Factor Affecting the Borrowers' Repayment Performance of Microfinance In Sub-urban Areas of Yangon, Myanmar[1]

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Abstract

The main objective of this study is to investigate the factors affecting repayment performance of borrowers who are the members of the Young Women Development Project (YWDP), one of the religious organizations running under the Young Women Christian Association (YWCA), in three sub-urban areas; North Okkalapa, Insein and Hlaing Tha Yar, in Yangon, Myanmar.

Data for this study was collected by using a questionnaire to interview 400 members in the study area. Then the logit model was used in order to find out the factors affecting repayment performance of the borrowers. The outcome of this research shows both the borrower's probability of increasing bad repayment and the probability of decreasing bad repayment in the credit provision. The use of binary choice in the logit model has resulted in the findings that seven respective important variables affected the probability of being a bad borrower. These problems, and the increased probability associated with them are health problems 85%, female borrower 41%, outside loan 39%, lack of group pressure on repayment 22%, primary level education 19%, age between 20 to 40 16% and street vending business 11%. Five respective important variables were found to potentially decrease the probability of being a bad borrower. These were solidarity group agreements on repayment rate -70%, less experienced borrower -20%, occupation of household head -17%, the use of loan amount

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in business investment -1.6% and second priority of small home business -13%. In summary, the late repayment of members leads to them becoming delinquent borrowers due to the large effect of health problems, female borrowers with less knowledge in business and poor education, and outside loans with high interest rate.

Keywords: Repayment Performance, Myanmar, Logit Model, Probability, Bad Borrower

1. Introduction

The experiences of many microfinance institutions have exemplified the fact that a strong repayment rate is a major aspect of financial success in the microfinance industry. Strong repayment rate may be difficult to achieve because the target beneficiary clients are poor, have low income, are illiterate, with no infinite credit history and no potential for collateral. Yet, these are simply the challenges that microfinance institutions take on when providing loans to marginalized people in developing countries. Since micro-finance can not rely on donor funds in the long run, they should be viable and sustainable by maximizing the full loan repayment. Therefore, this study aims to investigate the intervention of repayment performance which can manipulate the sustainability of the microfinance institution. Moreover, this study will discuss what regulation framework of micro-finance schemes or methodology should be promoted in the future. MFI-YWDP is the main focal project to undergo analysis of the repayment performance of borrowers in this study. This paper is presented in five sections. The first section expresses the introduction, the second section conveys the theoretical framework and third section explains the methodology used for the data collection and analysis. Section 4 depicts the empirical results and Section 5 states the summary and provides recommendations based on the findings of the study.

2. Theoretical Framework

2.1 Grameen Bank Model

The Grameen Model is one of the most well-known models for microcredit systems. It was initiated by Dr. Mohammad Yunus[5] in Bangladesh. It is setup as a joint-liability model and the groups are formed voluntarily. There is no influence by the MFI[6] staff in regards to the selection of the group members. Groups are formed with five members who must guarantee the repayment of defaulting members. Groups must agree to make the balance if one member fails to meet repayment of her obligation. The Grameen Model uses dynamic incentives and at the same time the borrower is barred from getting future loans if they fail to meet the repayment installments. A future, bigger loan will be approved only if they repaid the loan in time and follow the loan discipline. In addition, if group are not willingness to meet the balance of the defaulting member, the rest of all members will not be approved to get a future loan. (Morduch, 1999 and Besley & Coate, 1995). The concept is that members are peers and neighbors who know each other well. This model also focuses on women empowerment and targets especially those who would not normally qualify for credit through the banking system: women, the landless and other vulnerable groups (Conroy, 2003).

2.2 Contract Theory

Under joint liability, the peer lending group must repay their individual loan, so that all members are assured to get the next loan. Each group must come up with their group's approval, and formal and informal contracts that can mitigate the risk of default and that stipulate that repaying the loan is a utility maximizing the outcome for group members. To be able to manage the risk of group lending, there is a monitoring and evaluation method of reducing the risk (Mehr, 1985). Group meetings are a technique of constructing mutual trust between every single member.

By attending the meeting, members will become more familiar with each other and they can help, discuss and give advice to each other not only about the repayment but also about many of their social affairs (Adam, 1992). In practice, in the case of YWDP, the laws and methods are guided by the project's policy management method and it is flexible and can change according to the group members' issues.

