

Predicting Likelihood for Loan Default Among Bank Borrowers

Mohammad Aslam¹, Senthil Kumar¹ & Shahryar Sorooshian²

¹ Faculty of Industrial Management, Universiti Malaysia Pahang, Pahang, Malaysia

² Department of business administration, University of Gothenburg, Gothenburg, Sweden

Correspondence: Mohammad Aslam, Faculty of Industrial Management, Universiti Malaysia Pahang, Gambang Kuantan 26300, Pahang, Malaysia. Tel: 123-462-861.

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Abstract

Poverty is a threat to the world. In its extreme form at any part of the world, it will make endanger rest of the world. In fact, it is the source of crime and the worst form of violence. The poor people do not commit any crime but they get punishment out of being born as a poor that is not controllable in their hand. Microfinance has been designed to eliminate poverty and help marginal and poor people through small income generating activities. The borrowers need capital to materialize their dream, may be in a small amount and microfinance can play important role in this scenario. Through microfinance, small entrepreneurs may acquire necessary inputs to start their business. Both local governments and international agencies are trying to eliminate poverty through microfinance programs, services and guidelines. With this concept, Microfinance has been hosted primarily in Bangladesh. Grameen Bank (GB) has been serving large number of people below poverty level in Bangladesh. However, impact of microfinance is still questionable in several studies. Microfinance used properly and returned back to the lender with stipulated amount and time shows its working effectively for poverty alleviation. Otherwise, there must be loan default and the whole system may be in question. We survey with questionnaire to find out factors contributing to loan default among GB borrowers using binomial logistic regression. The results showed that some factors were crucial for loan default and should be treated properly at the start of lending.

Keywords: microfinance, poverty alleviation, loan default factors, logistic regression

1. Introduction

The introduction of microfinance has been regarded to point out a new milestone in development policy. Microfinance has been considered as a probable solution to alleviate poverty when the concept is emerged during the period of eighties. The attractiveness is even more as a development model when it gives attention to the women for betterment of their lives. The government together with development agencies wishes to adopt microfinance model across the countries after formal recognition of the concept during mid-seventies. Mohammad Yunus has been addressed as the 'Father of microfinance' for his brilliant contribution to this filed of development strategy (Goldstein, 2011). On the other hand, Milford Bateman argued that other strategies like provision of basic services and logistics are more effective than microfinance for poverty alleviation. Giving focus only on microfinance undermines all the other strategies of the spectrum (Bateman & Chang, 2012). There are well-documented criticisms of microfinance for poverty alleviation (Duvendack et al., 2011). However, Donor and government have been supporting it for last few decades as social obligation and sometimes political as well. The effectiveness of the microfinance system has been documented with different outcome in different time and place across the globe. Microfinance used properly and returned back to the lender with stipulated amount and time shows its working for poverty alleviation. Otherwise, there must be loan default and the whole system may be in question.

It has been prevailed over centuries for microfinance assumptions and hearsay evidences. However, systematic experiential researches, which are comparatively current derivation, validate these aforesaid assumptions and evidences. Still phenomena such as high interest rate and high credit risk have remained debatable. The utmost argumentative topic is the clarification about high interest rate charged by informal moneylenders to make them defaulter. High interest rate and default risk have been elegantly formalized at the theoretical level by Bhaduri (1973); (Bhaduri, 1980) and by Bottomley (1975) respectively. However, both these theories have been under growing criticism despite their elegance and early appeal. In case of Bhaduri Model, Bardhan and Rudra (1978) found that it

did not fit the facts on the whole. In case of Bottomley model, there have been lacks of convincing evidences of high default rates assumed existing in informal credit market. Timberg and Aiyar (1984) calculated average default ranging between half and one and a half per cent of working capital of informal moneylenders. Aleem (1990) confirmed the similar findings. He found the default rate up to five per cent in maximum cases.

