

Opinion of Fishermen Towards Their Well-being Under Agricultural Diversification and Intensification Project (ADIP) in Bangladesh

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ABSTRACT

Agricultural Diversification and intensification Project (ADIP) was the collaborative program of the Government of Bangladesh (GOB) and donor agencies. The program was implemented in four district of Bangladesh in order to upgrade the living-standard of the poor people who were engaged in agricultural activities. This study took the initiative to assess the impact of microcredit on the living-standard in terms of household expenditure of the borrowers under ADIP's fishery program. Primary data was collected from landless and marginal borrowers through a simple random sampling technique from the project areas who took loan for the first time for fisheries activities. Weighted Least Square (WLS) technique was used to examine the influence of socioeconomic variables on the dependent variable "household total expenditure". The study shows that six variables such as household's income, years of schooling of the borrowers, training, investment on fishery activities, expenditure on food, distance of rural market from borrower's dwelling place were significantly related to the household's total expenditure. The study also indicates that the fishery credit did not have any significant influence on borrowers' living-standard in terms of household's total expenditure.

Keywords: ADIP, Microcredit, Borrowers, Living-standard

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Any remaining errors or omissions rest solely with the author(s) of this paper.

INTRODUCTION

Bangladesh is an agro-based country, with the Agriculture sector contributing about 22 percent to its GDP in 2006/07. About 52 percent of her population directly or indirectly depends on agriculture as their occupation (BER¹, 2008). This sector comprises of four sub-sectors namely, crop, fisheries, forestry and livestock. The contribution of fisheries sector to the GDP was estimated about five percent over the last five years. In 2006/07, the share of fisheries sector in GDP was estimated at 4.73 percent (BER, 2008). The Agriculture sector plays an important role in nutrition, employment, and foreign exchange earnings of Bangladesh. About 63% of animal protein is supplied by fish alone (BER, 2005). According to BER (2005), about six percent of total export earnings came from the fisheries sectors. The Fisheries sector employs about 12 million people in fishing and other related activities (BER, 2004). Since, the fisheries sector is one of the important sources of foreign exchange earnings, the Government of Bangladesh (GoB) has put in a lot of effort to increase fish production through technical and financial support.

Through the years many government-supported projects were implemented having NGOs also involved in the process, which over a period of time, fish production saw a gradual increase. Table 1 shows the total fish production from 2000/01 to 2006/07. As seen from Table 1, the total fish production increased from 1.781 million metric tons in 2001/02 to 2.441million metric tons in 2006/07. A positive trend in total fish production was achieved by adopting a new fishery policy, promoting modern technology of fish culture and providing financial support to the fishermen. The contribution of inland fishery to the total fish production in Bangladesh was greater than that of marine fishery (Table 1). However, a vast majority of the population in Bangladesh is still poor having per capita GDP of 482 USD (BER, 2008). Due to this poverty level they lead lives of poor quality. As per the Direct Calorie Intake (DCI) method, the rates of absolute and hard-core poverty were estimated at 40.4 percent and 19.5 percent (BER, 2008). The poor have less income, less education and, limited assets and low production. Due to budget constraints, they cannot start or continue their income generating activities (IGAs) properly and thus, they have to depend on rural money lenders at a very high interest rate (Mahmud, 1999). The poor have limited access to the commercial banks for institutional credit due to their inability to fulfill the collateral requirement (Asanoy, 2004). Bangladesh's 'Grameen Bank' innovation of a collateral free credit system (known as microcredit system) in 1976 assisted in meeting credit needs of the poor. Microcredit program plays a crucial role in poverty alleviation by creating opportunities for income generating activities of the poor by providing collateral free credit facilities (Yunus, 2000).