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[5] *Mohammad Yunus is a founder of Grameen bank an institute that provide small loan to poor with no collateral. He received the Nobel Prize for Peace in 2006 (Wikipedia the free Encyclopedia).*

[6] *MFI (Microfinance Institution).*

2.3 Peer-group Pressure

Peer group pressure has been known to be very effective in formal business in the developed world. It uses peer control in the group and has been found to be very effective compared to control by a supervisor. In the MFI group scheme, group members are neighbors and they can easily notice what the other neighbor is doing and report to the other group members if their neighbor is exhibiting or considering risk behaviors. Then the members can consult and act before the member takes a risk. Additionally, the local culture can influence in their community and the individual will respect social cohesion and the economic commitments of what they will do after getting the loan.

Moreover, women, in this context, traditionally have more control over each other when compared to men. Women have more potential to stay around the home and it is easier to monitor and put pressure on each other. One important consideration is that if the peer pressure is strong among the group, then corruption may emerge in the group. This is because some of dominant members who have power possess wealth or other skill can be influential and have personal preference towards members.

2.4 Adverse selection

In the lending mechanism, adverse selection is the cause of market imperfection' (Morduch & Armendariz, 2005). Furthermore, information asymmetry occurs due to the lack of sufficient information among the client's real investment in the bank. So, the lender sets up the loan with high interest rates to compensate for the risk of not knowing who will create risky projects and who will be a safe borrower. It can implicitly be assumed that the investor will avoid borrowing the loan with a high interest rate because the profit will go to the lender. Thus, high interest will drive the safer investor out from the credit market and the most unsafe investor will be left as a risky borrower. Due to the fact that the high interest rate makes it almost impossible to earn a profit from a business, those risky borrowers will most likely not be able to repay the loan to the lender. It can also be assumed that those borrowers are not expected to interact with the lender for the long run (Berglind, 2007, page 11).

2.5 The Role of the Group Leader

The group leader is selected by the group members. The role of the leader is as an intermediary between the group members and the loan officer. Group leaders or treasurers are not offered any stipend or salary; they carry out their obligation as voluntary activities. The group leader mainly supervises the group members, reports on updated group issues of absent

members and new members, reminds others of the due date of loan repayment; follows up with member business; checks with loan officers; collects the money with treasurer and hands it over to loan officer.

If a group member fails the repayment, the group leader arranges all the rest of members to make the balance equal so that the loan officer can proceed with her activity without delay. An active and strong leader arranges the meeting with the group members and encourages them to repay the loan on time. It has been found that when the village leadership took an active role in screening and monitoring loan activity, repayment rates increased (Julia Anne Paxton, 1996).

3. Research Design and Data

This research investigates the cause of delaying repayment and default of loan return among borrowers in the credit institution of YWDP. Cross sectional survey methodology was adopted to collect the information about the borrower's characteristics and their family through structured questionnaires and in-depth interviews. The unit for analysis is selected borrowers. Two kinds of borrowers were selected to participate: good borrowers with no default credit history and bad borrowers with late repayment history. Primary data included household characteristics, group member's discipline and repayment procedure in the group; client's loan utilization and loan amount; the cause of being late repayment in their credit history, the responsibility of group leader and group members, borrower attitude on group lending and their supervision. The secondary data were provided by YWDP and consisted of total clients, total field areas, principles of loan eligibility and criteria of target members and the loan products of the MFI. All this secondary data obtained from YWDP report. Among the total six townships where the YWDP has been servicing the credit facilities, this sample consists of clients who are living in the area of North Okkalapa, Insein and Hlaing Tha Yar. Among those three areas, North Okkalapa's population is greater than the other areas. In North Okkalapa there are a large number of members and the loan default occurred mostly in that area. On the other hand, this area is the first place that the YWDP project implemented microfinance activity and the institution has more experience in this township rather than others. The researcher interviewed group members who were at a group meeting. In each group, about 30 minutes was spent for data collection of each group due to constraints of time limitation. Data from a maximum of four groups per day was collected with the help

of four research assistances. Selection of the group was decided following the suggestion of the loan officer who had prioritised the late repayment groups. According to the population of the study, the total sample of 400 members was calculated based on the total population of YWDP by using the formula of Taro Yamane (Yamane, 1973) as follows:

$$n = \frac{N}{1+Ne^2} \tag{1}$$

n = Sample size
N = Population size
e = the error of sampling
n = 2196/ {1 + 2196 $(0.05)^2$} = approximate = 338.3667 = collected 400

