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Evaluating Demand and Supply Side Factors for Client Refinance Intention and Microfinance Addiction in South Punjab

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ABSTRACT

This study evaluates demand- and supply-side factors influencing client refinance intention and microfinance addiction in South Punjab by assessing financial, organizational, and macroeconomic variables that contribute to borrower dependency. The research applies GMM estimation to 309 observations, using dimension reduction techniques to identify significant variables affecting microfinance addiction. Data collection involved surveys, interviews, and scheduled visits to banks and client spaces, with analysis including short-run and long-run estimations that control for firm structure, loan characteristics, liquidity, debt-to-equity ratio, and macroeconomic factors. Higher loan size, percentage of women borrowers, liquidity, and firm size positively impact microfinance addiction, while active borrower numbers, cost per borrower, and debt-to-equity ratio negatively influence addiction. GDP exhibits a negative relationship, indicating economic stability reduces microfinance dependence. These results provide policy insights for MFIs to regulate lending practices and prevent over-indebtedness. Financial literacy programs and improved borrower monitoring can mitigate excessive refinancing, while policymakers should implement borrower segmentation strategies to promote sustainable financial inclusion while reducing addiction risks.

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1. Introduction

Intentions represent an individual's belief in the value of their planned actions, decisions, or aspirations. The agent's intentions are the states in which they intend to act. In that state, one moves closer to the activity (Raz, 2017). It is as simple and correct to say that someone has a "motive" to act in a particular way as it is to say that they created the "intent" or "plan" to act in that manner when they have a reason to do so. A refinance intention happens when a borrower intends to take out a new loan to repay an existing microloan, usually owing to financial difficulties or low income. Loan reinvestment, or employing additional financing to expand a business, is not synonymous with refinance intention. Instead, borrowers' need for recurring loans rather than sustainable repayment indicates financial difficulty and dependence. It can lead to excessive debt, which is an issue in microfinance systems and a warning sign of financial difficulty. Thus, growing evidence indicates that the entrapment of borrowers in cycles of debt dependency is often termed microfinance addiction. According to Peprah and Koomson (2014a) high interest rates and debt traps lead them to take new loans to repay old debts, leading to endless indebtedness. Microfinance has been widely pushed as a means of poverty alleviation and financial inclusion. However, borrower sophistication has been shown in research to impact refinancing behaviour. Bucks and Pence (2008) revealed that the majority of borrowers misread their loan terms, while research by

Agarwal et al. (2023); Keys et al. (2016) shows that suboptimal refinancing is less common among higher-income, better-educated, clients with a good credit score—though this could be due to approval bias. Financial illiteracy also contributes to borrowers underestimating refinancing advantages, as demonstrated by the Keys et al. (2016) test, in which certain savings were discounted due to perceived insignificance. Behavioural factors such as inattention (Andersen et al., 2014) and lender mistrust (Johnson et al., 2019) can limit good refinancing decisions.

When a person's attachment to a feeling, an item, or another person is so strong that it limits his understanding of and capacity for coping with other things in the environment or himself, he is said to have an addiction because he has grown more and more reliant on that experience as his sole source of satisfaction (Peele, 1980). The use of opioids to treat pain or withdrawal, using drugs to feel good, developing automatic drug-use patterns, developing excessive drug "wanting" as a result of dopamine-related sensitization, and cognitive dysfunction viewpoints are all covered by addiction theories (Bechara et al., 2019). The precise dynamic behaviour of the consumption of addictive items was examined by Gordon and Sun (2015), who discovered that a consumer's stock of addiction is based on past consumption and tends to influence his or her present marginal utility of consumption. Credit is consumed as a normal good as any other physical commodity. Therefore, the theory of addiction can be applied to examine why low-income households become dependent on microloans. The refined food addiction model contends that excessive amounts of coffee, sugar, fats, carbohydrates, flour, salt, and other substances cause addiction. People consume dishes that either include these ingredients separately or together. When such commodities have been extracted and concentrated using modern industrial techniques, much like opioids, their potential addictive qualities are heightened (Corsica & Pelchat, 2010). Comparing this theory to the refined food addiction model, we can conclude that interest rates, transaction costs, financial commitments, group funding, and specific loan packages may be the basis of loan beneficiaries' addiction to microcredit. We should emphasise that, just as modern industrial and extractive processes increase the potential addictive capabilities of goods, so do recent innovations and MFIs' proclivity for profit-seeking increase the possibility of client microcredit addiction.

Despite extensive research on addiction behaviours and microfinance in various contexts, there exists a significant research gap regarding microcredit addiction patterns specifically in South Punjab. This region presents unique challenges due to its distinct socioeconomic conditions, cultural practices, and limited financial literacy among rural populations. The prevalence of informal lending systems alongside institutional microfinance creates a complex environment that may foster distinctive addiction behaviours not observed in other regions. This study addresses this critical gap by examining how the microcredit addiction framework manifests within South Punjab's particular context, providing essential insights for developing region-specific interventions and policies. Malak et al. (2022) examined that addiction to social media and its' potential functions have a major influence on the psychological reactions of students due to which academic performance is prompted. Applying these findings to microfinance addiction supports the hypothesis that borrowers' financial performance as the non-existence of future savings, multi-loan borrowing, and delay in repayment of loans caused psychological reactions of anxiety, depression, and dissatisfaction.

