

# **THE DETERMINANTS OF MICROCREDIT QUALITY IN MALAYSIA: A PANEL EVIDENCE**

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## **ABSTRACT**

This paper examines the determinants on microcredit quality in Malaysia that is measured by using the number of microcredits late in repayment (microcredit at risk). The study utilizes a static panel technique for 13 states and 3 federal territories in Malaysia from 2011 to 2015. Additionally, the study expands the understanding of microcredit quality, which captures the intensity of the default rate measured by the number of microcredits late in payment concerning Microcredit Organization's (MO) variable. Results show that the MO female clients have a significant negative effect on the microcredit quality. The average number of borrowing per branch and lower income household are positively significant on microcredit quality. The findings suggest that the MOs should increase their number of branches or microcredit officers but depending on the cost effectiveness. Opening up new branches and hiring more microcredit officers may be impracticable to the organization. The MOs may also seek a better balance by having prospective borrowers and provide technical training assistance in order to improve the microcredit quality in Malaysia, besides enhancing the ability and skill of the borrowers. Therefore in order to sustain, the MO should have quality regulation on loan disbursement and enhance the ability and skills of the borrowers in Malaysia.

**Keywords:** Microcredit quality; Microcredit organization; Lower income group; Malaysia

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## **1. INTRODUCTION**

Microcredit Organization (MO) was established due to the inability of the mainstream financial organization to deal effectively with the microcredit requirements of the poor in order to alleviate poverty and as an alternative microcredit system for them (Battilana & Dorado, 2010; Morduch, 2000; Coleman, 2005). The mainstream financial organizations do not serve the poor as they are perceived too risky and this will affect the organizations sustainability. The financial sustainability

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here is important and it is a necessary condition for micro institutional sustainability (Hollis & Sweetman, 1998). In order to sustain the MOs financial ability, the microcredit quality (repayment) is a very important element as it indicates the general management competence of the organization (Rosenberg, 2009). Microcredit quality is an issue because these MO schemes involve borrowers who are mainly from the poor category and, hence studies have been conducted to look into the extent of the capabilities of this category of borrowers in repayment of microcredit obtained.

Many studies have been carried out on microcredit quality issues that have looked into the determinants, trend and the importance of maintaining high repayment rates (Banerjee & Newman, 1994; Christen, R. et al., 1995; Cull et al., 2007; Mokhtar et al., 2012; Nawai & Shariff, 2013). On that note, researches regarding the success or failures in the microcredit quality of borrowers have been concluded with various results. Many researches have been concluded that MOs have microcredit quality challenges (Banerjee & Newman, 1994; Mokhtar et al., 2012; Nawai & Shariff, 2013). Low microcredit quality is a global problem. Additionally it has also been concluded that, Government funded organizations have focused more on microcredit volume rather than the financial performance in which higher default rates are observed globally. For example the defaults rates for India, Bangladesh and Malaysia are 50%, 71% and 40% respectively (Helms & Reille, 2004; Braverman & Huppi, 1991). Many studies have also found that, the Non-Performing Loan (NPL) is a major challenge as rates amongst the MO are high even in developed countries. In contrast, the best microcredit systems in Latin America, Africa, and Asia have recorded the repayment rates are at least 98% without any collateral (Kunz et al. 2007) and some findings have highlighted the high repayment rates (Christen. et al., 1995, Cull et al., 2007).

In Malaysia, the motivation to establish MO is to help the poor who are often prevented from qualifying and obtaining financial facilities from the mainstream financial system. The financial institutions do not serve the rural segment poor, as they perceive it as too risky due to the lack of microcredit history and collateral (Armendariz & Morduch, 2000; Hermes & Lensink, 2007a). Thus, microcredit here is an important source of funding for micro entrepreneurs in Malaysia. The financial institutions together with MO plays an important role in funding all sectors, and which include the provision of microcredit to micro enterprises. The microcredit programs are intended to develop and modernize the sectors by providing microcredit facilities and financial management services. Hence, microcredit quality is an important element in microcredit to establish a viable and sustainable MO, and also microcredit worthy borrower, even though many of the MOs are still facing high default rate. According to SME Corporation Malaysia (2016), micro establishments made up 76.95 per cent of total SMEs, followed by small size and medium size establishments which accounted 19.96 per cent and 3.08 per cent respectively (Refer to Figure 1).

