COMPARATIVE STUDY ON BRAC AND NON-BRAC HOMESTEAD ENTERPRISES WITH RESPECT OF INCOME GENERATION IN AN AREA OF BANGLADESH

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ABSTRACT

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The study was designed to identify the range of homestead enterprises practiced by the BRAC and non-BRAC programme households as well as to investigate the income and employment generation pattern of the BRAC and non-BRAC programme households and social status of women in decision making process. Thirty BRAC and thirty non-BRAC programme households were selected conveniently from Sadar Upazila of Rangpur district of Bangladesh. The findings revealed that, incomes of households from sale of vegetables, fruits, poultry, dairy and fish product and agricultural employment were substantially higher for BRAC than that of the non-BRAC member households. Total man-days of employment were higher for the BRAC than that of non-BRAC programme households. The participation of women in social and other self-development activities were considerably higher in the BRAC programme households. The women of BRAC programmes were better placed in respect of social awareness, freedom of attitude, financial freedom and in exercising the right of decision making in all activities compared to their counterparts with the non-BRAC programmes. The results of the multiple regression analysis model revealed that the key variables included in the model were individually or jointly responsible for variation in annual income of the BRAC and non-BRAC programme households. The measure of the overall fit of the estimated regression analysis was statistically significant at 1% level, i.e., inclusion of the variables were individually or jointly responsible for the variation of farm household income.

Key words: Homestead, income generation, women's participation

INTRODUCTION

BRAC a non-government organization set up in 1972. BRAC initially provided relief and rehabilitation assistance to Refugees returning from India after the war of liberation. Later, BRAC turned its focus on the long-term issue of poverty alleviation and empowerment of the poor in rural areas of the country. At present, BRAC promotes income generation for the poor, mostly landless rural people through micro credit and programmes on healthcare, literacy, education and training (Hasan, 2005).

Homestead is an area of land in which the households has its own dwelling unit. Homestead land has been defined in different ways, According to Ninaz (1986) homestead refers to home and adjoining land occupied by a family for the purposes like small scale agriculture production, home up keeping, health sanitation and nutrition. Homestead agriculture includes backyard gardening livestock rearing, poultry raising, fish culture, home forestry and alike activities. Homestead agriculture is fact in a subsystem of family system, which is complicated interwoven mesh of soils, plants, animals implements, workers, other inputs and the environment, all manipulated by a person called farmer, who given his preference and aspirations, attempts to produce outputs from the inputs and technology available to him (IARC, 1978). Homestead might be treated as the centre of agriculture activities. Homestead area per household was 0.07 acre in Bangladesh. Total household number and non-form household number were 17828187 and 6029945 respectively (BBS-2004). Farming activities are generally concentrated for the production of crops, livestock and poultry, culture fisheries and agro-forestry. Except for crop, most other activities are done around the homestead. In the agrarian and largely subsistence economy of Bangladesh livestock, vegetables, fruits and fish play a crucial role to supply nutrition's food and to generate income and employment.

A good number of vegetables are grown in Bangladesh throughout the year. Families having even small amount of land, plant multipurpose trees such as mango, jackfruit, and blackberry, which besides giving fruits serve the purpose of fuel and wood. From the economic point of view the importance of poultry is very significant. Poultry meat alone contributes 37 percent of the total animal protein supply in Bangladesh (Ahmed and Haque, 1990). Within agriculture sector, fisheries play a very important role in the socio cultural and economic life of Bangladesh. Bangladesh is a small densely populated country. Due to limited cultivable area, there is little scope for bringing more land under cultivation. According to Abdullah (1986) the substantial area occupied by the rural households as homestead areas can be used to grow vegetables, to rear livestock and poultry, to culture pond fish, etc., which can significantly contribute to our economy. Keeping these views the present study has

undertaken to identify the range of homestead enterprises and the income generation pattern and the status of women in decision making process on household affairs of the BRAC and non-BRAC programme households.