Both informal moneylenders and formal banks come across the same set of problems like information asymmetry and faulty enforcement. However, they respond in different ways. The informal lenders try to overcome the issues through finding ways that reduce risk of their lending. On the other hand, formal bankers keep themselves away from marginal borrowers and abandon them without serving for the riskiness of the loan portfolio. Therefore, such ways or mechanisms devised by the informal moneylenders to minimize risk can be an explanation for charging higher interest rate. More specifically, it highlights the ways informal lenders tackle both the issues of information and enforcement along with their consequences. The informal moneylenders give highest effort to screen the borrowers through gathering all the possible personal information. They monitor the utilization of loan and keep borrower reminding undesirable consequences in case of default. This makes the default rate to be minimum but still attracts high interest rate because of lender local intimidation and transaction cost required for the process. Sometimes informal moneylenders use their other capacities such as landowner, recruiter, traders etc. to monitor the consequences of lending upon borrowers. These different other capacities may solve default problems and make the credit market viable. For instance, an informal moneylender cum landowner may possess the capacity of threatening informal borrower cum tenant to evacuate the tenancy as a technique to prevent default (Osmani & Mahmud, 2015).

The rest portion of the work will be presented as follows. It gives the overview about loan recovery and default issues. Thereafter, it presents the research methodology and data, analysis and interpretation followed by summary and conclusion.

2. Loan Recovery and Default

Microfinance has been under the jurisdiction of typical fund intermediation process between surplus and deficit unit. The fund comes from the microfinance institute to the borrowers and goes back from the borrowers to the microfinance institute when they repay the loan back. This process is repeated again and again for successful operation of fund. If the fund is not paid back, then definitely something is wrong with the process and the whole system will come under question or at a point of time at end. Therefore, it is very important to look into the factors that are responsible to make loan cycle efficient and effective.

Besides assessing microfinance welfare impact, the attitude and competency of the borrowers to pay back loan has been very important aspect. Historical repayment pattern could be one of the way to analyze loan defaults. The analysis of previous knowledge on loan delay showing historical pattern may give a good indication (Hering & Musshoff, 2017). Research showed that variables like loan size, type of business, level of education, number of credit, borrowers' age, marital or living status and borrowers' sex etc. have a visible effect on the loan recovery rate. These variables subsequently may have been categorized into three broad group such as loan's characteristics, the borrower's characteristic and behavioral characteristics. Therefore, Borrowers' socio-demography, previous attitude and credit record have substantial influences on recovery rate (Baklouti, 2013). Van den Berg, Lensink, and Servin (2015) found that characteristics of loan officer, more specifically their gender, play a significant role on recovery rate. Hsu (2016) qualitative data analysis revealed that social ties among the borrowers are very influential in making repayment decision. Kassim and Rahman (2018) found post loan observation very significant in recovery. Regular monitoring to the borrowers' business site by supervisor makes proper utilization of the fund and also confirms higher profitability ultimately contributing to less defaults (Okorie, 1986). Chaudhary and Ishfaq (2003) concluded that higher level of education, non-farming business activity, appropriate loan investment and female borrowers had significant effect on good repayment rate. Bhatt and Tang (2002) stated that higher level of education is significantly positively associated with better microfinance loan recovery. According to Brehanu and Fufa (2008), loan default may be either involuntary or voluntary. Involuntary defaults come out of bounded situations such as surprising things happened in business reducing their capability. For example, small income generation, natural calamities and borrowers' health issues etc. On the other hand, voluntary defaults are immoral attitude problem or just unethical intentional behavior of the borrowers. For example, capable borrowers choose not to repay their loan because of lower enforcement techniques imposed by the respective microfinance institution. Nawai and Shariff (2012) suggested that reward should be given to decent and good borrowers for making on time repayment without delinquency.

In many developing countries, microfinance has been contributing for their socio-economic development. Because of loan default problem, this development cannot be achieved all the time. The default issues may arise out of informal

