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ORIGINAL CONTRIBUTION

Microfinance, A Lifeline for Micro Industries in Pakistan: A Comparison of Governmental and Non-Governmental Microfinance Programs

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Abstract— The association of microfinance and entrepreneurship is increasingly recognized as a tool for the socio-economic development of dawdling regions. By contrast, most of the studies on the micro level have primarily focused on poverty alleviation and spending of loans on living standards and reached conflicting findings. Evidence on the impact of microfinance on entrepreneurial development in different regions has conflicting results. There is growing academic interest in geographical variations and a consensus that geographical disparities exist. This paper investigates the impact of microfinance programs offered by government and non-government organizations on the profitability, employment and sales growth of microenterprises operating in Pakistan. Using a sample of borrowers (treatment group) and respondents on the waiting list (control group) operating microenterprises, we provide evidence that the impact on the profitability of microenterprises is positive, with a higher mark for NGO borrowers. Moreover, the study's novelty compares the microenterprise industry and the findings that using loans in service sector business makes individuals more likely to move from a low-wage labourer to a more profitable entrepreneurship status. Our findings will help policymakers and academics identify the most relevant intervention areas.

Index Terms— Pakistan SMEs, Microfinance comparison, Micro cottage industries, Financially excluded entrepreneurs, Entrepreneurship, Deprived regions, Regional development

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Introduction

According to World Bank, Asia is home to 1.7 billion people, two-thirds world's population living on less than USD 1.2 per day. Despite the steady and significant economic growth over the last two decades, poverty remains a crucial issue in the region (Bruton, Ketchen, & Ireland, 2013). However, how much grinding poverty and entrepreneurial activities impact each other remains unexplored mainly by business scholars (Bruton, 2012).

Significant development initiatives by governments and charity solutions offered by the NGOs have not been proven radically successful in solving the poverty problem (Easterly, 2008; Wu, 2022; Bruton, 2012). Schumpeter remarked that without entrepreneurship and innovation, accumulation of capital is analogous to "[adding] successively as many mail coaches as [one] pleases, [yet, one] will never get a railway" (Schumpeter, 1912, pp. 64).

This paper seeks to empirically analyze the contribution of microfinance programs offered by MFIs in poverty eradication in the regions lagging economically. Subject to our study are the programs initiated by the MFIs to promote entrepreneurship on the household

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levels in two districts of Pakistan, viz. Sargodha and Mandi Bahudin, which the governments neglect in terms of public spending (Batool, 2022).

Existing empirical studies are focused on the impacts of microfinance on the poverty eradication (Banerjee, 2015) and spending of the loan amount on living standards like health and education (Montgomery & Weiss, 2011). Although studies have provided heterogeneous findings, several studies have found microfinance as a tool for lifting poor economic prospects of a poor and financial buffer to adverse economic shocks for dispute society (Karlan, 2019). Others have presented evidence against microfinance in failing to alleviate poverty and living conditions (Ali, 2017). The paper provides insight into the extent entrepreneurship, fueled by microfinance, can be considered as means to encourage the poor to involve themselves in economic activities and to foster entrepreneurship (Banerjee, 2019), resulting in the social and economic development of the region (Wu, 2022; Ukanwa, 2022; Ribeiro, 2022). In this study, we provided evidence that NGO-funded businesses generate more profit than GO-funded businesses. However, households that are financed enjoy better financial health than non-recipients. Considering that the sample was drawn as a representation of the population which is poor or core poor and earns $1to2$ daily for a living, a profit of $20to30$ is a significant amount. A couple of children could access better education and health facilities with this fringed amount. Recently, studies have started inquiring about microfinance improving household welfare in developing countries (Demirgüç-Kunt, 2017).

Drawing on interviews with the households, our findings shed light on microfinance's potential to decrease poverty and add to the existing literature in four ways. First, it emphasizes the usage of microfinance rather than only access to the funds (Bros, 2022), where loans used for business purposes are performing well. Secondly, we highlight the importance of micro-entrepreneurship in poor countries like Pakistan for households to improve their socio-economic status (Hussain, 2019). Thirdly, our study indicates the importance of the industry type of business. Considering the scale effects, service sector enterprises perform better than the rest. Finally, unlike most studies that did not consider ownership type as a vital variable (Parwez, 2022), our paper finds that businesses under the joint ownership of family heads generate positive economic profits.

The remainder of this paper is structured as follows: section 2 reviews the key literature relating to entrepreneurship and competitiveness, followed by the conceptual framework. The methodology is presented in Section 4, followed by the key findings of the study, concluded by a summary.

Literature Review

Microfinance and entrepreneurship

Management and economic researchers increasingly acknowledge the degree of association between microfinance and entrepreneurship and their impact on the economic development of households and the community (Stein, Ardic, & Hommes, 2013). A Significant number of entrepreneurs consider credit as the primary constraint in the expansion of businesses held (Robinson, 2001). Microcredit is often cited as the most common tool to encourage entrepreneurship among the poor (Bruton, Khavul, & Chavez, 2011). Dr Yunus (1994) stated that "Although microfinance is not a "cure for all" if there has been one single action to eradicate poverty, it would be providing credit to the poor". The practice of "rotationary credit" in developing countries epitomises the informal association of microfinance, entrepreneurship and sustainability among the poor. The Sustainable Financial Markets Facility (IFC, 2004) urges the need for socially responsible lending markets to stimulate entrepreneurial activities in the developing world. Therefore, the interrelated nature of microfinance, entrepreneurship and sustainable development is evident (Ledgerwood, 1998; Ferguson & Navarrete, 2003; Bruton, 2012). In developing countries, the challenge to build capacity in the financial sector in micro and small enterprises and rural finance challenge remains at large (Banerjee, 2019).