¹ BER indicates Bangladesh Economic Review

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Table 1 Fish production in Bangladesh (million Metric ton)

Year	Total inland	Total Marine	Grand total
2001/01	1.402	0.379	1.781
2001/02	1.475	0.415	1.890
2002/03	1.566	0.432	1.998
2003/04	1.647	0.455	2.102
2004/05	1.762	0.496	2.258
2005/06	1.849	0.480	2.329
2006/07	1.927	0.514	2.441

Source: Bangladesh Economic Review, 2008.

NB: 1million = 10,00000 lakh

The government, through microcredit programs not only to increases productivity but also to uplifts the socioeconomic status of the poor. One of the prime tasks of the government is to alleviate poverty. Thus, it took initiatives to provide collateral free credit facilities to the poor enabling an enhancement in crop cultivation, poultry, livestock rearing and fishery activities among the poor farmers. The government thus launched the Agricultural Diversification and Intensification Project (ADIP) in 1997 with an aim to improve the living-standard of poor involved in agricultural activities.

ADIP, a project of the Department of Agricultural Extension (DAE) Bangladesh, completed its task in June 2005. The project was funded by the GoB and donor agencies such as International Fund for Agricultural Development (IFAD) and World Food Program (WFP). This project comprised of four partner organizations such as the DAE (lead agency), Local Government of Engineering Department (LGED), Agrani Bank (AB) and 22 local NGOs². The project was mainly assigned with the responsibility of enhancing the economic situation of the landless and marginal farmers engaged in the crop, livestock and fishery sectors. The government gave priority to the upliftment of the overall living-standard of the fishers (men and women who are engaged in fishery related activities), as many people in Bangladesh are engaged in this sector. Fishermen were also victims of poverty and deprivation like other stakeholders of the project who were involved in crop cultivation and livestock rearing. Thus, ADIP took the initiative to provide microcredit facilities to them to uplift the socioeconomic plight of the fishermen. Therefore, it is important to assess the influence of ADIP's credit program on their living-standard in terms of household expenditure. The

² ADIP (DAE) was responsible for overall planning and monitoring of the microcredit program; Agrani Bank (AB) was made responsible for rural lending as per ADIP guidelines for its stakeholders; LGED was made responsible for rural construction as per ADIP guidelines for its stakeholders; and NGOs were made responsible to group formation, rural lending and implement the agricultural activities set by ADIP.

success of this project would assist the policy makers to replicate similar projects elsewhere in Bangladesh with a view to reducing poverty among the poor fishermen.

PREVIOUS STUDIES ON MICROCREDIT PROGRAM IN BANGLADESH

Several quantitative studies were conducted to examine the impact of the microcredit program on various issues such as women empowerment, income-generation, saving, expenditure, decision-making ability and contraceptive use. Datta (2004) conducted a study on the microcredit program in Bangladesh in order to assess whether or not, the credit facility reached the poorest of the poor. The author mentioned that the microcredit program had a positive role in poverty alleviation and women empowerment. Nevertheless, the author stated that the program had failed to reach the poorest of the poor. Dowla and Alamgir (2003) conducted a study on the borrowers of NGOs in Bangladesh. They examined their (the borrowers) saving behavior. They found that the microcredit program had a positive impact on the compulsory saving of the borrowers. The authors indicated that the amount of savings of the borrowers had increased over time. According to them, in case of Buru Tangail (microcredit provider) the average saving per borrower was 378 taka in 1993 and it became 670 taka in 1999. Kabeer (2001) indicated that in Bangladesh, women were still backward in their decision-making process despite their participation in the microcredit program. According to author, men, even poor men, always had more choices in terms of accessing to the economic opportunities than women. men, it was much more likely to benefit women themselves and as well as their entire family. Khandker (2003) conducted a study on Bangladeshi borrowers on the impact of microcredit on the household consumption. The author found that microfinance had benefited the poorest. According to the author, microcredit program had also a positive spillover impact in reducing poverty at the village level. The author also indicated that the effect was more pronounced in reducing extreme than moderate poverty. The author also indicated that when loans were directed to women rather than to Pitt et al. (2003) estimated the impact of microcredit program on the rural Bangladeshi women's autonomy within the household. They observed that women's participation in the microcredit program had helped increase women's empowerment in terms of household-decision making ability, access to financial and economic resources, women's social networking and mobility. Pitt (2000) conducted a study on the group-based credit program in Bangladesh. The author examined the effects of credit program on agricultural contracts and supply of agricultural labor. The author stated that microcredit programs had increased own-cultivation through sharecropping for the male members. According to the author, female credit effect was larger than male credit effect in increasing

