JOURNAL OF
BANKING AND
SOCIAL EQUITY

**ACADEMIC PAPER**

# Role of Financial Inclusion in Promoting Financial Performance: Evidence from Microfinance Institutions of Pakistan

## Zunera Khalid[1]\*, Muhammad Kashif Ali[2], Farah Yasser[3]

[1] Department of Banking and Finance
University of Management and Technology (UMT), Pakistan
Email: zunera.khalid@multilynx.pk
[2] University of Engineering and Technology, Lahore, Pakistan
Email: m.kashifali@uet.edu.pk
[3] Department of Banking and Finance
University of Management and Technology (UMT), Pakistan
Email: farah.yasser@umt.edu.pk

### ABSTRACT

This study examines the role of financial inclusion (FI) to encourage financial performance (FP) of microfinance institutions (MIs). This study investigates the role of FI considering number of branches and average loan balance per borrower as major determinants to promote FP of MIs. This study used quantile panel data regression analysis to analyze the collected data from the sample of 17 MIs of Pakistan during 2014 to 2019. The findings of this research analysis suggest that number of branches as determinants of FI have significant and positive influence on FP of the MIs. As the number of branches of MIs increases, MIs tend to have a higher level of FP. On the other hand, this study finds a significant but negative relationship between average loan balances per borrower to GNI per capita (ALB) with the FP of MIs. It is normal practice of MIs that they target a few high-profile clients to attain their financial sustainability as low income and poor customers are unable to pay the market competitive price against financial services and products. Continuous increasing focus on profitability results into having very few numbers of poor and low-income customers in Pakistan. The findings of this study are helpful for the policy makers and regulators to design and implement the policies related to FI along with financial growth of MIs.

### KEYWORDS

Financial Inclusion, Financial Performance, Microfinance Institutions, Pakistan, Quantile Panel Regression.

## 1. INTRODUCTION

Financial inclusion (FI) has become one of the most area of discussion among academic researchers and policy makers. FI play significant role in the development of financial system along with the assurance of more valuable and easy accessible financial services specifically for the deprived population of the society (Lai, Yan, Yi, & Zhang, 2020; Zhang & Posso, 2019). FI is an indication of easy access and proper utilization of financial services to the every individual of the society, especially for deprived or low income group of population (Demirguc-Kunt, Klapper, Singer, Ansar, & Hess, 2018). Moreover, FI consider the pillar towards the formation of sound financial system along with economic growth (Lal, 2017; Ozili, 2018). Besides, investment in educational projects, retirement plans and risk mitigation strategies are also
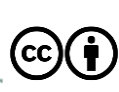
influenced by the FI (Demirgüç-Kunt, Klapper, Singer, Ansar, & Hess, 2020). No conclusive definition of FI exists in literature. FIs means efficient and easy access to financial services at minimum financing cost at every level of the society (Čihák, Mare, & Melecky, 2016).

According to the findings of Global Findex in 2017, 94% people from high income had account ownership while 63% people from lower income or developing economies had account ownership (Demirguc-Kunt et al., 2018). On the other hand, more than 2.5 billion people are unable to have access to available financial services all over the world which implies that almost 30% of the global population are unable to utilize financial services. Most of the countries, specifically developing economies, are facing financial issues due to lower level of FI or have limited access to financial services. A well organized and efficient working financial system empowers the individuals socially and economically, specifically poor and low income people and enable them to efficiently engage them in the development of their economy and get prepared themselves to deal with unexpected economic fluctuations. Financial products including deposits, savings, financing facility, payment, insurance and remittance facilities are categorized as basic financial services by the financial institutions.

FI has become a significant tool of policy making in order to deal with the issues of under developing economic conditions. FI encourage account savings, investment projects, strengthening financial position, increase mobility of capital resources and increase the level of economic development (Klapper, El-Zoghbi, & Hess, 2016; Park & Mercado, 2021). While, lower level of FI is an indication of problematic economic condition, higher possibility of unequal wealth distribution and continuous increasing level of poverty (Chikalipah, 2017; Nyarko, 2018).

Globally, the poor segment of the population has been ignored by the financial institutions due to higher operational cost to facilitate low income individuals of the society through small financing transactions. Anyhow, the development of microfinance institutions (MIs) in the developing economies has been targeted the poor and low-income individuals of the society for their financing services and facilitate them through minimizing the operational cost. It has been globally accepted that MIs, SME financing and national saving schemes are important to support the role of financial sector towards social and economic development (Ediagbonya & Tioluwani, 2023). It is an indication that microfinance institution (MI) strategies are related to the practices of deposits, savings, insurance, pension and remittance services which consider significant tool to increase the level of FI.

FI is a process through which financial institutions including MIs and banks as major market players of financial industry provide the basic financing services and products to the individuals of the society (Khan, Khan, Sayal, & Khan, 2022). Usually, MIs ensure the availability of financing services and products to the society at reasonable operational cost and overcome other associated barriers to ensure that every individual of the society has equal and easy access to available financing services. Easy access to these financial services lead towards the economic development and improve the quality of life of the deprived people of the society. Although, the access of these financing services to poor and low income people is associated with multiple risks, MIs achieve their objective along with the better financial performance (FP) (Asongu & Odhiambo, 2018).

In this way, FP of MIs are intended to grow with the increasing level of FI due to vast number of their customers (Iqbal, Nawaz, & Ehsan, 2019). FP of MIs is an assessment that how available resources are efficiently utilized by the MIs to generate maximum earnings through the business activities (Shettima & Dzolkarnaini, 2018). The FP of MIs is considered the foundation towards economic growth. Economic sustainability and employment opportunities are an indication of better performance of MIs in the country.

