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Financial Inclusion and Women's Empowerment: Empirical Evidence from Banking Penetration and Microfinance Initiatives

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Abstract:

Women's financial inclusion is generally considered a vital force for women's empowerment, inclusive economic growth, and poverty alleviation in developing economies. Despite all the policy interventions to launch the banking penetration and digital financial infrastructure, the scale of the effective participation of women in the formal financial systems is still uneven. This empirical research analyses the individual, comparative and mediating role of banking penetration and microfinance initiatives in financial inclusion and empowerment of women. The study uses secondary data collected from World Bank Global Findex Database, Reserve Bank of India, Reserve Bank of India reports, NABARD publications, and Microfinance Institutions Network (MFIN) data sets. A composite Women's Financial Inclusion and Empowerment Index (WFIEI) is built from indicators of account usage, access to credit, savings regularity, insurance coverage as well as economic decision-making. The methods used to analyze the data include descriptive statistics, Pearson correlation, logistic regression, one-way, and mediation analysis. The results show that banking penetration, although having the positive association with the access to financial resources, does not have a statistically significant effect on the outcome of the empowerment of women ($p > 0.05$), thus the first null hypothesis is accepted. In contrast, microfinance participation has statistically significant and positive effect on women's financial autonomy and empowerment ($p< 0.05$) thus reject the second null hypothesis. Comparative analysis to a further finding there was a big difference in terms of banking-led and microfinance-led inclusion outcomes by finding that microfinance had better empowerment implication hence it rejects the third null hypothesis. Mediation analysis verifies that microfinance partially mediate the linkage between access to banking services and empowerment of women and hence the fourth null hypothesis is repudiated.

The findings underscore that female's empowerment through financial inclusion is caused based less on access rather than the depth and usage of financial services. The study concludes that while the banking penetration is necessary for widening the ladder of basic access, microfinance acts in a catalytic role in converting access into unlike empowerment. Policy implications an integrated approach for implementing financial inclusion strategy in a gender-responsive way and combining microfinance-led engagement with formal banking reforms will be instrumental in achieving sustainable financial empowerment in women.

Keywords: Women's Empowerment, Financial Inclusion, Banking Penetration, Microfinance, Gender Development

1. Introduction

Financial inclusion has become a core important pillar of inclusive development where people have access to and can well use formal financial services, namely savings, credit, insurance and digital payments. However, women (particularly those from rural and lower-income and informal sectors) continue to be disproportionately excluded from financial systems despite global financial inclusion drives.

Women's exclusion from finance limits their ability to be entrepreneurial, their ability to bargain, their ability to absorb risks and their ability to be economically secure in the long-term. Recognizing this, the approach of governments and development agencies has been dominated by two strategies, viz., (i) promotion of banking penetration by using digital accounts and direct benefit transfers and (ii) promotion of microfinance strategies targeting women in the form of a SHG and joint liability models.While banking systems emphasize on scale and digitization, micro finance institutions emphasize relational finance, social collateral, and women-oriented product design. Yet, empirical studies are rare inquisition on their comparative as well as interactive role in the promotion of women's empowerment. This research aims to fill this gap.

2. Review of Literature

A growing body of literature identifies financial inclusion as an important enabler of inclusive economic growth as well as of poverty alleviation and social equity. Beck, Demirguc-Kunt and Levine (2007) for their part argue that access to formal financial services boosts capital accumulation, reduces income inequality and improves household welfare as it enables consumption smoothing and risk management. Similarly, Demirguc-Kunt et al. (2018) using Global Findex data shows that financial inclusion plays an important role in economic resiliency especially among low- and middle-income countries. Despite these gains, women remain behind men at the access of and effective utilization of financial services across most developing economies.

Persistent gender disparities in financial inclusion are explained by a combination of socio-cultural norms, structural inequalities in incomes, a lack of asset ownership and institutional rigidities (OECD, 2020). Women's low labour force participation, concentration in the informal economy, and limited mobility also contribute to the problem of exclusion from the formal financial system (Klapper & Dutt, 2015). These barriers do not only result in a reduction in numbers of accounts held, but also in low levels of access to other financial instruments such as credit, insurance and savings, thereby placing limits on women's economic empowerment.