2. Literature Review

2.1. Microfinance demand and supply side factors

According to many, microfinance is essential to lowering unemployment and poverty and improving living conditions. The microfinance sector has therefore expanded on both the supply and demand sides. With a financing portfolio of PKR 23.86 billion for the year 2020, Pakistan Microfinance Investment Company (PMIC) served over 750,000 microfinance clients—of whom 82% were women—through its partner institutions, with 72% of all loans designated for rural areas. The business got a Euro 5 million subordinated loan for renewable energy, raised PKR 8.2 billion from commercial banks, and made PKR 403 million in profit. Its strategic portfolio allocation, which aimed to allocate 53 per cent to agriculture and livestock, 17 per cent to trade and manufacturing, and 1.7 per cent to consumer loans, housing, and education, reaffirmed its dedication to sustainable and equitable development. Pakistan's microfinance industry grew rapidly in FY23, with microcredit borrowers rising from 9.09 million to 9.39 million and loan values from PKR 491 billion to PKR 546 billion. Micro savings also increased from 93.96 million to 108.69 million savers and deposits from PKR 514 billion to PKR 597

billion. Micro insurance's coverage values, which ranged from PKR 317B to PKR 326B, reflected the dynamic expansion of all financial services. It peaked at 9.26M policyholders in Q3 and then settled at 8.57M in Q4 (Sheikh, 2023).

Microfinance outreach to impoverished communities is shown by the ratio of average loan size to per capita GNI; institutions that focus on poverty are indicated by values below 20%. The outreach depth of microfinance banks (MFBs) has fluctuated significantly; their loan-to-income ratio fell from 36% in 2019, 21% in 2020 and 22% in 2022, indicating a decreased focus on lower-income clients, before rising to 33% in 2023 as a result of redoubled targeting efforts. Beginning at 14% in 2019 and rapidly increasing to 20% in 2023, Non-Bank Microfinance Companies (NBMFCs) maintained steadily lower but more consistent outreach levels (Sheikh, 2023). These patterns demonstrate how MFPs modify their outreach tactics in response to outside pressures and evolving objectives, and they also indicate their diminished dedication to serving marginalised groups in the face of shifting economic and policy realities. It concludes that MFPs have not yet reached their full potential in terms of poverty outreach, they are progressively reaching out to underserved populations. Given the various factors influencing the supply and demand of microfinance services, it would seem that there is still a sizable supply gap in microfinance, which is a matter that warrants consideration.

2.1.1. Supply Side (MFPs Specific) Factors

Microfinance repayment is shaped by multiple factors. Interest rates are central. Qatinah (2013) links them to both positive and negative repayment outcomes. Yet, Christen et al. (1995) and Robinson (2001) argue that access to credit matters more than its cost, especially for the poor. Robinson (2001) discovered that because borrowers exhibit almost no elasticity, the demand for microcredit is constant even in the face of high interest rates. Waterfield (2011) highlights high interest rates striking a balance between social responsibility and financial viability, even if others argue that these rates are required to cover operating costs and risks. The ongoing dispute over equitable microcredit pricing is highlighted by Rosenberg et al. (2009), who suggest that fair pricing should encompass operational costs and reasonable profit. Littlefield et al. (2003) suggest high repayment rates and repeat borrowing indicate borrower satisfaction. Helms and Reille (2004) support this, noting clients often repay loans on time. In Pakistan, repayment behaviour is also influenced by household income, education, loan utilization, and client-MFI relationship (Noreen et al., 2011). Asghar (2012) finds that in South Punjab, many clients borrow for consumption rather than income generation, weakening their ability to repay. Saqib et al. (2016) highlight that repayment struggles often stem from mismatches between loan size and business needs. However, Shylendra (2006) warns that some MFIs charge excessive rates and use unethical recovery methods, contradicting the idea of financial inclusion.

Significant transaction costs have a detrimental effect on the microfinance industry. One of the biggest barriers to loan repayment is the high transaction cost (Muhammad, 2010). Borrowing costs include time spent travelling and submitting loan applications, assistance and kickbacks to loan officers, and membership fees (Abdullah et al., 2015; Saqib et al., 2016). Transaction costs, including lost productivity due to time away from businesses, travel expenses, and the negative effects of loan money delays, can be significant. The borrower frequently pays more for these transaction fees than for the interest on the loan (Adams, 2021; Robinson, 2001). Similarly, Peprah and Koomson (2014b) argue that MFIs often charge more than banks, increasing pressure on low-income clients. MFPs have much higher operational expenses than their typical banking counterparts. This is due to the greater transaction costs associated with making smaller loans to previously unserved clients. The idea for this practice is that loan operation costs grow as loan size lowers. As a result, low-income borrowers pay higher interest rates than better-income borrowers who use traditional banking services. Moreover, Pakistani farmers are unable to access institutional finance because they lack adequate collateral due to their lack of land ownership (Saqib et al., 2016). Households applying for loans through ZTBLs must first pay membership fees, which are typically between $4-6 (Harper & Khan, 2017). To be approved for a loan, some MFIs demand borrowers to make specific deposits, which they normally must keep throughout the loan's duration (Rosenberg et al., 2009). In comparison to deposits, borrowers pay significantly less interest on loans. The borrower consequently receives less net additional cash from their loans, increasing their actual

loan cost. In their investigation of the Sinapi Aba Trust (SAT) in Ghana, Adjei et al. (2009) found a favourable correlation between loan quantity and savings deposits.