business nature together with borrowers' attitude. In case of Ghana, Ofori, Fianu, Omoregie, Odai and Oduro-Gyimah (2014) found Age, Gender, Marital Status, Income Level, Residential Status, Number of Dependents, Loan Amount and Tenure significant in determining loan default issues. They also found males and young borrowers more responsible for loan default although purpose of the given loan found insignificant. They suggested the aforesaid variables for screening prospective loan applicants to decrease the number of loan defaulters. In case of Kenya, many micro credit program especially run by women group came up with higher magnitude of loan defaults. These women groups have been registered as social welfare purpose and beyond the jurisdiction of Central Bank of Kenya and even Microfinance Regulator. It cannot be monitored and controlled although issues visible publicly. Therefore, Informal micro credit program are very difficult to monitor whereas formal credit program registered under legal body may work well within the framework. Working with formal microfinance institutions, Munyua (2016) studied loan collection procedures, loan diversion, financial management practices and the amount of loan borrowed by members of formal women groups. Using quantitative and qualitative techniques, they found strong policies should be implemented in micro-finance institutions to do away with loan default. The institutions should put up efficient loan collection procedures which are easy to follow for both the employees and the borrower, also there should be avoidance of loan diversions, efficiency in financial management and the amount of loan borrowed should be strictly monitored and evaluated by the micro finance institutions from time to time. In case of Ghana, Siaw, Ntiamoah, Oteng, and Opoku (2014) found significant relationship between the loan defaults and the process involved in granting loans. On the other hand, Kiros (2014) found initiation and sector have statistically significant whereas group composition and group size statistically insignificant on loan default. He suggested that all concerned stakeholders must to play their role to improve the loan repayment performance. Using both deductive and quantitative technique, Priyankara & Sumanasiri (2019) found three factors significant to explain microfinance loan default in Sri Lanka. These factors are microfinance institute's action to control loan default, borrowers' family and loan group characteristics and macro-economic concerns. They suggested these findings may be used by loan managers to manage their credit risk and customer portfolio to overcome loan default. In case of Nigeria, Adu, Owualah and Babajide (2019) found loan size and instalment size contributing significantly towards loan defaulting than lending rate. They suggested that loan size should be based on certain percentage of a borrower's net income to avoid repayment issues. Therefore, different variables in different countries in different times have been found for contributing significantly for microfinance default problem. Based on these mixture outcomes of several studies, the microfinance institutes need to develop their own respective safeguard to overcome these issues. There are established and rich theories rationalizing group-lending implication for recovery. These theories are often quoted four representative model of joint group lending namely Besley model, Coate model, Stiglitz model and the Ghatak model, although Ahlin and Townsend (2007) found that these models' repayment suggestions do not correspond in all the time. At the end, the loan default determinants can be categorized by three broadly characteristics such as borrower characteristics, business characteristics and loan characteristics.

3. Methodology

Logistic Regression has been executed to measure contributing factors on the likelihood that borrower will report that they have loan default. The borrowers with better knowledge and adequate information was the best target for the study. Different microfinance schemes borrowers from several sectors like small entrepreneurs, agricultural plantation, service sectors, animal husbandry, small-scale manufacturing and fishery were selected and interviewed using simple random sampling. With reference to Krejcie and Morgan (1970), this study required about 400 respondents from GB borrowers. Questionnaire survey was conducted in the four divisions of Bangladesh for which GB had major operations and borrowers were accessible. Broadly, the picked area was from the branches of four divisions namely Dhaka, Chittagong, Rajshahi and Khulna.

3.1 Experimental Framework

With reference to previous section, the loan defaults determinants have been function of three broad category variables such as Borrower characteristic (Gender, Living Status, Education Level, Age, Extra Income and Number of Dependent etc.), Business characteristic (Business Type, Revenue Amount etc.) and Loan characteristic (Repayment Period, Repayment Mode, Extra Loan, Repayment Amount, Loan Supervision Fee, Interest Rate etc.). As the information about loan defaults appears private and confidential for the borrowers, this research cannot access data from the concerned microfinance institution. As an alternative way, this research takes the method adopted by Sexton (1977) who discriminate good borrowers and bad borrowers. Good borrowers repay back as promised but bad borrowers fail to repay within stipulated period. Most likely borrowers with repayment problem in the past will have high probability of the same in the future. In absence of default data availability, the borrowers have been asked in the questionnaire whether they fail to repay loan more than two times within their respective stipulated time.

3.2 Loan Default Variables

Dependent Variable:

The dependent variable takes a value of “1” for borrowers who default loan and it takes a value of “0” if they not defaulted otherwise.

Independent Variables:

- The positive signs in parentheses “(+)” denote the hypothesized positive relationship between independent variables and loan default.
- The negative signs in parentheses “(-)” denote the hypothesized negative relationship between independent variables and loan default.