Currently financial institution, and credit cooperatives are complementing the existing MO's such as Amanah Ikhtiar Malaysia (AIM), TEKUN Nasional (TN) and Yayasan Usaha Maju (YUM) in Malaysia. On that note, many studies have been conducted to look into the microcredit quality of the MO's as it is an important element that reflects the competency and to maintain sustainability of the MO's. Microcredit quality problem become as one of the main obstacle for the MO's and it has been highlighted that the microcredit quality has declined based on the latest development in Malaysia. TEKUN Nasional as the largest MO has racked up accumulated losses of RM209.28 million and written off bad debts amounting to RM410.61 million, (National Audit Department Malaysia, 2016). As of 31<sup>st</sup> of December 2016 the default rate for TEKUN Nasional (TN) was 35.5% (increased) compared to 2015 in which the default rate was 20.52% (TN, 2015 & 2016).

Meanwhile in 2009, TN recorded an 85% repayment rate (Berita Harian, 2009). Yayasan Usaha Maju (YUM) repayment rate stood at 90.72% as of 31 December 2008, (YUM, 2009) and Amanah Ikhtiar Malaysia (AIM) achieved a 99.42% in August 2010 respectively from all the microcredits (Al- Mamun et al, 2011). Furthermore, the evidence to show that there is a problem in microcredit quality in Malaysia and it is reflected through the establishment of Small Debt Resolution Scheme (SDRS) by Bank Negara Malaysia in November 2003. SDRS has been established to assist and rehabilitate the SMEs Non Performing Loans (NPL) which includes microcredit. Since the establishment of SDRS, the number of total restructured NPL involves 977 (83%) SMEs (including microcredit) amounting to RM1.1 billion (SME Annual Report, 2015).

Based on the low or deteriorating microcredit quality amongst the MOs in Malaysia, it is important to identify the determinants that contribute to their success or failure in order to overcome their general competence. Even though several studies have been carried out to investigate directly or indirectly regarding the microcredit quality and its determinants but they have not consistently addressed using a comprehensive analysis based on Malaysia level data. For an example, Mokhtar et al. (2012), Nawai & Shariff (2010), Roslan and Karim (2009) have investigated the determinants of micro microcredit repayment in Malaysia based on the survey method. Nawai, N., & Shariff, M. M., (2010) studied factors influencing the MO's loan repayment in Peninsular Malaysia based on the individual lending approach. Meanwhile, Roslan and Karim (2009) investigated the determinants of microcredit repayment issued by a commercial bank on a non-group lending basis in Malaysia. Other the research that has been conducted in the Malaysian context on microcredit is on lower income group (bottom 40 household) (Selvaraj, Karim, Abdul-Rahman, & Chamhuri, 2018).

Thus, the important contribution of this study that makes the different from the existing research is that the microcredit quality here shall offer a good reflection of the actual performances in Malaysia as it uses actual data. This allows for a better understanding of the role and impact of each explanatory variable in microcredit quality in Malaysia. The outcome of this study may also be of interest to other small countries in their microcredit issues and can be referred and adopted in their mechanism. The policy implication from this study can be an input to the policy maker itself (MO) through the identification of the main factor that contributes to the risk and strategies in order to sustain the MO in the future for an example through better microcredit quality. The focus given by this study is to identify a number of MO's and lower income group (proxy by Bottom 40 Household) determinants or indicators that have an impact on microcredit quality (proxy by number of microcredit late in payment). The sequence of this study begins with the introduction, literature review, methodology, empirical results and conclusion.

## 2. LITERATURE REVIEW

As an overview, this paper will highlight the determinants from microcredit organization variables that influence and affect the microcredit quality. Identifying the right determinants is important in achieving a good microcredit quality. Many studies have been done to assess the determinants that affect microcredit quality, and the results have been mixed. On that note, literature has proven that determinants such as females are better paymasters and this leads towards a lower default rate. MO's with a majority of women clients have a better microcredit quality in terms of portfolio at risk, write-offs and loss in financing provision. (D'espallier et al., 2011). This may be due to

women-owned small businesses are safer (D'espallier et al., 2011; Arena, 2007; Sharma & Zeller, 1997; Armendariz & Morduch, 2007; Agier & Szafarz, 2010). Also female borrowers are more responsive to monitoring and enforcement efforts exerted on them by the MOs, through their microcredit officers (Armendariz & Morduch, 2007; Rahman, 2001; Johnson, 2004; Goetz & Gupta, 1996). Additional findings have also shown that there is a deterioration in repayment performance among male borrowers in Malaysia as they have a longer duration for repayments which can lead towards higher probability of defaulting (Roslan & Abdul Karim, 2009).

