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Abstract

This paper explores the features and consequences of heterogeneity among clients of the largest Islamic microfinance institution in Pakistan, identifying differences in business and household outcomes between sub-groups of borrowers. The research is based on a longitudinal survey conducted between 2015 and 2017 of 500 new clients of the institution, providing a unique dataset of low-income entrepreneurs applying for interest-free microcredit loans. The data was analysed using t-tests to establish baseline differences between borrowers, and regression analysis to explore variations in business and household outcomes over the period.

Evidence of significant heterogeneity was found among entrepreneurs at the time of the baseline survey. The longitudinal analysis shows that management experience was positively associated with business growth, but no significant association was found for gender, poverty level and credit experience and these variables were not found to associate with significant variation in employment creation. Nevertheless, the analysis does demonstrate a greater reduction in household poverty levels among those entrepreneurs that were poorer at the time of the baseline survey. Additionally, there was a general decrease of savings frequency over the sample period, particularly among female entrepreneurs.

Keywords: Islamic Microfinance, Entrepreneurship, Client Heterogeneity, Impact, Pakistan

[1] The research was conducted within a research partnership project between the University of Portsmouth and Lendwithcare (crowdfunding platform of CARE International UK), in which were involved local microfinance institutions supported by Lendwithcare. In the context of this paper, the research took place at Akhuwat Islamic Microfinance in Pakistan. We are grateful to Dr Amjad Saqib, Executive Director of AIM for the availability to participate in the research and to Ajaz Khan, Shahzad Akram and Shakeel Ishaq for their valuable comments.

1. Introduction

Entrepreneurial credit, particularly microfinance, has become a widely adopted and respected development tool (Stewart *et al*., 2012). The growth in microfinance provision has been paralleled by an increase in academic research studying how microfinance contributes to poverty reduction, and/or how to optimise the performance of microfinance institutions (MFIs) (e.g. Banerjee *et al.,* 2015; Hermes and Lensink, 2011; Khandker,2005). Within this line of research, heterogeneity among borrowers can affect the way in which they interact with the microfinance sector, and help explain variations in the business and household outcomes associated with the provision of microcredit. This is a particularly important issue given that entrepreneurial characteristics and aspirations may vary significantly between the developing and developed world (Raven and Le, 2015).

The literature addressing the impact of microfinance programmes has largely focused on comparisons between groups of borrowers and non-borrowers. However, a smaller number of prior studies have investigated differences between microcredit clients, notably with respect to gender and wealth levels prior to applying for loans (Haase, 2013, p.13). Gender differences have been extensively explored from distinct perspectives, including access to microfinance (e.g. Agier and Szafarz, 2013; Guérin, 2011), the use to which microcredit loans are put (Garikipati, 2008; Goetz and Sen Gupta, 1996), as well as their impact (Hashemi *et al.,* 1996; Kabeer, 2001). In terms of variations in client wealth, studies by Coleman (1999, 2006), Legovini (2002) and Hulme and Mosley (1996) find consistent evidence to suggest that the benefits associated with microcredit tend to be enjoyed by 'better-off' clients. Hulme and Mosley (1996, pp.134-136) further argue that differences in entrepreneurial characteristics affect the likelihood of success in business ventures and suggest that these characteristics should be considered in the design of microfinance programmes. However, despite this evidence, many microcredit programmes still treat the poor as a homogenous group to whom a rigid loan product is offered. Equally, Greeley (2005) reporting on the overall results of the Imp-Act project, concluded that, although average results for the 16 participating MFIs pointed to an increase in household income and assets resulting from the access to the financial services provided, this was not true for all clients and all branches of the MFIs.

Entrepreneur heterogeneity has also been shown to be an important issue in the specific context of Islamic microfinance. Heterogeneity has been shown to have a significant impact on the preferences of Muslim borrowers (El Ebrashi *et al.,* 2018) and the performance of Islamic MFIs (Mobin *et al.,*

2017), leading to strong arguments against 'one size fits all' policies typically associated with Islamic finance (Mertzanis, 2017). Moreover, Islamic (micro)finance faces a number of particular challenges (Tisdell and Ahmad, 2018), including reaching the 'poorest of the poor' as well as religiously motivated entrepreneurs in Muslim countries whose financial needs are not met by conventional microfinance (Hassan, 2015; Zulkhibri, 2016). As such, understanding client heterogeneity in the context of Islamic microfinance is of paramount importance in helping Islamic MFIs achieve their objectives.

In the light of the above, the research question addressed in this study is:

> *To what extent do entrepreneurial characteristics associate with variations in business and household outcomes between different groups of Islamic microfinance clients?*

Investigating this question offers important insights into the implications of client heterogeneity in Islamic microfinance markets, and can inform and help refine the decision-making process at the institutional level. The study makes use of a unique longitudinal dataset of 500 clients of Akhuwat Islamic Microfinance (AIM), a partner of the UK-based crowdfunding platform Lendwithcare (LWC) since February 2013. AIM was created in 2001 with the mission to "alleviate poverty by empowering socially and economically marginalised segments of society through interest-free microfinance and in the process harnessing their entrepreneurial potential and enhancing their capacity through economic and social guidance" (Khan *et al.,* 2017, p.18).

The structure of this paper is as follows. Section 2 reviews the literature on microfinance and its links to entrepreneurship, leading to the development of a number of hypotheses relating to variations in business and household outcomes between different entrepreneurial groupings. Section 3 provides details on the data and methodological approach. Section 4 explores the implications of the differences found between the selected groups of MFI clients, and how these have translated into entrepreneurial outcomes. Section 5 concludes.