sharecropping. The author observed that credit program had increased self-employment for both male and female borrowers. Rahman (1998) examined women's participation in different farm and non-farm activities and household decision-making. The author also focused on the relative performance of poultry, dairy and sericulture programs in terms of their income-generating capacities. The author observed that formal schooling had a negative impact on income, suggesting that hands-on-training was more important rather than providing formal education, while land holding had a positive effect on income. The author observed that poultry rearing was a profitable enterprise for women and also stated that BRAC program increased the women's decision-making ability. Rahman and Khandker (1994) evaluated three credit programs in Bangladesh, namely BRAC, Bangladesh Rural Development Board (BRDB) and Grameen Bank. Their study focused on the self-employment opportunity of the borrowers under credit programs. The authors found that the credit programs had expanded self-employment opportunities among the borrowers. They also mentioned that participation rates and employment per worker were higher among the program participants than the target group population in the control areas. Besides, such quantitative studies, a few qualitative surveys were also conducted in Bangladesh to measure the opinion of the borrowers towards the effectiveness of microcredit program in improving their living-standard under poverty alleviation program. For example, Rahman et al. (2008) assessed the opinion of microfinance borrowers of Islamic Bank of Bangladesh (IBBL) using logit model. The author examined whether they were economically well-off or not, under the credit program of IBBL. The author found that borrowers had a positive opinion that they had become economically well-off by participating in the microfinance program. Mahmud et al. (2007) found that borrowers who took microcredit for agricultural activities had the opinion that they became economically well-off after participating in the microcredit program but the magnitude of impact was small. Zaman (2001) found that BRAC borrowers had the perceptions that the microcredit program empowered women who joined the BRAC program.

Previous studies mentioned above shows that microcredit programs can be considered an important weapon for uplifting the socioeconomic plight of the poor in Bangladesh. This program created a positive influence among the borrowers household in uplifting their living-standard. Nevertheless, it failed to create higher level of impact on the poor. It is also noticeable that microcredit program mostly focuses on the issues of women empowerment, income and employment generation, household saving, household consumption, decision-making ability under the poverty alleviation program. However, this study was conducted by focusing on the issue of fisheries sector development because this sector can be considered as one of the potential sub-sectors of agriculture in Bangladesh. The project ADIP took the effort to develop this potential fisheries sector through microcredit program as this particular sub-sector was much less

focused than crop sub-sector. Thus, ADIP provided microcredit facilities to the fishermen for improving their living-standard. It can be hypothesized that the microcredit program would play a positive role in increasing the household expenditure of the fishermen leading them to a quality life. Thus, the main objectives of this study were: (i) to assess the effect of ADIP's program on the living-standard of the fishermen in terms of household expenditure and (ii) to assess the perceptions of borrowers towards the effectiveness of ADIP's fishery program.