Boiquaye and Protter (2024) observe that default rates rise when MFIs do not monitor loan use closely. In rural Multan and Bahawalpur, irregular income cycles and informal borrowing compound the problem. Moreover, Irshad et al. (2024) stress that group lending models while common do not always reduce default risk in South Punjab, due to weak social cohesion. Despite global optimism around microfinance, local evidence reveals gaps. Social context, informal norms, and borrower behaviour in regions like South Punjab require more tailored approaches. Without localized policy and monitoring mechanisms, microfinance may not deliver on its promise. The effects of lending to groups on those who receive loans are mixed. Meissner (2005) claims that recipients of the South Asia Poverty Alleviation Programme (SAPAP) stated that their living circumstances had improved and that they had easier access to credit and income-generating tools. Meissner continues by stating that becoming a member of a group results in the formation of social networks and linkages that promote ongoing togetherness and improved access to larger loans. Group members remain with MFIs for a very long time when this occurs and works in their favour. This is similar to becoming addicted to microcredit. Pakistan now has relatively low human resource capital efficacy, making it difficult to maintain the system as a whole (Muhammad, 2010). Therefore, such can lead to MFI inefficiency. The majority of non-governmental organisations that become MFIs lack the managerial skills required to run a microfinance institution, lack of specialized legal and administrative procedures, limited access to microcredit institutions, a dearth of chances for skill development, and insufficient market data limit the socially beneficial expansion of microfinance (Muhammad, 2010). Government programmes that promote skill development, employment, and training have developed into a crucial tool for helping the poor get microcredit (Delfiner & Peron, 2007). According to Helms and Reille (2004), the government should expand the financial sector's influence by fostering competition, innovation, and transparency through suitable legislative and regulatory frameworks and consumer protection programmes.

2.1.2. Demand Side (Customers Specific) Factors

Due to multiple borrowing and association, clients are more permanently bound to MFIs. When a client borrows from several institutions at once or regularly, it is referred to as multiple borrowing. This practice can retain the client with the MFI for a long time. On the other hand, a consumer may join various MFIs through multiple affiliations without necessarily borrowing from them. In Morocco, a "repayment crisis" in the microfinance sector occurred in late 2008 as a result of multiple borrowers, which reached up to 40% (Chen et al., 2019). Multiple borrowing to pay off prior debt or loan rescheduling to catch up on past due payments does not fix the issue; instead, poor borrowers are granted a reprieve (Alam, 2012). Yang and Stanley (2012) assert that rather than engaging in self-employment, which could raise their income levels and enable them to escape poverty, the poorest of the poor prioritise meeting their most basic requirements when using loans. In this situation, loan repayments do not ensure the eradication of poverty instead rather drive the impoverished further into debt with other creditors. Armendáriz and Morduch (2010) assert that despite the increased transaction costs linked to more frequent repayment, borrowers who do not have access to savings may favour microfinance loans when they need money. This intensifies customers' "addiction" to microcredit and keeps them stuck at a certain rung of the social and economic ladder.

Poor rural households' inability to obtain credit has a detrimental effect on the generation of agricultural and non-agricultural products as well as the welfare of the family unit, as claimed by Adams (2021). The majority of rural poor people don't know whom to turn to receive credit for their output acts. Another problem is that the high interest rates and confusing terms of these loans depress farmers and other borrowers, even if farmers are aware of formal credit options and where they can obtain those (Diagne & Zeller, 2001). Access to credit is significantly influenced by the bank's location concerning the farmer. Less finance is available to farmers who reside in isolated places far from banks (Bakhshoodeh & Karami, 2008). Due to a lack of credit information input, current financial institutions have a wide range of markets they are afraid of. Due to the social capital that peer screening, peer monitoring, and peer security effects provide, this credit knowledge gap is a significant obstacle (Ajani & Tijani, 2009). To address the program's uneven reach across regions, Chaudhuri studied district-level data on Self-Help Group (SHG) Bank connections in India. He concluded that the

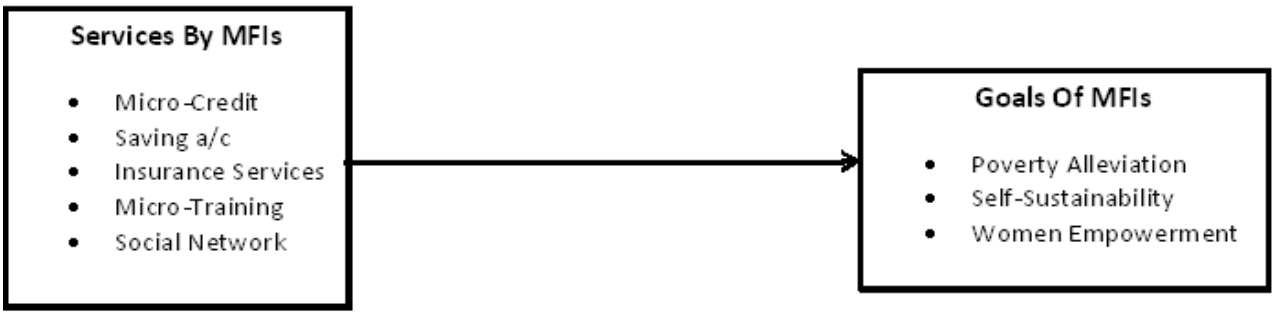
demand for microcredit was significantly influenced by the number of potential consumers and the expertise of MFI clients. The demand for MF is also influenced by factors relating to assets, income, education, health, and occupation. The primary driver of MF demand, according to Srinivasan (2009), is the amount of potential MFI clients. Reaching market potential will require innovations and enablers in the microfinance sector because the real demand for microloans is lower than its projected potential.