2. Microfinance, Entrepreneurship and Entrepreneurs

2.1. Microfinance and Entrepreneurship

The concept of microfinance is not new. Originating in the informal 'burial clubs' and funerary practices among stonemasons in Ancient Egypt, soldiers in Imperial Rome and the Vedic era in Indian history (Wilson, 2015), and extending through the saving and credit 'tontines' of Africa, the 'tandas'

of Mexico and the 'chit funds' of India (Anderson, 1966; Cope and Kurtz, 1980; Tello Rozas and Gauthier, 2012) into the relatively recent establishment of the Grameen Bank in 1983, microfinance has become synonymous with small-scale entrepreneurial development in emerging economies.[2] The barriers faced by low income populations trying to access formal financial services, particularly credit, derive from the strong informational asymmetries that exist in conventional financial markets (Stiglitz and Weiss, 1981). In order to overcome these asymmetries, the microfinance movement has developed strategies and mechanisms to reach out to latent borrowers (e.g. relaxation of collateral requirements, group lending with joint liability, progressive lending), and tailored support services accordingly (Armendáriz and Morduch, 2010; Mersland and Strøm, 2011).

The underlying principle behind microfinance initiatives is that relaxation of credit constraints expedites the development of entrepreneurial ventures, increases productivity and profits, and delivers enhanced returns for the loan recipient. Access to microcredit is also expected to associate with growth in household consumption and/or savings. This improved economic situation, in turn, enhances the capability to invest further in the business via own funds or improved access to credit (Duvendack *et al.,* 2011; Hermes and Lensink, 2011). From this perspective, entrepreneurship is perceived as a solution to poverty (Bruton *et al*., 2013). Behind this reasoning is the assumption that borrowers invest the money received in the businesses and these are successful, although this is not always the case (Duvendack *et al*., 2011).

Poor entrepreneurs are a heterogenous group that are often differentiated on the basis of their wealth (poverty) and/or gender (Haase, 2013). Additionally, both the prior experience of entrepreneurs (i) as business owners and (ii) with formal credit channels, have been identified elsewhere in the entrepreneurship literature as significant factors affecting business performance (Bradley *et al*., 2012; Franck, 2012). These arguments are used as the basis of an investigation into whether such differences associate with variations in both business (employment creation [*H1a to H4a*]; revenue growth [*H1b to H4b*]) and household outcomes (household savings [*H5*]; poverty status [*H6a* and *H6b*]) among a sample of Islamic microfinance clients. The hypotheses and respective rationale are described below.

[2] While microfinance refers to "financial services aimed at poor people who have traditionally been excluded by the formal financial industry" (Stewart et al., 2012: 9) - in the context of this paper the focus is on the provision of small business loans to lower-income clients in the emerging world.

2.2. Business Outcomes: Employment and Revenue Growth

Opportunity and Necessity

Lack of capital has been identified as a major constraint to business development among low-income populations in developing countries (McKenzie and Woodruff, 2008; Vial and Hanoteau, 2015). In this context, the promotion of microcredit programmes has been legitimised by a belief in the notion of 'opportunity entrepreneurship'. This perspective sees the poor as natural entrepreneurs who can successfully establish and develop businesses, providing they have access to the financial means needed to exploit such entrepreneurial opportunities (Acs *et al.,* 2012; Audretsch *et al*., 2008; Koellinger *et al.,* 2007). Several authors argue, however, that many impoverished households are not entrepreneurs by choice, but are pushed into self-employment to survive - and are therefore better characterised as 'necessity' entrepreneurs (Brewer and Gibson, 2014; Kent and Dacin, 2013).

In the microfinance literature, opportunity and necessity entrepreneurs tend to be differentiated in terms of their poverty levels. Karnani (2009, p.81) suggests that only a small proportion of the poor possess the abilities, vision, creativity and motivation needed to be 'true' entrepreneurs and be able to intentionally identify and take advantage of business opportunities. Wealthier microcredit clients are better placed to enter the business realm on their own, as opposed to on enforced terms (Acs *et al.,* 2012) and they are less risk averse than poorer 'necessity' entrepreneurs (Vial and Hanoteau, 2015). They are, thus, more capable of seizing business opportunities and benefit more from access to business loans (Hulme and Mosley, 1996).

Empirical support for these arguments can be found in the work of Bradley *et al.* (2012), who established that firm performance was inversely correlated with poverty levels across a sample of 201 microcredit clients in Nairobi. In this study, borrowers are classified as either opportunity or necessity entrepreneurs based upon their wealth status when they take up their loan, measured in terms of the Poverty Probability Index (PPI) as detailed in Section 3. This process leads to the development of the following hypotheses:

H1a: Businesses managed by 'opportunity entrepreneurs' are significantly more likely to create employment over the sample period than those of 'necessity entrepreneurs'.

H1b: Businesses managed by those designated as 'opportunity entrepreneurs' are significantly more likely to grow over the sample period than those of 'necessity entrepreneurs'.

Gender

Female entrepreneurs have been shown to declare lower microenterprise returns than male entrepreneurs in randomized control trials conducted in Sri Lanka (Mel *et al*., 2008) and Ghana (Fafchamps *et al.,* 2011), as well as in research conducted in Nigeria by Adekunle (2011). Differences were attributed to a tendency for female-led businesses to be smaller in size; concentrated in less capital-intensive sectors where returns and growth opportunities are lower and competition is more intense (Bardasi *et al*., 2011; Bruhn, 2009; Coleman, 2007). They may also reflect women's constrained spatial mobility, and/or lower educational levels, which inhibit their ability to deal with business administration (Guérin, 2011; Thorpe *et al*., 2014). Borghans *et al.* (2009) also found that female entrepreneurs tend to be more risk averse than men; a finding supported by the meta-analysis of Byrnes *et al*. (1999).

Heterogeneity among female entrepreneurs may also be a result of discriminatory practices against female entrepreneurs at both a societal and institutional level. These include women being precluded from owning land and other assets,[3] as well as financial institutions being less predisposed to lend to female-led businesses due to a perception they are less creditworthy (Agier and Szafarz, 2013; Carter *et al*., 2007; Deere *et al.,* 2013). These gender-related arguments have been corroborated in microfinance studies conducted in Pakistan by Asim (2009) and Zulfiqar (2017). Therefore, the second set of linked hypotheses is:

H2a: Businesses managed by female entrepreneurs are significantly less likely to create employment over the sample period than male-managed businesses.

H2b: Businesses managed by female entrepreneurs are significantly less likely to grow over the sample period than male-managed businesses.