MATERIALS AND METHODS

Sadar Upazila of Rangpur District of Bangladesh was selected purposively on the basis of concentration of BRAC programmes and non-programmes households. For the present study, convenient sampling procedure was followed. Thirty BRAC programme households and 30 non-BRAC programme households were selected and finally data were collected through direct interview method. Tabular analyses were used mainly based on average, percentages, etc., to calculate gross margins, net returns, etc. Multiple regression analysis was also used to determine the effects on the variation of annual income of the key variables which are likely to have impact on the variation of annual income. The multiple regression analysis models were as follows:

$$Y = f(X_i, D)$$

The explicit formulation of the function was

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, D)$$

Which in its linear form was specific as-

$$Y = a + b_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + D$$

Where,

Y = Total annual income per households (Taka)

X_1 = Age of the respondent (year)

X_2 = Educational status of the respondent (years of schooling)

X_3 = Family size of the households (persons per family)

X_4 = Total land holding per household (acres)

X_5 = Proportion of female members in the households.

X_6 = Total number of enterprises.

D = Dummy for programme effect (D= 1 for household BRAC programme and D=0 for otherwise)

a = Intercept

$b_1, b_2,$----------$,b_6$ = Parameters to be estimated.

RESULTS AND DISCUSSION

***Range of homestead enterprises*:** Cost and returns and gross margin were calculated for individual enterprises such as vegetables fruits, livestock, poultry and fish.

The selected vegetables were cucumber, red amaranth, sweet gourd, cowpea, gourd, potato, bean, tomato, puishak. Total variable costs of the enterprise of BRAC programme household was Tk. 2019.51 and Tk. 1715.56 for non-BRAC households respectively. Total gross return all these vegetables per household per year of BRAC programme households was Tk. 4438.35 and Tk. 3050.68 for non-BRAC programme households respectively. The gross margin of BRAC programme household was Tk. 2418.84 and Tk. 1335.53 for non-BRAC programme households respectively. The contribution of women in production of different types of vegetables such as cucumber, red amaranth, sweet gourd, cowpea, bottle gourd, potato, bean, tomato, puishak were 58.15%, 65%, 80%, 57%, 68.67%, 50%, 75%, 55% and 68.66% respectively for BRAC programme households and 40%, 57%, 50%, 57%, 62.86%, 30%, 50%, 35% and 58.33% respectively for non-BRAC programme households (Table-1).

Table 1 Gross returns, total variable costs and gross margin from vegetables production by the BRAC and non-BRAC programme households.

Name of vegetables	BRAC program households.				Non-BRAC program households.			
	Gross return (Tk)	Variable cost (Tk)	Gross margin (Tk)	Contribution of women for production (%)	Gross return (Tk)	Variable cost (Tk)	Gross margin (Tk)	Contribution of women for production (%)
Cucumber	625.18	310.18	315.00	58.15	443.00	277.41	166.00	40
Red amaranth	283.96	83.78	200.18	65	182.14	67.32	114.82	57
Sweet gourd	638.00	269.13	368.87	80	431.85	235.70	195.15	50
Cow pea	440.67	155.00	285.67	57	407.22	150.00	257.22	57
Battle gourd	565.33	288.00	277.33	68.67	353.57	221.00	132.57	62.86
Potato	635.20	351.66	283.64	50	461.25	285.58	176.67	30
Bean	386.00	107.64	278.36	75	182.32	87.18	95.14	50
Tomato	586.35	314.42	271.92	55	400.00	292.50	107.50	35
Puishak	277.66	139.80	137.86	68.66	189.33	98.87	90.46	58.33
All	4438.35	2019.61	2418.84	-	3050.68	1715.56	1335.53	-

Source: Yeasmin, 2002

The homestead fruits in the study area were mango, jackfruit, banana, betel nut, coconut and guava. The total variable cost, total gross return and total gross margins for all fruits were Tk. 1282.90, Tk. 7789.43 and Tk. 6506.49 respectively for BRAC programme households and Tk. 962.38, Tk. 6675.12 and Tk. 5650.07 respectively for non-BRAC households. The contribution of women programme households in production of fruits such as mango, jackfruit, banana, betel nut, coconut and guava were 32.66%, 38.33%, 37%, 39%, 40% and 33.50% respectively and for non-BRAC programme households were 29%, 33.10%, 30%, 30%, 36% and 32.29% respectively (Table-2).

