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Inside Microfinance Matrix: Microfinance Institutions' Characteristics and Women Credit Access

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ABSTRACT

This study aims to explore the role of Microfinance Institutions' (MFIs) organisational characteristics including ownership structure, target market, and institutional size, in shaping the lending pattern in reaching women entrepreneurs. This study employs Ordinary Least Square and Fractional Logit regression using STATA on pooled panel data of 2,330 MFIs across 116 countries. A fuzzy algorithm and Principal Component Analysis are applied to verify the consistency of the results. Findings suggest larger MFIs demonstrate greater inclusivity towards women, attributed to their extensive resources and institutional capabilities. Similarly, MFIs targeting affluent clients exhibit a higher likelihood of catering to the financial needs of women. Non-government organisations (NGOs) emerge as key drivers of women credit access, consistently prioritizing women entrepreneurs through targeted interventions. This study contributes to theoretical implications of the interplay between institutional ownership and goals related to social welfare. This finding also expands microfinance literature by emphasising how ownership influences the strategic orientation of MFIs. This study holds significance for financial regulators, and policymakers to utilise this study as a framework to evaluate the interplay between organisational scale, financial sustainability, and the fulfilment of social objectives within the microfinance sector.

Keywords: Microfinance Institutions, Organisational Characteristics, Women Entrepreneurs, Gender
JEL Classifications: I3, I320, L31

1. INTRODUCTION

The United Nations unveiled 17 Sustainable Development Goals in 2015 that are meant to guide mankind towards a more sustainable path to combat poverty, hunger, inequality, and environmental degradation, improve access to healthcare and education, and create a society that is equal (United Nations, 2015). According to United Nations (UN) UN Women, (2022) 388 million women worldwide are living in extreme poverty in 2022. As of 2022, women experienced severe effects from the COVID-19 pandemic because of job loss, business failure, and disruptions in income flow. The COVID-19 pandemic's economic repercussions have not affected everyone equally hard (International Labour Organization [ILO], 2020). Inequalities are entrenched and existing vulnerabilities are revealed. Many people with fewer resources and protection, such as those who engage in informal employment or under a variety of labour arrangements, have been least prepared to deal with the crisis' effects. Furthermore, women have been severely impacted by the crisis' increased demand for unpaid care. In 169 countries and regions, women's labour force participation is anticipated to fall below pre-pandemic levels in 2022 (50.8% vs. 51.8% in 2019); the gender gap is anticipated to worsen in 114 nations and regions in comparison to 2019 (UN Women, 2022).

Losses of employment and income have been particularly devastating for women. The female wage gap had already been wide-spread before the COVID-19 pandemic, but it has now become much more pronounced due to the gender disparity in hours worked in the workforce. The establishment of microfinance is therefore one of the ways to assist women in moving out from poverty, by providing easy access to microcredit with less collateral (Morduch, 1999; Gudjonsson et al., 2020). Women have more opportunities to become entrepreneurs, build small businesses, and improve their standard of living when they have easy access to finance in the form of small loans (Chowdhury et al., 2004; Abebe and Kegne, 2023). In this context, Microfinance Institutions (MFIs) and their outreach to women entrepreneurs are of compelling interest to academics and policy makers.

While there is a growing interest in gender dynamics within microfinance, existing literature tends to concentrate on a relatively narrow scope, primarily focusing on women's repayment performance and its implications for the financial viability of MFIs (Armendariz de Aghion and Morduch, 2005; D'Espallier et al., 2011; 2013). As the body of MFI literature expands, it also sheds light on various institutional models of MFIs and their lending practices concerning women (Johnson, 2000). For instance, Mia et al. (2024) suggests different types of legal status of MFIs resulted in different focus on reaching women access to credit. Moreover, previous research is primarily focused on the financial performance of MFIs, such as portfolio quality, profitability, and operational sustainability (Ayayi and Sene, 2010; D'Espallier et al., 2011; 2013; Chedad et al., 2022). Literature suggest that MFIs level of profitability vary according to their types of ownership and strategies (Hermes and Hudon, 2019; Navin and Sinha, 2020; Mia et al., 2022).

However, there remains a significant gap in understanding the organisational factors that drive MFIs' engagement with women entrepreneurs (D'Espallier et al., 2013). The inconsistent empirical evidence on the success of microfinance in reaching the poor, is influenced by socio-cultural norms, regulations, and management practices (Ribeiro et al., 2022). Therefore, this study aims to bridge this gap by exploring how MFI organisational characteristics shape lending practices to empower women globally. This study explores the effects of different organisational characteristics of MFIs on women entrepreneurs, due to the varied nature of MFIs. This study directly addresses this gap by formulating a set of hypotheses specifically examining the influence of different organisational characteristics and strategies of MFIs (such as ownership structure, target lending demographics, and institutional size) on their outreach to women entrepreneurs.