Besides that, the average number of microcredit handled by the MOs branch is also an important determinant in achieving a good microcredit quality as this can measure how far the officers or sub committees to whom authority has been delegated to monitor the borrowers to reduce the microcredit at risk rate. This is because monitoring minimizes the tendency of borrowers to engage in moral hazard behavior for an example reduces the incidence of ex-ante moral hazard (Reinke, 1998). Findings have shown that direct monitoring, regular repayment schedules, and the uses of non-refinancing threats are the elements to generate good credit quality rates from low income borrowers without requiring collateral and without using group lending contracts that feature joint liability (Armendariz & Morduch, 2000). According to Silwal (2003), microcredit programs that used various lending methods namely peer selection, peer monitoring, dynamic incentives, regular repayment schedules, and social collateral help maintains high microcredit quality. Peer monitoring (Wydick, 1999; Hill & Sarangi, 2012; Banerjee et al., 1994), and close monitoring by microcredit officers is said to be the important factor for the success of microcredit lending (Dixon et al. 2007)

The other most important factor that encourages the lending groups to make repayment is the relative value they attach to access future microcredit (Diagne et al., 2000), in which shows that borrowers have good repayment history. This normally refers to the returning borrowers or the borrower's microcredit worthiness compared to the new borrowers who expose the MO to a lot of risks due to the lack of history of their microcredit worthiness and score (Nawai & Shariff, 2013; and Greenbaum & Thakor, 1995).

Microcredit quality among the lower income groups (proxy by bottom 40 household) must also be revisited in order to understand their current microcredit quality performances. As mentioned in most of the literature, the formal financial institutions do not serve the rural poor (lower income group), as they are perceived as too risky (Armendariz & Morduch, 2000; Yunus, 1998; &Hermes & Lensink, 2007a). Additionally the loan officers working in rural zone have to cover vast geographical areas to attend sometimes a very small number of borrowers (Shankar, 2007), which may increase the operational costs for the local MO's and effect their enforcement ability. The social and economic configuration provided by urban settings also makes it easier for the micro entrepreneurs to invest in smaller, lower-risk businesses more suitable to their circumstances. All this factors are expected to contribute towards the good microcredit quality among the lower income group in urban area. Poor borrowers are basically unable to obtain microcredits from the formal microcredit institutions due to a lack of collateral (Banerjee & Newman, 1994). These institutions have difficulty in identifying reliable borrowers and monitor their behaviors that cause high default rate. For an example it is proven by a program in Ohio that provided the poor especially the small farmers with small microcredits and was had been a disastrous development policy (Adams et al., 1984). The program had also high rates of default such that viable rural finance institutions could not be established. Poor people were viewed as simply, not being bankable as it

involves high transaction costs, poor microcredit repayments and the development policy left all banking to the private, profit orientated sector.

Other determinants identified in the literature that causes high default rates were borrower's unwillingness or inability to repay the microcredit (Greenbaum et al., 1995; Coyle, 2000; Ozdemir & Boran, 2004), are due to the lender and not the borrower. There were also other contributing factors such as disaster that developed out of control and personal crises that affected the repayment ability (Sterns, 1995) as it affects the productivity.

Therefore, this paper studies the impact of the microcredit organization determinants on microcredit quality in Malaysia. The main contribution of this study that is different from the existing literature is that the methodology uses Malaysia from level data for both, the dependent and independent variables from all 13 states and 3 federal territory in Malaysia. These also reflect the true parameter of the microcredit quality in Malaysian context.

### 3. METHODOLOGY

#### 3.1. *Data Description*

Microcredit quality is an important performance area as it determines the sustainability of the organization, and competences except these organizations are with subsidies. It has been mentioned that the Malaysian government has subsidised its MO with the intention to give assistance for the micro entrepreneurs in order to elevate the household from poverty (Kasim, 2000). A major criticism of subsidized micro microcredit systems is their low microcredit quality due to high default rates (Morduch, 2006; Robinson, 2001). Besides that the long experience in evaluating microcredit projects have shown that there are very few successful projects that have bad microcredit quality, and very few unsuccessful projects that have good microcredit quality. The international standard indicators for measuring the microcredit quality are portfolios at risk, microcredit at risk, write-offs, provision expenses, risk coverage ratio, write-off ratio, operating expense ratio, cost per client, personnel productivity, microcredit officer productivity, funding expense ratio, cost of funds ratio and the microcredit loss reserves as an indicator. Microcredit at risk here is a measurement that refers to the number of microcredits (borrowings) late in repayment instead of their microcredit loan amounts late in repayment (R. Rosenberg, 2009).