Numerous studies have been done to show the many benefits of microcredit on clients' incomes and savings examples are Goldberg (2005); Meissner (2005). According to Stewart et al. (2012), there are some regions in Ghana where the link between income and microcredit is favourable and others where it is unfavourable. It became evident that those who had taken out longer-term loans made less money, particularly in some areas. A high dropout rate happens when an MFI's products and services do not satisfy the needs of its customers (Wright, 2001). This suggests that MFIs with the ability to offer services that are specifically tailored to the demands of their clients would have very satisfied customers. In addition to lowering poverty and raising participation advantages, Morduch and Haley (2002) demonstrate that the Grameen Bank should enhance family capabilities to sustain gains over time. The greatest rise in per capita income, in the opinion of Vatta (2003), has been brought on by the microcredit initiative. Because of this, the vast majority of demand-side factors are related to income, education, health, occupation, and assets. The distance to the nearby bank, crop output (which lowers refund uncertainty), the future share of the credit (determined by policy), and weather characteristics all have an impact on borrowing costs.

2.2. A framework

The primary objectives of MFPs were poverty alleviation, self-sustainability, promoting gender equality, and women empowerment through financial inclusion. To achieve these primary goals MFIs, offer services including microcredit, micro-training, saving accounts, and insurance.

Figure 1: Theoretical framework to illustrate the services and goals of MFIs.



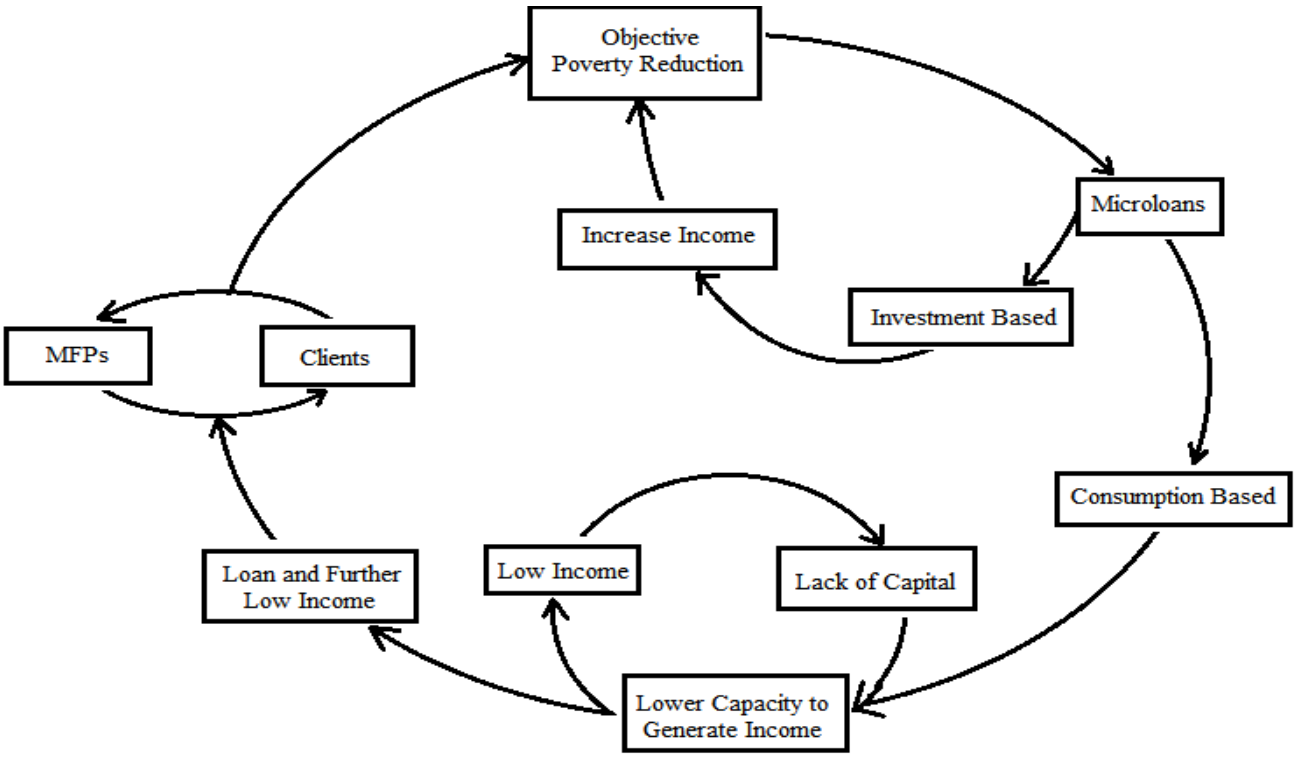
Authors' Construct, 2025

Figure 1 shows the theoretical framework underlying the services of MFIs and the goals of MFIs. Most of the MFIs have uncertainty about the availability of subsidies which causes financial unsustainability and leads them to "mission drift" and less social outreach. Instead of progressive lending, the shift to financial goals is achieved by high transaction costs, high interest rates, focusing on less-poor and smaller numbers of female borrowers, and larger average credit sizes per borrower. This increases the burden of credit on microloan borrowers, low rates of loan repayment by borrowers, multi-loan borrowing, and inability to save for the future leading to the death spiral of debt, which makes micro-loan borrowers addicted to microfinance.

Figure 2 shows the cycle of repeated borrowing resulting in microfinance addiction, Microfinance providers (MFPs) aim to alleviate poverty by providing low-income people with microloans to invest in income-generating ventures or meet their consumption needs. In actuality, investment-based loans do not typically produce sufficient returns to bring borrowers out of poverty, and consumption-based loans tend to create financial hardship while providing no income. As a result, in either situation, the borrowers are locked in a vicious circle of debt with no savings or accumulated assets, making them continuously dependent on microfinance.

Such undesirable debt trap traces present an obvious argument for supplementary interventions such as financial literacy, grants, and economic assistance for poverty alleviation.

