

Assessing The Economic Empowerment Potential Of Agricultural Training For Farm Women: Insights From Farming Communities In Bangladesh

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Abstract

Non-Governmental Organizations (NGOs) in Bangladesh provide agricultural training facilities for rural women borrowers. The prime objective of this study was to measure the impact of agricultural training programs on the household income and food expenditure of the borrowers. The target group of this study was the landless and marginal women borrowers who received agricultural training from NGOs. The PSM results demonstrated that the agricultural training programs had no impact on the living standards of the borrowers. The primary factor contributing to the unfavorable outcome was the provision of short-term training without conducting a comprehensive assessment of the women borrowers' needs.

Keywords: Impact, Training, Women, Income, Expenditure, Bangladesh.

I. Introduction

Background of the Study: In Bangladesh, rural farming communities play a pivotal role in the rural economy of the county. A significant portion (44%) of the total labor force is still involved in farming for their livelihood (Khan et al., 2024; Mondol et al., 2021). It is noteworthy that in Fiscal Year (FY) 2022-23, the agricultural sector contributed approximately 11% of the GDP (Ministry of Finance, 2023; Khan et al., 2024). Hence, it is indisputable that the attainment of sustainable development necessitates the enhancement of the overall standard of living among rural impoverished agricultural communities. Realizing the importance of improving the socioeconomic plight of the rural farming communities, the Government of Bangladesh (GoB) has formulated the National Agricultural Policies (NAPs). Being consistent with the NAPs, both the GoB and NGOs in Bangladesh have emphasized ensuring technological, financial, and legal support to the rural farming communities, especially focusing on the smallholder women cultivators (Ministry of Finance, 2023; Hilton et al., 2016; Mahmud et al., 2017). Despite such efforts, unfortunately, the socioeconomic plight of the rural farming communities still portrays a dismal picture. Inadequate income and inaccessibility to productive resources (e.g., land, credit, etc.)

compel the farming communities to lead a low quality of life (Syed et al., 2024; Tikadar et al., 2022; Rahman & Schmidlin, 2019; Mahmud & Hilton; 2020). Furthermore, rural agricultural communities exhibit a deficiency in the necessary expertise required to effectively engage in farming practices. This issue is further compounded when considering the specific challenges faced by women involved in agricultural activities. Despite an increasing trend in women's involvement in the agricultural sector, rural women in Bangladesh generally face limited access to financial, technological, and natural resources (Quisumbing et al., 2018; Kieran et al., 2017; Zafarullah & Nawaz, 2019; Mahmud et al., 2023).

In fact, a severe gender disparity is prevalent in the agricultural value chain system due to the patriarchal structure of the rural society in Bangladesh. For example, in a recent study in Bangladesh, it was observed that rural farm women usually lack control over their agricultural land, and they also have limited decision-making power in the agricultural decision-making process (Mahmud et al., 2023). It is generally believed that lack of ownership of productive resources as well as the inaccessibility of skill-building training programs are major barriers to the economic and social

empowerment of the rural poor women communities engaged in agricultural pursuits.

Problem Statement: Undoubtedly, a major obstacle to poor rural farming women's attaining the intended level of output and income is their incapacity to pursue suitable income-generating activities (IGAs). It is unquestionably essential to provide credit and training opportunities to the disadvantaged rural women in Bangladesh for enhancing their capacity to pursue agricultural IGAs. As a result, in Bangladesh, a number of NGOs collaborate with the government to reduce poverty through microcredit programs and training facilities, especially for rural women living in poverty (Hilton et al., 2016; Mahmud et al., 2017; Zafarullah & Nawaz, 2019). Some studies found that NGOs made a concerted effort to give both agricultural and non-agricultural training (e.g., health, non-formal primary education, community empowerment, human and legal rights, gender, environment and climate change) (Hilton et al., 2016; Mahmud et al., 2014).