Impacts of microfinance

The practice and concept of MF have changed considerably over the last 10 years as the sector is increasingly operating on commercial lines (Hulme & Arun, 2009). The academic literature is expanding with more and more explorative studies on the social and economic impact of the world's microcredit schemes, capturing the interest of policymakers. There are studies which conclude that the MFIs have made a significant economic and social impact for the recipients and the regions (Dunford, 2006; Duflo, Banerjee, Glennerster, & Kinnan, 2013), and microfinance is itself seen as a positive and effective measure to reduce poverty (Hossain & Zahra, 2008; Mahajabeen, 2008; Rabbani, Prakash, & Sulaiman, 2006). Cottage industries in India, Bangladesh, and China are growing because of the credit support by the government, which has resulted in the attraction of new entrepreneurs and investors (Ghalib, Malki, & Imai, 2011). An extensive study (Pitt & Khandker, 1998) of microfinance's impact in Bangladesh and a follow-up (Khandker, 2005) concluded that the core-poor, compared with moderately poor, benefited more, with women having higher pay-back ratios and spending on critical indicators of development, viz. education and health and education, with some suggesting that MFPs has helped in women empowerment (Kabeer, 2001).

On the other hand, there are disagreements about the impact of MF on alleviating poverty, suggesting that financial access only truly reaches the poor (Scully, 2004). Kernani argues that an entrepreneur, for an MFI, is merely a businessman since most clients of an MFI are stuck in subsistence entrepreneurship, and such clients usually lack special skills (Karnani, 2007). It has also been observed that the impact of Kushhali Bank in Pakistan on the profitability of livestock, agriculture and microenterprises has been immaterial (Montgomery & Weiss, 2011). On the other hand, the poor core clients of the same bank seemed to have benefited to a reasonable degree (Montgomery & Weiss, 2011). Some studies even argue that MFPs have driven people, especially women, into greater poverty, thanks to a vicious circle of debt (Bateman, 2008; Goetz & Gupta, 1996). Kate and Rouen (2004) suggested that microcredit organizations' high interest rates are a problem. Moreover, 'microfinance meltdowns' in Morocco, Pakistan, Mexico and most dramatically in the Indian state of Andhra Pradesh in late 2010 have raised valid concerns about the ability of microfinance to eradicate acute poverty (Bateman & Chang, 2012). Banerjee (2007) argue that, contrary to the United Nations' claim, micro-entrepreneurs might breed flourishing businesses, but this may not lead to flourishing economies.

This spectrum of conclusions reflects different geopolitical areas and methodologies. Thus, a properly defined working impact assessment must be considered. Since there is a limited number of studies on the impact of microfinance in Pakistan, our aim in this paper is to change the conversation about the impact of microfinance programs by changing the lens through which the problem of poverty reduction programs is seen. We assume that the microfinance programs offered to marshal entrepreneurial activity have a better impact towards poverty eradication than those offered credit services for non-entrepreneurial activities such as health, education and gender empowerment loans.

Pakistan

Currently, SMEs in Pakistan contribute about USD 86 billion. Considering the country's population, these SMEs stand at an advantage to contribute and perform even better (Qazilbash, 2015). The informal enterprises contribute 33.5% of the GDP, almost double the informal sector's contribution to the GDP of the developed countries (Schneider & Williams, 2013). Pakistan Microfinance Network estimated that almost 1 million enterprises could receive microfinance, with an average loan size of PKR 57,120.

Lack of facilities and incentives by the authorities, particularly the lack of credit facilities, have aggravated the cottage industry (Williams, Shahid, & Martínez, 2015). Access to credit is costly at the rate of 5.7% on average. Moreover, Pakistan has the highest net interest margins compared to Bangladesh at 4.3% and India at 3%. Only 7% of the Pakistani indigent has access to microcredit or microfinance (Aslam & Azmat, 2012). This sector has always been ignored despite significantly contributing to the overall economy.

Methodology

Data collection

In this study, we employ the three traditional performance indicators, viz. growth in employment, profit margin and qualitative growth in sales (McPherson, 1996). Once the interest is gauged, a control group must be decided. Primary data was gathered from 1600 households running their cottage industries (Montgomery & Weiss, 2011). Due to some discrepancy in the responses, 90 were rejected. In our study, cottage industries are divided into four sectors viz. manufacturing, food cart, services and petty trading. The study was conducted in the Sargodha and Mandi Bahauddin, districts of Punjab, Pakistan, where several GO and NGO MFPs are in active operation. 36% of respondents from the rural, 41% from the urban and 22% of respondents from the small-town union councils were interviewed in the survey (Table I).

