

Contribution of Variables to the Role Performance of *Char* Women in Maintaining Sustainable Livelihoods in Bangladesh

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Abstract:

The main purpose of the study was to determine the contributing variables to the role performance of *char* women in maintaining sustainable livelihoods. The study was carried out in two Upazila (administrative units) under Jamalpur district in Bangladesh from November 2006 to March 2007. Data were collected from 200 randomly selected *char* women by using interview schedules and correlation, multiple regression and path analyses to know the contributing variables with their direct and indirect effects. Analysis revealed that *char* women performed 23.24% role by utilizing human capital, 20.33% by natural capital, 19.69% by physical capital, 19.94% by social capital and 16.80% by financial capital. Out of 15 characteristics, 8 had positive correlations with their role performance. Stepwise regression analysis revealed that six variables namely participation in income-generating activities (47.5%), agricultural knowledge (10%), social participation (4.3%), organizational participation (2.1%), innovativeness (1.6%) and family size (1.4%) were important contributing variables which combined explained 66.9% of total variation on role performance. Path analysis indicated that participation in income-generating activities had the highest positive direct effect while social participation had the highest positive indirect effects. Women in the *char* area who had more participation in income-generating activities, better agricultural knowledge, more social participation, involvement in different organizational participation, more innovative and large family size were found to achieve better role performance.

Char: *Char* is a tract of land surrounded by the waters of an ocean, sea, lake or stream or pieces of land resulting from the accretion of silt in river channels. *Chars* are the areas of new lands formed through the continual process of erosion and deposition in the major rivers and coastal areas of Bangladesh. There are two different types of *chars*; islands *chars* and attached *chars*. Island *chars* are surrounded by water all year round and can be reached from the main land by crossing a main

channel. Attached *chars* are connected to the mainland and accessible without crossing a main channel during the dry season, yet are inundated or surrounded by water during the peak of a normal flood (normal monsoon). The island *chars* are flood more extensively than attached *chars*. The women who live in *char* areas are called *char* women.

Introduction:

Bangladesh is a developing country where 76.47% of the total population lives in rural areas (Agricultural Diary, 2007). About half (48.6%) of the population are women who play different roles in the economic and non-economic sectors to make their livelihoods sustainable by using available assets (FAO, 2003). They work to provide not only for their family's own consumption but also their other requirements. The fundamental requirement for the improvement of livelihoods of the household is to enhance people's strength and the activities essential for the means of living. The livelihood approach is founded on a belief that people require a range of assets to achieve a positive livelihood outcome. The major livelihood assets are human, natural, financial, physical and social capitals. Rural women are intimately involved in all phases of agricultural activities in rural areas. They primarily work as unpaid family workers, accounting for 45.6% of the total employment in agriculture (FAO, 2003). The daily life of rural women is characterized by the search for water, fuel and inputs for agriculture or household production. In Bangladesh more than 600,000 (6 to 7% of the population) people live in *char* areas (Sarker *et al.*, 2003). The main occupation in the *chars* relates to crop agriculture. The intensity with which agriculture can be pursued on a *char* depends very much on the stage of its development. Rice, the main crop, is cultivated in three seasons in *char* areas. *Char* people cultivate vegetables, pulses, wheat, groundnuts, chillies and maize. Farming includes owner cultivation as well as sharecropping. Wage labour is used in various operations. In some *chars*, fishing, rearing of cattle and trading of miscellaneous commodities is the primary occupation for many households. Thus people of *char* areas

contribute significantly to our national economy. Samantha (2005) stated that the contribution of rural women in agriculture and homestead was huge both quantitatively and qualitatively. Rural women spend 40.4% and 15.4% time in home and farm related activities respectively. Although the day-to-day life of rural women is full of hardship, deprivation and the struggle to survive, they supplement the family income by undertaking different income-generating activities (Rahman, 1996). They earn money by working in different small-scale industries such as the cottage, food-processing and tobacco industries. They sew clothes, make baskets, papers and flower bases and rear poultry, livestock, bees and mushrooms. They even sell fertilizer, seed and packaging products. In some areas, they are also involved in processing jute for the market (Abdullah and Zeidenstein, 1982). Women work as wage earners in different domestic services and crop processing activities. Landless females are more involved with agricultural activities to earn a direct income (Ahsan, 1986). However, women's roles become limited and undermined because of their poor access to social capital which is the most intimately connected to the transforming structure and process. Social institutions, organizations, policies and legislation hinder women's roles in development activities.