Equipping the poor with education and skill-building training might be a successful technique for enhancing their level of living-standard (Hilton et al., 2016; Hossain & Tisdell, 2005; Mahmud et al., 2017; Kabir et al., 2018). With the training interventions of NGOs, it is anticipated that farm women's abilities in pursuing IGAs will rise, leading in increased income and expenditures. However, in many instances, training initiatives in developing nations have failed to enhance the economic quality of life for rural people (Bharti, 2014; Khan & Ali, 2014; Mahmud et al., 2014). Therefore, it is possible to raise concerns over the efficacy of agricultural training programs in improving the financial situation of female borrowers in terms of their family income and expenses. Using the Propensity Score Matching (PSM) method, the primary purpose of this study is to evaluate the influence of a training program on the total household income and household food expenditure of women trainees of NGOs in Bangladesh. The study's findings may help training providers to design and implement agricultural training programs for low-income women borrowers.

ii. Impact Of Training Programs On The Farming Communities

Some studies have found that providing training facilities to the poor benefits them in a variety of ways, including enhancing their technical abilities, allowing them to pursue IGAs, boosting their productivity, income, and increasing their level of awareness (Hilton et al., 2016; Kabir et al., 2018; Wonde et al., 2022). Kabir et al. (2018) found that training had a significantly positive effect on enhancing the degree of awareness against the misuse of formalin in food products among Bangladeshi fish sellers. Dickson et al. (2016) stated that educated fish farmers in Egypt earned a greater profit than their untrained counterparts and that their operating costs were lower as a result of their success in improving management methods. In a different study, Murshed-e-Jahan and Pemsil (2011) discovered that training in Bangladesh played a crucial role in boosting farmers' productivity and net income. Some researchers observed the success of agricultural training in boosting off-season tomato production and income among tomato producers in Bangladesh (Schreinmachers, et al., 2016). According to the researchers, the training program greatly improved farmers' pesticide handling and usage abilities, as well as their understanding of the related health risks (Schreinmachers, et al., 2016). Some researchers observed in Bangladesh that the home gardening and nutritional training significantly improved women's skills, helped them manage their incomes, and boosted their self-confidence (Patalagsa et al., 2015). In another research conducted in Tanzania, Nakano et al. (2018) found that smallholder farmers' agricultural output rose dramatically after getting training facilities. Similarly, in Ethiopia, farmers who had access to agricultural training programs were able to substantially increase both their agricultural productivity and income (Wonde et al., 2022). Kijima et al. (2012) observed that rice farmers in Uganda who participated in agricultural training programs were more likely to employ modern farming methods, which in turn assisted them in increasing their income from rice cultivation. Argent et al. (2014) revealed that providing training and an asset (such as a cow) to impoverished

farmers in Rwanda significantly increased milk output, household income, and asset value.