Business Experience

Innate entrepreneurial skills can be developed through formal education or 'on the job' experience, and have a positive impact on business performance (Adekunle, 2011; Bradley *et al.,* 2012; Obeng *et*

[3] In the African case, research by Oseni *et al. (*2014) in Nigeria and Aguilar *et al.* (2014) in Ethiopia, illustrates how social conventions governing land access translates into sharply reduced productivities on female-controlled farms.

al., 2014). They allow the entrepreneurs to ask the right questions and to build knowledge of business networks and markets, hence improving their managerial capability (Basu and Goswami, 1999; Franck, 2012). In addition, such a skill set can boost the confidence of the entrepreneur, increasing their willingness to develop new businesses, or innovate within the existing business. It is expected that business skills are a function of time spent managing the business, and more experienced entrepreneurs are better placed to identify and explore new business opportunities (Bradley *et al*., 2012; Franck, 2012). These arguments lead to the formulation of the following hypotheses:

H3a: Businesses managed by microcredit clients with more years of business ownership are significantly more likely to create employment over the sample period than those managed by those with less experience.

H3b: Businesses managed by microcredit clients with more years of business ownership are significantly more likely to grow over the sample period than those managed by those with less experience.

Formal Credit Experience

Cultural and social norms (Guérin *et al.,* 2012) as well as religious factors (Harper, 2017) can be influential in the decision to apply for a business loan. Harper (2017) identifies a potential incompatibility between microfinance and Islamic principles related to credit, notably the prohibition of *riba* (interest rate). As a result, many low-income Muslim entrepreneurs are unwilling to apply for loans through conventional interest-based microcredit programmes (Hassan, 2015). Similarly, in their research into microcredit provision in the rural areas of Morocco, Morvant-Roux *et al.* (2014, pp. 306) found a lower propensity for debt among 'conservative households' (measured in terms of the head of household's views on women's rights and freedoms), as well as a fear of indebtedness dampening entrepreneurial demand for credit.

In practice, some of this fear may be overcome if households become more accustomed to employing formal credit and perceive previous experiences as positive (Karlan and Morduch, 2010). Entrepreneurs who have previously borrowed funds are also better placed to choose the best financial provider to satisfy their specific investment needs, and to deal with the loan management process. Thus:

H4a: Businesses managed by microcredit clients with prior experience of formal borrowing are significantly more likely to create employment over the sample period than those managed by clients lacking such experience.

H4b: Businesses managed by microcredit clients with prior experience of formal borrowing are significantly more likely to grow over the sample period than those managed by clients lacking such experience.

2.3. Household Outcomes: Savings and Poverty Status

Savings

Savings are of particular relevance for the poor. They protect against irregularity of household cash flows, smoothing consumption; they allow for accumulation of financial assets to fund future large expenditures; and they perform an insurance function helping to cope with unexpected events (Morduch and Haley, 2002). The perceived value of savings is expected to be higher for women, since they face more significant constraints in access to finance (Armendáriz and Morduch, 2010). Therefore, additional income generated by businesses financed through microcredit, at least partially, is expected to be applied in savings.

Relatively few empirical studies have formally tested the extent to which household savings vary in the presence of microcredit, with those that do presenting mixed results (Stewart *et al*., 2012). In some cases, no statistically significant impact was found (Coleman, 1999), while others observe household savings to associate positively (Coleman, 2006) or negatively (Augsburg *et al.,* 2015) with access to microcredit. However, despite mixed evidence from the literature, the following hypothesis is tested on the basis of theoretical expectations:

H5: Access to a microcredit loan is expected to lead to an increase in household savings, particularly for female clients, over the sample period.

Poverty Status

The impact of microcredit on poverty reduction remains a debatable subject. Recent studies indicate positive, but not transformative, effects on the poverty status of borrowers (Banerjee *et al*., 2015). Others, such as Coleman (1999, 2006) suggest that impact is differentiated according to the group of borrowers, with only the wealthier clients benefiting from access to microcredit in his studies in Thailand.

Neoclassical theory suggests that if some groups are more capital constrained, returns to capital for their enterprises should be comparatively higher (Armendáriz and Morduch, 2010; McKenzie and Woodruff, 2008). Similarly, Vial and Hanoteau (2015) suggest that access to finance can further increase returns to the poorest clients, who they found to benefit more from entrepreneurship participation compared with wealthier entrepreneurs in Indonesia. Mel *et al.* (2008) argue that "returns to shocks to capital stock should be higher for more constrained entrepreneurs and those who are more risk averse and face greater uncertainties in sales and profits" (p.1333). In their experimental project providing grants to entrepreneurs in Sri Lanka, they find evidence to support this assumption for male entrepreneurs but not for females.

This body of empirical evidence supports the theory previously outlined in section 2.1, which suggests that higher business returns will associate with improvements in the economic status of the household. These arguments lead to the proposal of the following hypotheses:

H6a: Necessity entrepreneurs are more likely to experience a positive impact in household poverty over the sample period compared with opportunity entrepreneurs.

H6b: Female entrepreneurs are more likely to experience a positive impact in household poverty over the sample period compared with male entrepreneurs.

3. Data and Methods

This research is based on data gathered from AIM. In 2019, the institution had a gross loan portfolio of US$92.3 million and an active client base of almost 1 million borrowers (Table 1), making it the largest MFI in terms of number of borrowers and geographical coverage in Pakistan, as well as one of the largest Islamic MFIs worldwide.

Table 1 – AIM Main Indicators (May 2019)

Number Active Borrowers	928,278
Female Borrowers (%)	42%
Gross Loan Portfolio (USD)	$92.3m (1)
Portfolio at Risk 30 days (%)	0.26% (2)
Number of Branches	811

Notes: (1) 1USD = 157PKR (04.07.19) (2) January 2016

Source: Adapted from Khan *et al.* (2017), Akhuwat website

AIM runs a microcredit programme compliant with *Shari'ah* principles, providing interest-free (*qard hasan*) business loans, and uses mosques for public disbursements, which helps in reaching clients and enhances their commitment in terms of loan repayment (Khan *et al.,* 2017). Nonetheless, client screening is not dependent on religion or gender. The MFI lends on the basis of household and family characteristics; an approach endorsed by a number of other recent studies of entrepreneurial finance (Salia *et al.,* 2018; Xiong *et al.,* 2018). Eligibility criteria also include residence in areas covered by the MFI's branches, indebtedness levels (no other active credits registered in the Pakistani Credit Bureau) and capacity to pay the upfront fixed fee of PKR200 (≈1.3USD).