Sustainability is the guarantee that every poor and low income individual of the society have equal access to available financing services, will lead towards the increasing FI (Sanderson, Mutandwa, & Le Roux, 2018). Investment opportunities will increase with more number of investors in the presence of economic sustainability as it assure that financial services and products are easily available and in access

of every person in the society. In addition, more employment opportunities will be created specifically for poor people, when MIs are performing well leading towards well-being of the society (Fadun, 2014).

Recently, researchers' attention has been diverted towards the association between FI and FP of MIs due to the continuous increasing demand for financial products and services across the world. In Pakistan, MIs industry is growing very fast, and variety of financial products and services are offering by the MIs to capture the market of general public. The growth of FI has not been specifically categorized as a determinant of the growth of MIs in Pakistan. As most MIs are still facing challenges and struggling to strive in the market. Most of the MIs have been closed within the period of two to three years (Hassan, Muhammad, Sarwar, & Zaman, 2020). Theoretically, it is expected that MI should financially perform well with the growth of FI.

Recently, the growth of FI has been categorized as one of the important determinants of FP and stability of MIs. Few studies exist in literature which have investigated the positive association between FI and FP of MIs (Shkodra, 2019). The accumulation of capital is considered the main pillar behind the growth of FI with ripple influence on the FP of MIs. The better FP is individually important for every institution and for the growth of overall economic condition of the country. Therefore, it is important to understand the role of FI in promoting the FP of MIs.

A study by Maeenuddin, Nassir, and Hashim (2023) investigated the role of FI towards the FP of MIs and suggested that both are the pillars of sustainable economic growth. Moreover, multiple determinants have been investigated to estimate the FP of MIs and concluded that these determinants are crucial for the economic growth (C. O. Omwanza & Jagongo, 2019). Significant and positive relationship between FI and FP has been suggested by literature studies considering the sample of MIs in Kenya (Kalunda & Ogada, 2019). Similarly, another study by Musau, Muathe, and Mwangi (2018b) examined the role influence of FI on financial stability, competiveness, and credit risk of financial institutions and concluded that FI has significant influence on the business expansion of financial institutions in Kenya.

There exist few studies in literature which have discussed the importance of the association between FI and FP of MI. But no significant study found in literature which have extensively discussed the role of FI in promoting the FP on MIs, specifically consider the sample of MIs in Pakistan. Considering this research gap, the objective of this study is to empirically investigate the relationship between FI and FP of MIs in Pakistan.

## 2. LITERATURE REVIEW
### 1.2. Theoretical Review
#### 1.2.1. Economic Value Added Theory
The economic value-added theory has been originated from Franco Modigliani initially and then further expanded by Stewart and Stern during 1990 (Sabol & Sverer, 2017). According to this economic value added theory, economic value addition for the shareholders instead considering only profitability is the determinants through which organizational performance can be estimated. But this economic value can only be attained when the organizations tend to earn high profits as higher return on assets. In this way, every single individual who is associated with MIs tends to assert some value addition. There are multiple MIs who are used to formulate and implement strategies with the objective of increasing their number of customers. This implies that higher number of customers means high level of FI which will lead towards the assurance of higher revenue to improve the financial position of the MIs (C. O. Omwanza & Jagongo, 2019).

On the other hand, there are some other philosophers which have opposite opinion to this theory and argued that higher revenue and returns cannot be considered the major determinants to analyze the FP of the MIs. Higher level of returns and revenues should be complimented with efficient governance framework. Without any standardized governance framework, higher returns are not the significant indication to determine the financial position of the financial institutions (Mustapha, Bello, Garba, & Gobe). In this way, this theory is considered one of the main foundation of theoretical background of

this research work. The analysis of efficient financial position of MIs in Pakistan is associated with economic value which they tend to be added through their profitability, return on assets and efficient management framework (C. Omwanza, Jagongo, & Ndede, 2022).

### 1.2.2. Contestable Market Theory
This contestable market theory is originated from Baumol which describes the process and framework which provide guidance related to market exit and entry. When the market players have easy market entry and exit and associated barriers including legal, regulatory and costs barriers have been removed, this type of market is categorized as contestable market (Sidek, Mohamad, & Mohd, 2019). Government and other regulatory authorities in Pakistan has collaborated with Securities and Exchange Commission of Pakistan (SECP) in order to formulate policies of productive environment for microfinance industry through which investors will be able to do convenient enterprise ventures in the industry. Easy access to more reliable and affordable financial products and services are continuously increasing in the microfinance industry across the world. This is the indication that more favorable competitive environment is creating within the microfinance industry. Anyhow, it is also argued that incumbent institutions tend to capture major profile of the customers through their efficient strategies. Therefore, it is important to investigate the influence of these institutions towards the market environment of financial services and products (Sidek, Mohamad, & Nasir, 2018).

### 1.2.3. Finance Development nexus Theory
The association between FI and financial growth is considered one of the oldest theoretical pieces of evidence in the industry of financial sector. This finance development theory was initially supported by Bagehot in 1873 and suggested significant association between the FI and financial growth of the industry (Anand & Chhikara, 2013). Easy and affordable access to available financial services and products is an indication of financial growth. While, lack of access to available financial services and products negatively influence the financial growth, leading towards unequal income distribution (Van, Vo, Nguyen, & Vo, 2021). It is argued that major players of the financial sector including banks and MIs can focus on demand leading or supply leading strategies to have more favorable business environment to financially stabilize and grow efficiently. More productive and favorable business environment means higher returns and financial institutions can stabilize their financial position (Čihák et al., 2016).

Researchers and regulators consider the FI as prerequisite determinants towards financial growth. Anyhow, there exists few statements opposite to this assumption. Those who believe in supply leading and demand leading strategies argued that there is no correlation exist between the number of available financial products and services in the market and the financial growth of financial institutions (Chauvet & Jacolin, 2017). However, this theory plays significant role to investigate that how FI influence the financial growth of the MIs in Pakistan.