Followings are the independent variables:

X_1 =Gender (+): Borrower gender (0 for Female and 1 for Male)

X_2 =Age (-): Dummy variables denoting borrower age group [where $X_{2(1)}$ = 1 for up to 25 years old and 0 for Otherwise; $X_{2(2)}$ = 1 for 26 to 35 years old and 0 for Otherwise; $X_{2(3)}$ = 1 for 36 to 45 years old and 0 for Otherwise; $X_{2(4)}$ = 1 for 46 to 55 years old and 0 for Otherwise; $X_{2(5)}$ = 1 for above 55 years old and 0 for Otherwise]

X_3 =Living Status (+): Borrowers living status (0 for Conjugal and 1 for Single)

X_4 =Education Level (-): Borrower educational level (0 for Otherwise and 1 for Educated meaning higher than primary education level)

X_5 =Dependant Number (+): Dummy variables denoting borrower dependant number in their household [where $X_{5(1)}$ = 1 for up to 2 person and 0 for Otherwise; $X_{5(2)}$ = 1 for 3 to 4 person and 0 for Otherwise; $X_{5(3)}$ = 1 for 5 to 6 person and 0 for Otherwise; $X_{5(4)}$ = 1 for 7 to 8 person and 0 for Otherwise $X_{5(5)}$ = 1 for above 8 person and 0 for Otherwise]

X_6 =Business Type (+): Borrower business type (0 for Otherwise business activities including service, trading, animal husbandry etc. and 1 for Agricultural business activities)

X_7 =Monthly Revenue (-): Dummy monthly revenue denoting amount received as monthly revenue from business activities [where $X_{7(1)}$ = 1 for up to \$100 and 0 for Otherwise; $X_{7(2)}$ = 1 for \$101 to \$200 and 0 for Otherwise; $X_{7(3)}$ = 1 for \$201 to \$300 and 0 for Otherwise; $X_{7(4)}$ = 1 for \$301 to \$400 and 0 for Otherwise; $X_{7(5)}$ = 1 for above \$400 and 0 for Otherwise]

X_8 =Alternative Income (-): Borrower alternative income source (0 for Otherwise and 1 for existence for alternative income source from somewhere else)

X_9 =Alternative Loan (+): Borrower alternative loan source (0 for Otherwise and 1 for existence for alternative loan source from somewhere else)

X_{10} =Repayment Mode (+): Borrower weekly repayment mode (0 for Otherwise and 1 for weekly repayment installment)

X_{11} =Repayment Period (+): Loan repayment time (0 for Otherwise and 1 for long period meaning more than 1 year)

X_{12} =Repayment Amount (+): Dummy repayment amount denoting repayment amount [where $X_{12(1)}$ = 1 for up to \$25 and 0 for Otherwise; $X_{12(2)}$ = 1 for \$26 to \$50 and 0 for Otherwise; $X_{12(3)}$ = 1 for \$51 to \$75 and 0 for Otherwise; $X_{12(4)}$ = 1 for \$76 to \$100 and 0 for Otherwise; $X_{12(5)}$ = 1 for above \$100 and 0 for Otherwise]

X_{13} =Supervision Fee (+): Dummy loan supervision fee denoting percentage charged as administrative or supervision cost of the loan [where $X_{13(1)}$ = 1 for up to 1% and 0 for Otherwise; $X_{13(2)}$ = 1 for 2% to 3% and 0 for Otherwise; $X_{13(3)}$ = 1 for 4% to 5% and 0 for Otherwise; $X_{13(4)}$ = 1 for 6% to 7% and 0 for Otherwise; $X_{13(5)}$ = 1 for above 7% and 0 for Otherwise]

X_{14} =Interest Rate (+): Dummy interest rate denoting percentage charged as interest cost on loan [where $X_{14(1)}$ = 1 for up to 5% and 0 for Otherwise; $X_{14(2)}$ = 1 for 6% to 10% and 0 for Otherwise; $X_{14(3)}$ = 1 for 11% to 15%, 0 for Otherwise; $X_{14(4)}$ = 1 for 16% to 20%, 0 for Otherwise; $X_{14(5)}$ = 1 for above 20% and 0 for Otherwise]