Table 2 Gross returns, total variable costs and gross margin from fruit production by the BRAC and non-BRAC programme households.

Name of fruits	BRAC program households.				Non-BRAC program households.			
	Gross return (Tk)	Variable cost (Tk)	Gross margin (Tk)	Contribution of women for production (%)	Gross return (Tk)	Variable cost (Tk)	Gross margin (Tk)	Contribution of women for production (%)
Mango	1544.99	297.50	1247.49	32.66	1569.23	217.43	1351.80	29
Jackfruit	1471.67	172.89	1298.74	38.33	1200.00	141.40	1059.00	33.40
Banana	1321.19	314.23	1006.96	37	1188.34	287.91	900.43	36
Betel nut	1703.93	227.50	1476.43	39	1217.00	107.32	1046.68	30
Coconut	1249.64	164.62	1085.02	40	1115.55	115.48	1000.00	30
Guava	498.01	106.16	391.85	33.50	385.00	92.84	292.16	32.29
All	7789.43	1282.90	6506.49	-	6675.12	962.38	5650.07	-

Source: Yeasmin, 2000

Average annual cost for poultry raising under BRAC and non-BRAC program households were Tk. 2777.50 and Tk. 2157.23 respectively to BRAC and non-BRAC program households. In poultry raising return from eggs was the main income both for the BRAC and non-BRAC program households. The total value of eggs was Tk. 2934.00 and Tk. 1779.48 for BRAC and non-BRAC program households respectively. Annual returns from by product were Tk. 282.98 and Tk. 166.79 respectively for BRAC and non-BRAC program households. The values of the net change in inventory were Tk. 920.64 and Tk. 660.00 respectively for BRAC and non-BRAC program households. The total gross return of BRAC and non-BRAC program households was Tk. 4137.62 on the contrary total gross return of non-BRAC program households was Tk. 2606.27 which was lower than that of BRAC program households (Table-3). The gross margins per households were Tk. 1360.12 and Tk. 449.04

respectively for BRAC and non-BRAC program households (Table-3). Total variable costs of the poultry enterprise were Tk. 13288.88 and Tk. 9007.95 for the BRAC and non-BRAC program households. Result shows that the performance of BRAC program households was better than that of non-BRAC program households because the BRAC program households were able to supply required feed, proper housing and veterinary facilities.

Table 3 Gross return, total variable cost and gross margin from poultry enterprise of BRAC programme and non-BRAC programme households.

Items	BRAC programme households.	Non-BRAC programme households.
	Return (Tk)	
Egg	2934	1779.48
By product	282.98	166.79
Net Change in inventory	920.64	660
Gross return	4137.62	2606.27
Variable cost (Tk)		
Feed	1050	700
Labour	1350	1120
Veterinary enterprises	145	129.65
Cage	232.50	207.58
Total	2777.50	2157.23
Gross margin (Tk.)	1360.12	449.04
Total	13288.88	9007.95

Source: Yeasmin, 2000

Total gross return of BRAC program households was Tk. 31467.10. Total gross return of non-BRAC program households was Tk. 16690.50, which was lower than that of BRAC program households. The gross margin per household per year was Tk. 18178.22 and Tk. 7682.55 respectively for BRAC and non-BRAC program households. The gross margin was much higher than that of non-BRAC program households. The better program of the BRAC program households in dairy raising may be attributed to their better management in raising dairy animals (Table 4).

Table 4 Gross return, total variable cost and gross margin from dairy enterprise of BRAC programme and non-BRAC programme households.