iii. Theoretical Underpinning

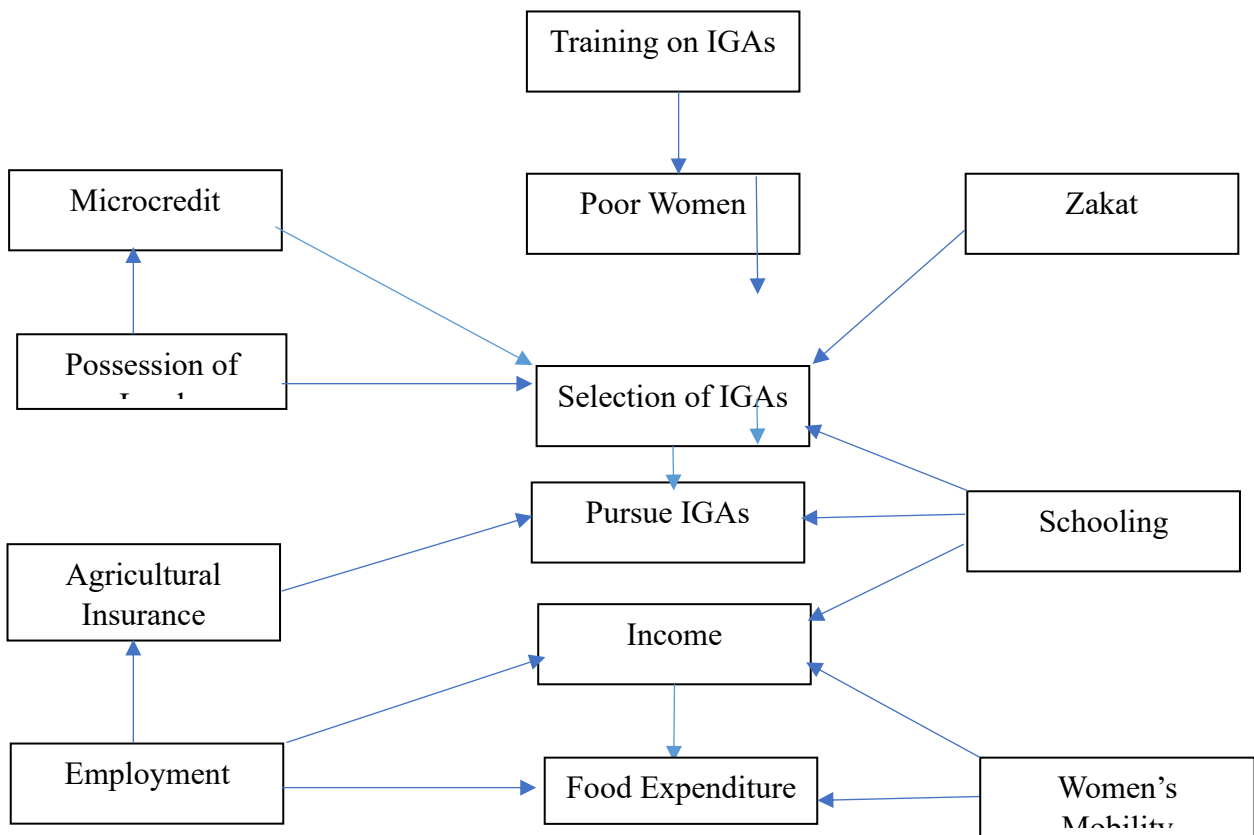
Among the components of human capital, training has received significant attention of human capital theorists. According to Becker (2009), who has formalized the theoretical foundations of human capital, training can be classified into two sections e.g., general and firm-specific training. The training that affects the general human capital of labor and improves the skills and productivity of all kinds of jobs is called general training. In contrast, firm-specific training, however, is designed to enhance the productivity and skills of a particular firm. According to human capital theory, training was considered a productivity and earning driving factor. Workers are expected to participate in continuous vocational training in order to increase their productivity and maximize their expected discounted lifetime earnings (Mincer, 1974; Becker, 2009; Becker, 1965). Moreover, the utility theory in the discipline of economics asserts that increasing income of a person would increase his or her

budgetary capacity which will ultimately improve their capacity to purchase more goods and services leading to higher utility. In fact, providing training opportunities to the women farmers in this study is expected to increase their skills, leading to increased income, which will subsequently result in higher level of expenditure. From this perspective, this study is also grounded on utility theory.

iv. Conceptual Framework

Skill development training is one of several factors that influence an individual's ability to invest, make decisions, manage risks, diversify IGAs, access information, form networks, and building an awareness level (Hilton et al., 2016; Mahmud et al., 2014; Mahmud et al., 2022; Kabir et al., 2018). As a result of receiving agricultural training, disadvantaged and poor women would be able to select and pursue IGAs more effectively, resulting in increased output, revenue, and expenditures. To enhance the standard of life of underprivileged women, however, it is necessary to study not just training but also the influence of other socioeconomic determinants (Figure 1).