The findings of this study suggests that the ownership structure of MFIs influence their social outreach, where Non-government Organisations (NGOs) are the most constant in reaching out to women entrepreneurs. This study sheds light on the relationship between institutional ownership and social impact goals, providing important theoretical insights. This study also broadens microfinance literature by highlighting how ownership affects the strategic orientation of MFIs and their focus on specific customer segments to align with their goals. This study addressed significant social consequences and financial viability, for the management of MFIs and policymakers where targeting specific segments can have an impact on the overall effectiveness of MFIs. Efficient strategies and regulatory frameworks need to redevelop to promote the sustainable development of MFIs

Furthermore, this study finds that MFIs pursuing a conservative self-sufficiency strategy, largely depending on their assets when designing their lending policies, are significantly higher outreach to women. Practically, these findings imply that MFIs customise their lending practices and operational frameworks that suit changing market conditions and competitive environment. Therefore, policymakers need to consider the regulatory framework and ownership dynamics when formulating SDG policies to enhance the performance of MFIs.

2. LITERATURE REVIEW

2.1. Microfinance, Entrepreneurship and Women

MFIs aim to serve as a developmental tool, to offer financial support in small loans for impoverished individuals in need that have limited or restricted access to traditional banks (Matin et al., 2002; Gudjonsson, et al., 2020; Fronda, 2024). Through microfinance, low-income households, small enterprises, particularly women, have alternative access to financial institutions (Ledgerwood, 1998; Augustine et al., 2016; Jasmi, 2020). This concept of outreach to women positioning MFIs is a social enterprise, committed to provide financial assistance to underserved female entrepreneurs, free from the constraints of gender inequality (Drori et al., 2020).

Microfinance plays a supportive role in fostering women's entrepreneurship, contributing to gender equality within the social landscape (Abebe and Kegne, 2023). Conventional financial institutions, notably banks, often exhibit bias against women, stemming from their disadvantaged financial circumstances and the absence of personal assets or collateral (Brana, 2013). Consequently, microfinance emerges as the primary financial recourse for women entrepreneurs, providing access to small-scale loans, alternative forms of collateral, and simplified application procedures (Swapna, 2017). These loans are utilized for various purposes such as retail sales, agricultural and trade activities, with resulting profits allocated towards consumption, education, healthcare, and other essentials (Lott, 2009; Togba, 2012; Aseanty and Hassan, 2013). Microfinance not only encourages women's entrepreneurship by facilitating the initial micro-loans for establishing or expanding businesses but also fosters saving opportunities for future investments (Cak and Değermen, 2015).

The beneficial influence of microfinance on women entrepreneurs, particularly in terms of income generation (Hillenkamp, 2015) and fostering financial autonomy (Boehe and Cruz, 2013), underscores its role in promoting greater autonomy for women and bridging societal divides. Furthermore, following access to microfinance, women entrepreneurs catalyse employment opportunities for numerous other women within their communities and across the nation, driven by empowerment and motivation (Swapna, 2017). Consequently, MFIs have emerged as pivotal instruments for women entrepreneurs, empowering them within their communities and broader society (Mayoux, 2001), enhancing their decision-making authority (Rahman et al., 2009), and garnering recognition from their families and peers (Afrin et al., 2010). The support microfinance extends to women entrepreneurship is indispensable for economic advancement as it (i) catalyses income-generating activities by affording women supplementary revenue streams, (ii) enables them to cultivate savings habits (Cak and Değermen, 2015), and (iii) nurtures the growth of female-owned enterprises (Swapna, 2017; Khursheed, 2022).

2.2. MFIs Lending Practices to Women

In worldwide practices, MFIs practice client-centric approaches according to demographic factors, business needs, and risk profiles by offering wide range of products that suits the needs of their clients, such as loans, insurance, deposits and remittances (Daley-Harris, 2009; Armendáriz and Morduch, 2010). In addition, MFIs' interest rate offered, and repayment periods are also critical in designing the lending approaches to the clients, to balance between outreach and the financial sustainability (Kar and Swain, 2014).