Table I
Summary statistics of dependent variables and independent variables

	ALL SMEs Mean	GO Mean	NGO Mean	N.R Mean
Entrepreneurial Characteristics				
Gender	.32	.31	.33	.33
Age	2.15	2.13	2.19	2.16
Occupation	.20	.17	.18	.23
Previous family income	2.56	2.58	2.52	2.58
Land	.64	.63	.67	.62
	[1.212]	[1.216]	[1.236]	[1.194]
Marital status	2.18	2.17	2.12	2.24
Family size	2.21	2.23	2.19	2.22
Male	2.04	2.08	2.09	1.98
	[1.074]	[1.092]	[1.105]	[1.027]
Training	.53	.54	.50	.55
Experience	1.31	1.34	1.25	1.36
	[2.203]	[2.201]	[2.161]	[2.228]
Education[1]	.22	.21	.20	.23
Previously Employed	.85	.86	.85	.85
Enterprise Characteristics				
Manufacturing	.2583	.2475	.2100	.3274
Petty Trading	.2649	.2178	.2900	.3186
Services	.2417	.2673	.2600	.1770
Food Cart	.2351	.2673	.2400	.1770
Urban	.3609	.2772	.2600	.5044
Rural	.4205	.5149	.3900	.3805
Small Town	.2185	.2079	.3500	.1150
GO	.3344	1.0000	0.0000	.0177
NGO	.3311	0.0000	1.0000	.0885
Non Recipient	.3742	.0198	.1000	1.0000
Male Ownership	.6921	.6535	.5700	.8319
Female ownership	.2020	.1782	.3500	.0885
Mixed Ownership	.1060	.1683	.0800	.0796
Community effects				
Member involved	1.45	1.49	1.45	1.40
Control Variables				
Finance Problem	.75	.71	.76	.78
Marketing Problems	.47	.47	.45	.50
Input Problem	.27	.26	.28	.28
Output Variables				
Profit	11015.535	11210.380	11417.808	10368.370
	[5649.25]	[5751.204]	[6009.35]	[5071.666]
Employment growth	0.185000	0.169000	0.020543	0.0150543
	[0.357]	[0.383]	[0.0299594]	[.0304658]
Sale growth	0.254967	0.198020	0.470000	0.0990099
	[.7312207]	[.6903502]	[.6402498]	[.8030812]
Savings	895.668	1022.657	1325.608	276.335
	[5419.250]	[5525.597]	[5599.37]	[5039.142]
N	1510			

[1]Riazul Haq. Education Woes: Pakistan misses UN target with 58% literacy rate. Express Tribune, June 15, 2015

MFIs are expanding rapidly in all parts of Pakistan, with many new applicants willing to borrow but still need to, furnishing us with a natural control group. To this end, the sampling spanned a short period (8 months), thus dampening the impact. It is assumed that the members share hidden variables that affect outcomes, which is best addressed by our randomized control trial method.

Randomized controlled trials involve two groups — the treatment group and the control group. These groups are the same in all the relevant aspects, except the treatment group has access to microfinance, whereas the control group has applied for one and would receive the credit in future. Hence, furnishing our study with a statistically significant difference between the outcomes of the groups.

Treatment and control groups are allocated randomly, thus addressing potential biases (Montgomery & Weiss, 2011). To overcome the information noise (diffusion treatment effect) (McKernan, 2006) in the sense of transfer of knowledge from the treatment group to the control (Coleman, 2006), a selection of alternate villages was made with recipients from one village and potential recipients in other with a distance of 3-5 km in between, as was the practice of Hume (2000).

Based on the population size of the unions, eight to ten groups were selected. The two districts have nearly the same social and economic conditions and livelihood patterns, including land ownership, common cropping seasons, and underspending of the public sector development budget (Pakistan Economic Survey, 2020). Both districts need more basic facilities of health and education and several amenities crucial to enterprises, such as access to major road networks, electricity and natural gas supplies, compared with other major urban cities of Pakistan. Both genders were sampled (Pakistan Economic Survey, 2020).

The survey was conducted from January 2015 to August 2015. The survey was conducted simultaneously in both districts, ensuring to interview new members who have yet to receive loans as early as possible. Data was collected using the Growth and Equity through Micro Enterprises Investments and Institutions (GEMINI) method. For our survey, an enterprise having less than 5 employees was considered. This includes the owner and family member involved. Enterprises with more than 1 branch were not considered. Sampling was based on two strata in which previous family income and education were considered. This allowed us to filter out outliers. The Malawi GEMINI questionnaire collected information regarding entrepreneurial characteristics, enterprise characteristics, sources of finance and significant constraints.

Model specification

We employ the three traditional performance indicators, viz. growth in employment, profit margin and qualitative growth in sales (McPherson, 1996), as our dependent variables to formalise a multiple regression model. We aim to identify related factors and their significance for our impact evaluation. This will involve three econometric modelling techniques: ordinary least squares, multinomial logit regression and propensity score matching. For each indicator, three models are estimated viz. a general model with the microfinance variable, one for GO financed only and one for NGO financed enterprises only.

Multiple regression equation

This distinction of variables gives us the following linear equation:

$$\mathbf{Y}_i = \alpha + \beta_1 \mathbf{MFR} + \beta_2 \mathbf{ENP} + \beta_3 \mathbf{ENT} + \beta_4 \mathbf{COM} + \beta_5 \mathbf{CVA} + \epsilon$$

Y_i, is a vector of impact variables. MFR a recipient dummy variable with binary values 1 and 0 for the treatment and control group respectively across all three regression equations. ENP is a vector of the entrepreneur's characteristics including gender, age, family income etc. ENT is a vector of enterprise characteristics including industrial sector, location and owner's gender. The last specification is necessary as the respondent's gender might differ. COM vector is decided for (hidden or otherwise) observables which influence program placement. CVA vector is dedicated for control variables such as problems in marketing, access to credit and other problems.