Gender indicates whether a borrower is male or female. Chaudhary and Ishfaq (2003) and Roslan and Karim (2009)s' works exposed that male borrowers are less accountable and less orderly in loan repayment. Age denotes borrower age. It may contribute borrower's capacity to pay back the loan. Relatively older borrowers are expected to have more responsibility than younger borrowers (Brehanu & Fufa, 2008). Living Status designates as conjugal live when a borrower is married and living together and as single live when a borrower is unmarried or divorced and living separately. Living status has been often taken as an optimum behavior and family accountability. Since there is no spouse and / or no children to support financially, a single borrower would be less accountable. Therefore, single borrower might not need to keep a positive relationship with the microfinance service provider to increase likelihood of having prospective loan compared to a married borrower (Peng, Li, Lv, & Zhou, 2009). Education Level specifies the literacy of the borrower. Borrower with relatively higher educational level would be negatively associated with a loan default (Bhatt & Tang, 2002; Chaudhary & Ishfaq, 2003). Dependant are the persons living with borrowers in their household with no income sources of their own. Number of dependant can contribute borrowers' capability for loan repayment. For higher number of dependant, the borrower will face more obligation for their basic amenities and other expenses (Brehanu & Fufa, 2008). Business Type means the borrower's category of business like either an agriculture business or otherwise. For example, a micro enterprise may be involved in farming activity or may do small trading. An agricultural business would be associated with a lower cycle of cash flow than a small business (Chaudhary & Ishfaq, 2003). Monthly Revenue means the monthly income from borrower business financed by microfinance loan. It may contribute the borrower capacity to pay back the loan. A lower amount of business revenue is related to a higher probability of a loan default (Okorie, 1986). Alternative Income besides income related to microfinance business will make higher capacity for the borrower to pay back that microfinance loan (Brehanu & Fufa, 2008). Alternative Loan means additional loan that borrowers have taken other than microfinance loan. Discussion with many borrowers, it has been found that the microfinance loan is not adequate sometimes to run their business operation and therefore they have taken loan from other sources. This creates the additional commitment for extra loan repayment and reduced their capacity to pay back microfinance loan (Mokhtar, 2011). Repayment Mode displays the frequency of loan repayment. It may be weekly or monthly repayment program. Loan default can be associated with repayment mode set by the respective microfinance institution (Derban, Binner, & Mullineux, 2005). Repayment Period is the period within which the borrowers have to repay the loan back. It can be categorized as long-term for more than one-year period and short term for otherwise. Borrower having long term means that they have a longer commitment to repay the loan and ultimately it contributes to a positive relationship of having a loan default (Roslan & Karim, 2009). Repayment Amount denotes the amount that has to be paid back by the borrowers in timely installment. Unfavorable loan program features such as loan repayment mode and loan installment amount can contribute to loan default (Derban et al., 2005). Supervision Fee means the amount that has to be paid back by the borrowers in various form like management fee, processing fee, administrative fee etc. This is in addition to interest cost charged by microfinance institution. Interest Rate denotes the amount that has to be paid back by the borrowers in addition to principle amount receipt by them. In case of Bangladesh, maximum interest chargeable set at 27% per year. Interest calculation should be done using declining balance method. Minimum installments number on general loans should be forty-six. There will be a minimum grace period of 15 days between loan disbursement date and repayment back date of first installment for loan given for one year. Recently, Microcredit Regulatory Authority announced guidelines for Microfinance Institute in Bangladesh to follow these obligations (Faruqee & Khalily, 2011). Grameen bank charges twenty percent on reducing balance basis for its main credit product or income generating activities (Fernando, 2006; Grameen Bank, 2017).

4. Analysis and Interpretation

Logistic Regression has been performed to find out factors contributing to the likelihood that borrowers will report loan default. The model contains fourteen explanatory variables plus dummy variables created for some explanatory variables (Gender, Age, Living Status, Education Level, Dependant Number, Business Type, Monthly Revenue, Alternative Income, Alternative Loan, Repayment Mode, Repayment Period, Repayment Amount, Supervision Fee and Interest Rate). Three independent variables namely Gender, Repayment Mode and Supervision Fee are excluded from the model. Because in this case, all are female borrowers, they have only weekly repayment mode and there is no supervision fee. The full model containing all predictors is statistically significant, χ^2 (26 Degrees of freedom, N = 400) = 67.361, $p < .000$, indicating that the model is able to distinguish between respondents who reports and do not report loan default problem. Overall, the logistic model correctly classifies 93.30% of the cases. The results of GB participant borrowers loan default are presented in Table 1. Some coefficients are statistically different from zero as the case at 10%, 5% and 1% level of significance.