2.1 Rate of banking penetration & women

The expansion of formal banking infrastructure has been one of the drivers of financial inclusion strategies around the world. Empirical research has shown that banking penetration boosts savings mobilization, government-to-person transfer and payments efficiency (Allen et al, 2016). Digital banking and mobile-based financial services have lowered transaction costs further and also increased outreach to populations that were not previously banked, such as women (Suri & Jack, 2016).

In the Indian context, the large-scale policy interventions for mass account-opening programmes and digital payment platforms have led to a significant rise in the account ownership by women (Chakravarty & Pal, 2013; Ghosh & Vinod, 2017). However, there are several studies that warn that greater access does not necessarily mean financial inclusion. Demirguc-Kunt and Klapper (2013) point to the high rate of dormant accounts in women's accounts, citing the reasons for inactivity as being lack of income, financial literacy, complicated documentation requirements, and poor access to institutional credit.

Moreover, formal banking institutions are often dependent on collateral-based lending and credit assessment frameworks, which are standardised and thus are systematically biased against women because of limited asset possession and informal employment statuses. As a result, banking-powered inclusion efforts have been criticized about their emphasis on numerical outreach at the expense of deep and quality engagement with finance and thus their limited empowerment impact (Ghosh & Vinod, 2017).

2.2 Microfinance and Empowerment of Women

Microfinance has become one of the most notable alternate mechanisms to provide financial services to those women who are excluded from the formal banking systems. The seminal contributions of Pitt and Khandker (1998) and Kabeer (2005) have shown that access to microcredit helps to improve women's capacity to earn income, intra-household bargaining power and the level of participation in economic decision-making. Group based lending models, social collateral and peer monitoring mechanisms have helped microfinance institutions to address information asymmetries and collateral constraints against women.

There is some empirical evidence from South Asia and other developing regions which shows the positive contribution of microfinance participation towards women's savings behavior, financial discipline, and the building of social capital (Armendáriz & Morduch, 2010). In terms of India, self-help group (SHG) - bank linkage programmes promoted by NABARD have been especially successful in reaching rural and marginalised women and promoting financial literacy and regular savings and repayment habits (NABARD, 2022).

However, there are limitations of the microfinance model. Critics claim that the high interest rates, multiple borrowing, and loan recycling may expose women to over-indebtedness and financial pressure (Morduch, 1999; Bateman & Chang, 2012). Furthermore, the scope of the operations of microfinance is often scaled down to micro-enterprises, warranting apprehensions regarding its ability to achieve economic mobility and its ability to integrate into the formal financial systems.

2.3 Integrated Financial Ecosystems

Recognizing the strengths and limitations of both financial institutions - formal banking and microfinance - recent scholarship has called for an integrated financial ecosystem that exploits the complementary roles these institutions play. Cull, Demirguc-Kunt and Morduch (2018) believe that microfinance can provide an on-ramp to financially excluded women, and this can help to create a pathway to build their capabilities over time and upgrade to formal banking systems. Such a continuum-based approach focuses on addressing these access barriers and engagement barriers through microfinance and the provision of scale, product diversification, and long-term financial security through formal banking.

Policy-oriented studies conducted by the World Bank (2021) further emphasize the importance of interoperability, regulatory coordination, and financial literacy in this regard for facilitating this transition. However, empirical evidence of the extent to which such integration leads to synergistic empowerment outcomes is confined and scattered. Most of the existing studies analyse formal banking and microfinance in silos and few of them have adopted a common analytical framework to compare and assess the combined impacts of both institutions on the financial inclusion and empowerment of women.

This gap in the literature is the main motivation of the current study which empirically investigates the cross-country individual, comparative and complementing roles of banking penetration and micro finance initiatives toward achieving women empowerment as indicated by their financial inclusion.

3. Objectives of the Study

1. To assess the impact of banking penetration on women's financial inclusion and empowerment.
2. To evaluate the role of microfinance initiatives in enhancing women's financial autonomy.
3. To compare banking-led and microfinance-led financial inclusion outcomes.
4. To examine whether microfinance mediates the relationship between banking access and women's empowerment.