Impact of microfinance on cottage industries is measured by the indicators of development – dependent variables already highlighted. Profit margin, the first dependent variable, is the annualised ratio of net profit (after instalments paid) out of sales amounting PKR 1,000. This method is entirely a social custom used by informal and microenterprises in other parts of the country, although is never used in previous empirical studies. Since 95% of the respondents are uneducated and operating informally, it is very unlikely for them to follow any accounting standards. It was observed that the common practice of calculating and deciding profit margin was to decide a specific amount as a profit out of sales of PKR 1,000, which is performed either on a personal experience basis or the bases of the prevailing average amount in the specific sector and location. For example, a household operating a food cart estimates PKR 400 as the net profit out of sales of every PKR 1,000 rupees. The survey collected data for monthly sales with a classification of months as low, average, and high sales, and average monthly sales values in these months were collected correspondingly. These were used to compute the yearly average of the annual and monthly sales. The ratio of profit to sales of PKR 1,000 was applied to monthly sales to obtain net profit.

Employment growth, the second dependent variable, is defined as the ratio of the difference in the logarithms of the current employment and the logarithms of the initial employment to the age of business (McPherson, 1996). The third dependent variable, growth in sales, is a qualitative choice variable. Households were asked to report change in sale in the post microfinance years plus two pre-microfinance years. Pre-microfinance year sales were considered in order to minimise the bias of any other unobservable effect, if it existed in the pre-microfinance years.

According to available literature, there are four man factors which affect the performance of enterprises. These are personal, family and business characteristics and human capital (McPherson, 1996). Montgomery's (2011) study indicated that access to Khushhali Bank's funds does not prove to be significant for the performance of the non-agricultural microenterprises. Thus, we also test if various

performance indicators, with the provision of finance, differ for the core poor and sample average. This is because there are chances for the core poor to be neglected, particularly since there is an interest rate charged, among other discouraging factors.

The second vector for explanatory variables encodes characteristics of the entrepreneur. Twelve such characteristics are gender, age, occupation, previous family income, land, training, experience, marital status, family size, number of males, education and employment in same sector. Since Pakistan is a male dominated society and number of males can affect the performance of the microenterprise, numeracy of males in the family is recorded. The "education" characteristic for us is either formal or informal and the employment in the same sector is another dichotomous variable.

The third category the explanatory variable captures the characteristics of the enterprise. With a study carried out on African SMEs, it has been argued that location of business has a significant effect on growth or survival of the microenterprise, depending upon whether the microenterprise is located at home, close or within a market or in an industrial/commercial area, with the latter growing more rapidly than the former (McPherson, 1996). Thus, the industry sector of the enterprise, location of operations, ownership gender and number of family members working in the business are recorded. Four tuples are introduced for the enterprise characteristics to model the enterprise into manufacturing, food cart, services and petty trading, where petty trading is treated as a base category.

Pakistan is a closed society; people tend to rely heavily on social networking among associates, friends and relatives. There might be chance that some associates of the households are already operating in the same business sector which may lead to flow of unobservable characteristics to the household. Access to the business related help, marketing and supplies can make enterprises perform better and may even result in benefits from intangible success of other social members of the microenterprise; such results can cause results to be biased (Loscocco, Robinson, Hall, & Allen, 1991). Controlling for the community effects for treatment and control group lessen the significance of the unobservable characteristics.

At the end of the equation, some other control variables are included. Financial access is captured by a dummy variable, hinging upon a buyout, if needed, for running expenses.

Results and Discussion

Multiple regression analysis results

Table II reports the ordinary least squares estimates of the impact of MFI borrowing on the profits of the income generating activities carried out by microenterprises. Heteroscedasticity consistency error analysis was established using SPSS Macro developed by Darlington and Hayes (2017). In Table I, we have observed that running enterprises generated significantly more income for the household as compared to their previous employment. Since we are interested in comparison of the profitability of the participant and non-participant enterprises, ordinary least square estimates the factors that may influence the profitability and employment growth of the enterprises.

Table II
Ordinary least squares estimates on determinants of profit margins

Variables	All		GO		NGO	
	Coefficients	t-stats	Coefficients	t-stats	Coefficients	t-stats
GOV	1261.427	3.68***	-	-	-	-
NGOV	2963.546	8.0***1	-	-	-	-
Entrepreneur Characteristics						
Gender	-925.327	-2.00**	-806.368	-1.24	-223.00	-0.29
Age	676.1595	4.36***	1006.589	3.72***	457.88	1.51
Occupation	-2549.16	-7.29**	-1671.020	-2.33**	-3124.76	-4.53**
Previous family income	84.7262	0.55	217.800	0.80	535.00	1.62
Land	372.1737	3.20***	-498.880	-2.66**	-1.59	-0.01
Training	965.0103	3.37***	-194.716	-0.44	1321.85	2.75**
Experience	224.9943	3.32***	-162.083	-1.44	-215.96	-1.72*
Marital Status	147.6926	0.75	-443.280	-0.91	842.24	2.27**
Family size	-838.496	-3.47***	-6.732	-0.01	-802.96	-1.52
Numeracy of Males	623.9547	3.38***	1123.223	3.25***	485.79	1.36
Education	-70.335	-0.18	2399.516	3.69*	6035.47	6.97***
Employed before?	43.4625	0.12	1246.546	1.54	-1358.67	-2.23**

Significant at 10%, ** Significant at 5%, *** Significant at 1%

Cont....