### 1.3. Empirical Review
The rapid growth in FI has been witnessed since the start of twentieth century. FI is crucial to facilitate deprived people of society through the assurance that every individual of the society has equal and easy access to available financing services and products at reasonable operational cost. Multiple studies have been conducted considering the different perspectives of FI and highlighted its importance towards economic growth and stability of the finance industry. Few researchers have investigated the role of FI in promoting the financial stability and economic development of different developing and developed countries (Kim, Yu, & Hassan, 2018; Neaime & Gaysset, 2018).

There are some studies in literature which have examined the relationship between the profitability and level of FI considering the sample of banking sector (F. Shihadeh, 2020). Another study by Ikram and Lohdi (2015) argued that the impact of FI on the revenue of banking sector is still questionable. A study by Kumar, Thrikawala, and Acharya (2022) conducted a study on the sample of 122 financial institutions from China for the period of 2004-2018 to investigate the influence of FI on the earnings of financial institutions. This study suggested that FI as number of branches have significant and positive

influence on earnings of financial institutions. On the other hand, this study did not find any significant relationship between the available number of ATMs and number of accounts with the earnings of financial institutions.

Considering other literature studies, it also found that number of branches as a determinants of FI is significantly and positively associated with the returns of the financial institutions (Chen, Feng, & Wang, 2018). Moreover, a study by F. Shihadeh and Liu (2019) examined that role of FI towards the MIs' operational activities, considering the sample of 189 both developed and developing economies with 701 financial institutions. This study concluded that operational activities of financial institutions are positively and significantly influenced by the FI which ultimately lead towards higher level of profitability. Net income, return on equity and return on assets have significantly influenced by the existence of branches. Furthermore, the impact of FI on return on assets and gross income has also been investigated considering the sample of 13 financial institutions from Jordan. FIs has been tested considering six different determinants including number of ATMs, number of personnel, total SME financing, POS services, credit card services and saving facility. This study found the significant and positive influence of number of ATMs, POS services, total SME financing on the level of profitability of financial institutions in Jordan. However, this study did not find any significant association between saving services, credit card services and profitability (F. H. Shihadeh, Hannon, Guan, Ul Haq, & Wang, 2018).

Ahmed and Salleh (2016) investigated the role of FI and suggested that increasing number of branches along with minimum non-performing loans and lower default risk are the indications of high revenues of financial institutions. The FP has also been examined considering the digitalized financing services considering the sample of 23 countries for the period from 2005 to 2013 through the panel data analysis technique. This study concluded that the FP of MIs is significantly influenced by the number of ATMs across the countries. This study did not find any significant association between FP and digital financing services (Akhisar, Tunay, & Tunay, 2015).

On the other hand, a study by Jouini and Obeid (2021) examined the relationship between FP and FI of MIs by taking the sample of 11 countries for the period from 2013 to 2019 through dynamic panel data analysis. FP has been measured as return on assets of the MIs. This study also considered the macroeconomic indicators and institution specific variables as control variables. The findings of this study concluded that institutional specific indicators have more significant influence on the FP of MIs. In addition, no significant relationship found between the macroeconomic indicators and FI. This study also suggested that no significant relationship has been witnessed between number of branches and availability of ATMs as FI with the return on assets of the MIs. In another study, positive and significant association has been witnessed between the number of branches as FI and revenue of the financial institutions (Wang & Lee, 2023). Positive and significant relationship between the efficiency and number of branches of financial institutions has also suggested by the study of (Al-Eitan, Al-Own, & Bani-Khalid, 2022).

It is evident that branch expansion of financial institution is important to ensure the higher profitability and minimum operational cost of the financing services. FI considering the access, usage and cost perspective has been studied and suggested that there is no significant influence of FI exist on the FP of financial institutions in Pakistan (Ikram & Lohdi, 2015). A study by Issaka Jajah, Anarfo, and Aveh (2022) investigated the relationship between FP, risk and financial stability of banking sector with FI considering the sample of 271 banks across the world. This study concluded that FP and financial stability of banking sector is positively linked with FI, although financial risk is negatively linked with FI. It indicated that FP of banking sector is positively influenced by the FI.

Considering the sample of Asia, a study by Van et al. (2021) suggested that high FI is an indication of better financial stability of the financial institutions, leading towards higher returns. It is also argued that FI is positively associated with market share but negatively associated with the financial transactional costs. Few studies in literature have considered the return on assets and return on equity

as determinants of FP and concluded the significant association between FI and FP of financial institutions (Ayaz, Mohamed Zabri, & Ahmad, 2021). A research study conducted by Alyousef, Saffouri, and Alqassar (2019) used the variable of Tobin's Q as the indication of profitability of banking sector as it capture the total market share over the total assets and has the capability to estimate the future growth and FP based on stock market prediction.

In literature, there are some studies which have used size and leverage as determinants of FP and suggested the significant relationship between leverage, size and FP of the financial institution (Al-Eitan et al., 2022). However, study by Belkhaoui, Alsagr, and van Hemmen (2020) did not find any significant results for the size and profitability of the financial institution. While, negative relationship between the size, leverage and profitability of financial institutions has been witnessed by few literature studies (Gupta & Mahakud, 2020).

A study by Istan and Fahlevi (2020) investigated the role of FI towards the FP of MIs and suggested that both are the pillars of sustainable economic growth. Moreover, multiple determinants have been investigated to estimate the FP of MIs and concluded that these determinants are crucial for the economic growth (Ozili, 2021). Significant and positive relationship between FI and FP has been suggested by literature studies considering the sample of MIs in Kenya (Musau, Muathe, & Mwangi, 2018a). Similarly, another study by Musau et al. (2018b) examined the role influence of FI on financial stability, competiveness, and credit risk of financial institutions and concluded that FI has significant influence on the business expansion of financial institutions in Kenya.