3.1 Research Design and Data

The logit model is used to interpret the information obtained by interviewing the borrowers and for a quantitative analysis of the factors. logit model uses the binary dependent distribution. A binary dependent variable is an example of a limited dependent variable, and take only two values zero and one. It explains the effect of the Xi on the response probability,

$$P(Y) = \frac{1}{X_i} = X'_i \beta' \tag{2}$$

Since this study of qualitative approach used the logit model, the outcome must be zero and one. In equation (2) ordinary least square method (OLS), the estimation of β is not efficient due to the problem of heteroscedasticity. As a result, the predicted value mast be 0-1 limit. Moreover, R2 is not applicable to estimate the goodness of fit (Ramanthan, 1998: 603-604: Johnston, 1984: 424, Menard, 1995:7).To avoid the non-constant variance of error term, this study used the logit model. The logit model will figure out the probability of what factor is affecting the cause of loan delinquency by calculating marginal effect in every single factor. This study investigates the following questions. What factors are affecting the characteristics of bad borrower? Who had delayed repayment and who are the good borrowers with regular repayment? What policy should be implemented in the case of loan delinquency. Based on those questions, the explanatory variables were conducted in the model. The logit model which can be express as follow:

$$\text{Prob}(Y=1)= \frac{1}{1+e^{-X'_i\beta'}} \quad (3)$$

Where, Y_i = 1, if the borrower had bad repayment history

Y_i = 0, if the borrower had good repayment history

Where, $_i\ x$ = $x_1, x_2, x_3, x_4, x_5\ldots\ldots, x_n$

X_1 = 1 if the borrower is female

= 0 if the borrower is male

X_2 = 1 if borrower age is between 20 to 40 year

= 0 (otherwise)

X_3 = 1 if borrower is married

= 0 (otherwise)

X_4 = 1 if the number of family members is 5 to 8

= 0 if the number of family member is 1 to 4

X_5 = 1 if six to ten family members are age between 15 to 45year

= 0 if one to five family members are age between 15 to 45

X_6 = 1 if the number of children in school are 5 to 8

= 0 if the number of children in school are 1 to 4

X_7 = 1 if the number of workers in family is 5 to 8

= 0 if the number of workers in family are 1 to 4

X_8 = 1 if the number of dependency in family 5 to 8

= 0 if the number of dependency in family 1 to 4

X_9 = 1 if the borrower's occupation is seller or street vendor

= 0 (otherwise)

X_{10} = 1 if the borrower's occupation is animal breeding

= 0 (otherwise)

X_{11} = 1 if the household head's occupation is seller or street vendor

= 0 (otherwise)

X_{12} = 1 if the household head is an employee of a company or NGOs

= 0 (otherwise)

X_{13} = 1 if the family's 1st priority business is animal breeding

= 0 otherwise

X_{14} = 1 if the family's 2nd priority business is a business or grocery shop

= 0 otherwise

X_{15} = 1 if the family's monthly income is 80,001 to 150,000(kyat)