EMPIRICAL EVIDENCE OF MEASURING IMPACT OF CREDIT PROGRAM

Asanoy (2004) conducted a study in Yemen to examine the effect of agricultural credit and microfinance on the expenditure patterns of the borrowers. The study used Extended Linear Expenditure System (ELES) to estimate the poverty line and living-standard. The impact of credit was measured by the author, by incorporating a dummy variable representing the 'with-without' group in the model. The Logit model was also used by the author to determine whether the borrowers preferred microcredit or not. Chowdhury and Bhuiya (2004) conducted a study on the Bangladeshi borrowers under the BRAC program. They examined the impact of credit program on several outcomes like survival rate of children, children education and nutritional status, and family planning. The authors conducted a descriptive analysis to examine the impact of credit program on the borrowers. Mosley and Rock (2004) examined six African microcredit institutions. They assessed the impact of microcredit using Ordinary Least Square (OLS) and Two Stage Least Square (TSLS) method, and found that microcredit had a positive impact on the borrowers. The programs helped them in reducing their poverty and it also improved the risk management ability of the households by enhancing social and human capital. Bhuyia and Chowdhury (2002) conducted a study on the BRAC members in Bangladesh. They measured the impact of women focused development programs on the child and infant mortality. They made comparison between BRAC participants and non-participants. The authors used Logit model for assessing the infant mortality. They found that child and infant mortality had reduced among the BRAC members. Duong and Izumida (2002) conducted a study in Vietnam to evaluate the impact of credit on household production. They used Weighted Least Square (WLS) rather than Ordinary Least Square (OLS) to solve the heteroscedasticity problem. They found that credit, number of dependants and total farm area were the key factors for determining household production for the credit constrained households. They added that credit program had a positive impact on the production. Khandker (2000) assessed the impact of microcredit on saving using conditional demand equation in Bangladesh. The author found that microcredit program had increased voluntary

saving and the saving impact was more pronounced for women than men. Mosley and Hulme (1998) conducted a study on thirteen microfinancing institutions of seven developing countries namely Bangladesh, India, Sri Lanka, Indonesia, Bolivia, Malawai and Kenya. They used Ordinary Least Square (OLS) technique to assess the impact of lending on borrowers income and assets. They found that higher income households had experienced on an average higher program impact than the households living below the poverty line. Amin et al. (1994) conducted a study on poor Bangladeshi women participating in income generating projects, launched by Grameen Bank, BRAC and BRDB. They used Logit model to estimate the influence of age, years of schooling, ownership of assets, number of living children and husband's occupation on the binary dependent variable 'contraceptive use'. They concluded that the income generating projects had increased the use of contraceptives among the women. Mahmud (2006) measures the impact of credit program on the borrowers who took loan for agricultural activities. The author used conditional demand equation to measure the impact of credit program on various outcome like such as household income, saving, household expenditures. The author also used the Logit model to assess the opinion of the borrowers towards the effectiveness of microcredit program.

The above mentioned studies indicated that various author used various techniques such as Descriptive Analysis, Linear Expenditure System (LES), Ordinary Least Square (OLS) and Weighted Least Square (OLS) , Simultaneous equation system like Two Stage Least Square (TSLS) for measuring credit impact on the various outcomes like income, expenditure, saving. The authors also used "Logit model" to assess the perceptions of borrowers when dependent variable was dichotomous. WLS has the advantage over OLS in solving heteroscedasticity problems (Gujarati, 1998). TSLS is appropriate technique to measure the impact of credit program when credit is considered as endogenous variable (Mahmud, 2006). In this study, WLS was conducted instead of OLS to solve the heteroscedasticity problem.

THEORETICAL UNDERPINNING

The borrowers under study were poor having low level of income that explains their low level of purchasing ability, low expenditure and low quality of life. Providing microcredit would assist them to solve their low-income problem. Microcredit provides them the opportunity to increase their purchasing ability that would lead them to higher level of expenditure. This economic behavior is consistent with the utility theory. In the Figure 1, consumer gets maximum satisfaction at point A, because, his/her initial budget line is tangent to the indifference curve (IC1). But when his/her income increases through microcredit his/her budget line shifts upward. He/she then reaches at a new equilibrium point at B, buying more of x and y goods and enjoying a higher level of utility.

