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# NEXUS AMONG FINANCIAL LITERACY, FINANCIAL INCLUSION AND MICROFINANCE DEVELOPMENT

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## Abstract:

This paper explores link among financial literacy, financial inclusion, and microfinance development in Pakistan to understand their impact on economic growth and individual well-being. The objectives of this paper are to examine these relationships and draw meaningful conclusion based on their interconnectedness. The empirical findings reveal that active borrowers have positive and significant impact on microfinance development, emphasizing the need to expand access to microfinance services. The study suggests: (i) to improve financial literacy (ii) to expands access to financial services (iii) to introduce innovating microfinance products and (iv) to cut interest rate on microfinance loans and soften collateral conditions.

**Key words:** Financial literacy; financial Inclusion; microfinance development; poverty alleviation; economic development.
**Type of study:** Original research Article

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# 1. Introduction

Financial literacy plays a vital role in empowering individuals to make informed financial decisions, ultimately leading to improved living standards and community well-being. It equips people with the knowledge and skills needed to effectively utilize resources, make sound borrowing decisions, and become proactive decision-makers. This ability is particularly crucial for marginalized populations, as it enables them to build assets, start saving, and access formal financial services. In tandem, financial inclusion strives to ensure that these services are accessible to all, especially those with low incomes. This initiative aims to integrate a wider demographic into the formal banking sector, with the overarching goal of poverty reduction and enhanced living standards. Microfinance institutions, with their tailored solutions and low collateral requirements, are pivotal in this process, providing loans and credit facilities to those who need them most. The relationship between financial literacy, financial inclusion, financial services, and microfinance development in Pakistan holds significant implications for the nation's economic growth and overall well-being. Financial literacy is not just an academic concept; it's a practical tool that enables individuals to navigate the complexities of formal financial systems. It serves as a cornerstone for informed decision-making, allowing people to build assets and improve their economic standing. In this context, financial inclusion acts as an enabler, ensuring that even the most economically vulnerable populations have access to affordable financial services. Microfinance institutions are at the forefront of this effort, providing vital banking services to low-income individuals and contributing to inclusive growth.

In Pakistan, where the formal banking sector still remains largely untapped by a significant portion of the population, the importance of financial literacy and inclusion cannot be overstated. Many individuals, unaware of formal banking operations, turn to private lenders, incurring unnecessary expenses and hindering economic progress. This study aims to shed light on these critical issues, examining the intricate connections between financial literacy, financial inclusion, and the development of microfinance. By understanding these linkages, we hope to pave the way for more effective policies and initiatives that promote economic growth and reduce poverty in Pakistan.

The study makes several significant contributions to the field of knowledge. First, this research will enhance the understanding of Financial literacy, Financial inclusion, and their connections with microfinance deveopment in Pakistan. By examining the linkages among these variables, the study provides a comprehensive overview of their roles in promoting economic well-being and inclusive growth. Second It will improve financial knowledge and skills to drive FI and MFD. Third, the findings of this study will provide a foundation for future research endeavors and the researchers can build upon these insights by exploring additional factors, causal relationships, and alternative econometric methodologies. The long-term impacts of financial literacy programs, the effectiveness of different approaches to financial inclusion, and the influence of gender on financial decision-making will be potential avenues for further research.