For the dependent variable, this study uses microcredit quality (proxy by number of microcredit late in payment); and selected MO's and lower income group (proxy by Bottom 40 Household) determinants or indicators respectively as the independent variables for the 13 states and 3 federal territories in Malaysia. All data were collected from the Statistic Department of Malaysia's, Economic Planning Unit Malaysia and a MO from Malaysia (MO that complements the initiatives by the Financial Institutions in Malaysia (BNM, 2015). Based on the availability of the data, the study was from 2011 to 2015, making a total of 5 years (80 observations). This research looks into the 5 years implications because extensive and reliable historical data on microcredit does not exist. Besides that, detailed lower income household estimates by states are available only from 2009 in Malaysia. The urban lower income household, rural lower income household and lower income household data were interpolated for the other missing years based on data provided by EPU, Malaysia respectively. Refer to Figure 2. This study is using the number of microcredit late

in payment at the end of each financial year in the current microcredit cycle for each state and Federal Territory or at risk due to the unavailability of data on microcredit collection for measuring the microcredit portfolio quality with other indicators. This data concerns the year-end characteristics of organization i.e. shows the yearly performances. This measure has few advantages. Firstly, it is an important measure because this study uses actual information in which data are obtained directly from the MO compared to the dichotomous dependent variables usually used in the literature (due to primary data). The microcredit quality here should offer a good reflection of the actual microcredit quality performance of the borrowing individuals for each state and federal territory. The study here shows in terms of individual lending mechanism. It has been mentioned that little study has been conducted on the issue of repayment for individual lending applied by microcredit programs. According to Mokhtar et al., (2011), the research on the determinants of microcredit repayment defaults in individual-based lending schemes can be found only for rural banks or semi-formal financial institutions. Additionally this study also provides detailed repayment observations for each state in a year. This study applied the panel data, in estimating the impact of microcredit and lower income household determinants on microcredit quality. Static Panel Techniques that include pooled ordinary least squares (POLS), random effects models (RE) and fixed effects models (FE) are used to examine the impact of microcredit access and macroeconomic conditions towards the lower income group using two balanced panel datasets between 2011 and 2015. . On that note, many studies have used panel data analysis, which have the combination of time series with cross-section (Antonio et al., 2013; D'espallier, B., et al., 2011; Hermanto & Astuti, 2013) and this combination reflects powerful study data (Gujarati, 2009). For an example, Hermanto and Astuti, (2013) examined the impact on the microcredit quality of MOs using quarterly data from December 2011 to September 2012 in Java, which consists of conventional rural banks and Islamic rural banks. Due to the unavailability of the data, the time interval was used in this study.

According to Yaffee (2003), panel data analysis is a combination of time series with cross-section can enhance the quality and quantity of data in ways that would be impossible using only one of these two dimensions (Gujarati, 2009). Hence it provides, a rich and powerful study if both the space and time dimension of the data is considered. Generally, there are few advantages to using panel data (Baltagi, 1995). The sample size can be increased considerably. With repeated observations of enough cross-sections, panel analysis allows to study the dynamics of change with short time series. Panel data enables to study more complicated behavioural models. The combination of the two dimensions observation, gives more informative data, variability, less multi collinearity among variables, more degrees of freedom and efficiency. Although the studies showed significant impact of microcredit programs, there were also several weaknesses in the methodology such as several estimation and inference problems namely heteroscedasticity and autocorrelation due to time series of cross-section observations. There also exist problems such as cross-correlation in individual units at the same point in time. These problems can be corrected using several estimation techniques and the most significant methods are the POLS, FE, and RE. Typical panels involve annual data covering a short span of time for each N and asymptotic arguments rely on number of N tending to infinity. Increasing the time is costly too.

**Table 1: Variable Description**

No	Variables	Descriptions	Source
<b>DEPENDENT VARIABLE</b>			
1.	Microcredit Quality (CQ)	Percentage of microcredit late in payment (number of credits late in payment/ total number of outstanding credit)	MO Malaysia
<b>INDEPENDENT VARIABLES</b>			
1.	Female to Male Borrowing (FMB)	Ratio of Female to Male Microcredit Borrowing	MO Malaysia
2.	Returning Borrowers (RRB)	Ratio of Returning Borrowers to New Borrowers	MO Malaysia
3.	Average Number of Microcredits (ALB)	Log Of Average Number Of Borrowing Per Branch	MO Malaysia
4.	Urban to Rural (RUR)	Ratio of Urban to Rural Lower Income Household	EPU Malaysia
5.	Lower Income Household (LIC)	Log of Lower Income Household	EPU Malaysia