Variables	All		GO		NGO	
	Coefficients	t-stats	Coefficients	t-stats	Coefficients	t-stats
GOV	1261.427	3.68***	-	-	-	-
NGOV	2963.546	8.0***1	-	-	-	-
Enterprise Characteristics						
Manufacturing	2693.21	5.41***	2583.936	3.33**	1587.54	1.96*
Services	6440.699	10.93***	3306.521	2.91***	6589.39	7.18***
Food cart	3337.207	5.93***	213.636	0.20	3255.35	3.61***
Urban	-642.812	-1.44	5441.096	7.17**	289.68	0.33
Rural	-969.444	-2.10**	3299.412	4.63**	-3118.72	-3.87***
Male ownership	-835.875	-1.61	-458.250	-0.58	-1044.58	-0.93
Female ownership	-1397.48	-2.69***	1108.576	1.14	-2446.59	-2.47**
Community Effects Associates	321.1399	2.11**	534.221	1.82*	-1227.31	-4.56**
Control Variables						
Finance Problems	-2024.86	-6.10***	-1320.834	-2.79**	-2742.05	-5.09**
Marketing Problems	-1032.26	-3.01**	-4077.019	-6.69***	-3593.02	-5.77***
Input Problems	-120.484	-0.39	1081.118	1.98*	-375.50	-0.75
Other Problems	-360.208	-1.25	-314.844	-0.58	-163.38	-0.35

Significant at 10%, ** Significant at 5%, *** Significant at 1%

With respect to profitability of cottage industries, Table II shows that both the lending programmes of GOs and NGOs have an impact on the profitability of the enterprises. An R^2 value of 0.654 (65%) of the variation in the profitability of the enterprises can be attributed to our linear model. For each predictor, some of the variance in the profit of the enterprise may be attributed to randomness. The adjusted R-square value penalizes the addition of extraneous predictors in the model and value of 0.42 shows that the variance in the profitability may be attributed to the influence of predictor variables rather than merely as a result of chance. Each variable is significant at 1%, with NGO funded enterprises generating PKR 2,963 more profit on average than the reference category non-recipient enterprises, while enterprises under the GO MFPs are able to earn PKR 1,261 more profit than the non-recipients. Considering the fact the sample was drawn as a representation of the population which is poor or core poor and earns $1to2$ daily for living, profit of $20to30$ is a significant amount. Couple of children could get access to better education and health facilities with this fringed amount.

Our estimates indicate that gender is a significant variable in the performance of microenterprises. Gender is significant at 5%; that is, if the recipient is a female, she is likely to yield a profit of PKR 1,000 less than the male recipients. This is in contrast to the study conducted by Chirwa (2008) on African small enterprises who found women cottage entrepreneur under-performing compared to men. Although women are earning less than men, considering that women are considered as a subservient entity in Pakistan the contribution of microfinance towards financial empowerment of women is momentous. Correlation between women entrepreneurs and their marital status indicate that considerable proportion of women are without male support. Thus microfinance has a sizeable contribution in women to endeavour entrepreneurial activities, hence raising the standard of living for their dependents and the community.

Recipients of microfinance with informal education displayed a more significant influence on basic rights compared to those with a more formal education (Chirwa, 2008). This suggests that even informal adult education is effective when implemented in a poor society. In our data set, formal education decreases the profitability but the coefficient of education is insignificant in our results. Respondents who run the enterprise as their primary occupation generate better profit than those who have secondary occupation. Results of business training have a coefficient of PKR 965 whereas coefficient of experience is at PKR 224, which is significant and could be supported by the marginal productivity of labour theory.

Apart from the MFPs, category of the enterprise is the major explanatory variable contributing to the profitability of the enterprise. Our estimates suggest that the type of the industry matters significantly in the performance of the microenterprises. Manufacturing, services, food cart and petty trading are significant at 1%. Results show that if the enterprise is in a services sector, it will yield a profit of PKR 6,440 more than the profit of the petty trading enterprise (reference category). This is because these household rely on the skills and expertise as their input in order to provide the services and, therefore, cost of inputs is negligible. For a person running a barber shop, a tailoring spot or a painter at an auto workshop, it takes years of training and practice (significant in our results) to become a craftsman before one can launch his or her own enterprise. Same trend is followed by the firms under GO MFPs (PKR 300) and NGO MFPs (PKR 6,500).

People of sub-continent are famous for their love for food. In our results, the enterprises running food carts tend to earn more profit (PKR 3,300, significant at 1%) than the petty traders. Enterprises who are involved in small scale manufacturing are also better off than the petty traders (PKR 2,693). Petty traders rely on high volume of sales in order to earn profit because their profit margin is not as high

as the other sectors have; their chances of earning less profit are more as compared to others, if enough sales volume is not achieved.

Our results show that the businesses operating in small towns earn higher profits compared to the businesses at urban and rural centres. Location variable is significant in our results. Firms which operate at urban centres tend to attract high demands of sales but the high overhead costs at these commercial centres tend to decrease the overall profitability. Enterprises operating at rural centres are able to minimise their transaction costs. However, a lower demand at rural areas negatively affects profits. Small towns tend to be moderate in both aspects of demand and transaction costs and hence generate more profits.

For GO funded enterprises, the consideration of location shows some different results. Enterprises operating in urban centres and rural centres tend to generate considerably greater profit compared to reference category (small town) while the NGO funded enterprises follow the pattern of the overall data set. Enterprises which are mixed owned tend be slightly more profitable as compared to the enterprise having male or female ownership. Controlling for other variables suggest that enterprises with difficult access to funds tend to generate less profits at 1% significance level. Ensuring the availability of finance to the cottage industries can result in better profits and overall financial stability of the households and their families.

We now move to our third table. With respect to the employment growth for the full sample, impact of the borrowing programme under GO or NGO is not evident. It has been discussed above that these enterprises rely on the family members for employment; hiring external employees is rare and our results are in contrast with the literature. Family size and number of males in the family have negative effects on the employment created by the micro enterprises. Both are inversely proportionate to each other: the larger the family, the lesser the chances of hiring external employees.