= 0 otherwise

X_{16} = 1 if the family's monthly expenditure is 80,001 to 150,000 (kyat)
= 0 otherwise
X_{17} = 1 if the borrower's education is primary level
= 0 (otherwise)
X_{18} = 1 if the borrower has more than three years experiences
= 0 (otherwise)
X_{19} = 1 if the borrower borrowed between one to five times
= 0 (otherwise)
X_{20} = 1 if the loan amount is under 100,000 kyat
= 0 (otherwise)
X_{21} = 1 if the member's home is far from the rest of the member
= 0 if the member's home is not far from the rest of the member
X_{22} = 1 if the member lives in the same ward with the rest of the members
= 0 if the member lives in a different ward from the rest of members
X_{23} = 1 if the member owns land and a house
= 0 if the members does not own land and a house
X_{24} = 1 if the group does not have social pressure against late repayment and default
= 0 if the group has social pressure against late repayment and default
X_{25} = 1 if the borrower or her family's health problem affected them to be a bad borrower
= 0 (otherwise)
X_{26} = the amount of the loan that is used for business investment (kyat)
X_{27} = 1 if the group has norms for evaluating each other
= 0 if the group has no norms for evaluating each other
X_{28} = 1 if the borrower used 100 percentage of loan in the business
= 0 (otherwise)
X_{29} = 1 if group members have strong guarantee for loan default
= 0 if group members do not have strong group guarantee for default
X_{30} = 1 if group members are willing to recognize for accepting new member or next higher loan
= 0 if group members are not active recognize for accepting new member or next higher loan
X_{31} = 1 if the borrower has an outside loan
= 0 if the borrower does not have an outside loan
β_0 , β_1 , $\beta_2 \ldots \beta_{31}$ = parameters.

4. Empirical Results

4.1 Characteristics of Borrower

In terms of the characteristics of the borrowers, the sample is largely comprised of female borrowers. Female borrowers are 99.25 % of the sample and male borrowers are 2%. The average age of the borrower is 42 years. The number of working age family members (15 to 64 years old) is separated into two groups: *"one to five family members"* and *"six to ten family members"*. According to the survey result, the "one to five family members" group is 72.5 % and "six to ten family members" is 27.25 %. Seventy-five percent of the respondents are married and 8% are single. Divorcees are 3.25 % of the sample and the remaining 13.75% are widowers. Regarding the age level of borrower, the majority of borrowers are between 20 to 40 years old. The breakdown of educational background of borrows is primary level (one to four grade) 32.75%, secondary level (five to eight grade) 35.75%, tertiary level (above nine grade) 21.75% and university level is 1.75%. Graduate borrowers are 2% and non-formal education borrowers are 6%. In terms of the occupation of borrowers, those who are small-scale sellers represented 53.25% of the respondents. The casual labor group is the second poorest level of occupation in this sample. Specifically, 26.25% or 105 borrowers do not have occupation. The number of borrowers who faced difficulties of late repayment or default was 123 persons. Among them, 41.46% of the late repayment members have health problems themselves or within their family, 6.5% used the money for education, 2.23% faced bad weather especially in the raining season. Natural disaster was the reason that 8.13% were bad borrowers and other situations were noted by 34.95%. Members who utilized the loan for education were 11.75% of the sample. Those who used it for business were 56.25%. Other uses comprised 19.5%, and 12.5% used the loan to pay for other debt. Borrowers who borrowed the loan from money lenders or borrowed other loans were 138 persons or 34.5% and those who only borrowed one loan from YWDP project were 262 persons or 65.5%. One hundred twenty-three out of 400 borrowers had late repayment or default, and 277 had no late repayment and default history. According to the results of loan utilization, over half of the borrowers used the loan for the business, and 138 borrowers have outside loans. Out of all 123 bad borrowers, 51 bad borrowers had health problems.

4.1.1 Characteristics of Family

With regards to the age of borrowers, the older borrowers group was 61 years old and above. This group represents only 6.75% of the sample population. Most of the borrowers'

ages are between 20 to 40 years old. This group represents 50.75%. The middle age group, 41 to 60 years old, is 42.5 % of total borrowers. Borrower family size of *"one to five family members"* groups is 72.5% of the total borrowers and the *"six to ten family members"* group is 27.25%. In terms of the number of students in the borrower's family, 75.25% of respondents have one to five students in their family and only 1.25% of total borrowers are in the *"six to ten students"* group. Borrowers with school-aged children who are not attending school are 23.5% of total borrowers. Borrowers who have one to four dependents represented 98.5% of all respondents and borrowers with five to eight dependents were 1.5 %. The number of workers in the borrower's family was split between the *"one to four members"* group, which was 84.25% of respondents, and the *"five to eight members"* group which was 9.75%. As for the occupation of the borrowers, home business was 0.75%, casual labor 10.75%, government employment 3.25%, non government employment 1.75%, animal breeding and agriculture group was 4% and no occupation was 26.25%.