Baseline Model of Microcredit Quality (MQ) is shown as below:

$$CQ_{it} = \beta_0 + \beta_1 FMB_{it} + \beta_2 RRB_{it} + \beta_3 \text{Log}ALB_{it} + \beta_4 RUR_{it} + \beta_5 \text{Log}LIC_{it} + \varepsilon_{it} \quad (1)$$

$$\varepsilon_{it} = \alpha_i + u_{it} \quad (2)$$

Based on the literature, it is expected that the female to male borrowing (D'espallier et al., 2011; Arena, 2007; Roslan and Abdul Karim, 2009), returning borrowers ((Diagne et al., 2000; Nawai & Shariff, 2013; Greenbaum & Thakor, 1995) and the ratio of urban to rural lower income household (Hermes & Lensink, 2007a; Armendariz & Morduch, 2000; Yunus, 1998; Ozdemir & Boran, 2004) are negatively related to the bad microcredit quality (number of microcredit late in payment). Meanwhile the average number of borrowing per branch (Silwal, 2003, Hill & Sarangi, 2012; Armendariz & Morduch, 2000), and the lower income household, (Hermes & Lensink, 2007a; Armendariz & Morduch, 2000; Yunus, 1998; Ozdemir & Boran, 2004) is expected to be positively related to the bad microcredit quality respectively.

The microcredit quality here is that the dependent variable denotes (proxy by number of microcredit late in payment) in state  $i$  at time  $t$ . The independent variable namely the female to male microcredit ratio (FMC), ratio of returning borrowers (RRB), average number of borrowing per branch (ALB), ratio of urban to rural lower income household (RUR) and log of lower income household (LIC). The unobserved effects model appears to be following with  $\alpha$  and  $\beta$  parameters, and  $\varepsilon_{it}$  is a stochastic error term ( $\alpha_i$  = state specific effect and  $u_{it}$  = remainder error term).  $\beta_0$  is a constant term,  $\beta$  measures the effect of independent or explanatory variables in period  $t$  for the state  $i$ ,  $X_{it}$  here represents the explanatory variables. The variables, both dependent and independent, denote cross-section unit  $i$  at time  $t$ , where  $i$  = state (1 to  $n$ ), and  $t=1$  to 5 years. The Variables Description is summarized in **Table 1**. This study consists of the number of active

borrowers and has been operating micro enterprises with viable businesses as to overcome bias selection. Fewer studies have been conducted on the issue of microcredit quality for individual lending that applied microcredit programs.

#### 4. THE EMPIRICAL RESULTS

Descriptive statistics for the dependent and independent variables, which comprises the data of six (6) variables, are provided in **Table 2**. Overall the dependent variable and independent variable mean and median values are near to each other. The baseline model is estimated by using the E-View software since we have included panel data (adjusted) in our models.

**Table 2:** Descriptive Statistics

Variable	Observations	Mean	Median	Std. Dev.	Maximum	Minimum
CQ	80	0.148018	0.126553	0.120572	0.652857	0.000000
FMB	80	1.354808	1.259924	0.433708	3.300000	0.804494
RRB	80	0.410932	0.368804	0.186910	1.451923	0.107843
ALB	80	5.271040	5.381225	1.069262	7.580700	1.722767
RUR	80	2.306984	1.188620	3.345941	23.37879	0.000000
LIC	80	11.44072	12.01461	1.485675	12.79995	7.090077

Before proceeding with the regression analysis, the calculation of the correlation coefficients gives a first look at the relationship that may exist between the variables (**Table 3**). As can be seen from the table below, there is a low degree of correlation between the independent and dependent variables and also between the dependent variables. This index passes the statistical validity of a valid instrument as it shows (significant correlation coefficients ranging from 0.02 to 0.48). Specifically, this study found that there is a positive relationship between average number of microcredits and lower income household with microcredit quality; while the microcredit quality was found to have negative relationship with the female to male borrowing, returning borrowers and urban to rural lower income household. This finding suggested that increase in the female to male borrowing, returning borrowers and urban to rural lower income household are beneficial for the success and survival of the microcredit organization.