The present study, undertaken in conjunction with Lendwithcare, is based on a longitudinal research design, which aimed to assess the changes in the businesses and household characteristics of Pakistani entrepreneurs during the period between taking and repaying their first loan from AIM. Three AIM branches in Lahore and one in the city of Kasur (Punjab province) were selected for inclusion in the study. The sample population was made up of 500 entrepreneurs who had successfully applied for a first loan during the period of the first wave of the survey (April to June 2015). The average loan amount and duration were PKR 20,000 (≈130USD) and 14 months, respectively. Sample selection was determined by logistical and security conditions in the country, and the cost of accessing a representative sample of borrowers. The same 500 microcredit clients were invited to participate in the second wave of the survey in 2017, with 447 agreeing to participate.

The interviews were conducted by independent enumerators and responses were elicited in two areas. First, the wealth status of the respondent during both waves of the study was ascertained using the Poverty Probability Index (PPI); a country-specific poverty measurement tool based on responses to ten questions relating to household characteristics and asset ownership. The answer to each question is given a score based on the country scorecard and the sum of these scores gives the PPI score for that particular household, ranging between 0 and 100. PPI scores can then be used to identify a household's likelihood of falling below a selected income poverty line. For example, in the case of Pakistan, a PPI score of 50 means that the likelihood of the household being below the $2.50/day international poverty line is 72.8% (Schreiner, 2010). In this study, the PPI score corresponding to more than 50% likelihood of the household income being below the poverty line

was used as threshold to classify clients as necessity (scores below or equal to 64) or opportunity (scores above 64) entrepreneurs.[4]

Second, a questionnaire devised by the research team was applied in order to capture information relating to socio-demographic status (age, gender, marital status, education level, household size, etc.), business characteristics (type of activity, length of operation, revenue variation), financial practices (business funding sources, loan purpose, etc.), as well as exposure to external shocks such as chronic health conditions. [5]

The definitions employed in the Global Entrepreneurship Monitor research programme (Reynolds *et al*, 2005) were used to characterise the survey respondents as inexperienced entrepreneurs (those whose businesses were active for 3.5 years or less) or established/experienced firm owners (more than 3.5 years). Finally, gender and formal credit experience were captured through binary variables, taking the value 1 if the respondent was female, or had previously funded the business with loans from a formal source respectively.

4. Results and Discussion

4.1. Baseline Entrepreneur Heterogeneity

The analysis begins with a series of T-tests undertaken in order to identify significant differences in the profiles of sampled entrepreneurs. T-tests are preferred in this instance due to the binary nature of several of the test variables, which renders alternative approaches such as Mann-Whitney tests less suitable. Mean values and T-values for key variables are presented in Table 2 (below) for both the full sample and sub-samples of entrepreneurs previously outlined in Section 2.2. The results of this analysis confirm the presence of heterogeneity in the sample of entrepreneurs at baseline (2015), with statistically significant differences between specific subgroups of AIM clients being identified for a large number of indicators.

[4] More information on the Poverty Probability Index can be found at: www.progressoutofpoverty.org. A PPI score of 64 corresponds to a probability of 54.8% of the household being poor considering the $2.50/day (2005PPP) poverty line.

[5] A copy of the questionnaires employed in the two waves of the survey can be obtained from the corresponding author.

Table 2 – Subsample Comparison

Analysis of differences between sub-samples (2015)