According to the different kinds of occupations of the borrower, the selling group like street vending income generating activities was the most pervasive and breeding and agriculture occupation was a smaller group. In the borrowers' families, 22.25 % of household heads were working mostly as casual labor and 23.75% of them had no occupation. Household heads who were selling goods were 18.75% and those with home businesses were 17.75%. Government employment was 25% and non government organization employment was 36% of total borrowers. The breeding and agriculture household head occupation group was only 9%.

The breakdown of which kind of business was the main income source for the family was as follows: selling was 51.75%, home business was 20.25%, and casual labor was 11.75%. Government employment was 4% and non-government organization employment was 10.5%, breeding and agriculture were 2% and no main income or business of household was 2%. Respondents with a household monthly income between 10,000 kyat to 80,000 kyat were 24.75%. The income group of 80,001 kyat to 160,000 kyat were 60.5% and the 160,001 kyat to 240,000 kyat group was 14.5%. The group that earned 240,001 kyat to 320,000 kyat was 0.25%. The monthly expenditure of the household is another related variable. Household monthly expenditure from 10,000 to 80,000 kyat represented 26.5% of the sample population. Households spending 80,001 to 160,000 kyat per month were 67.75%. The range of 160,001 to 240,000 kyat per month was 5.5% and 0.25% of the respondents had a monthly household expenditure of 240,001 to 320,000 kyat.

4.1.2 Characteristics of Group Members

In the policy of the MFI, group members must live in the same ward or near each other so that their physical proximity can help to decrease the default problems. Neighboring households can inform each other to come to the meeting or they can monitor what their neighboring member is doing. In the same ward, if the group has some problem which group members cannot handle by themselves, they can go and ask the local authority to resolve the problem. Thus, members select their neighboring households to form the group. In our studies, 95% of members were living in the same ward and, only 5% were living in different wards than their fellow group members.

Table1: Characteristics of Group Member

No	*Categories*	*No of borrower*	*Percentage*
1	member lived same ward	380	95
	member lived different ward	20	5
	Total	**400**	**100**
2	Cause of being late repayment		
	health	51	41.46
	education	8	6.5
	weather	11	2.23
	disaster	10	8.13
	others	43	34.95
	Total	**123**	**100**
3	Utilization		
	education	47	11.75
	business	225	56.25
	other	78	19.5
	debt	50	12.5
	Total	**400**	**100**
4	Outside loan		
	other loan	138	34.5
	no other laon	262	65.5
	Total	**400**	**100**
5	Adoption		
	yes	123	30.75
	no	277	69.25
	Total	**400**	**100**

Source: Survey

4.1.3 The Analysis of Logit Modle

The result of actual 1s and 0s are correctly predicted at 86.5%. The factor at the 1% significant level were X_{19} , X_{24} , X_{25} , X_{29} , X_{31} and significant at the 5% level were X_1 , X_2 , X_{12} , X_{17} , X_{26} and was significant at the 10% level are X_9 , X_{14}. According to the empirical analysis, there are 12 variables that have been adopted significantly out of 31 variables in the model .i.e. health problems, female borrower, outside loan, lack of group pressure on repayment, primary level education, age between 20 to 40 and street vending business. And five respective important variables were found to potentially decrease the probability of being a bad borrower. These were solidarity group agreements on repayment rate, less experienced borrower, occupation of household head, the use of loan amount in business investment and second priority of small home business. In terms of unplanned health expenditure, which can increase the probability of being a delinquent member by 85%. Health problems can happen unexpectedly and it is an uncontrollable circumstance for poor people. On the other hand, if the cost of health is higher than her savings, she will not prioritize paying for repayment. In this case, the member was not just absent on repayment day, but also had a financial problem to come up with the health cost. Since the group members are poor, they can not afford to repay the loan and to spend on health costs simultaneously. In terms of the gender, in this empirical result, the probability of delinquent borrower tends to be female. The women's lack of knowledge about business skills and weakness of loan monitoring of YWDP is also factors that promote bad borrowing. The study found that women to have higher tendency to be a bad borrower. This factor increases the probability of being a bad borrower by 41%. With respect to the additional loan from outside most of the informal local money lenders charge daily usurious rates. If a borrower has another loan at a usurious rate, they may have a heavy burden to pay for the repayment. The result shows that if the borrower has other loan the probability of being a bad borrower increases by 39%. In term of peer effect on repayment, if the group does not use peer pressure to encourage repayment, then the probability of being a bad borrower will increase by 22%. According to the group formation, in the selected townships, members frequently choose their neighbors for their groups. For this reason, they all know each other well and may have social and business relationships that are external to the loan group. Hence, they may have awareness about that their activities within the group and it can influence their broader social reputation. Regarding the experiences of borrower, the analysis shows that less than three years experienced borrowers have better repayment. In terms of the level of borrower education, there were five levels of education included as a variable in this study: primary, secondary,