**Table 3:** Correlation Matrix

Correlation Probability	CQ	FMB	RRB	ALB	RUR	LIC
CQ	1					
FMB	-0.164229	1				
RRB	-0.023024	0.041218	1			
ALB	0.312615	0.023262	0.073651	1		
RUR	-0.072564	-0.017825	-0.080069	-0.052635	1	
LIC	0.483734	-0.189534	0.121942	-0.141454	0.046183	1



**Table 4** summarized the Static Panel Regression Results of the effects of MO's variable on microcredit quality in Malaysia. Amongst the static models, there are three alternatives, i.e., pooled ordinary least square (POLS), fixed effect (FE) model alternatively known as the least square dummy variable model and random effect (RE) model to do the estimation. The selecting for all models is based on the p-value of the test. Firstly, Breusch and Pagan Lagrangian multiplier test was conducted to choose the best model between POLS or RE. The null hypothesis ( $H_0$ ) informs that if the p-value is more than  $\alpha$  level (0.05), then it is concluded that the OLS is the suitable model. Whereas, when the p-value of this test is less than 0.05, in this case, the null hypothesis is rejected, hence the RE is the suitable model. The Hausman test was carried out to select the best model between RE and FE. When the p-value of the test is lower than 0.05 the  $H_0$  is rejected, however, this study failed to reject the  $H_0$ . RE estimator is found better than FE and POLS for all the 3 models. Both the Hausman and theta statistics favour RE over FE. The Random Effects (RE) model used for panel data assumes that the differences between individuals are random as opposed to fixed. It is assumed to be a random variable with mean zero and variance and more crucially uncorrelated (independent) with the regressor, i.e.,  $Cor(\alpha_i, X_{it}) = 0$ , the observation effect is characterized as random.  $E(X_{it}, \alpha_i) = 0$  is an important assumption for the RE Model. It is necessary for the consistency of the RE Model, but not for FE Model.

**Table 4:** Static Panel Regression Results: (Dependent Variable: Microcredit Quality)

Variables	Expected coefficient sign	POLS	FE	RE (Adjusted)
<b>Explanatory Variables</b>		<b>CQ</b>	<b>CQ</b>	<b>CQ</b>
Female to Male Borrowing (FMB)	-	-0.019	-0.065*	-0.048**
Returning Borrowers (RRB)	-	-0.079	-0.058	-0.043
Log of Average Number of Borrowing Per Branch (ALB)	+	0.045***	0.014	0.0389***
Urban to Rural (RUR)	-	-0.003	-0.002	-0.0024
Log of Lower Income Household (LIC)	+	0.044***	0.041	0.041***
C		-0.53	-0.275	-0.439
Observations		80	80	80
R-squared		0.408	0.704	0.199
Number of code		16	16	16
F-Statistic		10.204	7.02	3.668
Prob(F-Statistic)		0	0	0.005
F-Test		3.935 (0.0001)		
Breusch-Pagan		18.207 (0.000)		
Hausman		2.4202 (0.789)		

\*\*\*Significant at 1%; \*\* significant at 5%; and \*significant at 10%. The standard errors for RE regression are adjusted (corrected) for heteroscedasticity and correlation across observation both over time and within the same period

Overall, RE estimator is found better than FE and POLS for all the 3 models. The numbers of our findings coincide with the existing literature and the results are consistent with the baseline results (POLS estimation) except for the female percentage in which the results are not significant. As can be seen in **Table 4**, the microcredit quality in the RE regression model is likely to be more affected by changes in female percentage, average number of borrowing per branch and the total number of lower income household.

The coefficient estimate for the percentage of female borrowers is negative and significant. The findings explain that, an increase of 1% in the female ratio decreases the microcredit quality by 0.048%. This indicates that there will be a reduction in percentage of microcredit late in payment when the number of female microcredit increases. The findings explain that the female borrowers contribute to better microcredit quality as they have higher tendency to contribute better repayment performances and agrees with the literature (Arena, 2007; Armendariz and Morduch, 2007; Agier and Szafarz, 2010; D'espallier et al., 2011). Additional findings have also shown that there is deterioration in repayment performance among the male borrowers in Malaysia as they have a longer duration for repayments, which can lead towards higher probability of defaulting (Roslan and Abdul Karim, 2009).

The study shows that average number of borrowing per branch (number of microcredit borrowing/number of branch) is positive and shows a 1% statistical significance. When the average number of microcredit borrowing per branch increases, the microcredit late in payment also increases (bad microcredit quality). This signifies that when the average number of borrowing handled by the microcredit branch is high, there is deterioration in microcredit quality in which the options are more responsive to the monitoring of the microenterprise. In such, monitoring is an important element important because it helps to minimize the tendency of borrowers to engage in moral hazard behavior (Reinke, 1998). For an example, monitoring leads to a better collection of the microcredit from the borrowers and better take-off in the microenterprises projects (ex-ante moral hazard). Hence, by practicing due diligence during the monitoring and control stage in the lending process is shown as an effective way of reducing defaults in repayments (Sheila, 2011). Meanwhile, the returning borrowers did not show any significance irrespective of the specification or the estimation method chosen. This may be due the smaller proposition of number of returning borrowers compared to the new borrowers.