Variable	Sample Average	Sample Range		Entrepreneur Type				Gender				Business Experience				Formal Credit Experience			
		Min	Max	Opport-unity	Necessity	t-stat (sig)		Male	Female	t-stat (sig)		<3.5 Years	≥3.5 years	t-stat (sig)		Non-formal	Formal	t-stat (sig)	
Employment Creation	0.45	-5	-17	0.52	0.38	0.88		*0.34*	*0.63*	*-1.63*		0.48	0.45	-0.01		0.40	0.68	-1.44	
Business Growth	0.69	-1	1	*0.67*	*0.72*	*-1.03*		0.68	0.72	-0.67		***0.52***	***0.74***	***-2.60***	***	***0.67***	***0.82***	***-2.69***	***
Savings Frequency	-0.23	-2	2	-0.21	-0,25	0.37		**-0.14**	**-0.38**	**2.14**	**	-0.18	-0.25	0.52		***-0.29***	***0.02***	***-2.35***	**
PPI Change	0.09	-0.48	2.07	***-0.02***	***0.21***	***-8.94***	***	0.08	0.12	-1.65		0.09	0.09	-0.00		0.09	0.12	-0.91	
PPI 2015	63.64	17	100	-	-	-		**65.67**	**60.15**	**3.37**	***	65.21	63.19	1.06		**64.48**	**59.84**	**2.25**	**
Female	0.37	0	1	***0.29***	***0.44***	***-3.39***	***	-	-	-		0.39	0.36	0.54		*0.34*	*0.51*	*-2.78*	
Ownership Period (Years)	9.89	0	40	9.64	10.14	-0.69		***10.53***	***8.79***	***2.43***	**	-	-	-		**9.27**	**12.69**	**-3.67**	***
Formal Credit Experience	0.18	0	1	0.17	0.20	-0.75		***0.14***	***0.25***	***-2.73***	**	***0.08***	***0.21***	***-3.73***	***	-	-	-	
Married 2015	0.89	0	1	***0.84***	***0.95***	*-3.98*	***	***0.87***	***0.93***	***-2.16***	**	***0.84***	***0.91***	***-1.77***	*	***0.88***	***0.96***	***-3.07***	***
Home Ownership 2015	1.30	0	2	1.32	1.28	0.71		***1.36***	***1.20***	***2.73***	***	1.36	1.28	1.08		1.31	1.27	0.44	
Age 2015	37.11	19	59	***35.96***	***38.24***	***-2.68***	***	**35.75**	**39.46**	**-4.25**	***	**34.39**	**37.90**	**-3.44**	***	**36.57**	**39.58**	**-2.72**	***
Household Size 2015	6.18	2	13	***5.61***	***6.75***	***-6.00***	***	6.08	6.36	-1.36		6.09	6.21	-0.51		**6.07**	**6.69**	**-2.44**	**
No Education	0.48	0	1	***0.34***	***0.61***	***-5.95***	***	**0.37**	**0.66**	**-6.31**	**	***0.40***	***0.50***	***-1.75***	*	***0.45***	***0.60***	***-2.59***	**
Primary School Education	0.16	0	1	*0.14*	*0.18*	*-1.00*		*0.18*	*0.13*	*1.43*		0.18	0.16	0.63		*0.17*	*0.11*	*1.52*	
Secondary School Education	0.32	0	1	***0.44***	***0.20***	***5.64***	***	***0.42***	***0.15***	***6.40***	***	0.34	0.31	0.56		0.33	0.28	0.78	
High Secondary / University Education	0.03	0	1	***0.06***	***0.00***	***3.47***	***	0.03	0.04	-0.80		***0.07***	***0.02***	***1.74***	*	***0.04***	***0.00***	***3.95***	***
Trade	0.26	0	1	*0.28*	*0.23*	*1.22*		***0.31***	***0.17***	***3.57***	***	***0.43***	***0.21***	***4.15***	***	0.26	0.25	0.19	
Production/Construction	0.56	0	1	*0.54*	*0.59*	*-1.07*		***0.48***	***0.71***	***-5.11***	***	**0.43**	**0.60**	**-3.09**	***	0.57	0.53	0.66	
Services / Education	0.18	0	1	0.18	0.18	-0.01		***0.22***	***0.12***	***2.64***	***	*0.14*	*0.19*	*-1.30*		*0.17*	*0.22*	*-0.99*	
Kasur	0.39	0	1	***0.33***	***0.45***	***-2.64***	***	***0.32***	***0.51***	***-3.97***	***	***0.26***	***0.43***	***-3.29***	***	***0.31***	***077***	***-8.59***	***
Badami Bagh	0.17	0	1	0.17	0.16	0.11		***0.19***	***0.13***	***1.69***	*	*0.22*	*0.15*	*1.53*		***0.20***	***0.01***	***7.70***	***
Kot Khawaja Saeed	0.20	0	1	***0.32***	***0.09***	***6.07***	***	***0.24***	***0.13***	***2.97***	***	0.21	0.20	0.18		*0.22*	*0.15*	*1.50*	
Kahna Nau	0.24	0	1	***0.19***	***0.29***	***-2.66***	***	0.25	0.23	0.52		***0.31***	***0.22***	***1.76***	*	***0.28***	***0.07***	***5.39***	***
N	447			221	226			283	164			100	347			366	81		

Notes: Figures shown are mean values for respective categories. Variables with significant t-statistics at or above the 90% confidence level are highlighted in bold. Statistical significance for t-tests indicated at *** = 99%; ** = 95% and * = 90% confidence levels. Figures in italics have unequal variances at the 95% confidence level.

In particular, the results show a number of significant differences between male and female entrepreneurs, which corroborates the results from previous studies conducted in Pakistan (Asim, 2009; Zulfiqar, 2017). Compared with males, female clients tended to be poorer (PPI score in 2015 was 5 points lower), older, less educated (66% were illiterate compared to 37% of males) and less likely to own their house. They typically had less business ownership experience (8.8 compared with 10.5 years). Although only a quarter of female clients reported previous formal credit experience, this was still significantly higher than for males (14%). The higher propensity of women to use formal credit can be explained by greater difficulties in accessing other sources of finance, such as savings or borrowing from family and friends. The results also indicate the existence of gender differences regarding personal income derived from the business. Female entrepreneurs earned, on average, significantly less than males, similarly to the findings of other studies (Mel *et al*., 2008; Zulfiqar, 2017). These variations in business performance for female entrepreneurs are likely to be the result of lower levels of literacy and management experience (Guérin, 2011; Coleman, 2007).

Regarding the differences between 'opportunity' and 'necessity' entrepreneurs at baseline, Table 2 shows that these differences were observed mainly in respect to sociodemographic characteristics (gender, age, marital status, educational level and household size). Considering statistical differences between the sub-groups at the 99% confidence level, it can be concluded that necessity entrepreneurs are more likely to be female, married and older than the clients identified as opportunity entrepreneurs. They also tend to live in larger households (6.8 members versus 5.6) and have lower levels of education (61% were illiterate). However, no significant differences were observed for business indicators between the two groups, specifically ownership period and type of activity.

The analysis of the differences between microcredit clients with and without formal credit experience is more nuanced. Entrepreneurs with credit experience were more likely to be older, less educated, poorer (lower average PPI score) and living in larger households. They were also more likely to be more experienced as business owners and, interestingly, living in the area of Kasur (77% of those with previous access to formal loans had applied in this branch). Additionally, the t-tests did not identify significant variation in the characteristics of entrepreneurs on the basis of management experience. This may be a consequence of the types of businesses supported by AIM's microcredit programme as these were mostly informal, small-scale (at baseline, 69% of entrepreneurs worked alone) and concentrated in activities with lower capital requirements.

Finally, the data presented in Table 2 allows for the identification of two variables for which statistically significant differences between the defined sub-groups (at a confidence level of 99%) were found for all four analyses. The first of these variables is age, with the results conforming to expectations – necessity entrepreneurs, women, more experienced business owners and those clients with formal credit experience were typically older than their equivalent counterparts. The second common difference related to entrepreneurs based in the city of Kasur. Despite all branches being located in an urban context and the city not being far from Lahore (approximately 50 km), clients based in Kasur were more likely to be female and classified as necessity entrepreneurs than those from the other branches. They were also more likely to be comparatively more experienced as business owners, and to have had access to formal credit prior to applying for the microcredit loan. These results imply that location should not be looked upon uniquely from the common rural/urban perspective, taking into account variations in socio-economic characteristics and MFI targeting strategies between urban areas.