In the Asian region, studies on Bangladesh, India, and Pakistan that have similar modules with the Grameen Bank, focus on outreach to women, to enhance women's socio-economic status, empowerment, quality education and healthcare services (Hermes and Hudon, 2019; Khursheed, 2022). However, this is challenging to MFIs as they are becoming overburdened with debt tailored to women's unique requirements (Huis et al., 2019). In Sub-Saharan Africa region such as Tunisia and Ethiopia, studies suggest that MFIs are tailored to their clients based on the division between rural and urban areas, the diversity of ethnic backgrounds and the limited level of financial literacy among women, that pose the high risk for MFIs (Bonin et al., 2021; Bel Hadj Miled, 2022). Meanwhile, for Latin America regions such as in Bolivia, Peru, and Mexico, MFIs outreach to women to indigenous communities and rural areas (Weiss and Montgomery, 2005). For Europe and Central Asia, such as Bosnia and Herzegovina, Kosovo, and Kyrgyzstan, most studies (García-Pérez et al., 2020; Mia et al., 2022) focus on women empowerment in rural regions and ethnic minority communities.

2.3. Ownership Structure and Women

The Agency Theory are widely applied by literature in explaining the ownership structures. Originating from the realms of economics and management literature, Agency Theory delves into the intricate dynamics between principals (e.g., shareholders or owners) and agents (e.g., managers or employees) within organisations (Laher and Proffitt, 2020; Rasel and Win, 2020). This theory sheds light on the conflicts of interest that arise between the principals and agents where in the case of MFIs, these conflicts happened between different stakeholders, including MFI managers, loan officers, clients, and investors, due to different organisational characteristics, management structure, and lending methodology (Laher and Proffitt, 2020; Rasel and Win, 2020). For instance, MFIs with cooperative ownership types and village banks may differ due to distinct organisational structures and ownership dynamics meanwhile non-governmental organisations (NGOs) can have a substantial influence on the social and financial achievements of these institutions (Purwanto, 2020). These situations align with underlying principles of agency theory.

MFIs involve diverse ownership structures, including microfinance banks (MFI-banks), non-bank financial institutions (NBFIs), cooperatives or credit unions, and non- NGOs. Cooperatives, MFI-banks, Rural banks, and NBFIs are less sensitive to culture and gender policies in their operations and lending practices, which results in less outreach to women, particularly in rural and underserved areas (Kabeer, 2005; Daley-Harris, 2009). In addition, geographically isolated targeted MFIs such as rural banks and NBFIs face transportation constraints, communication barriers, and infrastructure limitations in reaching women in rural communities (Armendáriz and Morduch, 2010). Unlike Cooperatives, MFI-banks, Rural banks, and NBFIs, NGOs are driven by social goals as they are mainly community-based approaches that design poverty program tailored to the needs and preferences of the poor, thus outreaching to women, who are in constrained access to financial credit, positioned themselves as gender-sensitive institutions (Dichter and Harper, 2007; Rahman et al., 2017). By understanding socio-economic context, cultural norms, and financial barriers by women, NGOs have been effectively promoting women's empowerment, access to credit, savings, generate income, invest in education and healthcare, and assert greater control over household resources through their financial inclusion initiatives (D'Espallier et al., 2011; Dutta and Banerjee, 2018). Thus, consistent with the prior literature, this study suggests the following:

Hypothesis 1: NGOs are more likely to have a higher proportion of women entrepreneurs, compared to other organisational ownership of MFIs.

2.4. Target Market and Women

Market Segmentation Theory is among the best theory to discuss the target market of MFIs on its outreach to women. This theory implies segmentation of the market can be by size, product, geographic, demographic, function, socio psychological and behavioural (Snellman, 2000). In the case of microfinance practices, the market segmentation is divided based on their loan size, as it tailored to the clients' need based on the interest rates, collateral, repayment period.

MFIs have been recognised as institutions that have dual mission, financial sustainability and outreach by offering financial services to low-income individuals, particularly women, in developing nations. Studies discussed the positive effects regarding the shift of MFIs from low-income to high-income clients targeted markets due to financial sustainability (Kar, 2013), reporting the significant proportion of women entrepreneurs within their client base (Dichter and Harper, 2007; Lützenkirchen et al., 2012). This indicates that even though MFIs are targeting wealthier clients, the cost bearing in serving low-income clients is covered by focusing this market segment. This leads to the following hypothesis:

Hypothesis 2: MFIs targeting higher income clients are more likely to have a higher proportion of women entrepreneurs.

2.5. Institutional Size and Women

The Institutional Theory in the context of microfinance emphasises the role of social norms, cultural values, and regulatory framework in structuring the MFIs (Magali, 2023). This Institutional Theory consists of a framework in which organisational characteristics are influenced by institution, regulative, normative, and cognitive aspects (Scott, 2001), whereby applied to MFIs, as their mission statement, structures, size and practices strategies are shaped by institutional theory. The concept of economies of scale on MFIs outreach enhanced the fact that as MFIs growing, they can reach more clients due to better access to funding sources and efficient risk management (Cull et al., 2007; Hartarska et al., 2013; Kar, 2013). This means they are capable to reduce the operational costs that lead to competitive loan offers to their clients. For instance, largest MFIs, Grameen Bank has utilized its vast funds to carry out broad outreach, targeting mainly at women (Zacharias, 2008).