Figure 1: Conceptual Framework for Improving Living-standard of the Poor Women through Training Program



Note 1: This conceptual framework was adopted and modified from Mahmud et al., 2014; Hilton et al., 2016; Mahmud et al., 2017

Due to budgetary limitations, rural poor women in Bangladesh frequently fail to pursue IGAs effectively. Microcredit is regarded as one of the most essential instruments for alleviating poverty in the contexts of these developing nations (Hassan & Islam, 2019; Zafarullah & Nawaz, 2019; Rahman et al., 2015; Rahman et al., 2017). Providing microcredit assistance to underprivileged people can play a crucial role in enhancing their financial capabilities (Ferdousi, 2015; Mahmud et al., 2017; Rahman et al., 2015). Similarly, zakat can be an efficient approach to boost the poor's access to interest-free funds (Sohag et al., 2015). According to Islamic doctrine, every Muslim is required to give a very small proportion of their annual income to the impoverished as zakat (Sohag et al., 2015). Education has a crucial influence in the acquisition of information and develops a person's analytical ability (Hilton et al., 2016; Kabir et al., 2018; Mahmud et al., 2021). It is commonly considered that rural under-privileged women in Bangladesh are typically uneducated. Providing disadvantaged women with formal and non-formal educational support would aid them in decision-making, resource management, bargaining, and risk-taking, resulting to a better quality of life in terms of income and spending. Existing patriarchal traditions in rural society continue to hinder the mobility of rural women, resulting in low income, consumption, and limited decision-making capacity (Hilton et al., 2016; Karim et al., 2016; Mahmud et al., 2014; Mahmud et al., 2023). A woman with greater mobility is in a better position than a

woman with less mobility to access extension services from various governmental and commercial organizations, acquire information, maintain networking, generate cash, and consume more (Hilton et al., 2016). Creating additional job prospects by establishing rural businesses and initiating gender discrimination awareness programs in rural regions may play a crucial role in speeding the mobility of women. Due to cultural and religious prohibitions, particularly rural women lack access, ownership, and control over productive resources such as land, which is a significant barrier to their social and economic activities (Kieran et al., 2017; Quisumbing et al., 2018; Zafarullah & Nawaz, 2019; Hossain & Jamil, 2022; Mahmud et al., 2023). Consequently, securing the land rights of women is crucial for their economic progress. It is worth noting that the farming communities in Bangladesh often face several risks (e.g., financial, technological, production, marketing, and climatic hazards, etc.) which can severely hamper in pursuing their agricultural activities (Mahmud et al., 2021; Mitra et al., 2019). Undoubtedly, a farming woman who is having access to agricultural insurance facilities would be in a more advantageous position than a woman not covered by agricultural insurance facilities in tackling the different types of risks and uncertainties which ultimately lead them to obtain higher production and income. Notably, this conceptual framework has been taken and adapted from (Hilton et al., 2016; Mahmud et al., 2014; Mahmud et al., 2017).

V. METHODS

Data Collection: The primary data were collected from marginal and small women borrowers who were involved in agricultural activities under the microcredit programs of NGOs. To select the samples for this study, at first, a comprehensive borrowers' list of the NGOs was prepared. From the list of the 1219 borrowers, a total of 300 borrowers were selected as samples. Data were collected using the Simple Random Sampling (SRS) technique conceiving a 5% of error at the 95% confidence level. The following criteria were used to select the samples for this study, which were:

- (i) Female borrowers who obtained loans for the purpose of pursuing agriculture endeavors,
- (ii) Borrowers who joined in the NGOs program in 2021 for the first time,
- (iii) Borrowers who received at least one agricultural training on the issues of crop production, livestock rearing, nursery raising; aquaculture and marketing of agricultural products from 2021 to 2023.
- (iv) Borrowers who received loans not more than USD 1000 from 2021 to 2023.

(v) Households possessed agricultural land not more than 150 decimals.