4.2. Variations in Business Outcomes

Business outcomes were studied through the analysis of two variables representing expected outcomes of microcredit programmes: business growth and employment creation (Armendáriz and Morduch, 2010). The 'business growth' variable was constructed on the basis of self-reported changes in sales revenue experienced by the respondent's business over the period. This could be described as 'growing' (to which a value of 1 was assigned), 'stable' (0) or 'decreasing' (-1). The 'employment creation' variable corresponded to the net creation of jobs, paid or unpaid, during the period (a part-time job was accounted as 0.5 of a full-time position).

The results presented in Table 2 (above) suggest that business growth associated with both business ownership period and prior access to formal credit, with the differences between the respective sub-groups being found to be statistically significant at the 99% confidence level. These results are in line with the literature outlined in Section 2, including Basu and Goswami (1999), Bradley *et al.* (2012), Franck (2012) and Karlan and Morduch (2010). Conversely, entrepreneur heterogeneity at baseline seems not to have had any impact on employment creation, as none of the differences between the sub-groups of clients were found to be statistically significant. To further explore variations in business outcomes holding all other factors constant, regression analysis was applied. Entrepreneurial outcomes were modelled against the key independent variables forming the basis of

the t-test analysis, alongside a set of entrepreneur, industry and region controls. In order to investigate the presence of multicollinearity in the analysis, correlation coefficients were calculated (Table 3 below). Alongside low VIF scores from the variables appearing in these regressions (max 1.62; mean 1.35), the correlation coefficients suggesting that there are no significant issues of multicollinearity.

Table 3 – Correlation Coefficients

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
(1) Employment Creation	1																						
(2) Business Growth	0.06	1																					
(3) Savings Frequency	0.10	0.24	1																				
(4) PPI Change	0.00	0.06	0.10	1																			
(5) PPI 2015	0.06	-0.08	0.04	-0.54	1																		
(6) Female	0.09	0.03	-0.10	0.08	-0.16	1																	
(7) Ownership Period (Years)	-0.01	0.05	0.03	0.03	-0.05	-0.11	1																
(8) Formal Credit Experience	0.07	0.10	0.11	0.04	-0.11	0.14	0.17	1															
(9) Married 2015	0.03	0.03	-0.02	0.04	-0.21	0.09	0.19	0.10	1														
(10) Home Ownership 2015	0.04	0.05	0.04	-0.04	0.04	-0.13	0.07	-0.02	0.08	1													
(11) Age 2015	0.06	0.04	-0.03	0.10	-0.11	0.20	0.38	0.13	0.39	0.15	1												
(12) Household Size 2015	0.05	0.14	0.04	0.19	-0.31	0.06	0.10	0.11	0.07	0.08	0.20	1											
(13) No Education	0.04	0.04	0.01	0.11	-0.32	0.29	0.12	0.12	0.21	0.09	0.22	0.11	1										
(14) Primary School Education	-0.02	0.02	0.04	0.07	-0.05	-0.07	-0.02	-0.06	0.05	-0.04	0.03	0.06	-0.42	1									
(15) Secondary School Education	-0.05	-0.06	-0.06	-0.16	0.30	-0.27	-0.07	-0.04	-0.15	-0.05	-0.20	-0.11	-0.67	-0.30	1								
(16) High Secondary / University Education	0.06	-0.02	0.07	-0.04	0.20	0.04	-0.11	-0.09	-0.27	-0.03	-0.14	-0.11	-0.18	-0.08	-0.13	1							
(17) Trade	-0.11	-0.02	0.00	0.04	0.06	-0.16	-0.19	-0.01	-0.05	-0.01	-0.06	-0.02	-0.08	-0.03	0.09	0.06	1						
(18) Production/Construction	0.17	-0.03	-0.05	0.03	-0.09	0.23	0.14	-0.03	0.05	-0.05	0.03	0.06	0.06	0.07	-0.10	-0.06	-0.67	1					
(19) Services / Education	-0.09	0.06	0.07	-0.09	0.05	-0.12	0.04	0.05	-0.01	0.08	0.03	-0.05	0.00	-0.06	0.03	0.01	-0.28	-0.53	1				
(20) Kasur	0.08	0.03	0.03	0.08	-0.20	0.19	0.13	0.36	0.07	0.00	0.08	0.10	0.20	-0.04	-0.16	-0.05	-0.19	0.22	-0.07	1			
(21) Badami Bagh	-0.11	-0.03	-0.01	0.04	0.09	-0.08	-0.09	-0.19	-0.12	-0.16	-0.02	-0.06	-0.16	0.04	0.09	0.12	0.08	-0.05	-0.04	-0.36	1		
(22) Kot Khawaja Saeed	0.16	0.01	0.17	-0.11	0.35	-0.13	0.01	-0.06	-0.04	0.15	-0.07	-0.10	-0.22	-0.01	0.21	0.06	0.09	-0.21	0.17	-0.41	-0.23	1	
(23) Kahna Nau	-0.15	-0.01	-0.18	-0.03	-0.18	-0.02	-0.08	-0.18	0.07	0.01	-0.02	0.02	0.12	0.01	-0.09	-0.11	0.06	-0.01	-0.05	-0.45	-0.25	-0.28	1

Table 4 presents the regression results regarding the selected entrepreneurial outcomes.