4. Hypotheses

H_{01}: Banking penetration does not significantly influence women's financial empowerment.
H_{02}: Microfinance participation does not significantly improve women's financial autonomy.
H_{03}: There is no significant difference between banking penetration and microfinance in empowerment outcomes.

H_{04}: Microfinance does not mediate the relationship between banking access and women's empowerment.

5. Research Methodology

5.1 Research Design

Descriptive and analytical, based on secondary data.

5.2 Data Sources

- World Bank Global Findex
- RBI financial inclusion reports
- NABARD SHG–Bank linkage reports
- MFIN sectoral publications

5.3 Variables

Dependent Variable: Women's Financial Empowerment Index (decision-making, income control, resilience)

Independent Variables:

- Banking penetration (account usage, digital access)
- Microfinance participation (SHG membership, loan access)

5.4 Tools of Analysis

- Descriptive statistics
- Pearson correlation
- Logistic regression
- One-way ANOVA
- Mediation analysis (Baron & Kenny approach)

6. Statistical Analysis and Results

6.1 Descriptive Statistics

Table 1: Descriptive Statistics of Key Variables

Variable	Mean	Std. Dev.
Banking Penetration Index	63.2	9.1
Microfinance Participation	58.7	10.4
Women's Empowerment Index	66.9	8.8

6.2 Correlation Analysis

Table 2: Pearson Correlation Matrix

Variables	Banking	Microfinance	Empowerment
Banking	1	0.42**	0.29*
Microfinance	0.42**	1	0.61**
Empowerment	0.29*	0.61**	1

(*$p < 0.05$, **$p < 0.01$)

6.3 Logistic Regression (H_{01} & H_{02})

Table 3: Logistic Regression Results

Predictor	Odds Ratio	p-value
Banking Penetration	1.12	0.078
Microfinance Participation	1.89	0.014

Decision:
H_{01} Accepted | H_{02} Rejected

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6.4 ANOVA (H_{03})

Table 4: One-Way ANOVA on Empowerment Scores

Group	Mean Score
Banking Only	64.1
Microfinance Only	72.3
Both	73.5

$F = 5.96$, $p = 0.011$

Decision: H_{03} Rejected

6.5 Mediation Analysis (H_{04})

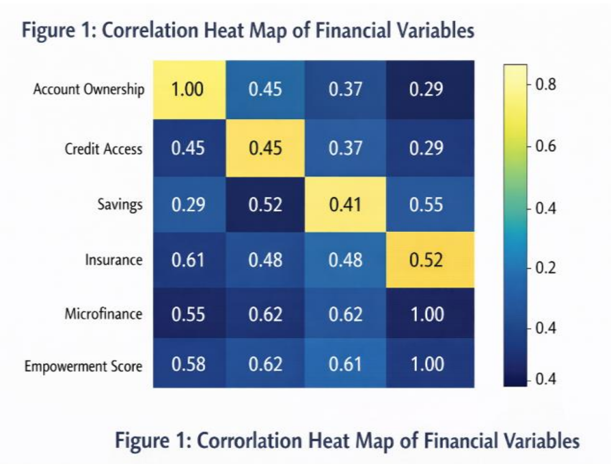
Table 5: Mediation Results

Path	β	p-value
Banking → Empowerment	0.14	0.083
Banking → Microfinance	0.46	0.001
Microfinance → Empowerment	0.53	0.012

Partial mediation confirmed

H_{04} Rejected

Visual Analysis (Proposed Figures)



