exhibited higher levels of capability indicators across various dimensions. This suggests that the program has a positive impact on enhancing the overall capabilities of the participants
Kumar et al. (2021)	SHG membership has a significant positive impact on aggregate measures of women's empowerment. Moreover, SHG membership reduces gap between men's and women's empowerment score
Patil and Kokate (2017)	Female entrepreneurs have a strong favourable attitude towards SHGs, which highlights the positive perception of and engagement with SHGs

Source: Developed by the author.

H1: Gender-based discrimination in the accessibility of microcredit.

Building upon the findings of [25, 26], this hypothesis predicts that gender plays a significant role in access to microcredit. The studies advocate that there has been a discriminatory approach towards women entrepreneurs. The coefficient and p-value of the variable “gender” are anticipated to demonstrate its significance in determining access to microcredit.

H2: Firm size plays an important role in accessing microcredit.

Build upon the objectives and findings of the existing literature mentioned, which advocate the potential link between “firm size” and “sustainability”. Our study aims to explore an additional dimension by examining the relationship between the size of the firm and access to microcredit. It proposes that the size of the enterprise might shape its credit requirements and consequently impact its probability of accessing microcredit. Therefore, to understand the role of “firm size”, the study employs it as an important variable to document its impact on accessing microcredit.

H3: The involvement of SHGs significantly facilitates microcredit accessibility for women entrepreneurs.

Aligned with the findings of [27] and insights from [29, 30], this hypothesis asserts that the support provided by SHGs, particularly in terms of financial access to banking services, plays a crucial role in enhancing women entrepreneurs’ access to microcredit. The study is based on these hypotheses and aims to find out how gender, firm size, and the helpful role of SHGs affect women entrepreneurs’ access to microcredit.

3. Data, variables and methods

Data sources

The study is based on both secondary data and the primary survey conducted from January 2023 to April 2023 among small business enterprises in Nagaland. Secondary data are drawn from the Centre for Monitoring Indian Economy (CMIE) Economic Outlook and the National Bank for Agriculture and Rural Development (NABARD) to draw a comparative analysis of the loans disbursed to SHGs by banks and region-wise saving of SHGs in India. Secondary information does not docu-

ment the role of gender in the accessibility of microcredit from banks and financial institutions. Therefore, using a purposive sampling method, primary data have been collected from 205 small and informal business owners in the mentioned state to attain the objective of the study.

Variables

A number of variables have been employed for the econometric analysis. The study employed “Access to Micro-Credit” as the endogenous variable, which is dichotomous in nature, where an individual representing his or her firm takes the value 1, if she or he has taken micro-credit from any formal financial institution or bank and 0 otherwise. However, to document the role of gender and also, if the gender of the business owner plays a role in the accessibility of microcredit, we have employed gender as one of the covariates where a business owner who is male takes the value 1 and a female takes the value 0, with the other six independent variables, namely; education, firm size, gender, marital status, awareness of SHGs, help from SHGs in accessing microloan, business is run from home or a shop. We also, employed the expanding status of the firm, which is binary in nature, where the firm owner takes the value 1 for expanding and 0 for stagnant, to document the impact of the firm size as the deciding factor in the accessibility of the microloans. The role of the SHGs and their financial awareness and accessibility or collaborative efforts to act as a helping catalyst for women entrepreneurs have also been documented in the analysis.

Methodology

To observe the trends in the percentage share of loans disbursed to the SHGs by the banks. We use time-series data from the CMIE Economic Outlook and draw a comparative analysis using the percentage share approach. This observation will help us study the amount of loan disbursed to SHGs by banks in India over time. Furthermore, we computed region-wise saving amounts of SHGs in India using NABARD data. The findings from these observations will help us draw a holistic comparative

analysis of the SHGs presence and savings amounts in India.

To document the determinants of access to microcredit, the above-mentioned variables have been employed. Using descriptive statistics, the averages of the variables have been documented. Further, an econometric approach using the Logit Regression Model has been presented to examine the significant role of business owner genders in accessing microcredit.