There exist few studies in literature which have discussed the importance of the association between FI and FP of MI. But, no significant study found in literature which have extensively discussed the role of FI in promoting the FP on MIs, specifically consider the sample of MIs in Pakistan.

Considering, this study assume the existence of significant association between FI and FP.

**Hypothesis:** *There is significant relationship between FI and FP of MIs.*

## 3. RESEARCH METHODOLOGY

### 3.1. Data and Variables

While FI is expected to have influence on FP of MIs, this study is developed the research model considering the literature studies related to FI and FP (Kalunda & Ogada, 2019; C. Omwanza et al., 2022). These literature studies have discussed the role of FI determinants in promoting FP of MIs which are related to the purpose of this research. This study is based on secondary data which have been extracted from MIX Market dataset available on the platform of World Bank. Various researchers have used this MIX market data for their study analysis (Abdullah & Quayes, 2016; Lopez & Winkler, 2018).

Initially, this study planned to collect the data of all 56 MIs registered on World Bank. Data were missing for few sampled MIs and have been excluded from the sample study. On the basis of available sufficient data, research sample in this study is based on 17 MIs of Pakistan for the time period of 2014 to 2019. List of MIs selected as sample of this study analysis is mentioned in *Annexure A*.

Return on Assets (ROA) and Operating Self Sufficiency (OSS) are dependent variables and used as two measures of FP of MIs (Iqbal et al., 2019; Khan et al., 2022). The determinants of FI including number of branches (BRAN) and Average loan balance per borrower to gross national income per capita (ALB) are independent variables (Bayai & Ikhide, 2018; Fadikpe et al., 2022) and MIs' specific variables including gross loan portfolio (GLP), SIZE and capital to asset ratio (CAR) are control variables in this study (Abu Wadi, Bashayreh, Khalaf, & Abdelhadi, 2022). The detailed measurement and description of variables is mentioned in *Annexure B*. The measurement of variable in this study analysis is consistent with the studies (Abu Wadi et al., 2022; Bayai & Ikhide, 2018; Fadikpe et al., 2022).

### 3.2. Model Specification

The model estimates FP of MIs considering determinants of FI with the controlling effects of firm specific indicators The model of his study analysis is mentioned below;

$$ROA_{it} = \alpha_{it} + \beta_1 BRAN_{it} + \beta_2 ALB_{it} + \beta_3 SIZE_{it} + \beta_4 GLP_{it} + \beta_5 CAR_{it} + \varepsilon_{it}$$
$$OSS_{it} = \alpha_{it} + \beta_1 BRAN_{it} + \beta_2 ALB_{it} + \beta_3 SIZE_{it} + \beta_4 GLP_{it} + \beta_5 CAR_{it} + \varepsilon_{it}$$

Where,
ROA = Return on Assets
OSS = Operating Self Sufficiency
BRAN = Number of branches
ALB = Average loan balance per borrower to GNI per capita (%)
SIZE = Natural logarithm of total assets
GLP = Gross loan portfolio to asset (%)
CAR = Capital to asset ratio (%)

Further, t is for time period/number of years, i is for countries and ε shows that residuals are identical and independently distributed. The coefficients of $\beta$ indicate the quadratic effect whose nature and value will be estimated by the coefficient values (Shaheen, Kalim, & Arshed, 2022).

As the data varies across countries and time, the suitable estimation technique should be the one which control one factor while randomizing the other factor. Normally, fixed effect and random effect estimation techniques are use in these types of scenario but these models have also some limitations. To overcome these limitations and constrains, this study has used Panel Quantile Regression (PQR) as a robust and efficient technique to measure point of estimation through median rather than considering only arithmetic mean. This panel quantile regression is an efficient estimation technique as associated medians are robust towards outliers and when data is not normal (Sohail & Arshed, 2022). In other words, median based slope coefficient is used in this panel quantile regression which are robust towards skewness and outliers of the data (Powell, 2020). This estimation technique can also use to get the coefficients estimates for multiple quantile to analyze the expected changes in marginal effects considering multiple positions of data distribution. Multiple studies exist in literature which have used this estimation technique for panel data analysis (Amjad & ur Rehman, 2023; Sardar, Asghar, & Rehman, 2024).

## 4. RESULTS AND DISCUSSION

### 4.1. Descriptive Analysis

Table 1 presents the descriptive analysis of the data which have been used in this research. Considering the values of skewness and kurtosis, it is clearly indicated that data is not normally distributed. It is also confirmed from the un-equal mean values. In addition, from the values of standard deviation which are lower than mean values indicate that data is under dispersed which lead towards the indication of the homogeneous pattern existence among the MIs and duration.

Table1: Data Descriptive Analysis.

| Variable | Obs | Mean | Std. Dev. | Min | Max | Skewness | Kurtosis |
|----------|-----|------|-----------|-----|-----|----------|----------|
| ROA | 102 | 2.88 | 4.76 | -23.26 | 14.76 | -1.60 | 10.91 |
| OSS | 102 | 119.65 | 36.94 | 8.28 | 285.01 | 0.36 | 7.22 |
| BRAN | 102 | 104.79 | 168.33 | 4.00 | 791.00 | 2.52 | 8.88 |
| ALB | 102 | 16.23 | 16.76 | 3.05 | 97.63 | 3.74 | 16.13 |
| SIZE | 102 | 16.53 | 1.33 | 13.67 | 18.88 | -0.07 | 2.35 |
| GLP | 102 | 66.84 | 19.09 | 7.17 | 96.24 | -0.90 | 3.23 |
| CAR | 102 | 27.02 | 19.50 | -10.96 | 98.38 | 1.68 | 6.88 |

### 4.2. Correlation Analysis

Table 2 presents the correlation values where we can see that all variables; BRAN, ALB, SIZE, GLP and CAR have linear association with ROA and OSS. All the values of correlation are mostly less than 0.9 which is an indication that variables do not have any significant multicollinearity.