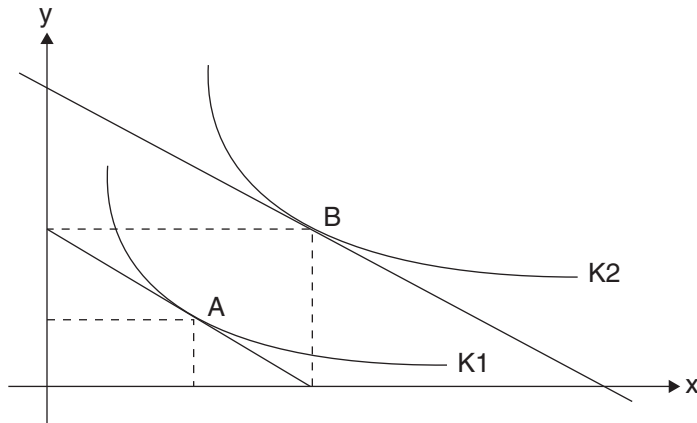


Figure 1 Graphical representation of utility theory

CONCEPTUAL FRAMEWORK OF MICROCREDIT PROGRAM FOR POVERTY ALLEVIATION

Under the microcredit programs, borrowers can take a loan from the microcredit providers without providing collateral. The amount of credit, they receive from the providers' increases their financial ability to invest more into income generating activities. Microcredit program also provides opportunity to generate employment for the poor in the locality. By participating in income generating activities under microcredit program, poor borrowers may have more earnings from activities that directly add to their income. This increased income would ultimately increase their purchasing ability. More purchasing ability would enable them to spend more on food, thus, leading them to high quality of living. The conceptual framework of microcredit program in alleviating poverty is shown in Figure 2.

Besides income, there are other factors which are related to well-being of the borrowers. It is imperative to enhance human capital as it is deeply related to the well-being of the borrowers. Therefore, the microcredit program provides training to the borrowers, hoping that training facilities will enhance their level of skills in performing income-generating activities. Moreover, factors like household's asset will increase the ability of the borrowers to invest in income generating activities. Household incomes also help in increasing their risk bearing ability. Therefore, it is essential to open avenues to create more income generating activities for the borrowers. Inadequacy of rural infrastructure is one of the major obstacles for development of Bangladesh. Rural poor have very limited access to infrastructural facility and this hampers their economic activities. Initiatives to establish rural infrastructure (such as markets, roads,

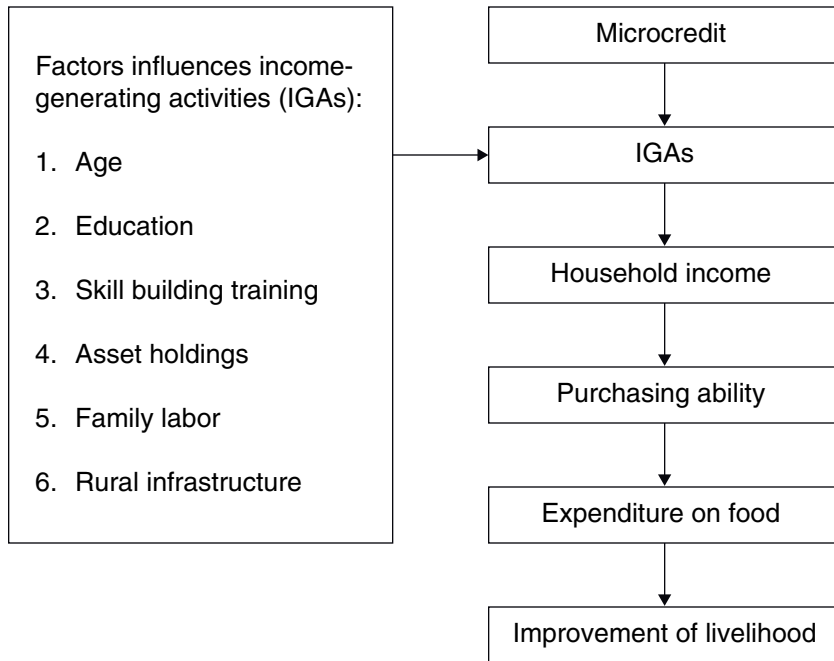


Figure 2 The conceptual framework of microcredit program in alleviating poverty

cold-storage etc) under the microcredit program may help them to accelerate their economic activity. Access to infrastructure facility and its proper utilization will increase the ability of rural poor in pursuing their income generating activities (IGAs).