Table 1. Predicting likelihood for loan default

Dependent Variable¹	Likelihood for Loan Default		
	Independent Variables²	Estimated Coefficient	P Value
1. Gender	Dropped as all are female		
2. Dummy Variables for (Age)			
(Age) X ₂₍₁₎	-2.376	0.213	0.093
(Age) X ₂₍₂₎	0.665	0.731	1.944
(Age) X ₂₍₃₎	0.305	0.867	1.357
(Age) X ₂₍₄₎	-0.532	0.767	0.587
(Age) X ₂₍₅₎	Dropped for dummy trap problem ³		
3. Living Status	1.353	0.072	3.871
4. (Education Level)	-0.524	0.312	0.592
5. Dummy Variables for Dependant Number			
(Dependant Number) X ₅₍₁₎	0.200	0.860	1.221
(Dependant Number) X ₅₍₂₎	0.162	0.879	1.176
(Dependant Number) X ₅₍₃₎	-0.327	0.774	0.721
(Dependant Number) X ₅₍₄₎	-0.064	0.960	0.938
(Dependant Number) X ₅₍₅₎	Dropped for dummy trap problem ³		
6. Business Type	-0.284	0.602	0.753
7. Dummy Variables for (Monthly Revenue)			
(Monthly Revenue) X ₇₍₁₎	1.399	0.239	4.053
(Monthly Revenue) X ₇₍₂₎	0.573	0.639	1.773
(Monthly Revenue) X ₇₍₃₎	-0.570	0.654	0.565
(Monthly Revenue) X ₇₍₄₎	-1.197	0.415	0.302
(Monthly Revenue) X ₇₍₅₎	Dropped for dummy trap problem ³		
8. Alternative Income	0.424	0.569	1.529
9. Alternative Loan	0.088	0.868	1.092
10. Repayment Mode	Dropped as all are weekly repayment		
11. Repayment Period	-0.770	0.149	0.463
12. Dummy Variables for Repayment Amount			
Repayment Amount X ₁₂₍₁₎	-3.147	0.047	0.043
Repayment Amount X ₁₂₍₂₎	-5.733	0.001	0.003
Repayment Amount X ₁₂₍₃₎	-1.916	0.206	0.147
Repayment Amount X ₁₂₍₄₎	-3.728	0.041	0.024
Repayment Amount X ₁₂₍₅₎	Dropped for dummy trap problem ³		
13. Supervision Fee	Dropped as there is no supervision fee		
14. Dummy Variables for Interest Rate			
Interest Rate X ₁₄₍₁₎	Dropped for dummy trap problem ³		

Interest Rate $X_{14(2)}$	-0.750	0.562	0.472
Interest Rate $X_{14(3)}$	-2.010	0.064	0.134
Interest Rate $X_{14(4)}$	-2.340	0.022	0.096
Interest Rate $X_{14(5)}$	-3.734	0.002	0.024

*, **, ***, represents 10%, 5% and 1% significance level respectively.

Note: 1. Dependent variable=1 for loan defaulters who miss loan repayment more than two times in installment schedule and 0 for otherwise.

2. Independent variable in parentheses means negatively hypothesized with loan default.

3. To avoid the dummy trap problem, a dummy variable is dropped in each group with the fewest frequency response.

Gender: In our sample, all are female borrowers. Hence, it is not possible to include this variable for GB borrowers. Although we know that male borrowers are less accountable and less orderly in repayment. Chaudhary and Ishfaq (2003), Roslan and Karim (2009) and Ofori et al. (2014) s' works expose that a male borrower is more susceptible to become loan defaulter.

Age: The age of the borrower may reflect their ability to repay the loan. To avoid the dummy trap problem, the dummy variable Age (5) having fewest response, is dropped in this group. All the other dummy variables in this group are statistically found insignificant. Therefore, Age does not appear to be contributing for loan default problem in case of GB borrowers. However, we know that older borrower is believed to be more responsible than younger borrower. Our results do not support with the findings that relatively older borrowers will be less likely to be loan defaulter (Brehanu & Fufa, 2008; Ofori et al., 2014).

Living Status: It refers to married or conjugal life often treated optimum behavior in the society. Conjugal lives are supposed to be more accountable than a single life. A single borrower may be less accountable as there is no spouse to support financially and will be related with a higher probability of being loan defaulter. Our result shows this variable coefficient is positive and significant statistically at 10% significance level. Therefore, Single borrower has a higher probability of encountering loan default than conjugal borrower. Reported odd ratio indicates that a single borrower is estimated 3.87 times more likely to report loan default than a conjugal borrower, all other factors remaining same. This finding is similar to the finding that single borrower may not require to keep a positive relationship with the lender to increase their likelihoods of getting prospective loans and more likely to be defaulter compared to married borrower (Peng et al., 2009).