Moreover, literature (Lusweti and Mwasiaji, 2020; Muithya et al., 2022) observed MFIs concerns with social accountability by making efforts to reach out to female clients, therefore they might implement policies related with gender equality. This intricate relationship in MFIs matrix is emphasised in Institutional Theory. Prior research suggests that large MFIs have highly targeted women compared to smaller institutions (Swain and Wallentin, 2009). This demonstrates that large MFIs recognised women as potential clients, as they have a good reputation in repayment. Large MFIs also started to implement gender-sensitive lending policies, targeted outreach programs, and recognition of women's economic contributions within their communities (Lambin and Nyyssölä, 2024).

Total assets represent a standard measure of an institutional size (Serrano-Cinca and Gutierrez-Nieto, 2014). MFI assets refer to all asset accounts such as financial assets, earning assets, cash, and net fixed assets. MFIs that have larger assets are expected to be more operationally self-sufficient due to stronger ability to accommodate risk and enhance productivity through diversification of products and services (Pati, 2012). Hence, this study proposes the following:

Hypothesis 3: MFIs with higher total assets are more likely to have a higher proportion of women entrepreneurs.

3. METHODOLOGY

This study involves empirical analysis based on large-scale data generated and available from the World Bank. The data cover activities of 2,330 MFIs across 116 countries over the period from 2005 to 2018. The World Bank database provides information on MFIs' financial, operational, and social characteristics including staff, cost efficiency, profitability, self-sufficiency, and sustainability. In addition, the data of key macroeconomic and demographic characteristics (such as gross domestic product [GDP], population density, women population, and inflation), also available at World Bank.

To empirically test the hypotheses, this study estimates a pooled fractional logit model (Papke and Woolridge, 1996) alongside an ordinary least square (OLS) model (Hayes and Cai, 2007), with the dependent variable being MFI outreach to women entrepreneurs, measured as a fraction of women borrowers in each institution. The OLS is a statistical method that is widely used due to its unbiased estimator with minimum variance, thus making it a reliable statistical technique for linear regression model (Ashley and Parmeter, 2020; Mo and Madni, 2023). Meanwhile, the fractional logit model is chosen due to its distinct characteristics compared to the standard regression, in handling non-integer values. The fractional logit model deals with values distributed in the range of 0 and 1, thus increasing the accuracy for a more precise analysis (Meaney and Moineddin, 2014). In fact, by modelling the likelihood of observing a specific fractional outcome, the endogeneity issues can be effectively addressed within the realm of non-integer responses and moreover, addressing endogeneity is significantly and further aided by the incorporation of control variables (Bruno et al., 2024).

The OLS runs regression for pooled MFIs, which is used as a benchmark for the results. This study believes most of the women clients enter small business and entrepreneurship by taking loans from MFIs. This assertion aligns with a body of literature that underscores the transformative role of microfinance in empowering women economically. Numerous studies have highlighted the significant contributions of MFIs in facilitating women's entry into entrepreneurship and small business ownership by providing them with access to financial resources and essential support services (D'Espallier et al., 2011; Gine and Mansuri, 2011). For many women, particularly those in developing countries, MFIs serve as vital sources of capital, enabling them to initiate or expand microenterprises, such as retail shops, agricultural activities, and artisanal crafts (Kabeer, 2005; Atiase et al., 2020). Additionally, microfinance interventions have been associated with improvements in women's socio-economic status, empowerment, and overall well-being, with clients often experiencing greater control over household finances and increased decision-making power (Pitt et al., 2003; Dutta and Banerjee, 2018).

The MFI outreach is regressed on a set of independent variables such as organisational ownership, target market, and institutional size, as detailed in Table 1.

Organisational ownership refers to the legal form status of governance of MFIs (Tchakoute-Tchuigoua, 2010). It consists of MFI-bank, Cooperatives or credit union, rural bank, Non-government Organisation (NGOs), and other non-bank financial institutions (NBFIs). NGOs typically cannot accrue savings from their clients, whereas credit unions/cooperatives primarily rely on client savings, and NBFIs, rural, and commercial banks predominantly depend on shareholder investments and client deposits (Mia, 2022).