Table 2: Correlations.

|  | ROA | OSS | BRAN | ALB | SIZE | GLP | CAR |
|---|---|---|---|---|---|---|---|
| **ROA** | 1 |  |  |  |  |  |  |
| **OSS** | 0.63 | 1 |  |  |  |  |  |
| **BRAN** | 0.01 | 0.04 | 1 |  |  |  |  |
| **ALB** | -0.28 | -0.20 | -0.05 | 1 |  |  |  |
| **SIZE** | -0.06 | 0.04 | 0.67 | 0.34 | 1 |  |  |
| **GLP** | 0.21 | 0.16 | 0.16 | -0.29 | 0.02 | 1 |  |
| **CAR** | 0.25 | 0.38 | -0.21 | -0.14 | -0.23 | -0.43 | 1 |

### 4.3. Panel Quantile Regression (Dependent Variable ROA)

Table 3 presents the findings of panel quantile regression for return on assets (ROA) as dependent variable based on 102 observations from 17 MIs. The results indicate that BRAN has significant and positive coefficient which indicates that variable number of branches of MIs is positively and significantly associated with return on assets. It also implies that as number of branches of MIs increases, institutions will have higher return on assets. Expansion of MIs is an indication of better FP. This implies that U-shaped relationship exist where FI is encouraging FP, when number of branches is increasing, it will promote the financial return on assets. These results are consistent with the findings of (Awaworyi Churchill, 2020; Zerai & Rani, 2012).

On the other hand, this study finds significant but negative coefficient value of other determinant of FI; average loan balance (ALB). The significant and negative coefficient of ALB indicates that with increasing amount of average loan balance per borrower to GNI per capita increasing, return on assets of MIs is decreasing. This implies that most of the financing products and services are specifically targeted and designed for higher income people and MIs are not efficiently focus on deprived people of the society. According to Welfarists approach, the outreach of FI to low income and poor people have negative influence on return on assets of the MIs.

It is normal practice of MIs that they targeted few high profile clients to attain their financial sustainability as low income and poor customers are unable to pay the market competitive price against financial services and products (Abdulai & Tewari, 2016; Annim & Katsushi, 2010; Awaworyi Churchill, 2019; Imai, Gaiha, Thapa, Annim, & Gupta, 2012; Muhammad, Chen, & Ahmad, 2019). Considering the other control variables, gross loan portfolio, size and capital to asset ratio have significant and positive coefficient values which indicate that these firm specific variables have significant influence on return of assets of MIs (Hermes & Hudon, 2019; Wediawati, Effendi, Herwany, & Masyita, 2018).

Table 3: Panel Quantile Regression (Dependent Variable Return on Assets-ROA).

| Variables | Coefficient | Probability |
|---|---|---|
| **BRAN** | 0.002 | 0.000 |
| **ALB** | -0.052 | 0.000 |
| **SIZE** | 0.245 | 0.000 |
| **GLP** | 0.030 | 0.000 |
| **CAR** | 0.085 | 0.000 |

### 4.4. Panel Quantile Regression (Dependent Variable OSS)

Table 4 presents the findings of panel quantile regression model for operating self-sufficiency (OSS) as dependent variable based on 102 observations from 17 MIs. The results indicate that BRAN has significant and positive coefficient which indicates that variable number of branches of MIs is positively and significantly associated with operating self-sufficiency (OSS). It also implies that as number of branches of MIs increases, institutions will have higher level of operating self-sufficiency (OSS). Expansion of MIs is an indication of better FP and sustainability. These results are consistent with the findings of (Nasrin, Rasiah, Baskaran, & Masud, 2018; Quayes, 2019).

On the other hand, this study finds significant but negative coefficient value of average loan balance

per borrower (ALB) as determinant of FI. The significant and negative coefficient of ALB indicates that with increasing amount of average loan balance per borrower to GNI per capita, operating self-sufficiency (OSS) of MIs is decreasing. This implies that most of the financing products and services are specifically targeted and designed for higher income people and MIs are not efficiently focus on deprived people of the society. Continuous increasing focus on profitability results into having very few number of poor and low income customers in Pakistan.

It is normal practice of MIs that they targeted few high profile clients to attain their financial sustainability as low income and poor customers are unable to pay the market competitive price against financial services and products (Abdulai & Tewari, 2016; Annim & Katsushi, 2010; Awaworyi Churchill, 2019; Imai et al., 2012; Muhammad et al., 2019). Considering the other control variables, gross loan portfolio (GLP), size and capital to asset ratio (CAR) have significant and positive coefficient values which indicate that these firm specific variables have significant influence on operating self-sufficiency (OSS) of MIs (Hermes & Hudon, 2019; Wediawati et al., 2018).

Table 4: Panel Quantile Regression (Dependent Variable Operating Self Sufficiency-OSS).

| Variables | Coefficient | Probability |
|---|---|---|
| BRAN | 0.046 | 0.027 |
| ALB | -0.846 | 0.000 |
| SIZE | 6.912 | 0.005 |
| GLP | 0.725 | 0.000 |
| CAR | 0.891 | 0.000 |

## 5. CONCLUSION & FUTURE RECOMMENDATIONS

The objective of this study is to empirically investigate the relationship between FI and FP of MIs in Pakistan. This study is based on secondary data which have been extracted from MIX Market dataset available on the platform of World Bank for the study sample of 17 MIs of Pakistan for the time period of 2014 to 2019 through panel quantile regression model. The findings of this study suggest that number of branches (BRAN) has significant and positive influence on the FP (ROA & OSS) of MIs. As number of branches of MIs increases, institutions tend to have higher level of operating self-sufficiency (OSS) and higher return on assets. Expansion of MIs is an indication of better FP and sustainability (Nasrin et al., 2018; Quayes, 2019).