Education Level: More literacy in the borrowers are expected to make less default. The reason is that the learnt borrower will be capable to manage the business well, understand information, maintain business documents and carry out cash flow and profitability analysis. The result shows statistically insignificant coefficient in the model. Therefore, Education level does not appear to be contributing for loan default problem in case of GB borrowers. However, it does not match the finding that borrowers with relatively higher educational will be less likely to be loan defaulter (Bhatt & Tang, 2002; Chaudhary & Ishfaq, 2003).

Dependant Number: The number of dependant may also influence the capability of borrowers to pay back their loan. As they have more dependant, they presume more responsibility for expenses of food, clothes, education, medical, etc. and these factors may attract loan default. To avoid the dummy trap problem, the dummy variable Dependant (5) having fewest response is dropped in this group. All the other dummy variables in this group are statistically found insignificant. Therefore, Dependant number does not appear to be contributing for loan default problem in case of GB borrowers. It does not support that the borrowers who have more dependant will have more probability of having loan default problem (Brehanu & Fufa, 2008).

Business Type: An agricultural type of business is quite often subject to natural disaster like flood, rain, drought etc. and associated with lower cash cycle. Hence, agricultural type will contribute more likely to default. In our result, the coefficient for this variable has been found statistically insignificant. Therefore, Business type does not appear to be contributing for loan default problem in case of GB borrowers. An agricultural type of business will be related with relatively lower cash cycle than small type of business (Chaudhary & Ishfaq, 2003). This factor may contribute higher likelihood of loan default. However, our result does not support this fact.

Monthly Revenue: Relatively higher monthly revenue echoes the borrowers' capability to pay back the loan and may

not attract loan default. To avoid the dummy trap problem, the dummy variable Monthly Revenue (5) having fewest response, is dropped in this group. All the other dummy variables in this group are statistically found insignificant. Therefore, Monthly revenue does not appear to be contributing for loan default problem in case of GB borrowers. It does not match that relatively lower monthly business revenue has been associated with higher likelihood of loan default (Okorie, 1986).

Alternative Income: Borrowers having alternative or extra income has been assumed inversely associated with loan default. In our result, the coefficient for this variable has been found statistically insignificant. Therefore, Alternative or extra income does not appear to be contributing for loan default problem in case of GB borrowers. It also does not corroborate that borrowers who have alternative or extra income apart from the microfinance loan related activities will have higher ability to pay back their microfinance loan (Brehanu & Fufa, 2008).

Alternative Loan: Alternative or extra loan may influence the ability of borrowers to pay back their microfinance loan. Apart from microfinance loan, an alternative or extra loan assumes more responsibility in fulfilling more obligations. On the basis of questionnaire survey experience, this research find that a lot of microfinance borrowers take money from more than one loan source. This research studies whether the borrowers are facing challenges in their respective repayment as they avail alternative or extra loans from other sources. Borrowers having an alternative or extra loan have been assumed positively associated with loan default. In our result, the coefficient for this variable has been found statistically insignificant. Therefore, Alternative or extra loan does not appear to be contributing for loan default problem in case of GB borrowers.

Repayment Mode: The loan repayment mode enforced by the microfinance institution may contribute to loan settlement behavior of the borrowers (Derban et al., 2005). This study intent to investigate whether a weekly loan repayment mode contributes to become defaulter, particularly to those types of borrower who receive lower revenue cycle. But Grameen Bank only accommodates weekly repayment mode. Therefore, it is not possible to find contribution of this variable to loan default.

Repayment Period: A borrower who has longer repayment period is positively associated with having a loan default. This study wants to investigate whether a longer loan repayment period, in this case more than one year, contributes to the default. In our result, the coefficient for this variable has been found statistically insignificant. Therefore, Repayment period does not appear to be contributing for loan default problem in case of GB borrowers. It does not support that the borrowers having longer loan period meaning longer commitment to pay back the loan contributes positive relationship with loan default (Roslan & Karim, 2009).