In addition, this study introduces several control variables, normally considered by the relevant literature. The control variables in this study include number of offices, region, as well as key macroeconomic indicators such as gross domestic product (GDP), population density, women population, and inflation (Table 1 for further details). In previous research, the inclusion of the number of offices (Pati, 2012; Ashraf et al., 2014) and region (D'Espallier et al., 2013; Girón, 2015) as control variables are intended to address potential influencing factors that may confound the geographical and operational scale, organisational structure,

Table 1: Descriptive statistics

Variables	Description	Mean	Standard deviation	Min	Max
Dependent					
Women entrepreneurs	Fraction of women borrowers (Number of women borrowers/numbers of all active borrowers).	0.611	0.289	0	1
Independents:					
Ownership structure: MFI-bank	A financial intermediary who is licensed and regulated by a state banking supervisory body. It may offer a variety of financial services. 1 if Yes, otherwise 0.	0.092	0.289	0	1
Cooperative or Credit Union	A non-profit financial intermediary with a membership base, provides a variety of financial services to its members. 1 if Yes, otherwise 0.	0.172	0.377	0	1
NGOs	A non-profit organisation that offers limited financial services but is not involved with deposit taking. 1 if Yes, otherwise 0.	0.337	0.473	0	1
Rural bank	Banks that cater to clientele who live and work in rural areas and are often involved in agricultural-related industries. 1 if Yes, otherwise 0.	0.043	0.204	0	1
Other NBFI	A financial institution that offers similar services to banks but has separate licences due to lower capital requirements, restrictions on financial service offerings. 1 if Yes, otherwise 0.	0.356	0.479	0	1
Target market					
Low-end	1, if depth <20% or average loan size <$150, otherwise 0. Depth is average loan balance per borrower/Gross National Income per capita.	0.433	0.496	0	1
Broad-end	1, if depth between 20% and 149%, otherwise 0.	0.463	0.499	0	1
High-end	1, if depth over 150%, otherwise 0.	0.103	0.304	0	1
Institutional size	Ln; Total asset. Total value of resources controlled by the Financial Service Providers (FSP) as a result of past events and from which future economic benefits are expected to flow to the FSP. For calculation purposes, assets are the sum of each individual asset account listed.	15.488	2.315	0	24.567
Controls					
Offices	Ln; number of MFI branches.	2.414	1.309	0	8.432
Gross domestic product	Ln; National income/National output and national expenditure.	25.013	1.998	19.578	30.029
Population density	Ln; The total number of people/areas of land (measured in square miles or square kilometres).	4.442	1.165	0.965	7.121
Women population	Ln; based on the de facto definition of population, which counts all female residents regardless of legal status or citizenship.	3.933	0.020	3.856	4.003
Inflation	Ln; Sum of (Retail Price Index × Weighted Price Index)/ Weighted Price Index × 100.	1.984	0.769	-3.263	4.652
Region					
Sub-Saharan Africa (SSA)	1 if Yes, otherwise 0. Countries included: Angola, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, the Democratic Republic of the Congo, Republic of the Congo, Cote d'Ivoire, Ethiopia, Gabon, the Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, and Sierra Leone.	0.208	0.406	0	1
East Asia Pacific (EAP)	1 if Yes, otherwise 0. Countries included: Cambodia, People's Republic of China, East Timor, Fiji, Indonesia, Laos, Malaysia, Myanmar (Burma), Papua New Guinea, Philippines, Samoa, Solomon Islands, Thailand, Tonga and Vietnam.	0.122	0.327	0	1
Eastern Europe and Central Asia (EECA)	1 if Yes, otherwise 0. Countries included: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Georgia, Kazakhstan, Kosovo, Kyrgyzstan, Macedonia, Moldova, Mongolia, Montenegro, Poland, Romania, Russia, Serbia, Tajikistan, Turkey, Ukraine, and Uzbekistan.	0.173	0.379	0	1

(*Contd...*)

Table 1: (*Continued*)

Variables	Description	Mean	Standard deviation	Min	Max
Latin America and the Caribbean (LAC)	1 if Yes, otherwise 0. Countries included: Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Suriname, Trinidad and Tobago, Uruguay and Venezuela.	0.289	0.453	0	1
Middle East and North Africa (MENA)	1 if Yes, otherwise 0. Countries included: Egypt, Iraq, Jordan, Lebanon, Morocco, Palestine, Sudan, Syria, Tunisia, and Yemen.	0.043	0.202	0	1
South Asia (SA)	1 if Yes, otherwise 0. Countries included: Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka.	0.165	0.371	0	1

and the efficiency of the MFIs. Meanwhile, GDP (Ashraf and Hassan, 2011) and inflation (Alshubiri, 2021) are included as the control variables to address the factors of economics and its performance. In addition, the women population and population density are also included for the purpose of addressing the impact of MFIs on women from the economic aspect and to avoid flaw of attribution in population density (Abrar, 2019; Mushtaq and Bruneau, 2019). Thus, these control variables robustly strengthen the analysis and hence could provide a more precise assessment and findings of the research model.