From the findings concluded it can be concluded that, there is a positive relation between the lower income household microcredit qualities and is significant at the 1% level. Therefore, the increase in the lower income household's increases the percentage of microcredit late in payment. This shows that the increase in the lower income household related to the deterioration in microcredit quality. The findings explain that the increase in lower income group household reduces the microcredit quality as they have lower tendency to contribute towards better repayment performances (Hermes & Lensink, 2007b; Armendariz & Morduch, 2000; Ozdemir & Boran, 2004). The lower income household here consist of Multidimensional Poverty Index (MPI). These default rates may be due to the defaults by the population falling below the poverty line income (PLI). As mentioned in most of the literature, the formal financial institutions do not serve the rural poor (lower income group), as they were perceived as too risky (Armendariz and Morduch, 2000; Yunus, 1998; Hermes & Lensink, 2007a). Hence, this might affect microcredit quality. In 2009, there were 228,000 poor households in Malaysia (3.8% of the total) and Malaysia's PLI was MYR 800. The median and mean income of the B40P have increased in 2016 as compared to

2014. The lower income group recorded the growth of 6.6 per cent per annum with the mean monthly income of RM2848 for an example extreme poverty and poor.

## 5. CONCLUSION

This study investigates the role of MO variables by focusing on female to male microcredit ratio, ratio of returning borrowers, average number of borrowing per branch, ratio of urban to rural lower income household and lower income household on microcredit quality. Microcredit quality is measured by using the number of microcredits late in repayment (microcredit at risk) in Malaysia. The findings from this study complements the existing findings in a number of ways, which informs the importance of screening, monitoring and influence of lower income group on microcredit quality in Malaysia. This study is important as it presents a contribution to the existing body of knowledge in the following areas namely implications for academicians, MOs and policymakers. The main contribution from this study that makes it different from the other existing research is that the microcredit quality here should offer a good reflection of the actual performances in Malaysia as it uses actual data (Malaysia level data) compared to the dichotomous dependent variables, usually used in the literature of each financial year. Additionally by using Malaysia's level data can represent and be referred by other small countries for their microcredit issues. This allows for a better understanding of the role and effect of each explanatory variable that contributes to late repayments.

The overall findings indicate that female microcredits have significant negative effect on the microcredit quality (reduces microcredit at risk). The other independent variables namely the average number of borrowing per branch and lower income household are positively significant on microcredit quality (increases microcredit at risk). The policy implication from this study can be an input to the policy maker (MO) in designing new strategies to minimize the default rates. For instance, MOs should increase their organizational competence by looking into microcredit determinants and policies in order to increase the microcredit quality in Malaysia (lowering microcredit at risk). This can be achieved by seeking a better balance through prospective borrowers and provide technical training assistance in order to improve the microcredit quality, besides enhancing the ability and skill of the borrowers. Opening up new branches and hiring more microcredit officers may be impracticable to the organization depending on the cost effectiveness. Quality regulation can also be used as a tool for a better potential performances in improving the microcredit quality. Hence, in order to sustain, the MO should have quality regulation on loan disbursement and enhance the ability and skills of the borrowers in Malaysia. This issue can also be addressed by the policy-makers and as well as the MO in how to transform the strategy in order to improve the microcredit quality in Malaysia.

Therefore, future studies should focus and explore on other areas such as the impact of the organizational delivery system, and policy implication that can help to improvise quality, control costs, and administrative coordination of the MO. Hence this study recommends for further research the factors that have been in with the objective to reduce the microcredit at risk and contribute in uplifting the MOs microcredit quality in Malaysia.