On the other hand, this study finds significant but negative relationship between average loan balances per borrower to GNI per capita (ALB) with the FP (ROA & OSS) of MIs. This implies that most of the financing products and services are specifically targeted and designed for higher income people and MIs are not efficiently focus on deprived people of the society. It is normal practice of MIs that they targeted few high profile clients to attain their financial sustainability as low income and poor customers are unable to pay the market competitive price against financial services and products (Abdulai & Tewari, 2016; Annim & Katsushi, 2010; Awaworyi Churchill, 2019; Imai et al., 2012; Muhammad et al., 2019). Continuous increasing focus on profitability results into having very few number of poor and low income customers in Pakistan.

The findings of this study is helpful for the policy makers, regulatory authorities and management authorities of MIs to design and implement more efficient policies of FI considering their significant influence on the growth of financial sector while ensuring that the main purpose of MIs should be poverty alleviation and facilitate deprived people of the society rather than only focusing on their revenues. Like other studies, this research also has some limitations, mainly is related to data availability. Further, this study has used determinants of FI in broader perspective.

It is recommended for the future researchers to examine the perspective of FI considering more specific indicators including number of active borrowers, number of ATMs and outreach cost. Furthermore, this study consider the sample of MIs of Pakistan, future research can be conducted considering the sample of other countries by doing the comparative study. For future studies, it is recommended to examine FP

by using other variables including Z score. The impact of FI on the level of financial stability of MIs is also interesting to be investigated.

## 6. REFERENCES

Abdulai, A., & Tewari, D. D. (2016). Efficiency of MIs in sub–Saharan Africa: a stochastic frontier approach. *Ghana Journal of Development Studies, 13*(2), 117-139.

Abdullah, S., & Quayes, S. (2016). Do women borrowers augment FP of MFIs? *Applied Economics, 48*(57), 5593-5604.

Abu Wadi, R., Bashayreh, A., Khalaf, L., & Abdelhadi, S. (2022). Financial sustainability and outreach in MIs: evidence from MENA countries. *Journal of Sustainable Finance & Investment, 12*(1), 238-250.

Ahmed, H., & Salleh, A. M. H. A. P. M. (2016). Inclusive Islamic financial planning: a conceptual framework. *International Journal of Islamic and Middle Eastern Finance and Management, 9*(2), 170-189.

Akhisar, I., Tunay, K. B., & Tunay, N. (2015). The effects of innovations on bank performance: The case of electronic banking services. *Procedia-Social and Behavioral Sciences, 195*, 369-375.

Al-Eitan, G. N., Al-Own, B., & Bani-Khalid, T. (2022). FI indicators affect profitability of Jordanian commercial Banks: Panel data analysis. *Economies, 10*(2), 38.

Alyousef, H. Y., Saffouri, R. O., & Alqassar, A. F. (2019). Bank-Specific and Macroeconomic Determinants of Bank Profitability: Evidence from Kuwaiti Banks. *International Research Journal of Finance and Economics, 176*, 167-181.

Amjad, M. A., & ur Rehman, H. (2023). The Long Run Dynamics of Sustainable Economic Development on Ecological Footprint in Developed and Developing Countries: Panel Quantile Regression. *Review of Education, Administration & Law, 6*(2), 191-210.

Anand, S., & Chhikara, K. S. (2013). A theoretical and quantitative analysis of FI and economic growth. *Management and Labour Studies, 38*(1-2), 103-133.

Annim, S. K., & Katsushi, I. (2010). *Microfinance paradigm: institutional performance and outreach.* University of Manchester,

Asongu, S. A., & Odhiambo, N. M. (2018). ICT, financial access and gender inclusion in the formal economic sector: evidence from Africa. *African Finance Journal, 20*(2), 45-65.

Awaworyi Churchill, S. (2019). The macroeconomy and microfinance outreach: A panel data analysis. *Applied Economics, 51*(21), 2266-2274.

Awaworyi Churchill, S. (2020). Microfinance financial sustainability and outreach: is there a trade-off? *Empirical Economics, 59*(3), 1329-1350.

Ayaz, M., Mohamed Zabri, S., & Ahmad, K. (2021). An empirical investigation on the impact of capital structure on firm performance: Evidence from Malaysia. *Managerial Finance, 47*(8), 1107-1127.

Bayai, I., & Ikhide, S. (2018). Financing structure and financial sustainability of selected SADC MIs (MFIs). *Annals of Public and Cooperative Economics, 89*(4), 665-696.

Belkhaoui, S., Alsagr, N., & van Hemmen, S. F. (2020). Financing modes, risk, efficiency and profitability in Islamic banks: Modeling for the GCC countries. *Cogent Economics & Finance, 8*(1), 1750258.

Chauvet, L., & Jacolin, L. (2017). FI, bank concentration, and firm performance. *World Development, 97*, 1-13.

Chen, F.-W., Feng, Y., & Wang, W. (2018). Impacts of FI on non-performing loans of commercial banks: Evidence from China. *Sustainability, 10*(9), 3084.

Chikalipah, S. (2017). What determines FI in Sub-Saharan Africa? *African Journal of Economic and Management Studies, 8*(1), 8-18.

Čihák, M., Mare, D. S., & Melecky, M. (2016). The nexus of FI and financial stability: A study of trade-offs and synergies. *World Bank Policy Research Working Paper*(7722).

Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). Global Findex Database 2017: Measuring FI and the fintech revolution.

Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2020). The Global Findex Database 2017: Measuring FI and opportunities to expand access to and use of financial services. *The World Bank Economic Review, 34*(Supplement_1), S2-S8.