## 2. Literature Review

Financial literacy is a cornerstone for informed financial decision-making, vital for achieving both individual financial well-being and overall economic growth (Irshad Hussain, 2016). It encompasses a comprehensive integration of awareness, knowledge, skills, attitude, and behavior crucial for making advantageous financial choices. Individuals equipped with financial literacy can navigate financial terms and instruments, while those lacking this knowledge remain unaware of the functions and existence of financial markets (Taqadus Bashir, 2013). Studies have shown positive correlations between financial literacy and age, qualification, marital status, and occupation. Older, highly qualified, married, and business-oriented individuals tend to be more informed about financial matters. Additionally, financial literacy is positively associated with gender, hopelessness, and retirement planning intention. Approximately 40% of the population excluded from accessing financial services attributes this to a lack of financial knowledge, underlining the critical role of financial literacy in ensuring access to essential financial services. Proficiency in financial literacy empowers individuals to make well-considered decisions regarding their finances, reducing the likelihood of being misled in financial matters (Sonia Marcolin, 2006). It enables individuals to effectively manage money, from reconciling bank accounts to formulating budgets and making informed investment decisions. Possessing these competencies forms a fundamental foundation for both preventing and resolving financial challenges, ultimately leading to a prosperous and contented life. However, a significant portion of the population lacks adequate levels of financial literacy, posing challenges not only to economic prosperity but also to personal well-being. Poor decisions regarding savings and investments can have serious long-term repercussions, especially for economically disadvantaged households. Disparities in measured financial literacy further disadvantage those with lower socio-economic status. Older adults with better financial knowledge tend to plan and invest more effectively, highlighting the importance of financial literacy in achieving economic security

The demand for financial services in Pakistan has surged in recent years, driven by factors such as the deregulation of financial markets and enhanced accessibility of credit. The intense competition among financial institutions has facilitated easier access to credit, leading to increased consumption expenditure and rising individual and household debt levels. Inadequate financial understanding has been linked to adverse impacts on individual well-being, including heightened prevalence of chronic sleeplessness and increased inclination towards smoking. Financial literacy becomes imperative for making informed decisions and avoiding financial losses, as individuals are equipped to navigate the complexities of financial variables. While efforts have been made to improve financial literacy in Pakistan, challenges persist. Only a third of the adult population is familiar with fundamental financial concepts, indicating the need for sustained efforts from both public and private sectors. Empowering individuals with financial literacy is essential for making better financial decisions, ultimately enhancing their overall financial well-being. Zuzana Fungacova (2014) examines the factors which influence the adoption of formal financial services in China. Higher income, better education, male gender, and increasing age are identified as key determinants for greater utilization of formal accounts and credit. This underscores the profound impact of financial inclusion on a country's economic development. Financially aware individuals, equipped to invest in education and conduct business, significantly contribute to economic growth. Additionally, financial inclusion plays a pivotal role in ensuring financial stability, enabling individuals to save for the future and fortifying the stability of the financial system through increased deposits in banks examination of financial inclusion in China delineates three primary markers: bank account ownership, savings within bank accounts, and utilization of bank credit. The analysis underscores the significance of GDP per capita in elucidating variations in formal account usage across countries, emphasizing its role as an indicator of financial development. Moreover, this global investigation reveals a favorable correlation between financial development and the adoption of formal credit services. Biju KC (2018) underscores the pivotal role of financial inclusion in achieving sustainable development and inclusive growth. Microfinance emerges as a potent tool for enhancing financial inclusion, offering crucial services to low-income households. Through microfinance interventions, previously unbanked individuals gain access to essential financial support, liberating them from exploitative money lending practices. Additionally, the microfinance program encourages regular savings, fostering financial resilience among clients. KC's study further identifies key determinants of financial inclusion achieved through microfinance, including age, social and economic class, and duration of active participation in the program. In the context of Pakistan, significant strides have been made towards advancing financial inclusion, though challenges persist. The government's initiatives, such as the Microfinance Institution Regulation and the National Financial Inclusion Strategy (NFIS) launched by the State Bank of Pakistan (2021), to expand access to financial services, particularly for low-income households and small businesses. The private sector has collaborated extensively with the State Bank in these efforts, offering a range of financial services, including agricultural loans and mobile banking services. However, despite progress, only 35% of adults in Pakistan have formal access to financial services, presenting a substantial barrier to economic advancement. Sustained efforts from both public and private sectors are imperative to further extend universal financial access, unlocking the potential for economic growth and development in Pakistan. Microfinance, a crucial tool for fostering financial inclusion, entails providing modest financial services like savings and credit to individuals in various settings with the aim of improving their income levels and overall quality of life. Joint liability in group lending shifts responsibilities for borrower selection, monitoring, and credit repayment from lenders to borrowers, making collateral less necessary for obtaining credit. This facilitates easy access to credit for the poor, enabling them to engage in income-generating activities and encouraging savings. The strategy of linking self-employed Groups to banks, initially through savings and later through credit, has successfully integrated previously excluded segments of society into the financial mainstream, particularly in India (Biju KC, 2018). Table 1 shows the benefits of access to microfinance.