Figure 2: Vicious cycle of death spiral of debt leads to microfinance addiction.



Authors' Construct, 2025

2.3. Criticism

2.3.1. Lack of success by MFIs in reducing poverty

Microfinance is the provision of savings, loans, and other necessary financial services to the impoverished (Vatta, 2003). Reaching impoverished households is far more effective for MF providers who make poverty reduction a clear goal and part of their organisational culture than for those who do not (The Ministry of Finance and Revenue, 2006). Morduch and Haley (2002) suggested that MFPs failed to reduce short-term costs at the expense of long-term social and economic objectives and adequately monitor and evaluate the poverty funds. According to Karlan and Zinman (2011), MFI benefits are just temporary because microcredit merely results in fewer firms and lower subjective well-being. In addition, MFI contributions are based on investments in businesses that generate revenue (Hermes & Lensink, 2011). According to studies conducted by Angelucci et al. (2015); Banerjee et al. (2015) concluded that the welfare of smallholders is not significantly impacted by microcredit. Crépon et al. (2015) in a study, that included both control and treatment groups in Morocco, found no net effect on total labour income and consumption, underscoring the power of microcredit access to significantly boost self-employment income.

Microfinance, according to Battilana and Dorado (2010), has undergone a paradigm shift from a developmental initiative to a commercial push, with an increased concentration on financial goals rather than the social aim. They added that the shift was required to meet the goals of stakeholders and commercial investors as well as the increased capital requirements. Upscaling is a microfinance industry trend in which non-governmental organisations (NGOs) transition from NGO to a bank or non-bank financial institution status to access various sources of funding (such as deposits) and share profits. This was demonstrated for the first time in 1992 when Bancosol in Bolivia was upscaled (Lützenkirchen et al., 2012). An MFI makes every effort to retain current clients when it decides to grow rather than beginning over and acquiring new ones. This shows that MFIs are increasingly performing the role of commercial banks, which historically primarily served the needs of micro and small firms and left the requirements for medium- and large-scale company financing to them. The MFI and client growth continuum paradigm predicts that small businesses would be the last to receive MFI financial services. But because the microfinance industry is now commercialised and thriving, MFIs can now fund the

higher capital needs of medium- and large-scale businesses, which justifies customers keeping with MFIs for longer than is technically necessary (Peprah & Koomson, 2014b). We can see NGOs are being transformed into MFIs. Although the operations of NGOs and MFIs differ significantly, both organisations share the same goals.

According to microeconomic theory, price reductions are a result of more competition, but this is not always the case in the microfinance industry, especially once the industry has reached the consolidation stage of its growth and expansion (Porteous, 2006). Srinivasan (2009) contends that intense rivalry among MFIs, particularly the kind that lowers selection standards for the borrower, erodes customer connections, promotes multiple borrowing, and leads to high default rates, is one of the key causes of poor people's addiction to microcredit. For its flimsy levels of outreach, microfinance institutions have received criticism. Woller (2002) claimed that many MFIs do not specifically target the underprivileged. Instead of using unique targeting strategies to reach the disadvantaged, these institutions generally use inadequate targeting tactics. MFIs usually incorporate such design elements into their products as small initial loan amounts, phased loans, high-interest rates, rigid and standardised loan products, mandatory savings requirements, loan terms, group loans with joint obligations, and weekly meetings. Low initial loan amounts and progressive loans naturally act as roadblocks to high loan turnover rates and prevent borrowers from moving up the socioeconomic scale.

3. Methodology

3.1. Materials & Methods Used

Baseline estimates are developed through the estimation of the target population and administration of a baseline survey on the target population. A dimension reduction technique is used to identify major supply and demand side addiction factors for the target population. Project data is collected through survey questionnaires, interviews, scheduled visits to the banks and client spaces, and Pakistan microfinance review reports. Furthermore, the General method-of-moment (GMM) is used to account for the endogeneity in the assessment of MFIs financial sustainability indicators. Many researchers have used GMM panel analysis to measure the bank's stability e.g. Banto and Monsia (2021) used a GMM panel analysis to examine the statistical importance of banks' and MFIs' contributions to economic development and Pham et al. (2021) examine the factors that influence a bank's stability in a developing nation using GMM regression analysis. The study utilized stationary, equipment, and data analysis software for recording project data and analyzing research findings.

4. Results

4.1. Statistical Analysis

The study aims at using the Generalised method-of-moment (GMM) and dimension reduction techniques like multiple-factor analysis. GMM is applied to the data collected from Microfinance Institutions because GMM can handle the dynamic correlations (such as lagged financial indicators) that are typically included in studies of this endogeneity (reverse causation between risk and returns) as well as some unobserved bank-specific elements, it is the most appropriate assessment for bank's stability. Although GMM is robust concerning data difficulties such as heteroskedasticity, it employs lagged instruments to solve these concerns, in contrast to the majority of standardised panel methods. Since it is not particularly effective with typical application methods, it would provide more definitive conclusions for this area, although requiring careful instrument verification. Data is comprised of supply-side factors that affect decisions and consequent sustainability of Microfinance Institutions.