Same trend is found in the subsets of GO and NGO financed enterprises. Categories of business operations have a statistically significant negative impact on the employment growth, though to a trivial degree. Households are usually unwilling to rely on employees outside the family circle probably because of a lack of trust regarding business secrets and cash transactions (Shahid, 2022). Only location variables tend to create employment opportunities because enterprises in urban locations hire a greater number of employees.

Table III
Ordinary Least squares estimates on determinants of employment growth, GO and NGO

Variables	All		GO		NGO	
	Coefficients	t-stats	Coefficients	t-stats	Coefficients	t-stats
GOV	0.003	1.50	-	-	-	-
NGOV	0.002	0.72	-	-	-	-
Entrepreneur Characteristics						
Gender	-0.002	-0.78	-0.013	-2.93**	-0.001	-0.29
Age	0.000	0.37	0.004	2.02**	-0.007	-4.17**
Occupation	-0.001	-0.58	-0.013	-2.51*	0.006	1.48
Previous family income	0.000	-0.43	-0.001	-0.35	0.003	1.62
Land	-0.001	-0.91	-0.006	-4.53**	-0.002	-1.17
Training	0.003	1.58	0.004	1.21	0.006	2.37*
Experience	0.000	-0.85	-0.001	-1.21	0.000	-0.48
Marital Status	0.000	0.33	-0.003	-0.77	0.003	1.28
Family size	-0.003	-1.91	-0.002	-0.59	-0.012	-4.05**
Numeracy of Males	-0.003	2.15**	0.007	2.88	0.007	3.69
Education	0.008	3.20	0.002	0.49	0.016	3.23
Employed before?	-0.001	-0.36	0.004	0.67	0.006	1.61
Enterprise Characteristics						
Manufacturing	-0.006	-1.93	-0.013	-2.40**	-0.019	-4.15**
Services	-0.015	-3.93	-0.025	-3.12**	-0.024	-4.70**
Food cart	-0.022	-6.24	-0.034	-4.49*	-0.023	-4.56*
Urban	0.015	5.28	0.024	4.45**	0.024	4.82**
Rural	0.013	4.34	0.016	3.23*	0.028	6.12*
Male ownership	-0.001	-0.16	0.006	1.11	-0.005	-0.78
Female ownership	-0.008	-2.48	0.004	0.59	-0.009	-1.54
Community effects Associates	0.001	0.59	0.000	0.02	-0.002	-1.28
Control Variables						
Finance Problems	-0.002	-1.12	-0.007	-2.23	-0.003	-1.05
Marketing Problems	-0.007	-3.20	-0.021	-4.85*	-0.005	-1.29
Input Problems	0.004	1.79	0.008	2.21	0.003	1.21
Other Problems	0.007	3.58	0.023	5.95**	0.013	4.96

Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table IV presents results from multinomial logit model on factors that can leave an impact of the sales growth. Our study respondents were in the informal sector where it is very unusual to find businesses adopting standard business procedures and book keeping. Growth in the volume of sales is expressed by the entrepreneurs as a qualitative measure. Our base line category for the multinomial logistic model is the increase in sales. The value of the coefficient shows the magnitude of the effects on the probability of an event occurring given the explanatory variable.

Table IV
Multinomial logistic estimates on determinants of employment growth

Variables	Decrease in Sales		No Change	
	Coefficients	t-stats	Coefficients	t-stats
GOV	-0.7074	-2.5**	0.4178	2.2**
NGOV	-1.8372	-5.78***	-0.6689	-3.31***
Entrepreneur Characteristics				
Gender	-0.7335	-1.7*	0.4884	1.9*
Age	0.0673	0.85	-0.1498	2.47**
Occupation	0.6224	2.47**	-0.5372	-2.58**
Previous family income	0.0118	0.1	0.2302	2.7**
Land	-0.4116	-3.66**	-0.0606	-0.94
Training	-0.0976	-0.44	-0.1697	-1.09
Experience	0.0398	0.73	0.0190	0.49
Marital Status	-0.1191	-0.82	0.6924	6.53*
Family size	0.6217	3.24*	-0.0156	-0.12
Numeracy of Males	0.4984	3.21**	0.5875	5.85*
Education	1.8266	6.31	-0.6570	-2.83**
Employed before?	0.4448	1.45	-0.0173	-0.08
Enterprise Characteristics				
Manufacturing	-0.2230	-0.58	0.5407	2**
Services	0.2316	0.51	1.6274	5.03***
Food cart	0.1651	0.38	1.5987	5.18***
Urban	-2.0134	-6.03**	-1.4834	-5.81**
Rural	-0.2594	-0.76	-0.5316	-2.08*
Male ownership	-1.4892	-3.41**	0.8635	2.95**
Female ownership	-2.1375	-4.64**	-0.9172	-3.23**
Community effects Associates	-1.4480	-10.53**	-0.8359	-9.97**
Control Variables				
Finance Problems	0.0042	1.01	0.0039	1.18
Marketing Problems	-1.2221	-3.98**	0.5434	2.81**
Input Problems	0.4369	1.82*	0.2373	1.45
Other Problems	-0.5016	-1.96*	-0.7208	-4.56**

Significant at 10%, ** Significant at 5%, *** Significant at 1%

The results show that the recipients of the MFP, whether from GOs or NGOs, are less likely to experience decrease in sales volume if compared with their base line category of non-recipients. The enterprises under NGO funded programs, when compared with non-recipients, are more immune against the decrease in the sales volume. The coefficient of -1.83 at significance level of 1% suggests that their chances of not experiencing sale's decline are twice that of the non-recipients. With access to finance, businesses have better chance of increasing their span, hence expanding customer base, which eventually minimise the risk of low sales volume.