DATA COLLECTION AND METHODOLOGY

Primary Data were collected using questionnaire method from respondents in the ADIP project areas namely Kishoreganj and Tangail districts of Bangladesh during May, 2005 to September, 2005. ADIP operating fishery programs in seven thanas (a lowest administrative unit) under the Kishoreganj and Tangail district. Off the seven thanas four thanas were in Kishoreganj district and the rest were located in the Tangail district. Sample borrowers were selected for this study based on the following criteria (set by ADIP) which were: (i) borrower's household must be involved in fishery activities, (ii) borrowers must be permanent resident of the selected thanas where ADIP was operating (iii) age of the borrowers should be within 18 to 55 years (iv) borrowers who did not receive any other loan from other organization (v) landless or marginal borrowers those who were having up

to 150 acres of land. For the purpose of selecting sample, two complete lists of the borrowers were collected from the respective branch office of ADIP located in Tangail and Kishoreganj districts respectively. The borrower's list collected from ADIP branch office showed that under Tangail and Kishoreganj districts there were 856 and 1400 borrowers. The two lists were combined and out of a total of 2,256 borrowers 800 were selected to be sampled out using the Simple Random Sampling Technique. Sample size was determined with a 99 per cent significance level with four per cent of error using the online survey calculator. Data was collected from the household members who participated in the project in January 2003 and obtained the first loan for pursuing fishery activities. Data was gathered on borrowers' socioeconomic situations including age, education, family labor, land-holdings, household assets, credit management, average household income and expenditure, savings, borrowers' mobility, physical infrastructure facilities in the villages and their opinion towards their own well-being under ADIP's microcredit program.

Model Specification: To estimate the effect of microcredit on the various outcomes like income, consumption and savings of the rural borrowers, the author used several techniques such as Descriptive Method, Ordinary Least Square Method, Weighted Least Square, and System Equation (Mahmud 1999, Mosley and Rock 2004; Duong and Izumida 2002). In this study, Weighted Least Square (WLS) was used instead of OLS to solve the heteroscedasticity problem. The models were specified as:

Households Consumption Model:

$$C = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \mu_2 \quad (1)$$

Where,

- C = Mean of total household expenditure after joining the program (taka)
- X₁ = Borrower's mean investment on fishery after joining the program (taka)
- X₂ = Mean household income after joining the program (taka)
- X₃ = Number of credit by the borrowers from ADIP after join the program
- X₄ = Total amount of credit taken by borrowers after joining the program (taka)
- X₅ = Number of training received by borrowers after joining the program
- X₆ = Mobility of the borrowers (kilometer / week)
- X₇ = Distance of NGO branch office from the borrowers dwelling place (kilometer)
- X₈ = Distance of rural market from the borrowers dwelling place (kilometer)
- X₉ = Distance of health center from the borrowers dwelling place (kilometer)
- X₁₀ = Mean expenditure on food after joining the program (taka)
- X₁₁ = Borrower's schooling (number of years)

α is the constant for equation

μ_1 is the error term for the equation one and two respectively

RESULTS AND DISCUSSIONS

In this study, an attempt was taken to assess the effect of fishery loan on the borrowers living-standard in terms of total household expenditure which includes food and non-food item. It was hypothesized that living-standard of borrower's household would increase after participating the ADIP program. Variables such as investment of fishery activities (inv), Mean of total household income after joining the program (inc), number of loans taken by borrowers (ncrd), total amount of credit taken from ADIP (tcrd), number of training received by the borrowers (tra), mobility of the borrower (mob), distance of NGO from borrower's dwelling place (dnngo), distance of rural market from borrower's dwelling place (dmar), years of schooling (edu), mean of total expenditure on food (efood), distance of health center from borrower's dwelling place (hel) and borrower's mean investment after joining the program (inv) were incorporated in the regression model independently, being related to the living-standard of the household. Off the eleven variables, six were significantly related to the living-standard in terms of household consumption. The estimated results of the WLS are presented in the Table 2.