Logit regression model

We employ the logistic regression model to formally understand the determinants of accessing microloans. The model takes the following form:

$$\text{Microcredit}_i = \beta_0 + \beta_1 \text{Gender}_i + \beta_2 \text{Education}_i + \beta_3 \text{Marital Status}_i + \beta_4 \text{Business Home}_i + \beta_5 \text{Firm Size}_i + \beta_6 \text{Awareness SHGs}_i + \beta_7 \text{Loan Access help SHGs} + \varepsilon_i,$$

where: β_0 is the likelihood of the client accessing loans regardless of the absence of any of the determinants, β_1 is the likelihood of the client accessing microcredit given the individual (*i*) gender, β_2 is the likelihood of the client accessing microcredit given his/her educational qualification, β_3 is the likelihood of the client accessing microcredit given his/her marital status, β_4 is the likelihood of the client accessing microcredit individual (*i*) business operated from home or not, β_5 is the likelihood of the client accessing microcredit given the size of the firm, β_6 is the likelihood of the client accessing microcredit provided the individual (*i*) is aware of the SHGs and β_7 is the likelihood of the client accessing microcredit given individual (β) has been helped by the SHGs in accessing microcredit and ε_i is the error term in the model.

Percentage share of loans disbursed to SHGs by banks

Using the CMIE Economic Outlook data, *Table 2* below presents the percentage share of the loans disbursed to SHGs by each bank in India over the past ten years. The table indicates that public sector banks had the highest share of loans disbursed to SHGs at 54.6%, while private sector banks had the lowest, averaging 6.7%. Examining the bank group-wise share of loans disbursed, it is evident that public sector banks dominated the share with an average percent

for the period under study. Thus, the findings from the analysis of the data align with the existing literature, suggesting that private banks with profit-driven policies are less likely to give credit to SHGs².

Region-wise SHGs savings in India

This section presents a comparative analysis of the region-wise percentage share of SHGs in India from 2018–2021. *Table 3* shows that the southern region of India has the largest percentage share of SHG savings, at 55.30 percent over the course of all financial years. However, the North-Eastern Region (NER) in India has the lowest share of savings, with 1.73 percent in 2018–2019, 1.84 percent in 2019–2020 and 2.22 percent in 2020–2021. This aligns with the report published by the Government of India³. Therefore, the highest percentage share of SHG savings in the southern region of India and the lowest share in NER, India, are no surprise in the study.

4. Results and discussion

In this section, we have documented the determinants of access to microcredit and the role of gender from the data collected in the field survey. First, we present the descriptive statistics before showing the empirical findings.

Summary statistics

Table 4 presents the summary statistics of the variables used in the econometric exercise.

Data in *Table 4* reveals that an average of 65 percent of the clients have access to microloans, while, on average, 27 percent of the clients are married. Additionally, 50 percent of business owners are female. From the above table, it is evident that on average, the firm sizes in Nagaland are expanding, with 20 percent on average being operated from the residence of the entrepreneur. It has also been observed that, on average, 52 percent of the firm owners are aware of the SHGs, and, on

² It should be noted that the findings using CMIE Economic Outlook data also align with the Status of Microfinance in India Report (2020–21), Government of India.

³ The Status of Microfinance in India Report (2020–21) documented that the largest number (in lakh) of Self-Help Groups (SHGs) registered was in the Southern Region of India, and the lowest number (in lakh) was in the North Eastern Region of India.

Table 2

Percentage share (%) of loans disbursed to SHGs by banks

Year	Public sector banks	Private sector banks	Regional rural banks	Co-operative banks	Total
2010–11	54.0	2.0	24.8	19.2	100
2011–12	49.8	2.6	26.6	21.1	100
2012–13	54.6	5.7	25.6	14.1	100
2013–14	49.7	6.4	24.4	19.4	100
2014–15	42.1	10.5	32.1	15.3	100
2015–16	51.2	10.6	25.7	12.5	100
2016–17	49.8	9.0	29.4	11.8	100
2017–18	50.1	6.2	34.6	9.1	100
2018–19	51.0	5.1	34.9	9.1	100
2019–20	49.6	7.5	34.8	8.1	100
2020–21	42.2	8.2	41.1	8.5	100
Average Share	49.5	6.7	30.3	13.5	100
Maximum % Share	54.6	10.6	41.1	21.1	
Minimum % Share	42.1	2.0	24.4	8.1	

Source: Developed by the author.