A fuzzy algorithm and principal component analysis (PCA) methods are performed on the dataset to further verify the reliability of the results. The fuzzy algorithm, called chemometrics fuzzy autocatalytic set (c-FACS) (Hassan et al., 2023) is used to model the dataset. The complexity of the dataset is handled using the c-FACS algorithm, whereby Perron-Frobenius Theorem procedures in the algorithm able to model and deplete the insignificant variables. Moreover, the conversion of the dataset to fuzzy value in the algorithm increases the precision in obtaining more accurate results (Kapitanova et al., 2010). The algorithm is performed using MATLAB version R2017b (Mathworks, Natick, MA). As a result, the significant fuzzy values in a form of matrix are obtained and analysed in PCA for cluster plot. The PCA is a statistical method that is commonly used to analyse and classify variables in a coordinate plane of first and second principal components (PC1 and PC2) (Alkhayrat et al., 2020). The most significant variables or elements can be identified through the score plot of the PC1 and PC2. The PCA is an established technique for data visualisation and was proven to be reliable and robust due to its capability in reducing data dimensionality while conserving significant variance (Yimer et al., 2021).

4. RESULTS AND DISCUSSION

Table 1 reports descriptive statistics run in STATA. Women entrepreneurs are ranging from 0 to 1 as a fraction of women entrepreneurs among clients. The average value of 0.611 demonstrates a large fraction of the clients are women. Independent variables of organisational ownership structure (MFI-bank, cooperative, NGOs, rural bank and other-NBFIs) as well as target lending market (broad, high and low-income) are set as dummy variables to run the regression. Among different types of ownership structure, NGOs and other types of ownership like NBFIs are dominant players in microfinance industries. As a target lending market, MFIs are more likely to offer small end and large size of loans.

Table 2 reports results of OLS and logit regression. In relation to ownership structure, unlike NGOs, microfinance banks, cooperatives or credit unions, rural banks also remain among institutions associated with a significantly lower proportion of women entrepreneurs (as compared to non-banking institutions).

The results are generally supportive of Hypothesis 1 in relation to the role of NGOs, are socially oriented thus reaching more to women entrepreneurs, compared to commercially oriented institutions (D'Espallier et al., 2013; Kar, 2013). Non-Governmental organisations (NGOs) have a proven track record of consistently reaching out to women entrepreneurs in microfinance initiatives (Mayoux, 2001; Kabeer, 2005). Their success can be attributed to their intentional program design, specifically tailored to the unique needs and circumstances of women, particularly those in marginalised or underserved communities (Dichter and Harper, 2007). Through a combination of targeted outreach efforts, active community engagement, and culturally sensitive approaches, NGOs effectively dismantle obstacles that may impede women's access to financial services (Armendáriz and Labie, 2011). Furthermore, these organisations prioritise gender inclusivity in their policies and practices, ensuring that women have equal opportunities to benefit from microfinance interventions (Swain and Wallentin, 2009). By empowering women economically, NGOs play a crucial role in promoting entrepreneurship, improving household welfare, and fostering broader socio-economic development (Dutta and Banerjee, 2018). Thus, their committed dedication in outreach to women entrepreneurs serves as a fundamental pillar in advancing financial inclusion and promoting gender equity.

In line with Hypothesis 2, this study finds a significant relationship between the target lending market of MFIs and their outreach to women, indicating MFIs that prioritise affluent clients are associated with a significantly higher proportion of women compared to MFIs prioritising clients who can afford medium-size loans. Growing MFIs are shifting from low-income to high-income clients, however, they are not forgetting in outreaching to women borrowers (Dichter and Harper, 2007). These MFIs reach out to affluent clients for expanding businesses, and at the same time, they accommodate the risk of serving poor women borrowers in exploring business opportunities. These will strengthen MFIs not only as strong institutions, but also as pivotal institutions in fostering a financial ecosystem for broader social change.

Moreover, this study finds a significant positive relationship between assets and women entrepreneurs, demonstrating MFIs with higher total assets are more likely to have a higher proportion of women entrepreneurs. In line with hypothesis 3, MFIs with larger assets capable of diversified risk as they are more experienced and operationally self-sufficient in enhancing productivity, inclined to serve women clients (Rahman et al., 2009; Corsi and Angelis, 2016). This indicates a balanced social and financial targets in lending strategies. This reflects prior study wherein as MFIs expand their operations and broaden their outreach, they attract a more varied client base, and at the same time, they maintain a substantial number of women entrepreneurs within this demographic exhibits a dedication to gender inclusivity and emphasises the importance of women's involvement in the economy (Armendáriz and Labie, 2011; Bateman and Chang, 2009). Large MFIs, through focused initiatives like gender-sensitive lending policies and outreach programs, facilitate women's access to financial resources, thereby promoting economic empowerment, reducing gender disparities, and fostering inclusive growth (Wijesiri et al., 2017; Lambin and Nyyssölä, 2024).