Income: Most of the borrower's households were in poverty lacking income. The income earned could not support even their basic needs. It is expected that after participating in these activities household income would increase. This increased income would provide them more purchasing power and hence increase

Table 2 Influencing factors of household's total expenditure

Variables	Co-efficient	t-value	Sig
Number of credit taken by borrower	74.73125	0.738699	0.4603
Amount of credit taken by borrower (taka)	0.015459	0.495389	0.6205
Number of training received by borrower	211.7717	3.804435	0.0002
Mobility of the borrowers (km/week)	15.51472	0.278106	0.7810
Distance of health center (km)	-17.97026	-0.344931	0.7302
Distance of NGO's branch office (km)	-66.00682	-1.178805	0.2388
Years of schooling of the borrowers	312.3315	7.357341	0.0000
Expenditure on food (taka)	0.663893	3.282311	0.0011
Household's income (taka)	0.092666	9.044941	0.0000
Investment on fisheries (taka)	1.104601	4.835071	0.0000
Distance of rural market (km)	-181.3532	-3.787648	0.0002
Constant	2238.940	5.397761	0.0000
R-squared: 0.469708			
Durbin-Watson: 1.607433			

their living standard in terms of expenditure. The study shows that income was significantly and positively related to the household expenditure, indicating that as household income increases the living-standard increases.

Education: Socioeconomic activities today, are closely related and complex in nature. Without a proper educational background, it is almost difficult to understand the nature of these socioeconomic variables and to adjust with the diverse socioeconomic phenomena. Education would provide the borrowers insights to understand the economic activities clearly and assist in utilizing their skills in pursuing their economic activities efficiently. Majority of the borrowers of this study had no or very little education which created a big obstacle in improving their living-standard. The project also assisted the borrowers through non-formal education and supplying educational materials at a low cost to enable an acceleration of their living-condition. It was hypothesized that schooling opportunity would increase the living-standard of the borrowers. The study reveals that years of schooling of the borrowers were significantly and positively related to the dependent variable. As years of schooling increases among the borrowers, their ability of expenditure would increase more leading them to higher level of living-standard.

Investment of fishery activities: Due to lack of income, the borrower's household had a little scope to invest on fishery activities even though the skills were adequate. Since they could not invest enough money in pursuing their fishery activities they failed to receive the desired level of output from their venture. This small scale production had brought little earning which ultimately compelled them to spend less indicating low level of living-standard. It was hypothesized that more investment in fishery activities would increase their ability to purchase. The results shows that household's investment on fishery activities was significantly and positively related to the dependent variable indicating that more investment on fishery activities provides more earnings and, thus, more purchasing ability, resulting in a higher level of living-standard.

Expenditure on food: In the Bangladesh context, rural people are the worst victims of poverty, disabling them to cater to their own food. The 'study borrowers' were no different. They did not have the ability to buy food for their family. They had to suffer from malnutrition and starvation due to lack of food. It was an important task of the project to improve their buying capacity of food-stuff by providing microcredit. It was expected that borrower's living-standard would improve by increasing the food purchasing ability. This study reveals that expenditure on food was significantly and significantly related to the dependent variable. It indicates that ability of purchasing more food stuff would assist borrowers to come out from the poverty level resulting in a quality life.