Items	BRAC programme households.	Non-BRAC programme households.
	Gross Return (Tk)	
Milk	14554.63	7200
By product	2404.28	925.50
Net change in inventory	14508.019	8565
Total	31467.10	16690.50
Total variable cost (Tk.)		
Feed and Fodder	7857.46	4550.40
Labour	4722.12	4030.75
Veterinary enterprises	438	301.50
Housing cost	271.30	125.30
Gross margin (Tk.)	18178.22	7682.55

Source: Yeasmin, 2000

The total variable cost of fish production for BRAC program household (Tk. 7838.86) was higher compared to that of non-BRAC program (Tk. 7007.68) households. The gross return per family per year was Tk. 15797.92 and Tk. 11190.05 respectively for BRAC and non-BRAC program households. The gross margin per family per year of BRAC members was Tk. 7959.06 for the non-BRAC member's gross margin was Tk. 4182.37, which was lower than that of BRAC program households (Table 5).

Table 5 Gross return, total variable cost and gross margin of fish cultivation of BRAC programme and non-BRAC programme households.

Items	BRAC program households.	Non-BRAC program households.
	Gross Return (Tk)	
i) Opening stock	798.80	743.39
ii) Sold	8398.30	6684.24
iii) Consumed	2469.25	1845.05
iv) Others	1799.07	1047.52
v) Closing stock	3930.10	2356.63
Gross return (ii+iii+iv+v-i)	15797.92	11190.05
Total variable cost (Tk.)		
Fingerlings	763.00	527.54
Manure	74.30	72.23
Lime	124.00	126.53
Fertilizer	420.00	267.71
Feed	180.00	197.18
Labour	6081.22	5639.53
Treatment	123.84	107.92
Other	72.50	69.04
Total variable cost (Tk)	7838.86	7007.68
Gross margin (Tk.)	7959.06	4182.37

Source: Yeasmin, 2000

Functional analysis: An attempt has been made to examine the quantitative relationship between household's income and selected socioeconomic attributes of the sample households. After a series of trial regression runs, the linear form was considered acceptable in terms of expected signs and magnitudes of the coefficients, R^2 and F-values. The parameter estimates obtained from the linear regression were selected for interpretation.

It is evident from Table 6 that many of the coefficients of the regression function did not have expected signs and magnitudes. As is expected, age of the respondent had negative impact on the level of income although the coefficient was not statistically significant. Respondents' year of schooling had positive impact on the level of income but was not statistically significant. It might be due to the case that practical training rather than formal schooling was more important determinant of household's income.

Table 6 Estimated values of coefficient and related statistics of the linear regression model of BRAC and non-BRAC programme households.

Variables/Parameters	Coefficient	t-value
a (Intercept)	26500.55	2.73
X_1 (Age of the respondent)	- 218.34	- 1.22
X_2 (Educational status of the respondent)	186.05	0.47
X_3 (Family size of the households)	2042.59	1.36
X_4 (Total land holding per households)	4318.02	2.45[*]
X_5 (Proportion of female members in the households)	- 8289.15	- 1.15
X_6 (Total number of enterprise)	2015.19	2.12[*]
D (Dummy variable)	8573.30	3.36[**]
R^2	0.53	-
Adjusted R^2	0.46	-
F	8.24 **	-

Source: Yeasmin, 2000
** Significant at 1 percent level, * significant at 5 percent level.

The coefficient of family size was 2042.59, which implied that holding all other variable constant one unit increase in family size led to an increase in income by Tk. 2042.59. However, the coefficient was not significant. It is observed from the regression model that the coefficient of land holding was positive and Tk. 4318.02, indicating that one acre increase of land holding, keeping other factors constant, would result in an increase in household income by Tk. 4318.02. The coefficient was also statistically significant at 5 percent level. The proportion of women in households had negative impact on the level of income, although the coefficient was not statistically significant. The coefficient of number of enterprises was 2015.19, which was significant at 5 percent level. This value implied that holding all other variables constant, introduction of an additional enterprise in the households would lead to an increase in income by Tk. 2015.19. Thus an increase in the number of enterprises may be contributing modestly to the income of the sample households. The most striking impact on the level of household income was of the dummy variable. The coefficient of the dummy for programme effect was 8573.30 implying that other things remaining same members of BRAC programme households earned on an average Tk. 8573.30 more per annum than those of non-BRAC programme households. The coefficient was also statistically significant at 1 percent level, indicating that the estimate could be taken with a great deal of confidence.