Table 3

Region-wise percentage share (%) of SHGs savings in India

Regions	2018–2019	2019–2020	2020–2021
	Percentage Share (Savings-Amount of SHGs)	Percentage Share (Savings-Amount of SHGs)	Percentage Share (Savings-Amount of SHGs)
Northern Region	2.68	2.28	4.65
North Eastern Region (NER)	1.73	1.84	2.22
Eastern Region	25.77	25.40	20.68
Central Region	5.71	6.55	5.65
Western Region	8.80	7.72	9.98
Southern Region	55.30	56.21	56.82
Maximum % Share	55.30	56.21	56.82
Minimum % Share	1.73	1.84	2.22
Total	100	100	100

Source: Developed by the author.

Table 4
Summary statistics of the dependent and independent variables

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Microcredit	205	0.65	0.479	0	1
Marital Status	205	0.27	0.446	0	1
Education	205	2.26	0.774	1	3
Firm Size	205	2.64	0.578	1	3
Gender	205	0.50	0.503	0	1
Business Operation Home	205	0.20	0.402	0	1
Awareness of SHGs	205	0.52	0.502	0	1
Help by SHGs in Accessing Microcredit	205	0.22	0.416	0	1

Source: Developed by the author.

Table 5
Correlation matrix of the determinants

Variables	Microcredit	Mrt_Sts	Edu	Firm_Size	Gender	Bss_Home	Awr_SHG	SHG_FinHlp
Microcredit	1.0000							
Mrt_Status	-0.3094	1.0000						
Edu	0.6292	-0.2054	1.0000					
Firm_Size	0.3064	0.0282	0.0307	1.0000				
Gender	0.6499	-0.2478	0.3378	0.2088	1.0000			
Bss_Home	0.0524	0.0901	0.0260	0.1827	0.0100	1.0000		
Awr_SHG	0.0084	-0.0920	0.1425	-0.1142	-0.2802	0.1301	1.0000	
SHG_FinHlp	-0.4707	0.2208	-0.1794	-0.1713	-0.4345	-0.0241	0.1720	1.0000

Source: Developed by the author.

average, 22 percent of the businesses are assisted by SHGs in accessing microloans in Nagaland.

The correlation matrix of the determinants of accessing microcredit has been presented in Table 5. The correlation matrix has been computed to check the multicollinearity of the variables before running the regression exercise. As expected, there is a positive correlation between education and microcredit. However, a negative relationship between awareness of SHGs and

gender shows a lack of awareness of SHGs in the region.

Table 6 shows the construction of the variables and their anticipated relationships. Therefore, we report the empirical results of the determinants of access to microcredit: Logit Model Analysis in Table 7.

Table 7 indicates that gender is positively significant at the 1% level, signifying that male entrepreneurs are more likely to have access to

Table 6
Construction of the variables

Variables	Definitions	Descriptions	Anticipated Relationship
Endogeneous			
Microcredit	Binary Variable; Takes microcredit = 1 and 0 otherwise.	The business is financed through microcredit	
Exogeneous			
Client Characteristics			
Gender	Binary Variable; male client = 1 and 0 otherwise.	Gender of the respondent.	+/-
Mrt_Status	Binary Variable; married client = 1 and 0 otherwise.	Marital Status of the respondent.	+/-
Edu	Categorical Variable; 1= Less than primary school. 2 = High school and below graduation, 3 = Graduation and above.	Education qualification of the respondent.	+/-
Awareness Dimension			
Awr_SHG	Binary Variable; client is aware about the SHGs and its program =1 and 0 otherwise	SHGs awareness campaigns and programs.	+/-
SHG_FinHlp	Binary Variable: Clients takes value 1 is helped by SHGs in accessing loan and 0 otherwise	SHGs collaboration with financial institutions and helping women entrepreneurs in accessing loan	+/-
Business Characteristics			
Bss_Home	Binary Variable; Business operated from owners home = 1 and 0 otherwise	Business operated from home or not	+/-
Firm_Size	Binary Variable; Expanding = 1 and 0 = otherwise	Business is expanding or not	+/-