Ediagbonya, V., & Tioluwani, C. (2023). The role of fintech in driving FI in developing and emerging markets: issues, challenges and prospects. *Technological Sustainability, 2*(1), 100-119.

Fadikpe, A. A. A., Danquah, R., Aidoo, M., Chomen, D. A., Yankey, R., & Dongmei, X. (2022). Linkages between social and FP: Evidence from Sub-Saharan Africa MIs. *Plos one, 17*(3), e0261326.

Fadun, S. O. (2014). FI, tool for poverty alleviation and income redistribution in developing countries: Evidences from Nigeria. *Academic Research International, 5*(3), 137.

Gupta, N., & Mahakud, J. (2020). Ownership, bank size, capitalization and bank performance: Evidence from India. *Cogent Economics & Finance, 8*(1), 1808282.

Hassan, J., Muhammad, N., Sarwar, B., & Zaman, N. U. (2020). Sustainable Development through FI: The Use

of Financial Services and Barriers in Quetta-Pakistan. *European Online Journal of Natural and Social Sciences, 9*(4), pp. 691-707.

Hermes, N., & Hudon, M. (2019). Determinants of the performance of MIs: A systematic review. *Contemporary Topics in Finance: A Collection of Literature Surveys*, 297-330.

Ikram, I., & Lohdi, S. (2015). Impact of FI on banks profitability: An empirical study of banking sector of Karachi, Pakistan. *International Journal of Management Sciences and Business Research, 4*(10), 88-98.

Imai, K. S., Gaiha, R., Thapa, G., Annim, S. K., & Gupta, A. (2012). FP of MIs-A Macroeconomic and Institutional Perspective. *Research Institute for Economics & Business Administration, Kobe University, Discussion Paper Series: DP2012, 4*.

Iqbal, S., Nawaz, A., & Ehsan, S. (2019). FP and corporate governance in microfinance: Evidence from Asia. *Journal of Asian Economics, 60*, 1-13.

Issaka Jajah, Y., Anarfo, E. B., & Aveh, F. K. (2022). FI and bank profitability in Sub-Saharan Africa. *International Journal of Finance & Economics, 27*(1), 32-44.

Istan, M., & Fahlevi, M. (2020). The effect of external and internal factors on FP of Islamic banking. *Jurnal Ekonomi & Studi Pembangunan, 21*(1), 137-145.

Jouini, J., & Obeid, R. (2021). Do FI Indicators Affect Banks' Profitability? Evidence from Selected Arab Countries. *Evidence from Selected Arab Countries (January 14, 2021)*.

Kalunda, E., & Ogada, A. (2019). FI using traditional banking channels and its effect on FP of commercial banks in Kenya. *The University Journal, 1*(3), XX-XX.

Khan, I., Khan, I., Sayal, A. U., & Khan, M. Z. (2022). Does FI induce poverty, income inequality, and financial stability: empirical evidence from the 54 African countries? *Journal of Economic Studies, 49*(2), 303-314.

Kim, D.-W., Yu, J.-S., & Hassan, M. K. (2018). FI and economic growth in OIC countries. *Research in International Business and Finance, 43*, 1-14.

Klapper, L., El-Zoghbi, M., & Hess, J. (2016). Achieving the sustainable development goals. *The role of FI. Available online: http://www.ccgap.org. Accessed, 23*(5), 2016.

Kumar, V., Thrikawala, S., & Acharya, S. (2022). FI and bank profitability: Evidence from a developed market. *Global Finance Journal, 53*, 100609.

Lai, J. T., Yan, I. K., Yi, X., & Zhang, H. (2020). Digital FI and consumption smoothing in China. *China & World Economy, 28*(1), 64-93.

Lal, T. (2017). Impact of FI on economic empowerment of rural households. *IIS Univ J Commer Manag, 6*(1), 170-186.

Lopez, T., & Winkler, A. (2018). The challenge of rural FI–evidence from microfinance. *Applied Economics, 50*(14), 1555-1577.

Maeenuddin, S. A. H., Nassir, A. M., & Hashim, P. M. (2023). Developing an Index for the Measurement of Financial Sustainability of Microfinance Providers: A Theoretical Review. *CEMJP, 31*(1), 197-205.

Muhammad, S., Chen, Y., & Ahmad, H. (2019). The Impact of Social Outreach on the FP of Microfinance Providers in Pakistan. *European Journal of Business and Management, 11*(31), 67-78.

Musau, S., Muathe, S., & Mwangi, L. (2018a). FI, bank competitiveness and credit risk of commercial banks in Kenya. *International Journal of Financial Research, 9*(1), 203-218.

Musau, S., Muathe, S., & Mwangi, L. (2018b). FI, GDP and credit risk of commercial banks in Kenya. *International Journal of Economics and Finance, 10*(3), 181-195.

Mustapha, A. A. G., Bello, A. M., Garba, A. M., & Gobe, M. I. The Moderating Effect of the Audit Committee on the Relationship between Corporate Governance and FP: A Conceptual Review.

Nasrin, S., Rasiah, R., Baskaran, A., & Masud, M. M. (2018). What determines the FP of MIs in Bangladesh? a panel data analysis. *Quality & Quantity, 52*, 1409-1422.

Neaime, S., & Gaysset, I. (2018). FI and stability in MENA: Evidence from poverty and inequality. *Finance Research Letters, 24*, 230-237.

Nyarko, E. S. (2018). *FI, Financial Literacy and Inclusive Growth in Africa.* PhD Thesis], University of Ghana, available at: http://ugspace.ug.edu.gh

Omwanza, C., Jagongo, A., & Ndede, F. (2022). Effect of process innovations on FP of microfinance banks in Kenya. *The Strategic Journal of Business & Change Management, 9*(2), 1193-1202.