tertiary, under graduate and graduated level. This factor can increase the probability of being a bad borrower by19%. Young borrowers, ages 20 to 40, have the bad repayment behaviors when compared to the borrower group that is above 41 years old. The result implies that if the borrowers are between the ages of 20 to 40, the probability of being a bad borrower is increased by 16 %. Another influential factor is the members who do the street vending business. This group has an economic hardship in their daily life. The empirical analysis shows that if the borrower is a street vendor, then the probability of being a bad borrower will increase by 11%. In terms of loan guarantee, a solidarity group agreement shares the risk among the group and relieves the lender of the risk. Ideally, group lending does not need collateral but it is based on the social collateral in every single group. The result is that if the group has a solidarity group agreement, then the probability of being a bad borrower will decrease by 70%. Regarding the experiences of borrower, the analysis shows that less than 3 years experiences borrowers have better repayment. If the borrower has less experience (compared with above 3 years experiences borrower) the probability of being a bad borrower will decrease by 20%. Regarding the occupation of household head, the result shows that if the household head, in the borrower's home, works at a non-governmental organization or at a company, it can decrease the probability of late repayment by 17%. On the other hand, under the three years experiences, the amount of loan is not higher than 100,000 kyat ($ 100 USD). Thus, borrowers can manage the loan and have fewer burdens for the weekly or monthly repayment. The amount of loan used in the business also statistically significant on better repayment. It was found that for every additional 1000 kyat which the borrower used in their business, the probability of that person being a bad borrower decreased by 1.6%. But, if the amount that they use for business goes down by 1000 kyat, then their probability of being a bad borrower will increase in the same way. This shows the importance of using the loan towards the intended business. The probability of default will decrease if the borrower has extra occupation or extra income. The result shows that if the borrower family has a second priority business such as a small home business, the probability of being a bad borrower will decrease by 13%. If the household has this kind of business, they are not included in the poor level and their income is quite stable.

Table 2 : The Result of Logit Model by Maximum Likelyhood of Borrower Repayment

Variable	*Maximum Likelihood*			
	Coefficient	*Standard Error*	*T-ratio*	*Prob*
X_1	2.22756819	.88602067	2.514**	.0119
X_2	.90169507	.34799517	2.591**	.0096
X_3	.66522186	.43644066	1.524	.1275
X_4	-.22984800	.36245334	-.634	.5260
X_5	.00096542	.66122888	.001	.9988
X_6	.00772128	.11461125	.067	.9463
X_7	-.00491363	1.03133334	-.005	.9962
X_8	.25711926	.61513843	.418	.6760
X_9	.64402464	.36441104	1.76*	.0772
X_{10}	-1.17278814	4.61627900	-.254	.7995
X_{11}	-.34668646	.41611755	-.833	.4048
X_{12}	-1.27570461	.76755322	-1.662 **	.0965
X_{13}	.00426326	.03646104	.117	.9069
X_{14}	-.94277053	.68861088	-1.369*	.1710
X_{15}	.40237068	.39674811	1.014	.3105
X_{16}	-.62324688	.41330340	-1.508	.1316
X_{17}	1.00494174	.35555085	2.826**	.0047
X_{18}	.27835018	.39019374	.713	.4756
X_{19}	-1.24486528	.381111252	-3.266***	.0011
X_{20}	-.22428903	.45671866	-.491	.6234
X_{21}	.64579428	.40103066	1.610	.1073
X_{22}	-.85762597	.82910283	-1.034	.3009
X_{23}	-.21371993	.38884691	-.550	.5826
X_{24}	1.53983429	.53842839	2.860***	.0042
X_{25}	6.09286945	1.11363119	5.471***	.0000
X_{26}	-.0000907023	.0000381997	-2.374**	.0176
X_{27}	-.45177526	.44101501	-1.024	.3056
X_{28}	-.00990862	.02638763	-.376	.7073
X_{29}	-3.95792398	1.69267283	-2.338***	.0194
X_{30}	-.70691060	1.30263280	-.543	.5874
X_{31}	1.92971678	.3485121	5.537***	.0000