Table 4 – Regression Analysis Results I

Entrepreneurial Outcomes (2015 – 2017)				
	I		II	
	Employment Creation (Poisson Regression)		*Business Growth (Ordered Logit)*	
	Coeff.	(Std. Error)	Coeff.	(Std. Error)
Ln (PPI 2015)	0.998	(0.570)*	0.772	(0.348)
Female	0.098	(0.232)	1.141	(0.317)
Ln (Ownership Period)	-0.201	(0.084)**	1.380	(0.148)***
Formal Credit Experience	0.308	(0.321)	1.743	(0.606)
Married 2015	0.404	(0.448)	0.941	(0.355)
Home Ownership 2015	-0.180	(0.172)	1.076	(0.218)
Ln (Age 2015)	0.828	(0.575)	0.734	(0.406)
Ln (Household Size 2015)	0.395	(0.289)	2.244	(0.769)**
Primary School Education	-0.353	(0.366)	1.085	(0.362)
Secondary School Education	-0.273	(0.276)	0.946	(0.299)
High Secondary / University Education	0.651	(0.688)	1.119	(0.731)
Production/Construction	1.612	(0.362)***	0.688	(0.216)
Services / Education	-0.158	(0.452)	0.931	(0.344)
Badami Bagh	-1.043	(0.560)*	1.253	(0.412)
Kot Khawaja Saeed	0.849	(0.297)***	1.387	(0.502)
Kahna Nau	-1.527	(0.460)***	1.476	(0.464)
Constant	-9.359	(2.160)***	-	-
Chi-Squared / F	1746.41***		19.12	
Log Likelihood / R^2	0.235		0.036	

Regressions performed on the 447 observations. Statistical significance for t-tests indicated at *** = 99%, ** = 95% and * = 90% confidence levels. Coefficients for Specification II expressed as odds-ratios

Specification I is based on the volume of employment creation observed between sample periods in 2015 and 2017. As this measure effectively represents a 'count' variable, a Poisson regression was employed. In line with the T-tests, the results from Specification I suggest that each of the hypotheses relating to the association between entrepreneur characteristics and employment creation (H1a; H2a; H3a and H4a) should be rejected. Few of the control variables were found to associate statistically significantly with employment creation, aside from the type of industry; namely production and construction, where employment creation was found to typically be higher than other industries, as well as location, with clients in Kasur found to be different from those based in other branches.

Looking at the individual response data, it is clear that employment creation is concentrated among a relatively small number of entrepreneurs in the sample. In fact, for 324 entrepreneurs there was no net variation of employment; in most cases, clients continued working alone in their businesses. Nonetheless, it should be noted that 87 entrepreneurs reported creating a total of 191 new positions during the period of the study.

Specification II is an ordered logit regression capturing whether business growth has declined, remained the same or increased over the period. Coefficients are reported as odds-ratios. In the case of business growth, the natural log of ownership period was shown to associate positively and significantly with the probability of business growth. More specifically, a 1% increase in the ownership period was shown to increase the odds ratio of being in a higher profitability category by about 1.38. This result suggests that hypothesis H3b should be accepted, i.e. businesses managed by microcredit clients with more years of business ownership are more likely to grow than those managed by those with less experience.

This particular finding is in line with those from previous studies, including Bradley *et al.* (2012) and Franck (2012). However, by contrast, relatively few other entrepreneur controls were found to be statistically significant. These results suggest that each of the other hypotheses relating to business growth (H1b; H2b and H4b) should be rejected. The data available and the model specification did not seem to capture the main drivers of growth, which may instead be related to economic, social and cultural environmental factors.

It is noteworthy that the results do not show any evidence of variation in business growth according to the gender of the entrepreneur, implying that female-led businesses do not necessarily grow less than male-led businesses. This result challenges findings from the aforementioned studies in Sri Lanka, Ghana and Nigeria and implies a potential influence of religion on business performance. In this context, it would be useful for future studies to explore the role of the family approach followed by AIM in compliance with Islamic principles, particularly how other family members are involved in the loan process and the management of the business.

4.3. Variations in Household Outcomes

The analysis now turns to exploring associations between entrepreneur characteristics and variations in household outcomes. First, the variation of household savings frequency is calculated on the basis of the self-reported savings frequencies captured in both surveys, which were described as ‘never’ (0), ‘occasionally’ (1) or ‘regularly’ (2). The variation between these categories resulted in five potential scenarios, which capture both the amplitude and the direction of the change (e.g. an entrepreneur who saved regularly in 2015 and reported never saving in 2017 was assigned a value of ‘-2’, whereas an entrepreneur who saved occasionally at baseline and declared saving regularly in 2017 is assigned a value of ‘+1’).

Returning to Table 2, the results of the T-tests demonstrate that savings frequency tended to decrease after being granted the microcredit loan. Although empirical evidence on savings variation has been mixed, the findings of this study contradict theoretical expectations outlined in the model of Duvendack *et al*. (2011). In addition, it should be noted that the largest decrease in savings frequency was observed among female entrepreneurs. Despite the percentage of women saving regularly in 2017 remaining higher than men (52% and 48%, respectively), the gap between them substantially declined compared with 2015, where the percentages were 62% and 52% respectively.

The analysis also explores associations between entrepreneur characteristics and poverty status on the basis of variations in PPI scores observed over the course of the sample period. The results in Table 2 demonstrate a statistically significant and positive variation for necessity entrepreneurs, meaning a lower probability of being considered poor using the selected poverty threshold. By comparison, a slightly negative variation in PPI scores is observed over time for opportunity entrepreneurs. This finding indicates that poorer clients tended to benefit comparatively more from access to microcredit compared with better-off clients, leading to a decrease in the poverty gap between the two groups of entrepreneurs.

As with the analysis of variations in business outcomes, these changes in household outcomes are investigated further using regression analysis, the results of which are presented in Table 5. Specification III is an ordered logit regression, where the dependent variable represents variation of savings frequency between both surveys, while in Specification IV the change in the PPI scores between 2015 and 2017 was modelled using a standard linear regression.