**Table 1**

*Benefits of Access to Microfinance*

| **Benefits of Microfinance Accounts** | | |
|---|---|---|
| **Benefit** | **Impact** | **Overall wellbeing** |
| The availability of crucial resources like credit, training, loans, and capital | Increased income<br>Savings<br>Loan Repayments | ● Enhancing educational opportunities for children<br>● Improving access to healthcare<br>● Asset accumulation. |
| Participation in communal aid | Heightened self-sufficiency. | |
| Accrual of social resources. | | |

| | | |
|---|---|---|
| Mitigation of exposure to risk through private borrowing. | Enhanced decision-making in targeted endeavors<br>Decrease in unnecessary spending. | ● Empowering life choices and collaborative decision-making |

Commercially focused microfinance banks, especially in developing economies, are instrumental in providing financial services to underserved populations. Supported by global donors and development financial institutions, these banks play a vital role in expanding financial access. The establishment of Microfinance Bank (MFB) branches, particularly in regions with a significant proportion of low-income households, dense populations, and active economic hubs, leads to a notable increase in bank account adoption. This demonstrates the positive impact of MFBs in enhancing financial inclusion and accessibility (Martin Brown, 2015). Tania Lopez (2018) emphasizes the importance of rural financial inclusion, recognizing the amplified challenges faced in rural areas due to elevated transaction costs and risks. While microfinance institutions (MFIs) have made significant strides in promoting economic empowerment, challenges persist in balancing outreach with sustainability, especially in rural regions. MFIs focusing on rural clientele encounter complexities related to lower population density, unique agricultural loan products, and asymmetrical information. This underscores the need for tailored approaches to ensure sustainable financial inclusion in rural areas. Microfinance, thus, emerges as a powerful tool for advancing financial inclusion, particularly in underserved and rural areas. While challenges persist, such as sustainability concerns and the need for tailored approaches in rural regions, the potential benefits of expanded financial access are substantial. Efforts to promote microfinance should continue to play a pivotal role in broadening financial engagement and empowering individuals across diverse income segments (Adeola, 2017).

## 3. Theoretical Framework

The Theory of Planned Behavior (TPB), developed by Ajzen (1991), is a well-established framework that delves into the factors influencing individuals' intentions to engage in specific behaviors. It posits that behavioral intentions are the primary predictors of actual behavior. The TPB comprises three key components:

- **Attitudes:** Shaped by an individual's beliefs about the likely consequences of a behavior, attitudes encompass both perceived benefits and costs. Positive attitudes toward a behavior lead to stronger intentions to engage in it.
- **Subjective Norms:** These capture social influences on behavioral intentions, representing an individual's perception of the social pressure and expectations regarding specific behaviors. It includes what significant others, like family or friends, think about the behavior.
- **Perceived Behavioral Control:** This refers to an individual's assessment of their capability to effectively execute a particular behavior. It considers factors like self-confidence, available resources, and situational limitations.

This theory has been extensively applied to understand various human behaviors, including financial behavior. In the financial context, attitudes reflect beliefs about financial actions' outcomes, subjective norms involve social influences on financial behavior, and perceived behavioral control pertains to confidence in managing finances effectively. Applying the TPB to financial literacy, financial inclusion, and microfinance development allows researchers to explore the factors influencing individuals' intentions and behaviors in these domains. Financial literacy influences attitudes towards financial behavior, while subjective norms encompass societal expectations and social pressures. Perceived behavioral control relates to individuals' confidence in managing their finances effectively.