Table 2: Regression results

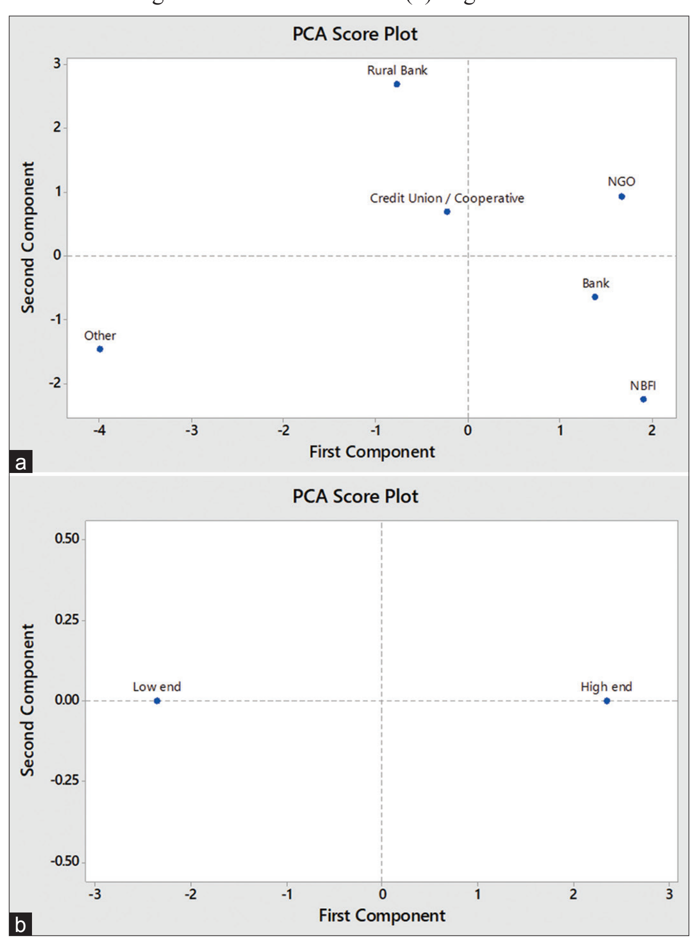
Variables	(OLS) Fraction of female borrowers	(Fractional Logit) Fraction of female borrowers
Ownership structure		
Bank	−0.0718***	−0.0580
	(0.00901)	(0.307)
Cooperative or credit union	−0.0901***	−0.629***
	(0.00751)	(0.207)
NGO	0.0365***	1.345***
	(0.00584)	(0.312)
Rural Bank	−0.170***	−1.274***
	(0.0123)	(0.329)
+Others-NBFI		
Target market		
Low-end	−0.0894***	−1.477***
	(0.00882)	(0.219)
High-end	0.181***	0.939***
	(0.00602)	(0.229)
+Broad end		
Total assets	0.00924***	0.137**
	(0.00202)	(0.0544)
Controls		
Offices	0.0207***	0.221**
	(0.00297)	(0.103)
GDP	0.00643***	0.317***
	(0.00164)	(0.0645)
Population density	0.00608**	0.227**
	(0.00279)	(0.106)
Female population	1.006***	2.580
	(0.147)	(6.490)
Inflation	0.0136***	0.159
	(0.00342)	(0.108)
EAP	0.122***	0.263
	(0.0100)	(0.325)
EECA	0.100***	1.508***
	(0.00879)	(0.372)
LAC	−0.00225	−0.0687
	(0.00793)	(0.262)
MENA	−0.125***	−0.155
	(0.0157)	(0.766)
SA	0.187***	3.202***
	(0.00988)	(0.779)
+SSA		
Constant	−3.161***	−0.728
	(0.591)	(25.86)
Observations	8,752	8,752
R-squared	0.426	

*P<0.1; **P<0.05; ***P<0.01. Standard errors are in parentheses. +Denotes reference category

For robustness check, the fuzzy graph algorithm and PCA is performed on the similar dataset, to further analyse the dataset and verify the findings of OLS and logit regression. The results in a form of score plot is shown in Figure 1.