Table 5 – Regression Analysis Results II

Household Outcomes (2015 – 2017)				
	III		IV	
	Savings Frequency (Ordered Logit)		*PPI Change (Linear Regression)*	
	Coeff.	(Std. Error)	Coeff.	(Std. Error)
Main Independent Variables				
Ln (PPI 2015)	1.006	(0.390)	-0.664	(0.074)***
Female	0.590	(0.120)***	-0.002	(0.025)
Ln (Ownership Period)	1.009	(0.106)	0.005	(0.011)
Formal Credit Experience	1.633	(0.423)*	-0.016	(0.036)
Entrepreneur Controls				
Married 2015	0.914	(0.296)	-0.089	(0.044)**
Home Ownership 2015	1.009	(0.131)	-0.009	(0.019)
Ln (Age 2015)	0.670	(0.277)	0.099	(0.053)*
Ln (Household Size 2015)	1.489	(0.432)	-0.013	(0.029)
Entrepreneur Education (Base = No Education)				
Primary School Education	1.074	(0.330)	0.044	(0.038)
Secondary School Education	0.580	(0.125) *	0.012	(0.027)
High Secondary / University Education	1.390	(0.811)	0.069	(0.052)
Industry Controls (Base = Trade)				

Production/Construction	0.947	(0.200)	-0.029	(0.031)
Services / Education	1.086	(0.317)	-0.077	(0.033)**
Region Controls (Base = Kasur)				
Badami Bagh	0.922	(0.259)	0.051	(0.036)
Kot Khawaja Saeed	1.920	(0.527)**	0.073	(0.031)**
Kahna Nau	0.480	(0.127)***	-0.055	(0.037)
Constant	-	-	2.582	(0.372)***
Chi-Squared / F		52.56 ***		7.280***
Log Likelihood / R^2		0.038		0.243

447 observations. Statistical significance for t-tests indicated at *** = 99%; ** = 95% and * = 90% confidence levels. Coefficients for Specification III expressed as odds-ratios.

The estimates for Specification III show that the odds ratio of being in a higher savings category decreased by around 0.41 for female entrepreneurs compared with males; in other words, female entrepreneurs were less likely to have increased savings activity over time compared with male entrepreneurs, similarly to the results of the t-tests. Although there is no data collected on the amount of savings, but its frequency, this finding along with the overall decrease of savings frequency over the period leads to the rejection of hypothesis H5.

One potential reason for the rejection of this hypothesis could be that business returns were not as high as expected, implying a reduced capacity to save regularly. However, as average business and household incomes increased over the period, a more plausible explanation is that the additional income was preferentially used for other purposes, including consumption and voluntary donations to AIM. As part of its religious culture, the MFI encourages its clients to become donors reciprocating the support they have received through the access to the interest-free loan. Donations, similarly to savings (Morduch and Haley, 2002), can be seen as social insurance, giving the clients the sense of being part of a community that helps each other in case of need (Khan *et al.,* 2017). This seems to be widely accepted within the sample of entrepreneurs in this study, with 93% of all participants reporting donating during the previous 12 months. Female clients donated more frequently as 74% declared regularly donating, compared with 61% of male clients. However, these donations, according to information from an AIM representative are, on average, very low (20PKR ≈ 0.13USD), and most likely not related to the decisions on savings. It would be, thus, interesting to collect data on the amounts of savings and donations to confirm that there is no substitution effect at this level and explore other factors affecting savings.

Finally, the results for Specification IV indicate that one of the most powerful predictors of a change in PPI score over the sample period is the PPI at baseline. More specifically, a 1% increase in baseline PPI score was shown to associate with a 0.66 unit reduction in PPI over the sample period. The

negative coefficient implies that the entrepreneurs who were poorer at baseline were the ones more likely to show an improvement in the poverty level over time. In the same way as the result of the t-tests for the 'opportunity' versus 'necessity' entrepreneurs, it suggests that the poorest clients have benefited relatively more than better-off clients over the sample period leading us to accept hypothesis H6a. Conversely, gender is not shown to associate with a statistically significant variation in PPI score over the sample period, suggesting that hypothesis H6b should be rejected. In common with earlier results regarding variations in business growth by gender, this finding calls for further analysis of the family loan approach and its implications in terms of business and household outcomes.

5. Conclusions

This study examines differences in the characteristics and business and household outcomes among a sample of Islamic microfinance clients. The results empirically support the presence of significant differences among clients with respect to three criteria; gender, poverty level and previous formal credit experience. Differences were found to be stronger between male and female entrepreneurs, a finding not exclusive to Islamic contexts. Differences were also observed between necessity and opportunity entrepreneurs with respect to their socio-demographic characteristics, as the former are more likely to be women.

The findings of the study demonstrate that among entrepreneur characteristics, only prior experience has a significantly positive relationship with business growth. Conversely, neither poverty-level, nor credit experience or gender is found to associate with significant variations in business growth. The latter finding is particularly important, as it challenges the argument that female-led businesses have lower growth potential and calls for further analysis of the role of AIM's family approach in the provision of loans. In addition, none of the entrepreneurial characteristics captured by the dataset is shown to associate significantly with variations in employment creation. In aggregate, there is relatively little variation in business outcomes observed between different groups of clients over the course of the sample period.

By contrast, this study does find evidence of statistically significant variations in household outcomes among specific groups of entrepreneurs. In particular, the results show a reduction in household savings frequency over the course of the sample period, which is particularly pronounced among females. Changes in poverty levels over the course of the sample period are also shown to differ

according to entrepreneur characteristics. Most notably, the results demonstrate a greater increase in PPI (i.e. a larger reduction in poverty level) among those with lower PPI scores at the time of the baseline survey. This result suggests that microfinance loans in this context benefit the households of the poorest entrepreneurs to a greater extent than the wealthiest.

The results of this research share some commonalities with previous studies on conventional microfinance (e.g. related to business experience). However, they also draw attention to specificities of the AIM Islamic microcredit model that call for further research; namely the family loans approach and the donations programme. Acknowledging client heterogeneity and understanding its association with variations in business and household outcomes can therefore be crucial to identify differences between Islamic and conventional microcredit programmes and maximising the outcomes of microfinance programmes implemented at a micro level. It is also relevant from a broader perspective, contributing insights that can be of considerable value to governments and international organisations such as the World Bank Consultative Group to Assist the Poor (CGAP) and the sector-level Social Performance Task Force (SPTF), who establish standards and regulatory frameworks for microfinance.

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