## 4. Data and Methodology

The research methodology involves data collection from sources such as the World Bank database and the State Bank of Pakistan. Various econometric techniques, including regression models, are applied to analyze the relationships among financial literacy, financial inclusion, and microfinance development. The limitations and potential biases of the analysis are considered. The dependent variable was microfinance development while independent variables were financial literacy and financial inclusion. The econometric model was developed on the basis of these variables. The functional form of the model is specified in the following equation:

$$\mathbf{MD = \beta_0 + \beta_1 FL + \beta_2 FI1 + \beta_3 ATM\ Machines + \beta_4 Bank\ Accounts\ Nos + \varepsilon}$$

This model is transformed in an econometric equation**: -**

$$\mathbf{Y = \beta_0 + \beta_1 X1 + \beta_2 X2 + \beta_3\, X3 + \beta_4\, X4 + \varepsilon}$$

Where:

Y = Microfinance Development (Number of microfinance Institutions)

X1 = Financial Literacy

X2 = Financial Inclusion

X3= ATMs per 100,000 adults in natural log

X4: = Bank accounts per 1,000 adults

$\beta_0$, $\beta_1$, $\beta_2$, $\beta_3$, $\beta_4$ = parameters

$\varepsilon$ = Error term

# 5 Results

## 5.1 Key Indicators of Financial Inclusion and Microfinance Development

Statistical analysis of key indicators for financial inclusion and microfinance development in Pakistan over the last 20 years are summarized in Table 2. These statistics show that access to formal financial services was increased from 10% in 2000 to 24% in 2020. Mobile phone banking services were increased from 68% in 2010 to 85% in 2020. Number of commercial bank accounts were increased from 13.8 million in 2010 to 63.9 million in 2020. It is about 400% increase in the 2o years period. Gender gap in account ownership was decreased from 20% in 2010 to 14% in 2020. Number of microfinance institutions was increased from one to 54 and number of borrowers were jumped from 0.0114 million in 2000 to 7.9 million in 2020. Female borrowers' share in total borrowers was increased from zero percent in 2000 to 58%. Moreover, the microfinance sector's share in total banking assets was also double during last ten years from 3.40% in 2010 to 6.10% in 2020. These statistics demonstrate tremendous growth in microfinance indicators from 2000 to 2020.

**Table 2**

*Key Indicators of Financial Inclusion and Microfinance Development*

| Indicators | 2000 | 2010 | 2020 |
|---|---|---|---|
| Access to formal financial services | 10% | 22% | 24% |
| Mobile phone penetration | - | 68% | 85% |
| Number of bank branches per 100,000 adults | 5.5 | 5.9 | 8.2 |
| Number of ATMs per 100,000 adults | 0.3 | 2.2 | 5.5 |
| Number of commercial bank accounts (million) | 13.8 | 29.7 | 63.9 |

| | | | |
|---|---|---|---|
| Gender gap in account ownership (%) | - | 20 | 14 |
| Number of microfinance institutions | 1 | 62 | 54 |
| Number of active borrowers (million) | 0.0114 | 2.5 | 7.9 |
| Gross loan portfolio (million) | $5.5 | $452 | $3.4 |
| Portfolio at risk (>30 days) | - | 3.10% | 1.20% |
| Female borrowers' share of total borrowers | - | 53% | 58% |
| Average loan balance per borrower (in PKR) | - | 21,000 | 40,000 |
| Microfinance sector's share in total banking assets | - | 3.40% | 6.10% |
| | | | |

**5.2 Comparison of financial inclusion and microfinance development**

Over the past twenty years, Pakistan has made significant progress in both financial inclusion (FI) and microfinance development (MFD). The proportion of adults possessing a bank account has risen from 7% in 2000 to 21% in 2020. Additionally, the percentage of adults who have gained access to formal financial services has increased from 16% to 35% during the same period. This can be attributed to the increased number of commercial banks, which have grown from 30 in 2000 to 45 in 2020.Total microfinance loan portfolio was jumped from Rs. 1.2 billion in 2000 to Rs. 254.5 billion in 2020, which huge growth in microfinance loans growth. Table 3 shows comparison of financial inclusion and microfinance development during last 20 years. It can help us understand the growth of microfinance institutions in Pakistan during 2000-2020.