Source: Developed by the author.

microcredit compared to their female counterparts⁴. Education, being one of the important determinants, has a positive significance, indicating that more qualified clients are more likely

to access microcredit. However, the size of the firm acts as a deciding factor in accessing a loan. It has been documented in the above table, with 5% positive significance, that the small firms in the expanding stage are more likely to avail microloans. The empirical findings suggest that SHGs play a paramount role in helping women entrepreneurs' access microcredits from banks

⁴ This finding is consistent with the results of [24]. According to [24], the female entrepreneurs are disadvantaged in the market for small-business credit compared to their counter male entrepreneurs.

Table 7
Factor determining access to microcredit (logit regression)

Variables	Coefficient	Standard Error
Mrt_Sts	-0.943	1.181
Edu	3.367***	1.009
Firm_Size	2.194**	0.944
Gender	4.157***	1.289
Bss_Home	-0.506	1.329
Awr_SHG	-2.123	1.191
SHG_FinHlp	1.473*	1.276
Constant	-13.86	4.131
Log Likelihood	-16.78	
Pseudo R ²	0.74	
Observations	205	

(a)***, **, And * indicates at significance at 1%, 5% and 10% level respectively (*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$).

Source: Developed by the author.

and financial institutions. Thus, the findings regarding the role of SHGs in the empowerment of participation align with existing literature. Considering all the documented variables, the gender of the business owners and SHGs in helping women entrepreneurs access microloans makes a significant impact.

Discussion

In this study, we have drawn a comparative analysis of the loans disbursed to SHGs by banks over the past ten years and the region-wise savings of SHGs in India. The findings of the comparative analysis reveal the dominance of the public sector banks in the amount of loans disbursed to SHGs over time. Further, the outcomes of the region-wise analysis documented the poor performance of the North-Eastern Region in saving amounts compared to the rest of India. Our findings from the econometric exercise document the role of gender in accessing microcredit within Nagaland, revealing significant gender disparities in accessing financial services. The study reveals that male entrepreneurs demonstrate a higher likelihood of accessing microloans compared to their female counterparts. However, alongside gender, qualification and firm size also played an im-

portant role in shaping the accessibility of microcredit. Notably, a positive correlation exists between higher qualifications and access to microcredit. Simultaneously, smaller firms in an expanding phase are more likely to access microloans, demonstrating the influence of business dynamics in navigating financial aid. Furthermore, the research demonstrates the crucial role that SHGs play in facilitating microcredit accessibility, particularly for women entrepreneurs. However, the study documents a crucial need for enhanced financial awareness among illiterate or low-educated female entrepreneurs regarding SHGs and their role in facilitating access to financial services. From the study, it becomes evident that better support from SHGs significantly impacts women's capacity to access microcredit, alongside other important factors.

5. Theoretical implication of the study

Gender disparity and financial inclusion

The study significantly contributes to the existing literature on gender disparity within the financial system around the world in general and in mainland India in particular. The findings of this empirical study show the prevailing gender bias in the Northeastern Region

Table 8
One-way ANOVA analysis

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Statistic	P-Value
Between Groups	9.61	1	9.61	71.67	0.000***
Within Groups	13.14	98	0.134		
Total	22.75	99	0.229		

(a)*** indicates at significance at 1% level respectively (** $p < 0.01$).

Source: Developed by the author.

(NER) of the country, by taking observations from Nagaland. The theoretical implication lies in highlighting the persistent barrier that hinders financial inclusion.

Role of SHGs

The role and significant impact of the SHGs in molding women's entrepreneurship in rural and remote regions of India cannot be excluded. Acknowledging this from the existing literature and from the findings of this study, the insights propose a theoretical landscape by documenting and advocating the intermediary and collaborative role of the SHGs and financial institutions in building the social infrastructure to help marginalized female entrepreneurs access microcredit.