Survey was conducted from February 2024 to March 2024 in three Upazillas (Sub-districts) under Khulna district of Bangladesh which were: Dumuria, Dacope, and Phultala. Primary data were mainly collected on the demographic profiles of the borrowers, economic status of their households, microcredit management, and training including the number of training, types of training, cost of training, and opinions of the borrowers about NGOs training program.

In this study, purposively 300 poor women borrowers were also selected from the other upazillas of Khulna district who were involved in crop production, poultry, livestock rearing, and fishery activities but did not receive any agricultural training from any NGOs or government agencies in the last five years. Similar criteria which were used to select the members of the treatment group (received training) were also used to select the women borrowers who did not receive any agricultural training. This women borrowers' group (received no training) was considered the 'control group' for this study. It is to be noted that all the members of the control group also joined the microcredit programs in 2023 for the first time.

Estimation Strategy: In this study, the PSM technique was used for its ability to handle the problem of 'selectivity bias' (Haque & Dey, 2016; Mahmud et al., 2017; Sohag et al., 2015). This PSM technique was extensively used by the researchers

to assess the impact of development intervention (e.g., credit, training, etc.) on the living-standards of the treatment group in Bangladesh and elsewhere (Mahmud et al., 2017; Sohag et al., 2015; Weber & Ahmad, 2014). For example, Mahmud et al. (2017) used this technique to assess the impact of microcredit on the income and expenditure of the women borrowers who took loans from BRAC (a reputed NGO). Similarly, Ferdousi et al. (2023) also used the PSM to assess the impact of the Social Business Fund (SBF) on the income and expenditure of young entrepreneurs in Bangladesh. This method identifies the individuals of both control and treatment groups who are similar with respect to the control variables (Mahmud et al., 2017; Sohag et al., 2015; Ferdousi et al., 2023). Nearest Neighbor Matching (NNM), Kernel Matching (KM), and Radius Matching (RM) techniques can be used for matching (Mahmud et al., 2017; Ferdousi et al., 2023). In this study, NNM and KM techniques were used. It is worth noting that for matching purposes, three variables, which were: (i) age of the respondent, (ii) the family size of the respondent; and (iii) the distance of the rural market from the respondent's house were used. In PSM approach, these above-mentioned three variables were also used by other researchers (Mahmud et al., 2017; Mahmud et al., 2022; Ferdousi et al., 2023). For the validity of PSM, the assumptions of Conditional Independence Assumption (CIA), and balancing property must be satisfied (Mahmud et al., 2017; Haque & Dey, 2016; Ferdousi et al., 2023).

Vi. Results And Discussion

Demographic and Socioeconomic

Characteristics of the Respondents

One factor that can potentially impact an individual's productivity and decision-making abilities within a professional setting is their age. Results show that the average age of participants in the treatment group was 42.47 years, whereas those in the control group was 41.19 years (Table 1). Microcredit providers predominantly focus on extending microcredit facilities to borrowers within the middle-aged groups rather than elder age groups (Mahmud et al., 2017; Mahmud et al.,

2022). A significant determinant impeding the economic functioning of households is a deficiency of knowledge. A significant proportion of individuals residing in rural regions and experiencing impoverished conditions lack access to proper education. The average number of years a borrower spent in school varied between 3.6 years and 3.2 years between the treatment and control groups respectively (Table 1).

Table 1: Demographic and Socioeconomic Characteristics of the Women

Indicators	Treatment Group		Control Group		t-value
	Mean	%	Mean	%	
Age of the respondent (years)	42.47	-	41.19	-	1.64
Years of schooling (number)	3.6	-	3.2	-	1.15
Marital status of the respondent (%)	-	94.34	-	91.67	
Family size in 2023 (number)	4.5	-	4.2	-	0.28
Land possessed by household (decimal)	134.17	-	127.32	-	1.54
Respondent's saving in 2023 (BDT)	7418.95	-	5793.43	-	1.83
Value of assets in 2023 (BDT)	1,67,213.14	-	1,48,956.71	-	2.19
Received one training (%)	-	71.34	-	-	-
Received two training (%)	-	27.00	-	-	-
Received three training (%)	-	1.66	-	-	-
Distance of the market (kilometer)	0.97	-	0.94	-	1.93