NGO-financed firms have greater prospects to increase sales than their reference group. Even in the category on no change in sales, NGO MFPs have a 1% significant coefficient of -0.67. Both the coefficients negative implies that NGO MFPs participants, when compared with non-recipients, are more likely to experience sales increase rather than facing decrease or no change in sales. The enterprises financed by GO MFPs have more chances to experience sale decline when compared with the NGO MFPs enterprises but they are better off in a comparison with non-recipients.

The coefficient, significant at 5% suggests, that GO MFPs firms have a 70% lesser chance than the non-recipients to face decline is sales. On the other hand, these firms have a better chance of having sales unchanged. At a significance level of 5%, GO MFPs participant have 41% better chances than non-recipients to have unchanged level of sales. It can be also been found in split cases results that none of the variables are found significant for decrease in sales for GO MFPs compared with the base line group of non-recipients.

Table V
Multinomial logistic estimates on determinants of employment growth, GO and NGO

Variables	Decrease in Sales		No Change	
	Coefficients GO	Coefficient NGO	Coefficients GO	Coefficient NGO
GOV	-	-	-	-
NGOV	-	-	-	-
Entrepreneur Characteristics				
Gender	26.8341	-15.0896	-1.4995*	-1.9389**
Age	0.5072**	0.1644	0.2999**	-0.2459*
Occupation	-24.3087	56.5294	1.6840**	2.3021
Previous family income	-0.0975	2.0480	-1.0454*	1.2153***
Land	31.0706	-26.2621	-0.1970	0.3393*
Training	-0.4854	-0.4370	-0.9377**	-1.1231**
Experience	2.7742	0.9979	-0.2401*	0.0259
Marital Status	59.6893	-5.2296	-0.4853	0.0078
Family size	93.1697	-45.9059	-0.6428	-0.6768
Numeracy of Males	-84.3429	8.0721	0.7994*	1.5169**
Education	-63.4438	-23.0118	-0.5685	-7.2863**
Employed before?	-60.4283	63.4039	-1.1061	3.2470**
Enterprise Characteristics				
Manufacturing	229.2881	-30.6076	-0.6699	3.4319**
Services	84.4369	-64.6986	-3.4182**	5.9291**
Food cart	84.4846	-65.3288	-3.8779***	5.7164**
Urban	-124.2268	41.8443	3.7506***	-5.1333**
Rural	-254.8832	53.2893	2.7353***	-1.2444
Male ownership	-36.3519	16.8119	-2.7569**	4.7957*
Female ownership	-172.8467	35.7799	1.5579*	5.2017*
Community effects Associates	-47.5674	13.5576	0.1998	-0.8149*
Control Variables				
Finance Problems	0.3420	0.8055	-0.6195	0.0125
Marketing Problems	-11.5155	-48.8558	-2.7922**	2.8546**
Input Problems	-1.1694	2.7757	-0.9326*	2.1854*
Other Problems	-239.8782	62.4045	2.0723**	-0.1044

Significant at 10%, ** Significant at 5%, *** Significant at 1%

For our final table, in terms of entrepreneur characteristics, the probability that sales will fall is positively associated with gender of the entrepreneur. Though gender variable is not significant in our results, male members are 73% less likely to experience decrease in sale than women, yet these results are in contrast with existing literature. A large body of empirical literature suggests that in developing economies, women entrepreneurs face more challenges than men (Stewart et al., 2012). Occupation variable shows a unique impact. A change in one unit of the land ownership makes the respondents less likely by 40% to face sales decline. Analogous to the OLS confident of the "land" variable in Table III, these results are also in contrast to the findings of (Stewart et al., 2012). The level of education plays an important role in determining revealed sales growth, particularly higher levels of education from completing primary school to higher education reduces the likelihood of decrease in sales or no growth in sales and the coefficients are particularly high for formal education.

Positive probability of decrease in sale is associated with entrepreneur comprising of large family size and a greater number of males. These two variables may cut down the cost of the employment but too many people exercising decisions may lead to bumpy business operation, resulting in sales decline rather than achieving high level of sales. Enterprises operating at urban centres have a lesser risk of facing a decline in sales. Urban centres draw high demands for the businesses and our results are contrary to afore mentioned fact.

Propensity score matching

For profit, the overall χ-square balance test was significant with 40.815 and $p < 0.0087$. According to Table VI, the adjusted estimated impact on recipient's average profit in the matched sample has almost an unchanged level of significance than the unadjusted estimation. Impact of microfinance on profitability for both matched and unmatched samples is significant at 1%, while the mean differenced is reduced from 3084 to 2846. From d=0.567 in the unmatched sample, the overall magnitude of impact increased from d=-0.808. Respondents from the treatment group (M=2494) in the matched sample indicated that microfinance had a measurable impact on profitability.

The impact score for GO had a lower standing at M=1380, compared to NGO recipients where the magnitude of impact was M=1756 in the matched sample. After matching, compared to the unmatched sample, the organizational level of impact stands at higher ground. GO

has an impact of 1055 while NGO has M=2223 for unmatched samples. The unadjusted impact, which confounded influences of covariates and not a measure of treatment, was slightly high before PSM. This was corrected after matching, after which the absolute magnitude decreased to M=2494.015. Above results are in contrast with our ordinary least square regressions, hence supporting our model as a significant one in order to explain the variability in the profitability of the microenterprises under MFPs.