Table 1: Correlation Matrix

Var.	FSI	OS	ALPB	NAB	GLP	PWB	Lqdt	DER	LCPB
FSI	1.000								
OS	-0.096	1.000							
ALPB	0.090	0.489	1.000						
NAB	0.320	0.052	0.145	1.000					
GLP	0.311	0.233	0.513	0.924	1.000				
PWB	0.123	-0.676	-0.293	0.061	-0.060	1.000			
Lqdt	0.015	0.040	0.028	-0.052	-0.035	-0.055	1.000		
DER	0.005	0.040	0.137	0.065	0.110	-0.044	-0.041	1.000	
LCPB	-0.345	0.682	0.591	-0.245	0.016	-0.396	-0.002	-0.034	1.000
Size	0.275	0.405	0.492	0.869	0.944	-0.203	-0.024	0.093	0.173

GDP	0.150	-0.020	0.346	0.076	0.200	-0.051	0.006	0.103	0.044
INF	-0.169	0.029	-0.396	-0.084	-0.226	0.003	0.008	-0.135	-0.106
VA	0.158	-0.040	0.394	0.052	0.197	0.061	0.029	0.090	0.167
PS	0.090	0.004	0.163	0.029	0.088	-0.089	0.031	0.024	-0.040
GE	0.032	0.023	0.047	0.005	0.022	-0.122	-0.009	0.027	-0.068
RQ	-0.067	0.040	-0.199	-0.053	-0.123	-0.114	-0.025	-0.065	-0.111
RL	0.148	-0.028	0.370	0.100	0.229	0.038	0.060	0.105	0.092
CC	0.120	-0.008	0.322	0.050	0.168	-0.084	0.049	0.050	0.031
Var.	Size	GDP	INF	VA	PS	GE	RQ	RL	CC
Size	1.000								
GDP	0.168	1.000							
INF	-0.198	-0.868	1.000						
VA	0.175	0.332	-0.546	1.000					
PS	0.053	0.765	-0.479	0.055	1.000				
GE	-0.005	0.644	-0.408	-0.148	0.830	1.000			
RQ	-0.137	0.049	0.138	-0.374	0.425	0.703	1.000		
RL	0.198	0.505	-0.637	0.524	0.430	0.166	-0.057	1.000	
CC	0.123	0.789	-0.617	0.343	0.822	0.703	0.230	0.440	1.000

Note: FSI: Financial Sustainability; OS: Organizational Structure; ALPB: Average Loan Per Borrower; NAB: Number Active Borrower; GLP: Gross Loan Portfolio; PWB: Percentage of Women Borrowers; Lqdt: Liquidity; DER: Debt to Equity Ratio; CPB: Cost Per Borrower; GDP: Gross Domestic Product; INF: Inflation.

Table 1 shows that there could be a problem with multicollinearity, given the high dependence of Independent variables on each other. Extremely strong relationships between a number of variables, including macroeconomic indicators, institutional characteristics, and financial sustainability, are included in the correlation matrix. While GDP and inflation have a negative connection of -0.868, organisational structures and female borrowers have a negative correlation of -0.676, and portfolio size measures show a substantial positive correlation with governance indicators (NAB-GLP: 0.924; Size-GLP: 0.944; GE-PS: 0.830; CC-PS: 0.822). Financial sustainability indices (FSI) exhibit negative evidence with regard to cost per borrower (LCPB: -0.345) and inflation (-0.169), but moderately positive correlations with NAB (0.320) and GLP (0.311). This implies that size-related variables and governance indicators may have multicollinearity issues, underscoring the need for cautious variable selection in subsequent modelling. Collectively, these trends show the relationship between macroeconomic factors, loan portfolio composition and institutional characteristics concerning financial sustainability results. Before performing Regression analysis on supply-side factors through GMM, a test for endogeneity is conducted, which is the major condition for the application of GMM. Endogeneity is one of the main assumptions required to run the GMM model. To determine endogeneity, the Dubrin (score) and Wu-Hausman tests were performed using the null hypothesis that the variables were exogenous.

Table 2: Endogeneity

	Durbin (Score) 5% Sig. level	**Wu-Hausman 5% Sig. level**
Null Hypothesis	Variables are exogenous	
Chi2(1), F(1,290)	6.210	5.967
P=	0.0131 (1.31%)	0.0158 (1.58%)

Table 2 reflects that there is strong evidence of endogeneity in the model, as indicated by the Durbin score and Wu-Hausman endogeneity tests rejecting the null hypothesis of exogenous variables at the 5% significance level (p-values 0.0131 and 0.0158, respectively). These results suggest the possibility of measurement error, simultaneity, or omitted variable bias, which could lead to bias in the conventional regression estimations. Therefore, the outcome strongly suggests using GMM techniques to provide reliable parameter estimations.

Table 3: GMM Analysis

Variables	**System GMM-Short-run Estimation**	**Long-run Estimation**
FSI_1	0.2017*** (14.78)	
Organizational Structure (OS)	0.1964** (2.39)	
Average Loan per Borrower (ALPB, log)	0.2620*** (6.77)	0.3281*** (6.60)
Number of Active Borrowers	-0.1496***	-0.1874***

(NAB_log)	(-3.97)	(-3.93)
Percentage of Women Borrowers (PWB)	0.3142***	0.3936
	(5.61)	(5.67)
Liquidity (Lqdt)	0.0028***	0.0035**
	(2.15)	(2.18)
Debt to Equity Ratio (DER)	-0.0033**	-0.0041**
	(-2.17)	(-2.15)
Cost Per Borrower CPB, log	-0.4000***	-0.5011***
	(-15.80)	(-15.27)
Size	0.3806***	0.4768***
	(4.00)	(3.96)
GDP	-1.9094*	-2.3917*
	(-1.70)	(-1.68)
F(9,33)	738869.36	
Prob > chi2	0.0000	
Groups/Instruments	34/32	
AR(2)	0.464	
Hansen Statistics	0.176	
No. of Observations	309	

Notes: ***,**,* denote significance at 1%, 5% and 10% respectively, Inside parenthesis are t-statics values.