Source: Calculated

Note ***Significant at 1 percent level
**Significant at 5 percent level
*Significant at 10 percent level
Log likelihood function -130.9989

restricted log likelihood -246.8343
Chi-spuared 231.6708
McFadden R^2 .4692841
Accuracy of Perdition 86.50

Table 3: The result of Logit Model by marginal effect of borrower repayment performance

Variable	*Marginal effect*			
	Coefficient	*Standard Error*	*T-ratio*	*Prob*
X_1	.41003122	.17894235	2.291**	.0219
X_2	.16481009	.06884824	2.394**	.0167
X_3	.11184434	.06973888	1.604	.1088
X_4	-.04239821	.06732077	-.630	.5288
X_5	.00017774	.12175969	.001	.9988
X_6	.00142127	.02088859	.068	.9458
X_7	-.00090337	.18938383	-.005	.9962
X_8	.04977411	.12509786	.398	.6907
X_9	.11698064	.06728163	1.739*	.0821
X_{10}	-.15425145	.38848405	-.397	.6913
X_{11}	-.06022065	.06886670	-.874	.3819
X_{12}	-.17352388	.08166459	-2.125**	.0336
X_{13}	.00078474	.00667723	.118	.9064
X_{14}	-.13985701	.08213899	-1.703*	.0886
X_{15}	.07237358	.07119101	1.017	.3093
X_{16}	-.12082064	.08524584	-1.417	.1564
X_{17}	.19934038	.07980254	2.498**	.0125
X_{18}	.05333191	.07772163	.686	.4926
X_{19}	-.20642406	.06831328	-3.022***	.0025
X_{20}	-.04180825	.08608355	-.486	.6272
X_{21}	.12844247	.08744167	1.469	.1419
X_{22}	-.18517825	.20079898	-.922	.3564
X_{23}	-.04050848	.07614906	-.532	.5948
X_{24}	.22007509	.07329447	3.003***	.0027
X_{25}	.85468162	.04449171	19.21***	.0000
X_{26}	-.0000166957	.00000730203	-2.262**	.0237
X_{27}	-.08315883	.08225871	-1.011	.3120
X_{28}	-.00182389	.00499112	-.365	.7148
X_{29}	-.70449607	.10886195	-6.471***	.0000
X_{30}	-.15075776	.30942674	-.487	.6261
X_{31}	.39043318	.08073793	4.836***	.0000

Source: Calculated

Note ***Significant at 1 percent level*

***Significant at 5 percent level*

**Significant at 10 percent leve*

5. Conclusion and Recommendation

The empirical results of this study show clearly that health problems highly affected the potential of increasing the bad repayment of the members from YWDP-MFI. This is because the probability of being a bad repayment member will increase by 85% if the borrower or family members have health problem. The rest of the factors that increased the probability of bad repayment were female borrower 41%, outside loan from money lender by 39%, lack of group pressure on bad repayment of borrower by 22%, primary level education by 19%, age level 20 to 40 by 16 % and street vending business by 11%. Regarding a decrease in bad repayment, solidarity group agreement for the repayment among the membership was found to be the most crucial factor as it can decrease the probability of bad repayment by -70%. The rest of factors that could potentially decrease the bad repayment are less experienced borrower -20%, occupation of household head -17%, the use of loan amount in business investment -1.6% and second priority of small home business by -13%.

According to the above results, the policy recommendations were focused on the highest percentage of marginal effect. Under this consideration, the most important issues to address is health problems which great increase the probability of the member being a bad borrower. This most important factor to maintain and strengthen is the solidarity group agreement since it was the most influential factor for decrease the change of being a bad borrower. Therefore, YWDP MFI should carry out a survey with the support of the health department in order to assess what kind of health problem occurs in most households and should offer support based on those findings. In light of the finding regarding the solidarity group agreement, another recommendation is that this agreement should be encouraged by the loan officer and used to motivate the group's team spirit so that group leader will manage to stimulate the group team spirit and the member's sense of responsibility for group loan repayment.