The value of the coefficient of determination R^2 was 0.53, which implied that about 53 percent variation in the income was explained by the set of explanatory variable included in the model. The value of adjusted R^2 was 0.46 indicated that after taking into account the degrees of freedom, those seven explanatory variables included in the model still explained about 46 percent of the variation in the dependent variable i.e., income of sample households. The measures of the overall fit of the estimated regression F-value was significant 1 percent level, implying that inclusion of the variables for explaining the variable of farm household's income was reasonably accurate

Status of women in decision making process: The highest participation of women in decision making were observed in the case of rearing livestock and poultry, caring children and homestead gardening in which exclusive women participation was observed in the case of 66.66%, 80% and 70% households respectively for BRAC programme households. For non-BRAC households highest exclusive women participation was observed for caring children in 60% households partial participation of women in decisions with respect education of sons and daughters, marriage of sons and daughters and family planning was substantially higher for BRAC than for non-BRAC programme households. While no women were involved in the decision making with respect to crop production of non-BRAC programme households, in 50 percent cases decisions with respect to crop production was taken by men in consultation with women in BRAC programme households (Table 7).

Table 7 Women's role in household decision making process for BRAC and non-BRAC programme households.

Decision making with respect to	BRAC program households.			Non-BRAC program households.		
	Female alone	Male alone	Both	Female alone	Male alone	Both
Crop Production	10 (33.33)	15 (50)	5 (16.67)	-	30 (100)	-
Labor use	5 (16.67)	15 (50)	10 (33.33)	-	21 (70)	9 (30)
Homestead gardening	21 (70)	-	9 (30)	10 (33.33)	9 (30)	11 (36.67)
Building and repairing house	-	18 (60)	12 (40)	-	22 (73.33)	8 (26.67)
Marketing agricultural products	5 (16.67)	16 (53.33)	9 (30)	-	23 (76.67)	7 (23.33)
Rearing livestock and poultry	20 (66.66)	5 (16.67)	5 (16.67)	8 (26.40)	16 (53.33)	6 (20)
Caring children	24 (80)	-	6 (20)	18 (60)	4 (13.33)	8 (26.67)
Education of sons and daughters	10 (33.33)	9 (30.10)	11 (36.67)	5 (16.67)	17 (26.66)	8 (26.67)
Marriage of sons and daughters	3 (10)	9 (30)	18 (60)	-	20 (66.67)	10 (33.33)
Family planning	5 (16.67)	10 (33.33)	15 (50)	-	18 (60)	12 (40)
Other business	6 (20)	16 (53.33)	8 (26.67)	5 (16.67)	15 (30)	10 (33.33)

Source: Yeasmin, 2000

Note: Figures within parenthesis indicate percentage

Bangladesh is predominantly a rural economy. The landless and marginal farmers have very limited resources to invest for further production. Due to continuous increase of population, demand for food is increasing. Continuous increasing pressure on land for the production of cereals, scope of producing vegetables, fruits, livestock, poultry and fish is being reduced. Under the present socioeconomic condition, a homestead is just more than a dwelling unit. The additional spaces available in the homestead offer a wide scope of producing a variety of products. So, homestead enterprises play a vital role in providing nutrition, extra income and employment as well as poverty reduction. The findings of the present study suggest that adoption of comprehensive approach of socioeconomic development through participation of households in BRAC programme led to increase income higher level of employment and increased participation of women in decisions making process. Thus it was helping the rural poor women to lift themselves above the poverty line. In fact, the BRAC programme made a positive contribution to poverty alleviation in the study area.

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