A substantial positive link has been observed between the proportion of women borrowers PWB and financial sustainability FSI. It indicates the significance of the relationship at a 5% level of significance. Similarly, At the 5% level of significance, the liquidity ratio exhibits a substantial positive link with MFPs' financial sustainability. Leverage, as measured by the debt-to-equity ratio (DER), has a significant positive link with the financial viability of MFPs in South Asia, everything else being equal. This means that combining diverse sources of financing for microfinance providers increases their financial sustainability. Thus, the positive coefficient implies that the greater the proportion of MFIs financed by debt relative to other forms of finance, the more efficient their sustainability. There is a negative correlation between cost per borrower (CPB) and financial sustainability. On average, the link is significant at the 5% level, assuming everything else remains constant. The negative results demonstrate that cost reduction plays an important role in improving the financial sustainability of microfinance providers (Mekonnen & Zewudu, 2019). The data shows that increasing the cost per borrower affects microfinance companies' financial sustainability. This conclusion is consistent with Ganka's (2010) findings. The cost per borrower assesses an MFI's efficacy in cost reduction based on the number of borrowers they serve. This underlines the need for cost reduction in achieving financial sustainability. Control variables GDP and inflation have a negative impact on the financial sustainability of MFPs. GDP has a significant negative link with MFPs' financial sustainability at the 5% level of significance. Similarly, at the 5% threshold of significance, inflation is negatively related to financial sustainability. As a consequence of the overall results of the main model, we found that all of the explanatory and control factors have a significant impact on the dependent variable, microfinance providers' financial sustainability.

5. Discussion

5.1. Endogenous variables

The findings of the System GMM regression do, in fact, empirically support the existence of important factors influencing financial sustainability in the context given. The analysis identifies a number of significant trends that should be carefully examined. As seen by the significant positive coefficient of the lagged dependent variable (0.2017), financial sustainability itself exhibits a great deal of persistence, suggesting that past performance has a major impact on current sustainability. It emphasises the necessity of steady performance over time and the path-dependent character of financial sustainability. Organisational structure is another crucial factor. Structured institutions typically show higher sustainability results, as indicated by their positive coefficient value of 0.196. With its well-established operating procedures and decision-making structures, this may be an example of strong governance mechanisms. Both in the short and long term (0.2620 and 0.3281), loans averaged per borrower show extremely high positive effects, suggesting that institutions are more focused on handling the large number of microloans that have the potential to have an impact and lend more towards greater sustainability. This could result from targeting more creditworthy customers who can manage microloan amounts or from economies of scale in loan administration.

Conversely, there is a negative correlation between the number of active borrowers and the viability of the institution. According to this, a customer base that is too large may attract institutional resources in terms of their monitoring capabilities, perhaps restricting soar-off economies of scale or abuse, which would have a detrimental effect on sustainability. As a result, this finding presents a significant trade-off for institutions between the needs of financial sustainability and the objectives of financial inclusion. The share of female borrowers also shows the strongest positive correlation (0.3142), supporting previous research on the social advantages of gender-inclusive financial services and women's typically superior payback performance. The liquidity position shows a slight but statistically significant positive effect (0.0028), suggesting that even modest increases in liquidity buffers would help with sustainability as a whole. Conversely, the debt-to-equity ratio's negative coefficients (-0.0033 short-run, -0.0041 long-run) show a signal about the dangers of excessive leverage and imply that organisations with higher levels of capital are more likely to remain sustainable. Cost control is crucial for sustainability, as evidenced by the extremely high negative coefficients for operational efficiency as assessed by cost per borrower (-0.4000 short-run, -0.5011 long-run). The benefits of scale for financial operations are supported by the positive coefficient for institution size (0.3806); nevertheless, the negative GDP coefficient (-1.9094) poses an intriguing conundrum that may be a reflection of specific macroeconomic conditions or cyclical patterns throughout the study period. When the robustness check is performed for these results, the Hansen test (p=0.176) reveals valid instruments, and the AR (2) test (p=0.464) indicates that autocorrelation is not a worry. The model's overwhelmingly strong explanatory power is demonstrated by the highly significant F-statistic (738869.36, p=0.000).

5.2. Exploratory Variable

Financial literacy is often promoted as a key factor in enabling individuals to make informed borrowing decisions, but studies examining its actual role in preventing debt dependency within microfinance reveal mixed results.

5.2.1. Positive Correlation Between Financial Literacy and Debt Avoidance

Many studies show a positive relationship between financial literacy and responsible borrowing behaviours. For example, financial literacy is linked with better budgeting skills, increased savings rates, and prudent borrowing decisions. In contexts where individuals possess a strong understanding of loan terms and interest rates, studies indicate that they tend to avoid over-indebtedness. Studies, such as those conducted by Lusardi and Klapper (2015), provide empirical evidence of this positive correlation, suggesting that individuals with a higher degree of financial knowledge are less likely to accumulate unsustainable debt from microloans.

Limitations: Despite these findings, a major limitation is that correlation does not imply causation. While individuals with higher financial literacy may be better positioned to manage loans responsibly, it’s unclear whether literacy alone directly prevents debt addiction or if other factors (like socioeconomic status, access to stable income, or initial financial stability) play a significant role. This nuance is often overlooked, resulting in an oversimplified view of financial literacy as a standalone solution.

5.2.2. Mixed Findings in Microfinance-Specific Contexts

Financial literacy programs tailored specifically for microfinance clients have shown varied results. Some studies report positive outcomes, such as reductions in debt accumulation and improved loan repayment behaviour. For instance, a randomized control trial by Karlan and Zinman (2011) showed that financial education, when integrated with microfinance services, reduced instances of default among borrowers. However, other studies indicate that while financial education may raise awareness, it does not always lead to behaviour change in a high-pressure financial environment where clients may still borrow out of necessity rather than choice.