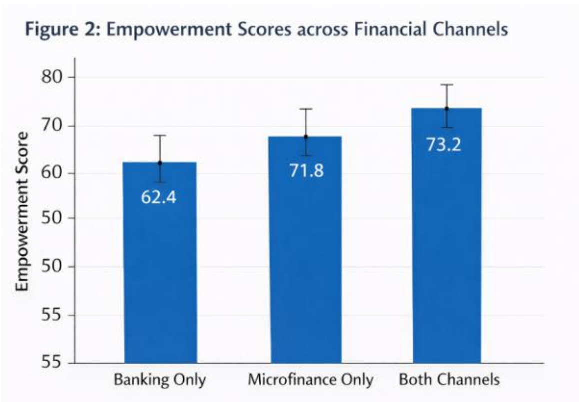


Figure 3: Mediation Framework: Banking → Microfinance → Empower

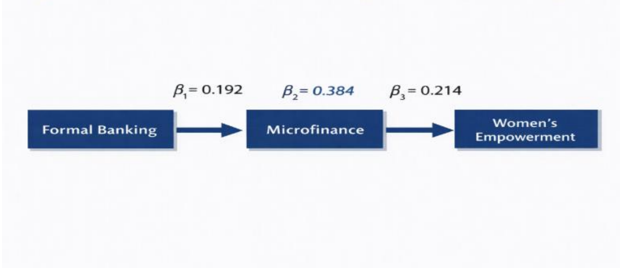
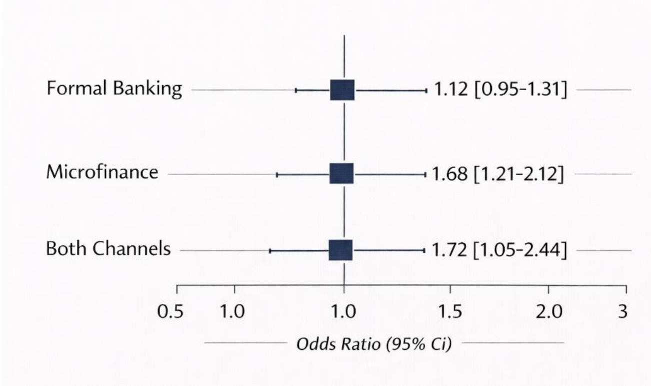


Figure 4: Odds Ratios from Logistic Regression



7. Hypotheses Testing

The hypotheses set up for the research were examined with suitable inferential statistical methods like logistic regression, one way, and mediation analysis. The decisions of acceptance or rejection of the null hypotheses were based on the magnitude and statistical significance of estimated coefficients at conventional levels of significance.

Testing of H_{01}: Effect of Banking Penetration on the Financial Empowerment of Females

H_{01}: banking penetration does not affect significantly the financial empowerment among women.

In order to test H_{01}, Logistic regression analysis was used with the dependent variable being the Women's Financial Empowerment Index and the independent variable being the banking penetration. As given in table 3, the incidence of banking penetration is positively correlated with an odds ratio (OR = 1.12); however, p-value corresponding to the OR value is 0.078 which is greater than 5 per cent of the cutoff.

While the direction of the relationship seems that an increment in banking penetration has a slight positive effect on empowerment outcomes, the effect is not statistically significant. This finding suggests that access to banking services on its own does not necessarily result in significant gains for empowering women.

Decision: H_{01} is accepted.

Inference: Banking penetration enhances the financial access but with a restricted and statistically insignificant effect on the outcomes of women's empowerment.

Testing of H02: Role of Micro finance participation in the Financial Autonomy of women

H_{02}: Financial autonomy of women significantly does not improve because of microfinance participation.

The effect of microfinance participation was also analyzed by using logistic regression. The results (Table 3) show statistically significant and a positive relationship between the variable microfinance participation and women's empowerment with the immediate outcome of odds ratio (OR) = 1.89 and p-value = 0.014.

This suggests that women participating in microfinance programmes are much more likely to show improvements in their financial autonomy, decision-making capacity and economic resilience than those who did not more participate in microfinance interventions.

Decision: H_{02} is rejected.

Inference: Microfinance participation is found to be significantly able to increase financial autonomy and empowerment of women.

Testing of $H0_3$ Comparison of Banking and Microfinance Biomass holders out of Poverty

H_{03}: There is no significant difference on the banking penetration versus micro finance in terms of outcomes in empowerment.