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Appendix

Table: 4 Borrower's Characteristics

No	*Categories*	*No. of people*	*Population (%)*
1	Township		
	North Okkalapa	310	77.50
	Insein	49	12.25
	Hlaing Tha Yar	41	10.25
	Total	**400**	**100**
2	Sex		
	Female	397	99.25
	Male	3	0.75
	Total	**400**	**100**
3	Age (years old)		
	20-40	203	50.75
	41-60	170	42.50
	>61	27	6.75
	Total	**400**	**100**
4	Marital status		
	Married	300	75.00
	Single	32	8.00
	Divorce	13	3.25
	Widower	55	13.75
	Total	**400**	**100**
5	Working age(15-64)		
	One-five	347	72.5
	Six-10	47	27.25
	Total	**394**	**100**
6	Borrower educational background		
	Primary	131	32.75
	Secondary	143	35.75
	Tertiary	87	21.75
	University	7	1.75
	Graduated	8	2.00
	Non-formal education	24	6.00
	Total	**400**	**100**

Table 5 : Shows the Family's Characteristics

No	*Categories*	*No of peoples*	*Population (%)*
1	Family size		
	one-five	291	72.50
	six-ten	109	27.25
	Total	**400**	**100**
2	In school		
	one-five	301	75.25
	six-ten	5	1.25
	Out of school	94	23.50
	Total	**400**	**100**
3	Dependents		
	one-four	394	98.50
	five-eight	6	1.50
	Total	**400**	**100**
4	No of worker		
	one-four	337	84.25
	five-eight	39	9.75
	no worker	24	6.00
	Total	**400**	**100**
5	Monthly income		
	40,000-80,000	99	24.75
	80,001-160,000	242	60.5
	160,001-320,000	58	14.5
	320,001-480,000	1	0.25
	Total	**400**	**100**
6	Monthly expenditure		
	40,000-80,000	106	26.5
	80,001-160,000	271	67.75
	160,001-320,000	22	5.5
	320,001-480,000	1	0.25
	Total	**400**	**100**

Table 6 : Job Characteristics of Borrower and Family

No	*Categories*	*No of borrower*	*percentage*
1	Borrower's occupation		
	selling	213	53.25
	home business	3	0.75
	casual labor	43	10.75
	government employment	13	3.25
	company worker	7	1.75
	breeding or agriculture occupation	16	4.00
	no occupation	105	26.25
	Total	**400**	**100**
2	Household head occupation		
	selling	75	18.75
	home business	71	17.75
	casual labor	89	22.25
	government employment	25	6.25
	non government(or)company worker	36	9
	breeding or agriculture occupation	9	2.25
	no occupation	95	23.75
	Total	**400**	**100**
3	First priority business		
	selling	207	51.75
	home business	81	20.25
	casual labor	47	11.75
	government employment	16	4
	non government(or)company worker	36	9
	breeding or agriculture occupation	5	1.25
	no occupation	8	2
	Total	**400**	**100**
4	Second priority business		
	selling	81	20.25
	home business	39	9.75
	casual labor	58	14.5
	government employment	15	3.75
	non government(or)company worker	42	10.5
	breeding or agriculture occupation	14	3.75
	no occupation	151	37.75
	Total	**400**	**100**

Table:7 Characteristics of Group Member

No	*Categories*	*No of borrower*	*Percentages*
1	member lived same ward	380	95
	member lived different ward	20	5
	Total	**400**	**100**
2	Cause of being late repayment		
	health	51	41.46
	education	8	6.5
	weather	11	2.23
	disaster	10	8.13
	others	43	34.95
	Total	**123**	**100**
3	Utilization		
	education	47	11.75
	business	225	56.25
	other	78	19.5
	debt	50	12.5
	Total	**400**	**100**
4	Outside loan		
	other loan	138	34.5
	no other laon	262	65.5
	Total	**400**	**100**
5	Adoption		
	yes	123	30.75
	no	277	69.25
	Total	**400**	**100**