**Table 3**

Comparative analysis of financial inclusion and microfinance development in Pakistan

| Indicator | 2000 | 2020 |
|---|---|---|
| Financial Inclusion | Percentage of adults with a bank account: 7% | Percentage of adults with a bank account: 21% |
| | Percentage of adults with access to formal financial services: 16% | Percentage of adults with access to formal financial services: 35% |
| | Number of commercial banks: 30 | Number of commercial banks: 45 |
| Microfinance Development | Number of microfinance institutions: 10 | Number of microfinance institutions: 22 |
| | Number of active borrowers: 300,000 | Number of active borrowers: 6.7 million |
| | Total loan portfolio: PKR 1.2 billion | Total loan portfolio: PKR 254.5 billion |
| | Microfinance penetration rate: 2% | Microfinance penetration rate: 33% |

State Bank of Pakistan, Financial stability Report, 2021.

## 5.3 Empirical analysis

### 5.3.1 Descriptive Statistics

The descriptive statistics provide an overview of the central tendency, dispersion, skewness, kurtosis, and normality of the variables. They help understand the distribution and characteristics of the data set. The means, medians, and maximum/minimum values give insights into the typical values and range of each variable. The standard deviation indicates the variability around the mean, while skewness and kurtosis provide information about the shape of the distributions. The Jarque-Bera test and its associated probability values demonstrate the normality of the data. Higher probabilities suggest that the data follow a normal distribution, while lower probabilities indicate departures from normality. Table 4 exhibits the results of Descriptive statistics.

**Table 4**

*Results of descriptive Statistics*

| | MD | Financial literacy | Financial inclusions | ATM Machines | Bank Account |
|---|---|---|---|---|---|
| Mean | 1938.235 | 1.551775 | 266.9338 | 2.973924 | 0.563829 |
| Median | 1550.000 | 1.665232 | 261.6800 | 2.000000 | 0.556000 |
| Maximum | 4102.000 | 2.410654 | 402.2730 | 7.400000 | 0.600000 |
| Minimum | 75.00000 | -0.297534 | 126.3114 | 0.184700 | 0.521400 |
| Std. Dev. | 1243.049 | 0.807230 | 83.17000 | 2.364365 | 0.023850 |
| Skewness | 0.404328 | -0.894638 | -0.039444 | 0.750714 | 0.219004 |
| Kurtosis | 2.122003 | 2.894820 | 1.949660 | 2.212987 | 2.043582 |
| Jarque-Bera | 1.009235 | 2.275571 | 0.785851 | 2.035522 | 0.783833 |
| Probability | 0.603737 | 0.320528 | 0.675079 | 0.361403 | 0.675761 |
| Sum | 32950.00 | 26.38017 | 4537.874 | 50.55670 | 9.585100 |
| Sum Sq. Dev. | 24722733 | 10.42593 | 110676.0 | 89.44352 | 0.009101 |
| Observations | 17 | 17 | 17 | 17 | 17 |

### 5.3.2 ARDL Model

The analysis the association between dependent and independent development we employed Autoregressive Distributed Lag (ARDL) model. The dependent variable in the model is microfinance, representing the number of microfinance institutions in Pakistan. Table 5 demonstrate the estimated results of ARDL model

**Table 5**

*Results for ARDL Approach*

| | | | | |
|---|---|---|---|---|
| Dependent Variable: Microfinance Development | | | | |
| Method: ARDL | | | | |
| Date: 07/05/23. Time: 09:42 | | | | |
| Sample (adjusted): 2000 2020 | | | | |
| Included observations: 17 after adjustments | | | | |
| Dependent lags: 1 (Fixed) | | | | |
| Dynamic regressors (0 lag, fixed): FL FI1 FI2 FI3 | | | | |
| Fixed regressors: C | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
| MD (-1) | -0.525740 | 0.213888 | -2.458019 | 0.0318 |
| F. Literacy | -5502.680 | 4483.917 | -1.227204 | 0.2454 |
| F. inclusion | 628.4470 | 337.5994 | 1.861517 | 0.0896 |
| ATM Machines | -0.601384 | 5.442932 | -0.110489 | 0.9140 |
| Adults' Bank Accounts. | 659.9447 | 149.3818 | 4.417838 | 0.0010 |
| C | 3169.138 | 2218.799 | 1.428313 | 0.1810 |
| R-squared | 0.978067 | Mean dependent var | | 1938.235 |