Repayment Amount: This factor specifies weekly repayment amount. Grameen Bank enforces weekly repayment to almost all the borrowers regardless of their cash flow cycle. This research studies whether the magnitude of weekly repayment amount has any effect on its borrowers' capability to repay their loan. Borrower who makes relatively higher loan repayment amount is associated with a higher probability of loan default. To avoid the dummy trap problem, the dummy variable Repayment Amount (5) having fewest response, is dropped in this group. In case of Repayment Amount (1), the result shows negative coefficient at 5% level of significance. The Odd ratio indicates that borrower with weekly repayment amount up to \$25 is 0.043 times less likely to have loan default, remaining other factors constant in the model. In case of Repayment Amount (2), the result shows negative coefficient at 1% level of significance. The Odd ratio indicates that borrower with weekly repayment amount \$26 to \$50 is 0.003 times less likely to have loan default, remaining other factors constant in the model. In case of Repayment Amount (3), the result shows statistically insignificant coefficient meaning no contribution to loan default for this case. In case of Repayment Amount (4), the result shows negative coefficient at 5% level of significance. The Odd ratio indicates that borrower with weekly repayment amount \$76 to \$100 is 0.024 times less likely to have loan default, remaining other factors constant in the model. It supports the findings by Derban et al. (2005). They conclude that the unfavorable loan product such as loan repayment mode may contribute to loan default.

Supervision Fee: It denotes percentage charged as administrative or supervision cost of the loan. On the basis of questionnaire survey experience, this research finds that some microfinance institutes charge for administrative purpose. Hence, it examines whether the borrowers confront their loan repayment when they are charged supervision fee on their loans. The borrower who has been charged supervision fee, is assumed to have positively associated with a loan default. But in our sample, we do not see find any case for this type of charge. Therefore, this variable is dropped in this analysis.

Interest Rate: It is the percentage charged as interest cost on loan. Microfinance institutes charge interest to cover some portion or all the costs for fund disbursement including fund raising cost. Hence, it is essential to examine whether the borrowers confront their loan repayment when they are charged relatively higher interest on their loans.

The borrower who has been charged higher interest, is assumed to have positively associated with a loan default. On the basis of questionnaire survey experience, this research finds that microfinance institutes charge different rate for different borrowers based on their respective loan portfolio. To avoid the dummy trap problem, the dummy variable Interest Rate (1) having fewest response, is dropped in this group. In case of Interest Rate (2), the result shows statistically insignificant coefficient meaning no contribution to loan default for this case. In case of Interest Rate (3), the result shows negative coefficient at 1% level of significance. The Odd ratio indicates that borrower with interest rate 11% to 15% is 0.134 times less likely to have loan default, remaining other factors constant in the model. In case of Interest Rate (4), the result shows negative coefficient at 5% level of significance. The Odd ratio indicates that borrower with interest rate 16% to 20% is 0.096 times less likely to have loan default, remaining other factors constant in the model. In case of Interest Rate (5), the result shows negative coefficient at 1% level of significance. The Odd ratio indicates that borrower with interest rate above 20% is 0.024 times less likely to have loan default, remaining other factors constant in the model. It can be concluded that the unfavorable loan product may influence borrowers not to repay loans Derban et al. (2005).

5. Conclusion

In case of GB borrowers, gender cannot be attributed as loan default factor since they are very dominant by female borrowers. Even age does not appear to be contributing for loan default problem as well. But for living status, single borrowers have three times higher probability of encountering loan default than conjugal borrowers. Education level, dependant number, business type, monthly revenue, alternative or extra income, alternative or extra loan appear indifferent to be contributing for loan default. Grameen Bank only accommodates weekly repayment mode. Therefore, it does not contribute to loan default in this case. Repayment period is irrelevant though repayment amount contributes to loan default. Grameen. Relatively lower repayment amount attracts less defaults. Grameen Bank does not charge supervision fee. Therefore, it also does not contribute to loan default in this case as well. Relatively higher interest rate contributes less default. This is may be because borrowers are afraid of higher interest rate and do not want to go through future consequences for it. Finally, it can be concluded that unfavorable loan product to the borrowers can influence them not to repay loans back and create default problem. The findings of this study may be used by loan portfolio manger to design the prospective loan and policy development for Grameen Bank and other microfinance institution as well. Manager can scrutinize borrowers, design the appropriate loan product suitable for them and monitor strictly to avoid loan default issue. This study can be further extended for different region and time that has microfinance operation. Advance statistical techniques can be used to narrow down the finds and make it more precious. Future studies with same or different outcome will conform or dilute the existing scenario of loan default problems in microfinance industry. May be existing current factors contributing to loan default will be strong or weak overt time and region. Therefore, future studies should guide the microfinance institution for their policy development time to time.

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