The PCA score plot displays significant variables at the upper right quadrant, which is the area with positive components. The PCA score plot in (Figure 1a) for variables of organisational ownership structure shows that NGO is the most significant variable, while the PCA score plot in (Figure 1b) shows MFIs targeting high-end clients are significant on women entrepreneurs. Thus, this robustly

Figure 1: The principal component analysis score plot for (a) organisational structure and (b) target market



verifies the earlier findings in which the NGOs are the pivotal MFIs in reaching women entrepreneurs, and MFIs focusing on serving affluent clients are more likely to extend their services to women due to their extensive resources.

5. CONCLUSION AND IMPLICATIONS

This study is a unique attempt to explore the role of organisational characteristics on women entrepreneurs and provide critical insights into a set of specific organisational channels and forms via which MFI outreach to women can be strengthened and expanded. The influence of organisational characteristics of MFIs such as ownership structure, target market segmentation, and institutions size on women entrepreneurs remains relatively unexplored, motivating this study to fill the gap in this extant literature. This study develops hypotheses linking organisational characteristics and their implications for lending practices related to women entrepreneurs as microfinance clients. This study involves longitudinal analysis of 2,330 MFIs operating across 116 countries of MFIs' characteristics on women entrepreneurs. This study provides robust insights into the dynamics of microfinance, particularly regarding the relationship between MFI organisational characteristics, ownership status, market segmentation strategies, with women entrepreneurs.

This study reveals that organisational characteristics have a substantial influence on microfinance lending practices on women entrepreneurs. This contributes insights to the existing microfinance literature, particularly concerning the effects of organisational characteristics on the outreach efficacy of MFIs. The study identifies those differences of ownership lead to different organisational missions. Notably, NGOs are the most consistent MFIs in reaching women, propelled by their social objectives, thus corroborating earlier literature on NGOs. Additionally, findings reveal the profound impact of market segmentation on engaging women entrepreneurs. MFIs prioritising wealthier clients in their lending practices attract a higher proportion of women entrepreneurs. Furthermore, the study unveils that larger MFIs with greater assets, possess a competitive edge in catering to affluent clientele and reaching a broader demographic of women. This enhances the fact that these MFIs act as the pivotal role of operational sustainability in achieving social impact objectives.

However, the secondary longitudinal data utilised in this study are sourced from the World Bank database, which is widely utilised by scholars to evaluate the performance of MFIs across various contexts, including operational, social, and financial aspects. This database is favoured due to its accessibility on the website and the self-reported nature of the information provided by participating MFIs regarding their operations, finances, and social impact. Consequently, this may impose constraints on the depth of research conducted in examining the effectiveness and efficiency of MFIs' social performance.

Therefore, since this study relies on secondary quantitative data, future research endeavours could incorporate qualitative data sources, such as interviews or surveys, to enrich and fortify the research findings. Additionally, further exploration could adopt a meta-analysis approach to assess the alignment of operational practices among different MFIs and industries across varying technological landscapes.

The results obtained have important theoretical and practical implications. First, this study contributes to financial regulation as findings revealed the differences of ownership of MFIs affect the direction of MFIs' goals. MFIs' performance varies according to their legal ownership status, where NGOs are the most consistent in reaching women entrepreneurs, strengthening the view of NGOs as a social organisation. The findings regarding the influence of ownership structure on MFIs' goals have significant theoretical implications for understanding the intersection of institutional ownership and social welfare objectives. The consistent performance of NGOs in reaching women entrepreneurs suggests that non-profit ownership aligns with a stronger commitment to social welfare, such as gender inclusivity.

Second, this study contributes to the theoretical implications on the strong effects of market segmentation on outreach to women entrepreneurs. MFIs prioritising affluent clients in their lending activities are having a significantly higher proportion of women entrepreneurs. This contributes to theories of financial inclusion by highlighting the role of product design and customization in facilitating access to finance for marginalised groups.

Third, this study finds that MFIs institutional size plays an important role in reaching women entrepreneurs. The relationship between MFIs' institutional size and their ability to reach women entrepreneurs expands existing literature where larger MFIs with greater assets are better positioned to cater to wealthier clients and reach more women underscores the importance of scale and depth of social outreach in achieving social welfare goals and reducing the poverty. This emphasises MFIs growth have high potential to expand their outreach to underserved populations, enhancing the synergies between organisational scale and depth, financial viability, and social mission attainment in the microfinance context.

Combined, the results provide important insights into a set of specific organisational channels and structures that can emphasise outreach efforts toward women entrepreneurs by MFIs. This, in turn, contributes to outlining a potential research direction aimed at delving deeper into the mechanisms and dynamics by which these channels and structure's function, develop, and respond to pertinent organisational and policy interventions within various regulatory, normative, and cultural contexts.

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