| | | | | |
|---|---|---|---|---|
| Adjusted R-squared | 0.968098 | S.D. dependent var | | 1243.049 |
| S.E. of regression | 222.0243 | Akaike info criterion | | 13.91402 |
| Sum squared resid | 542242.8 | Schwarz criterion | | 14.20809 |
| Log likelihood | -112.2691 | Hannan-Quinn criter. | | 13.94325 |
| F-statistic | 98.10565 | Durbin-Watson stat | | 2.158101 |
| Prob(F-statistic) | 0.000000 | | | |
| | | | | |
| | | | | |
| *Note: p-values and any subsequent tests do not account for model selection. | | | | |

Table 5 shows the results of an ARDL regression analysis where the dependent variable is Microfinance Development. The key findings of the analysis are discussed in detail. The coefficient value of microfinance development (MD (-1) (-0.525) is negative and significant (0.0318), suggesting that past Microfinance Development (one period lag) has a negative impact on current development. This could indicate a correction mechanism where rapid growth in one period is followed by a period of slower growth. This also implies that in past microfinance was developed rapidly in Pakistan due to low interest rate and soft terms of microfinance loans but later high interest regime caused high infection rate in microfinance loans slower the growth of microfinance development. Financial literacy coefficient value (-5502.680) is also negative with an insignificant p-value (0.2454). It indicates that improvement in financial literacy has no impact on microfinance development because more educated persons are more cautious to borrow microfinance at high interest rate. However, financial inclusion coefficient value (628.4470) is positive with a marginally insignificant p-value (0.0896). It means that one unit increases in financial inclusion is associated with 62.84% increase in microfinance development. Here financial inclusion means the number of adults having bank accounts. The data of State Bank Report (2021) disclosed that number of adult bank accounts were increased from 7% in 2000 to 21% in 2020. These figures also strengthen the statistical results. However, ATM machines have negative association with microfinance development as its coefficient value (-0.601) is negative and statistically insignificant (0.9140). The reason for this negative relationship is that microfinance institutions have a smaller number of ATM machines and its borrowers also have less access to it. Moreover, the borrowers of microfinance loans draw the amount of loan one time and they do not need to use ATMs. Therefore, ATM machines are less important for microfinance borrowers. The coefficient value of bank accounts (659.9447) is positive and highly significant (0.0010), which implies a strong positive link between the number of bank accounts and Microfinance Development. These results strengthen the findings of financial inclusions which also has positive association with microfinance development.

The value of R-squared (0.978) and Adjusted R-squared (0.968) are very high, and it indicates that more than 96% variation in the dependent variable is on account of combined variation in the independent variables. The unexplained percentage of the model is only lest than 4% which may be due to other factors not included into the model of study. The F-statistic value (98.10565) is statistically significant at the 0.000000 level, indicating a strong relationship between the independent variables and Microfinance Development in the model. Thus, model is goodness of fit and its results are robust.

## 6. Discussion

The findings of this study based on the results reveal insights into the relationships between microfinance development (MD) and financial inclusion variables (Financial literacy, financial inclusions, ATM Machines and number of adults bank accounts in Pakistan. The hypothesis ($H_1$) suggests a significant association between the number of microfinance institutions and financial inclusion factors, with an emphasis on the positive impact of increased microfinance institutions on financial inclusion within the country. However, it's crucial to acknowledge certain limitations inherent in the model and analysis. The findings are confined to the specific dataset and methodology employed in this particular study. There exists the possibility that influential factors like regulatory frameworks, economic circumstances, and cultural dynamics, which could potentially affect microfinance development, are not encompassed within the model. Moreover, it's important to consider potential endogeneity and the possibility of omitted variable bias when interpreting the findings. Within the framework of this model, the financial literacy variable (FL) and financial inclusion (FI), the number of ATMs per 100,000 adults, do not exhibit statistically significant relationships with microfinance development (MD). However, a worth-noting results are the number of active borrowers or clients served by microfinance institutions demonstrates a significant and positive association with MD. This finding underscores the importance of adults' bank account numbers which drives the growth and of microfinance institutions across Pakistan. These findings collectively suggest that policy initiatives aimed at bolstering the number of active borrowers or clients served by microfinance institutions could potentially contribute to the expansion of the microfinance sector in Pakistan. These findings are in line with the studies of Martin et al. (2016), Adeola, (2017), and Tania & Winkler, (2018)