Limitations: The mixed outcomes may be partly due to the heterogeneous nature of microfinance clients, who vary widely in terms of income, education, and cultural background. Additionally, most studies on financial literacy training rely on short-term measures of success, such as initial debt repayment rates. Few studies track long-term behaviour, leaving it unclear whether these programs yield sustainable financial habits or if debt avoidance is simply temporary.

5.2.3. Over-Reliance on Quantitative Data and Self-Reporting

Most studies in this domain rely heavily on quantitative data, such as credit scores, repayment rates, and loan sizes, or on self-reported financial literacy assessments. While these metrics are useful, they may overlook qualitative factors that influence borrowing behaviour, such as cultural attitudes toward debt, social pressures, or emotional stress related to poverty. Research by Servon and Kaestner (2008) and Harahap and Amanah (2021), for instance, highlights that financial literacy assessments may not fully capture the financial reality and cultural nuances that drive microfinance clients' behaviour.

Limitations: Self-reported financial literacy scores, often used to assess program effectiveness, are subject to social desirability bias, where participants may overestimate their understanding. Moreover, quantitative indicators can miss the nuanced dynamics of debt dependency, such as clients' perceived social obligation to repay despite their financial struggles or the complex motivations behind taking multiple loans from different lenders.

5.2.4. The Impact of External and Structural Factors

Another critical insight from the literature is that financial literacy alone may not be sufficient to prevent debt addiction in microfinance contexts. Structural issues, such as high interest rates, limited loan options, and aggressive lending practices, can trap individuals in cycles of debt regardless of their financial knowledge. Studies by Schicks (2013) and others argue that without addressing these structural issues, even financially literate clients can fall into debt cycles. This highlights the need for systemic reform within microfinance, such as ethical lending practices, interest rate caps, and borrower protections, to complement financial literacy initiatives.

Limitations: While structural factors are acknowledged in many studies, few attempt to measure or control for these external influences when assessing the effectiveness of financial literacy. This gap limits the reliability of conclusions that attribute debt avoidance solely to financial literacy, as it disregards the broader ecosystem of microfinance practices that impact borrowing behaviour.

6. Conclusion and Implications

This study looked at the causes of microcredit addiction and found that both demand-side (client circumstances) and supply-side (MFI practices) elements were involved. According to this study, poverty makes it extremely difficult for low-income households to get out of the microloan system. Therefore, MFIs prioritise customer welfare in their pursuit of growth and cost-effectiveness by offering reasonably priced loans and assistance to small businesses even as they commercialise their operations. Moreover, financial literacy can positively influence borrowing behaviour and mitigate risks associated with microfinance, but the research suggests that it is not a comprehensive solution to debt addiction. The complex socio-economic realities faced by microfinance clients, combined with the pressures and limitations inherent to microfinance systems, mean that financial literacy alone may have limited effect. Addressing microfinance debt addiction will likely require a multifaceted approach that includes financial literacy, systemic reform in lending practices, and policies to protect vulnerable borrowers, rather than relying on financial literacy as a panacea. This study's findings have significant policy implications. In addition to keeping solid capital positions, MFIs should prioritise managerial efficacy and quality over quantity in lending portfolios. Lending schemes that prioritise gender parity may prove especially successful given the relatively improved performance of female borrowers. The negative coefficient on the number of borrowers suggests potential diseconomies of scale in customer expansion, which further emphasises the need to carefully balance access expansion against financial health. In order to handle the high operational costs, cost efficiency highlights the necessity of process changes and technology innovation. In addition to a more thorough examination of the surprising macroeconomic correlations, future studies could profitably explore the nonlinear links suggested by some of these findings.

6.1. Limitations and Recommendations for Future Research

6.1.1. Limitations

This study presents several limitations that may affect the generalizability of findings. The research is geographically constrained to South Punjab, limiting broader applicability

across Pakistan's diverse economic regions. The sample size of 309 observations, while adequate for GMM estimation, may not capture the full spectrum of microfinance client behaviors. The cross-sectional nature of some data components restricts the ability to establish definitive causal relationships between variables and microfinance addiction. Additionally, the study relies heavily on self-reported data from surveys and interviews, which may introduce response bias. The research does not account for external factors such as cultural influences, family dynamics, or informal lending practices that could significantly impact borrowing decisions. Furthermore, the definition and measurement of "microfinance addiction" may vary across different contexts and requires standardization.

6.1.2. Recommendations for Future Research

Future studies should expand geographical coverage to include multiple provinces and urban-rural variations across Pakistan. Longitudinal research designs would better establish causality and track addiction patterns over time. Researchers should incorporate qualitative methods to understand psychological and social drivers of microfinance dependency. Investigation of the role of financial literacy levels, alternative credit sources, and cultural factors would provide deeper insights. Cross-country comparative studies could identify universal versus region-specific factors influencing microfinance addiction and inform international policy development. Future research should incorporate longitudinal studies to better assess long-term impacts, as well as mixed-method approaches that consider qualitative factors and structural conditions. Additionally, research should aim to integrate insights from behavioural economics to explore why financial knowledge does not always translate into prudent financial behaviour, especially in high-stakes, poverty-driven environments.

6.2. Ethical Consideration

The researchers adhered to accepted ethical standards throughout this study. Every participant was treated with dignity, and their anonymity and privacy were rigorously safeguarded. In compliance with relevant data protection laws and institutional review board (IRB) procedures, personal data was anonymised and securely handled.

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