Training: Fishery activities are complex in nature. It requires adequate knowledge and skills in performing such activities smoothly. Without using modern technology, to achieve desired outcomes from the fishery activities is a difficult task. Training helps in acquiring proper operation of fishery activities. The sampled borrowers lacked adequate skills in performing their economic activities. Thus, training was provided on different aspects such as fish culture, fish-processing, fish-marking, nutrition, and credit management. This study shows that the training obtained by the borrowers' was significantly and positively related with the dependent variable. It indicates that training would assist borrowers to acquire new knowledge to perform their activities efficiently yielding more output and income which in turns lead to increase their purchasing ability indicating higher living-standard.

Distance of rural market: Borrowers of this study received low price from selling of their output due to lack of market facilities in the rural areas. Since borrowers were very poor; they had no or limited scope of storing or transporting their perishable products to the market within the shortest period of time. Moreover, mobility of the female borrowers was much restricted due to social and cultural norms in the rural context of Bangladesh. Due to lack of marketing facilities they cannot receive fair price form selling their output.

Thus, setting up a market as close to borrowers' place as possible would accelerate their business transactions and economic activities. This study shows that distance of market from the borrowers' dwelling place was negatively and significantly related to dependent variable. It implies that increase in the distance between rural market and borrower's dwelling place would create obstacle in earning which would ultimately adversely affect their purchasing ability.

Borrower's opinion of the ADIP's Fishery Program: Borrower's provided their opinion on selected socioeconomic indicators such as household income, fishery-production, environment pollution, education and purchasing ability. The study shows that most of the borrowers were of the opinion that their household income, purchasing ability and awareness of female child education and environmental pollution increased due to project intervention (Table 3).

CONCLUSIONS

ADIP took the initiative to encourage the rural poor to involve themselves in the fishery activities in order to improve their economic plight in terms of household income by providing microcredit facilities. This study reveals that amount of microcredit provided by ADIP to the women borrowers did not have any significant effect on the borrowers living-standard in terms of household total consumption. There might have two reasons which were: (i) the amount of loan was inadequate to pursue their economic activities and (ii) the study groups which

Table 3 Opinion on selected indicators of living-standard (Number)

Indicators	Not increased	Increased	Total
Household income	107	693	800
Production of fish and fish-products	151	649	800
Food purchasing ability	180	620	800
Non-food purchasing ability	327	473	800
Number of IGAs	219	581	800
Environmental pollution	233	567	800
Awareness of girl-child education	256	544	800

participated in the program for a short period of time like two years. This study also showed that six variables such as household income, borrower's education, training, distance of rural market, expenditure on food and investment on fishery activities were the significant factor for borrower's living standard. Though the amount of credit had no significant effect nevertheless the borrowers showed a positive attitude towards the program. Policy makers have to take following initiative to improve the living-standard of the poor borrowers:

Priority should be given to extend the loan amount for the borrowers, loan should be provided based on borrower's demand and nature of the income generating activities. Loan should be provided on time to the borrowers. Moreover, the loan procedure should be less formal. Borrowers must be encouraged.

Steps should be taken to provide educational facilities to the borrowers. Necessary materials (like books, pens or pencils etc) should be provided free from the management. Setting up night schools and introducing non-formal education for adults would reduce the illiteracy rate among the rural borrowers.

In the context of rural Bangladesh, the scope of income earning is limited. It is important to create new income-generating opportunities in rural areas. Government and NGOs should work as partners in creating job opportunities in the rural areas. Programs like establishing fishery processing units, developing small factories to manufacture fishery inputs and gear would widen the opportunity to the rural households to be involved in the income generating activities.

Emphasis needs to be given on providing effective training, based on the borrowers demand. Priority must be given to hands-on training. It should be conducted by experts on specific issues. Training materials must be updated and useful to the borrowers. It is important to establish well-equipped training center as possible as close to the borrowers dwelling place.

It is important to undertake the establishing of rural markets under the microcredit program. Government must take initiative to establish rural infrastructure like roads and markets. This would assist the rural borrowers in producing and marketing their products efficiently resulting in an improvement in their income earnings and expenditure leading them to a higher living-standard.

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