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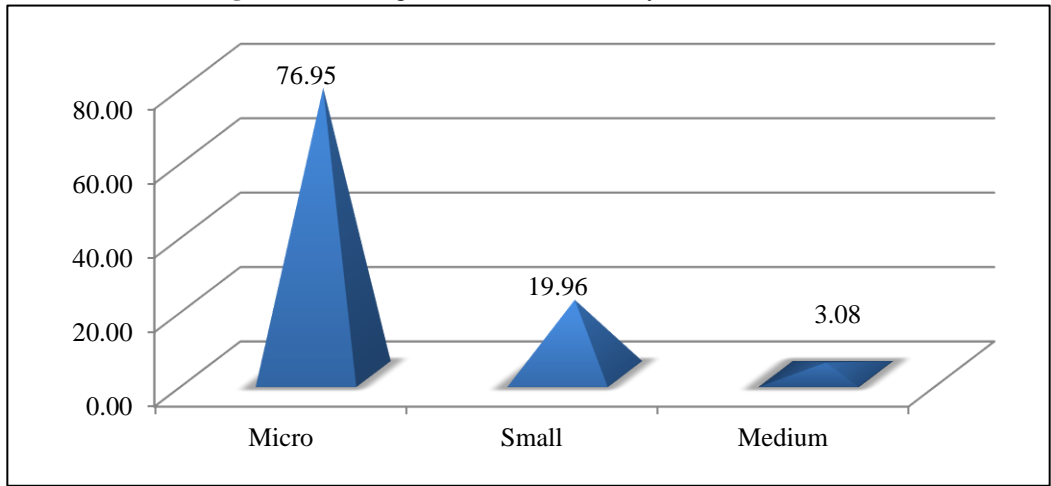
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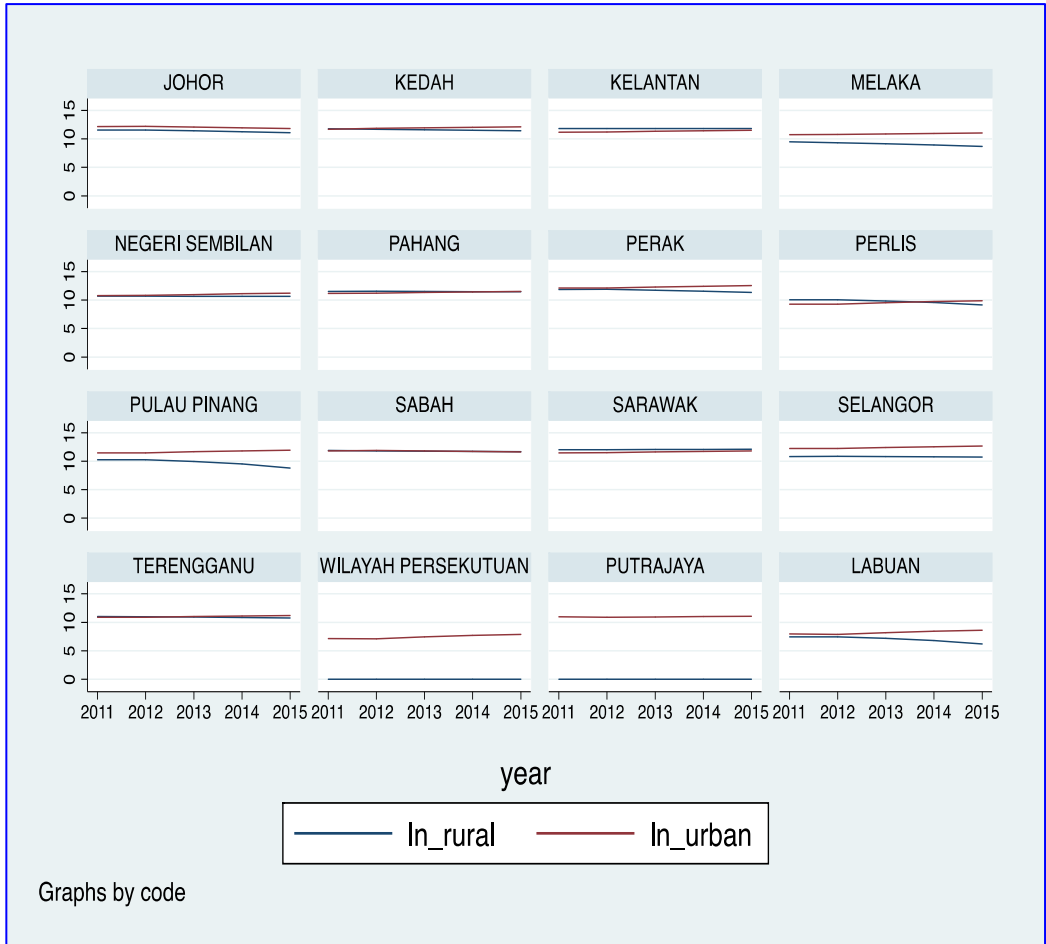
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**Figure 1: Coverage of SME (%) in Malaysia, 2015**



Source: SME Corporation Malaysia (2016)

**Figure 2:** Panel Line Plot for Lower Income Group in the Urban and Rural Area between 2010 and 2015



Source: EPU, Prime Ministers Department of Malaysia (2016)