Source: Survey, 2024

Other researchers also observed that microcredit borrowers in Bangladesh had a low level of educational background even having less than an average of five years of schooling (Mahmud et al., 2017; Mahmud et al., 2022). Microfinance institutions have a higher likelihood of granting loans to individuals who are married, as opposed to those who are single, due to the former group's comparatively lesser inclination to discontinue their participation in the program. The findings indicated that NGOs exhibited a higher propensity to offer assistance to married couples compared to individuals who were not married. In this study, it was observed that 94.34% of the borrowers in the treatment group were married, compared to 91.67% of the borrowers in the control group (Table 1). The average family size was found 4.5 in the treatment group while it was 4.2 in the control group (Table 1). The inability to save money limits the amount of investment that the poor can make. As a result, participants in the microcredit program must set aside some of their earnings in order to repay their loans. Results showed that in the treatment group saved an average of 7418.95 BDT (Bangladeshi currency) in 2023 whereas those in the control group saved an average of 5793.43 BDT in 2023 (Table 1). Principally, the landless,

marginal, and small borrowers are whom the microcredit program focuses on (Mahmud et al., 2017; Mahmud et al., 2022). There was no significant difference between the average land size of households in the treatment group (134.17 decimals) and the control group (127.32 decimals). It was assumed that households with greater agricultural assets are in a better position to invest in productive activities. In fact, a lack of asset foundation is one of the main obstacles for rural poor households in Bangladesh to invest in the IGAs. The average worth of a household's assets (including poultry, livestock, furniture, jewelry, and agricultural equipment) was determined to be 1,67,213.14 BDT in the treatment group and 1,48,956.71 BDT in the control group (Table 1). Regrettably, the NGOs catering to the borrowers have not adequately offered agricultural training assistance, hindering their ability to engage in IGAs. This study revealed that 71.34% of borrowers had received one agricultural training between 2021 and 2023, followed by two training courses (27.00%) and more than two training (1.66%) (Table 1). The mean distance of the rural market from the house of the members of the treatment group (0.97 kilometers) and the control group (0.94 kilometers) did not vary significantly (Table 1).

Impact of Training Program on Household Income and Expenditure

As mentioned earlier, the borrowers who participated in this study's training program had low levels of education, training, savings, and

household assets, which led them to live with a low standard of living (Table 1). One of the goals of the training program was to boost household income

by offering agricultural training facilities and credit support to borrowers. It was anticipated that by participation in the training program, the abilities of the borrowers in pursuing agricultural activities would develop, ultimately leading to an increase in household income through agricultural production. However, our results indicate that the NGO-operated training programs failed to have a meaningful influence on the overall household income of the borrowers (Table 2). In this study, household income comprises profits from

agricultural and non-agricultural sources. The agricultural source refers to crop cultivation, poultry rearing, animal husbandry, fisheries, nursery, and agribusiness. On the other hand, non-agricultural sources include wage earning, handicrafts, and service in public and private organizations. Both the NNM and KM approaches demonstrated that agricultural training programs had no significant impact on household income (Table 2).