**6.1 Conclusion and policy implications**

We can draw conclusion from the above discussion that there is need to improve financial literacy and financial inclusion as well as microfinance development. The development of microfinance institutions depends upon the access of borrowers to microfinance services, feasible microfinance products, low requirements of collateral and convenience procedure of availing microfinance loans. The negative association between financial literacy in the regression analysis highlights the fact that improving financial literacy cannot play a crucial role in the growth of microfinance institutions. Currently, all microfinance institutions are charging high interest rate between 28% to 35% from the borrowers and the end results is that high infection microfinance loans. The borrowers are unable to pay such a high interest rate and monthly instalment and consequently they declared themselves ad defaulters. As most of microfinance loans are given on the basis of gold jewelry or mortgage of property and when the borrowers failed to discharge their loans default, they would have to lose their collateral. In this way, the microfinance banking services are proving counter-productive. It draws the attention of bankers and policy makers to rationalize interest rate and collateral requirements otherwise current practices of microfinance institutions will trigger poverty and unemployment in Pakistan.

The findings provide valuable guidance for policymakers, practitioners, and researchers to enhance financial literacy and financial inclusion, and foster the growth of microfinance institutions in Pakistan. By incorporating these insights into future initiatives and research endeavors, we can work towards a more equitable and prosperous financial landscape in the country. Policymakers should prioritize the development and implementation of national strategies and policies that promote financial literacy and financial inclusion. Efforts should focus on enhancing financial knowledge, skills, and behaviors among individuals of all backgrounds. Regulatory frameworks should facilitate innovation, consumer protection, and competition in the financial sector. Strategies that leverage technology to reach underserved populations, such as mobile banking and digital payment systems, should be pursued. Practitioners in the microfinance sector should design client-centered products and services that cater to the specific needs of the target population. Responsible lending practices, transparency in pricing and terms, and the provision of financial education alongside financial services should be emphasized. Collaboration and partnerships among microfinance institutions, government agencies, NGOs, and other stakeholders can enhance the impact and outreach of microfinance initiatives. The rationalization of interest rate on microfinance is also an urgent need to attract small barrowers to avail the benefits of microfinance loans and expand their entrepreneurial activities which ultimately leads to sustainable economic development.

**6.2 Limitations and suggestions for further research.**

While this study has made significant contributions to understanding the nexus among financial literacy, financial inclusion, ATM Machines and Adults' bank account numbers in Pakistan, there are several avenues for future research that can further enrich our knowledge in this field. Future studies can explore the long-term impacts of financial literacy programs on individuals' financial behaviors and outcomes. By examining the sustained effects of financial education initiatives, researchers can assess the effectiveness of different program designs, delivery methods, and content in improving financial decision-making and overall financial well-being. Further research can investigate the effectiveness of different approaches to financial empowerment in promoting access to and usage of financial services. Comparative studies can evaluate the outcomes of various interventions, such as mobile banking, agent banking, and community-based models, to identify the most effective strategies for reaching and serving underserved populations in Pakistan. Given the gender disparities in financial inclusion, future research should examine the gender dimensions of financial literacy and inclusion in Pakistan. Exploring the differential impact of financial education programs on men and women, understanding the barriers faced by women in accessing and using financial services, and identifying strategies to promote gender equality in financial access are important areas for investigation. The rapid advancement of financial technology (fin tech) has transformed the financial landscape worldwide and the experience of other countries must be tested in Pakistan. Future research can explore the impact of fin-tech innovations, such as digital payment systems, online lending platforms, and block chain technology, on FL, FI and MFD in Pakistan. Examining the opportunities and challenges presented by these technological advancements can inform policy and practice in leveraging technology for inclusive financial services.

**Data statement**

The data that supports the findings of this study will be made available by corresponding author on strong request.

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