Omwanza, C. O., & Jagongo, A. (2019). Financial innovations and FP of MIs in Kenya: A theoretical review. *International Academic Journal of Economics and Finance, 3*(4), 32-46.

Ozili, P. K. (2018). Impact of digital finance on FI and stability. *Borsa Istanbul Review, 18*(4), 329-340.

Ozili, P. K. (2021). *FI research around the world: A review.* Paper presented at the Forum for social economics.

Park, C.-Y., & Mercado, R. V. (2021). FI: New measurement and cross-country impact assessment 1. In *FI in Asia and beyond* (pp. 98-128): Routledge.

Powell, D. (2020). Quantile treatment effects in the presence of covariates. *Review of Economics and Statistics,*

*102*(5), 994-1005.

Quayes, S. (2019). Probability of sustainability and social outreach of MIs. *Economics Bulletin, 39*(2), 1047-1056.

Sabol, A., & Sverer, F. (2017). A review of the economic value added literature and application. *UTMS Journal of Economics, 8*(1), 19-27.

Sanderson, A., Mutandwa, L., & Le Roux, P. (2018). A review of determinants of FI. *International Journal of Economics and Financial Issues, 8*(3), 1.

Sardar, M. S., Asghar, N., & Rehman, H. U. (2024). Moderation of competitiveness in determining environmental sustainability: Economic growth and transport sector carbon emissions in global perspective. *Environment, Development and Sustainability, 26*(1), 1481-1503.

Shaheen, S., Kalim, R., & Arshed, N. (2022). Nonlinear effect of Islamic financing on economic stability: A Case of equity and debt financing. *Journal of Management Info, 9*(2), 121-145.

Shettima, U., & Dzolkarnaini, N. (2018). Board characteristics and MIs' performance: Panel data evidence from Nigeria. *Journal of accounting in emerging economies, 8*(3), 369-386.

Shihadeh, F. (2020). The influence of FI on banks' performance and risk: new evidence from MENAP.

Shihadeh, F., & Liu, B. (2019). Does FI influence the Banks risk and performance? Evidence from global prospects.

Shihadeh, F. H., Hannon, A. M., Guan, J., Ul Haq, I., & Wang, X. (2018). Does FI improve the banks' performance? Evidence from Jordan. In *Global tensions in financial markets* (Vol. 34, pp. 117-138): Emerald Publishing Limited.

Shkodra, J. (2019). FP of MIs in Kosovo. *Journal of International Studies, 12*(3), 31-37.

Sidek, S., Mohamad, M. R., & Mohd, W. (2019). Sustaining small business performance: role of entrepreneurial orientation and financial access. *International Journal of Academic Research in Business and Social Sciences, 9*(9), 66-80.

Sidek, S., Mohamad, M. R., & Nasir, W. M. N. W. M. (2018). *Entrepreneurial Orientation, Access To Finance And Business Performance: A Preliminary Study.* Paper presented at the PROCEEDINGS OF THE 1st INTECORVERNATIONAL CONFERENCE ON BUSINESS, ECONOMICS, SOCIO-CULTURE AND TOURISM.

Sohail, H., & Arshed, N. (2022). Contribution of Islamic debt financing in entrepreneurship promoting financial sector transformation. *International Journal of Management Research and Emerging Sciences, 12*(2).

Van, L. T.-H., Vo, A. T., Nguyen, N. T., & Vo, D. H. (2021). FI and economic growth: An international evidence. *Emerging Markets Finance and Trade, 57*(1), 239-263.

Wang, E.-Z., & Lee, C.-C. (2023). The impact of commercial bank branch expansion on energy efficiency: Micro evidence from China. *China Economic Review, 80*, 102019.

Wediawati, B., Effendi, N., Herwany, A., & Masyita, D. (2018). Sustainability of Islamic microfinance in Indonesia: A holistic approach. *Academy of Strategic Management Journal, 17*(3), 1-14.

Zerai, B., & Rani, L. (2012). Technical efficiency and its determinants of micro finance institutions in Ethiopia: A stochastic frontier approach. *African Journal of Accounting, Economics, Finance and Banking Research, 8*(8), 1.

Zhang, Q., & Posso, A. (2019). Thinking inside the box: A closer look at FI and household income. *The Journal of Development Studies, 55*(7), 1616-1631.

**Annexure A**

| No. | Name |
|---|---|
| **List of Countries-Study Sample** |
| 1 | Akhuwat |
| 2 | Apna Microfinance |
| 3 | CSC |
| 4 | Damen Support |
| 5 | FFO |
| 6 | GBTI |
| 7 | JWS |
| 8 | Kashf Foundation |
| 9 | National Rural |
| 10 | OPD |
| 11 | Orangi |
| 12 | Orix Leasing |
| 13 | Punjab Rural |
| 14 | RCDP |
| 15 | Safco Support |
| 16 | Sindh Rural |
| 17 | Thardeep |

## Annexure B

| | Description and Measurement of Variables | |
|---|---|---|
| **Symbol** | **Name** | **Definition** |
| ROA | Return on assets (%) | (Net Operating Income - Taxes) / Average Total Assets |
| OSS | Operational self-sufficiency (%) | Financial Revenue / (Financial Expense + Net Impairment Loss + Operating Expense) |
| BRAN | Number of branches | The number of staffed points of service and administrative sites / branches used to deliver or support the delivery of financial services and wide array of face-to-face and automated services to clients. |
| ALB | Average loan balance per borrower / GNI per capita (%) | Average Loan Balance per Borrower / GNI per Capita |
| SIZE | Firm Size | Natural Logarithm of Total Assets |
| GLP | Gross loan portfolio to total assets (%) | Gross Loan Portfolio / Total Assets |
| CAR | Capital /asset ratio (%) | Total Equity / Total Assets |