Table VI
Propensity score matching and treatment effects

Models	Covariates	Average Impact	S.E	*p*
Propensity Score Matching	*Profit Margin*			
	Total	2494.015	137.326	0.003
	GO	1379.963	154.048	0.041
	NGO	1756.927	137.637	0.000
	x^2 balance Test	40.815		0.0087
	Standardised mean difference	-.808 (As unmatched = -0.567)		
	Employment Growth			
	Total	0.007128	0.00104	0.064
	GO	0.003389	0.00164	0.039
	NGO	0.003541	0.00103	0.001
	Sales Growth			
	Total	0.091899	0.01474	0.010
	GO	-0.00078	0.01682	0.963
	NGO	0.315599	0.01626	0.037
Treatment Effect Model	*Profit Margin*			
	Total	2519.491	188.955	0.036
	GO	2163.407	302.73	0.074
	NGO	3878.126	353.58	0.029
	Employment Growth			
	Total	0.00718	0.00120	0.253
	GO	0.011468	0.00233	0.138
	NGO	0.015834	0.00176	0.117
	Sales Growth			
	Total	0.030401	0.01875	0.105
	GO	0.06023	0.03909	0.123
	NGO	0.033795	0.03249	0.298

For employment, growth and sales growth our results have followed the same pattern. For matched samples impact of microfinance on the two outputs has slightly decreased as compared with unmatched samples. Only GO funded enterprises have shown negative impact for sales growth, though insignificant, while NGO financed businesses have outperformed GO funded enterprises for both employment growth and sales. A comparison of Table III and Tabl VI, i.e. of the OLS model and the post-matching, both results agree on the influence of NGO provision being better off then GO provision. This has to be interpreted with caution (Dehejia, 2005), with particular regard to matching dependent upon cross-sectional data since temporal effects are hard to control for. Secondly, any bias connected to cross-sectional matching estimators may be large if a good set of covariates are not accounted for or if the control and treatment group differ fundamentally when, for instance, they have access to different markets (Smith & Todd, 2005).

Financial and time constraints restricted the study to 2 districts. More concrete and less biased findings could be realized in further studies by expanding the geographic span of the study to other districts, particularly to other provinces. Most of the previous studies are confined only to Punjab province.

Notwithstanding our attempts at curtailing biases and spill-over effects, we have admitted that some bias might have crept in to our study. Future work might consider establishing studies using TEM or PSM. We also have not addressed the reliability of the respondent's comments – this should be considered in a future study as well.

Conclusion

The demands for microcredit of microenterprises in Pakistan are increasing rapidly (Arshad, 2015) and this study aimed to empirically measure its impact offered by GO MFIs and NGO MFIs on entrepreneurship development. This paper has shown positive outcomes of microfinance – NGO MFIs proving better than GO MFIs – aimed at stimulating entrepreneurship through increased access of microcredit to the microenterprise owners, hence fostering regional development and the competitiveness of the regions. Since, in this paper, we

have argued that entrepreneurship is crucial to the regional development, results of our study imply that the indigent regions can be stemmed from socioeconomic decline by invigorating the entrepreneurial process through the provision of microcredit. Consistent with the findings of Mair et al. (2012), NGOs play a key role as a proxy for other formal institutions, particularly in rural areas for poverty alleviation, which our study complements.

Major findings indicate that the microcredit has contributed positively towards the profit and sale growth of the microenterprises but there are yet many factors aiding these positive outcomes. The results suggest that in our model, besides microcredit, type of the industry is one of the major explanatory factor where services businesses are earning maximum profit while entrepreneurs running petty trading are not earning significant amount of profits. Gender of the owners has a strong relationship with the performance of the business, where men are found to perform better than women. In contrast to the development literature, our results show that formal education has a negative impact on the performance of the business.

In summary, modelling suggests that the financial access should be considered based on the recipient's gender, age, occupation, education level, family size, number of male family members, experience and sector of enterprise. Thus, MFIs have to develop business support services in line with the current findings – key indicators of the social fabric of Pakistan and, therefore, rubrics for screening – to facilitate microentrepreneurs and to provide necessary. It is clear that merely access to financial capital may not play a significant role in the fight against various obstacles and challenges for microenterprise growth and thus poverty alleviation. The statistically significant influence of education on the impact of MF warrants a need for better human capital, achievable by appropriate investments.

This paper suggests a need for social development policy drivers at regional level mainly to promote entrepreneurship in disadvantaged locations and, particularly, among young people. In terms of economic drivers, there have been a range of regional policy approaches, including the establishment of regional business start-up strategies, alongside a range of other complementary economic development policy drivers, relating to business support, access to finance, cluster and innovation system building.

In this study, it appears that financial access has reasonably increased the profitability, employment and sale volume of the microenterprises. The changes were noticeable in NGO microfinance recipients compared to GOs. Policies should be designed for GO and NGO MFIs. Gender-specific implementation should be ensured by respondent's feedback and supervision in order to achieve a noticeable change in the Millennium Development Goals. The statistically significant influence of education on the impact of MF warrants a need for better human capital, achievable by appropriate investments.

In light of the findings of this paper, we suggest two policies for sustainable microenterprise and microfinance development in Pakistan. One, training in basic entrepreneurship should be facilitated. Second, as is the practice of Akhuwat, microcredit should furnish more resources to clients with amenable attributes, specifically business ideas, to make the broader goals of microcredit more realistic

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