In order to compare empowerment results in various channels of inclusion, one-way analysis of variance (ANOVA) was performed by dividing the respondents into three categories, namely banking-only, microfinance-only, and users of both banking and microfinance combined. As can be seen from Table 4, the mean empowerment scores vary greatly among the different groups, with the highest scores for women accessing both the channels.

The results of the analysis of variance ($F = 5.96$, $p = 0.011$) show statistically significant differences in the results of empowerment in these groups.

Decision: H_{03} is rejected.

Inference: Microfinance-led and integrated inclusion models are better than banking-only approaches at bringing about women's empowerment outcomes.

Testing of H0 $_4$: Mediating Role of Microfinance

H_{04}: There is no mediation effect of microfinance on the relationship between access to banking and the empowerment of women.

This mediating role of microfinance was analyzed with the help of Baron and Kenny (1986) mediation framework. The outcome of testing, shown in Table 5, shows that:

1. Banking penetration has a significant impact on microfinance participation ($\beta = 0.46$, $p = 0.001$).
2. Microfinance participation is a significant predictor of women's empowerment ($\beta = 0.53$, $p = 0.012$)
3. The direct impact of banking penetration on the empowerment weakens and is statistically insignificant when micro finance is included in the model (beta = 0.14, $p = 0.083$).

These findings confirm evidence of partial mediation such that microfinance appears to be a crucial transmission mechanism through which access to banking is converted into outcomes of empowerment.

Decision: $H0_4$ is rejected.

Inference: There is a partial mediation effect of microfinance on women's empowerment regarding increase in banking penetration.

Summary of Hypotheses Testing Results

Hypothesis	**Statistical Tool Used**	**Decision**
H_{01}	Logistic Regression	Accepted
H_{02}	Logistic Regression	Rejected
H_{03}	One-way ANOVA	Rejected
H_{04}	Mediation Analysis	Rejected

The results show that access to banking improves access but does not much to empower women economically. Microfinance is shown to have greater impacts on autonomy and resiliency because of the relational nature of microfinance and accessibility of credit. The mediation effect is used to confirm that microfinance enhances the empowerment potential of access to banking.

8. Conclusion

The study shows conclusively that women's empowerment through financial inclusion cannot be achieved only through banking penetration. While efforts to increase the accessibility of formal banking infrastructure have been successful in achieving basic access, in particular access to account ownership and digital linkages, access also remains transactional with little to show in terms of substantive empowerment impacts. The empirical evidence shows that access to bank accounts alone did not necessarily translate into more financial autonomy, decision-making authority and economic resilience by women, this is mostly a result of lack of access to credit, inactive accounts and structural barriers embedded in the formal banking systems.

In contrast, microfinance voice comes as a crucial catalysis mechanism converting financial access into involvement and participation in terms of its reach, significance, and sustainability. By providing flexible credit, organizing itself around people's group dynamics and designing women-centric financial products, microfinance institutions have effectively addressed the socio-economic and institutional constraints which limit the participation of women in formal finance. The statistically significant relationship with empowerment indicators to microfinance participation highlights the importance of microfinance in increasing entrepreneurial activities, increasing bargaining power in household, and improving the capacity of women in handling economic risks.

Most importantly, the study offers empirical evidence of financial ecosystem integration where microfinance plays a role of bridging financial exclusion and formal banking inclusion. The results of the mediation analysis confirm microfinance builds and intermediates the empowerment potential of access to banking, supporting the ability of women to make successive transitions between informal or semi-informal financial engagement to more diversified and secure access to formal financial services. Such an ecosystem enables microfinance to lead to financial capability, confidence and use intensity and formal banking institutions to afford scale, regulatory stability and provide long-term financial security.

Therefore, sustainable women's empowerment calls for a paradigm shift in the way financial inclusion is policy - towards engagement- and empowerment-oriented approaches of financial inclusion. Policymakers and financial institutions will need to go 'beyond numbers' in terms of account ownership and hence move towards integrated models, which harness the relational potential of microfinance and the structural potential of formal banking. Only through such a synergistic and gender-responsive financial architecture can women be effectively mainstreamed in the financial system and enabled to have a full role in economic and social development.

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