Table 2: Impact of Training on the Household Income and Food Expenditure (BDT)

Indicators	Matching Methods	ATT	t-value
Household income in 2023 (BDT)	NNM	8759.62	1.75
Household food expenditure in 2023 (BDT)	KM	8311.97	1.58
Household income in 2023 (BDT)	NNM	6647.54	1.49
Household food expenditure in 2023 (BDT)	KM	6496.78	1.34

Source: Survey, 2024

Note 2: BDT indicates the currency of Bangladesh

Note 3: 1USD= 119 BDT (approximately) in 2024

We also examined household expenditures, with food expenditures as a major indicator of living-standards (Table 2). As indicated previously, the households included in this study were poor, and as a result, the majority of them had minimal food expenditures. Participation in the training programs was anticipated to boost the food expenditures of the borrowers' households, resulting in an improved standard of living. Due to the intervention of the NGOs' training program, it was noticed that the treatment group's household food expenditure did not increase considerably relative to the control group (Table 2). Both the NNM and KM methods demonstrated that agricultural training programs had no significant impact on household food expenditures (Table 2). Previous evidence also suggests that the training programs became unsuccessful in improving the living standard of poor borrowers of BRAC (a reputed NGO) in terms of household expenditure (Mahmud et al., 2014).

In fact, this study contradicts the commonly held belief that skill enhancement training can increase household income and expenditure. The empirical findings of our study reveal that education and training, despite being effective instruments for eradicating poverty for decades, may require a suitable atmosphere as a requirement for poverty

alleviation. Poor people need greater education and skill-building training without a doubt, but they also require financial and physical assistance to escape poverty (Hilton et al., 2016; Mahmud et al., 2017; Sohag et al., 2015). In reality, the agricultural training provided by the NGOs was not adequately aligned with the local labor market demand. Training may have been insufficient in quality and quantity, particularly with regard to the specific job roles and IGAs targeted. In many cases, training did not match with IGAs pursued by the borrowers. Training the borrowers in this approach would not be effective in bringing about the required adjustments in the borrower's economics. In addition, the lack of strong monitoring of the post-training IGA activities of the borrowers by the NGOs is believed to be one of the causes of the inability of the borrowers to improve their standard of living in terms of household income and expenditures. In this patriarchal environment, the IGAs of these households are frequently administered by men, despite the fact that training was provided to the household's women borrowers. Women trainees in such fields have limited influence over the credit required to utilize the acquired abilities. Short-term training was also offered without a proper assessment of the borrowers' training requirements. Mahmud et al. (2014) observed the

short duration of training programs as one of the primary reasons for the failure to have a meaningful impact on the living standard of borrowers. All of

Vii. Limitations Of The Study

The study excluded borrowers who received training on non-agricultural activities, as this was in accordance with the concept and nature of the training programs offered by the selected NGOs. Furthermore, the training program has exhibited a bias towards women while neglecting men. Hence, the suitability of agricultural or non-agricultural training programs for enhancing the income and expenditures of borrowers remains indeterminate. Subsequent investigations may include a comparative analysis of training programs in the agricultural and non-agricultural sectors, encompassing both male and female borrowers affiliated with NGOs.

VIII. CONCLUSION AND IMPLICATIONS

This study's primary objectives were to evaluate the effect of agricultural training programs on the borrowers' standard of living in terms of household income and food expenditure. The study showed that training programs failed to increase the household income and food expenditures of NGO borrowers relative to non-participants (control group). There are other potential factors that may

these may have limited success in enhancing the borrower's household income and food expenditures through skill development training. have contributed to this failure. Short-term training was conducted without doing a comprehensive evaluation of the training needs of the recipients. Furthermore, there existed a restricted capacity to oversee the training endeavors, specifically in terms of verifying the practical implementation of the borrowers' acquired competence in agricultural pursuits. It should be highlighted that the effect of training on household income and food spending was statistically negligible, but the sign of the coefficient of household income and food expenditure was positive (Table 2). Thus, there is potential for training programs to be helpful provided they are appropriately planned based on the needs of borrowers and thoroughly monitored. Providing comprehensive IGA training to economically disadvantaged women by a qualified trainer is also imperative. Additionally, providing adequate credit support to the poor for pursuing IGAs, creating more opportunities for rural employment by establishing agro-based industries in rural areas, and developing rural infrastructural facilities would be the most effective means of improving the income and expenditures of the rural poor.

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