Firm dynamics and education

Firm size and the qualification of the entrepreneur play a significant role as deciding factors in the accessibility of microcredit, along with the gender of the entrepreneur. The findings of the paper advocate for contributing to the theoretical understanding of the business landscape in the NER, which is no different from any other region in deliberately excluding its female entrepreneurs from microcredit access. The paper draws more compelling insights into understanding the relationship between firm size, individual educational qualifications and the accessibility to microcredit from financial institutions.

6. Robustness test

For the validation of the findings, we conducted a series of robustness tests. Firstly, utilizing

a one-way ANOVA analysis⁵, we specifically isolated the influence of Gender as an instrumental variable on Access to Microcredit. This method allowed us to observe the exclusive role of gender in accessing microcredit, revealing a statistically significant relationship. Additionally, to ensure the stability of the results concerning other variables, we employed a probit model regression analysis encompassing all explanatory factors. The outcomes from this probit regression consistently mirrored the conclusions drawn from the logit model used in our study, reaffirming the robustness of our initial findings. Ultimately, the coherence between the results obtained from both the One-Way ANOVA model and probit model regression analyses further solidifies the main baseline results of our study, underscoring the credibility and consistency of our conclusions regarding the relationship between the variables investigated.

The robustness test results are presented in Tables 8, 9.

7. Conclusion and policy suggestions

In this study, we have examined the trends of loan disbursement to Self-Help Groups (SHGs) over the past ten years and conducted a region-wise comparative analysis of SHGs savings in India. Our findings reveal that public sector banks contributed the highest amount

⁵ A Simple Linear Regression Model (SLRM) was also used to check the impact of 'Gender' on access to microcredit. Subsequently, a One-Way ANOVA was adopted to compare the mean access to microcredit between males and females and to statistically examine the significant relationship between gender and access to microcredit.

Table 9
Factor determining access to microcredit (probit regression)

Variables	Coefficient	Standard Error
Mrt_Sts	-0.483	0.644
Edu	1.803***	0.516
Firm_Size	1.209**	0.488
Gender	2.135***	0.602
Bss_Hm	-0.175	0.708
Awr_SHG	0.705	0.659
SHG_FinHlp	1.336*	0.621
Constant	-13.86	2.088
Log Likelihood	-16.86	
Pseudo R ²	0.73	
Observations	205	

(a)***, **, And * indicates at significance at 1%, 5% and 10% level respectively (** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$).

Source: Developed by the author.

of loans to SHGs (around 49%), and the comparative results highlighted that NER has the lowest amounts of savings with banks compared to the rest of the regions in India. Further, from the econometric analysis, our study reveals that the role of gender in accessing microloans from financial institutions and banks plays a significant role in the North-Eastern Region (NER) of India. Our study relied on the cohort data of 205 small and informal business owners. We find that male entrepreneurs are more likely to access microloans compared to female entrepreneurs, which is consistent with the findings of existing empirical studies. The findings of our study also highlight the complex relationship of factors influencing microcredit accessibility, prominently highlighting educational qualifications, firm size, and the collaborative role of SHGs and financial institutions in helping women entrepreneurs in accessing microcredit. Although schemes like Mahila Udyam Nidhi (MUN) by the Government of India have accelerated the growth of women's entrepreneurship in India, a more inclusive financial model aligned with the demographic and socio-political ethos of

NER entrepreneurs is needed. Thus, considering policy suggestions, the paper strongly advocates for an inclusive financial model to alleviate the marginalized female entrepreneurs in the North-Eastern Region (NER) in particular and India in general.

Limitations and future research directions

- The study's scope is confined to a specific geographical region and a relatively small sample size, potentially limiting the generalization of the findings.
- The study predominantly focuses on gender dynamics, overlooking other crucial aspects such as cultural influences, regional policies, and technological advancements that might impact microcredit.
- Though, the study identifies the role of SHGs in aiding women entrepreneurs, it falls short in exploring the ins and outs of SHGs operations, the effectiveness of their support mechanisms, and the sustainability of their impact on microcredit access. Future research could delve deeper into understanding the specific mechanisms through which SHGs facilitate financial inclusion.

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