The present study was undertaken to find out the contributing variables to the role performance of *char* women in maintaining sustainable livelihoods.

Material and Methods:

Locale of the study

Two upazila (administrative units), Islampur and Dewanganj, were selected randomly from Jamalpur district in Bangladesh. From each of the two upazilas, one union, namely Belgacha of Islampur upazila and Chukaibari union of Dewanganj upazila, were purposively selected for the study because they are both considered proper *char* areas. Village Munnier and Ghunapara from Belgacha union of Islampur upazila, village Halkerchar and Balugram from Chukaibari union of Dewanganj upazila were randomly selected. The geographical location of Islampur upazila is at 25°00' to 25°10' north latitude and 89°40' to 89°52' east longitude and the geographical location of Dewanganj upazila is at 25°10' to 25°26' north latitude and 89°40' to 89°48' east longitude.

Population and sample of the study

The total number of housewives of the households of these four villages namely Munnier char, Ghunapara, Halkerchar and Balugram comprised the population. 10% women of this population were randomly selected by using simple random sampling methods. The total sample size was 200.

Measurement of dependent variable

The dependent variable role performance was measured by computing a 'composite role performance index' based on each of the five components of the livelihood asset pentagon: (i) human capital, (ii) natural capital, (iii) physical capital, (iv) social capital, and (v) financial capital role performance index. Ten appropriate roles/activities were selected going through a rigorous process of item collection, items screening through field verification, judge rating, piloting, development of instruments etc. Ten activities were used to determine the role performance of *char* women based on each of the capitals. The respondents were asked to indicate their extent of performance for each of the 10 selected activities, which were related in supporting and strengthening their livelihoods. Their role performance was measured by using a 5-point rating scale - high, medium, low, very low and not at all. They were asked to indicate to what extent they were involved in performing the activities by indicating any of the five responses under each of the capitals. Appropriate weights such as 5, 4, 3, 2 and 1 were assigned to each of these responses. The role performance score of a respondent was calculated individual capital-wise and then combined into overall performance.

Independent variables such as age, education, family size and farm size were measured by using the measuring units of year, year of schooling, number of members and hectare respectively. The annual income was measured on the basis of total earnings annually by all members of the family and expressed in Taka. The training experience of a *char* woman was determined by computing a 'training experience score' on the basis of total number of days for which she received training on various subject matters related to farming and non-farming provided by different GOs and NGOs during her life time. In order to know the level of knowledge of a respondent for each of the six technical aspects (variety and its attributes; time of transplanting and spacing; fertilizer management; weeding and

irrigation; plant protection measures; and environment and ecology), 36 (6×6) questions with six levels of cognitive behavior were included in the questionnaire to represent knowledge on vegetable cultivation. The total credit for the 36 questions was 60. Full scores were given for correct answers, zero for wrong and partial scores for partially correct answers. In calculating the social participation score, two dimensions - extent of participation and nature of participation in social activities - were considered. Scoring for extent of participation was '0' for not at all, '1' for low, '2' for moderate and '3' for regular participation. The scoring for nature of participation was '1' for indirect and '2' for direct. The social participation score was computed for each of the social activities by multiplying the score obtained from extent of participation with its corresponding scores from nature of participation. The scores for all the items were added together to have the total score of social participation of a *char* woman. Time spent in household and farming activities was measured in terms of hours per day as stated by the *char* woman for different activities related to agriculture and non-agriculture. Risk orientation was measured by using a 5 point Likert type scale on ten statements. Organizational participation, innovativeness, cosmopolitanism and extension media contact were measured by the usual methods in social science. Participation in income-generating activities was measured by computing a 'participation in income-generating activities score' on the basis of her extent of participation in selected income-generating activities related to *char* livelihoods.

Statistical analysis

Various statistical measures such as frequency distribution, range, mean, standard deviation (SD) and percentage were used to describe variables and findings. To explore the relationship between dependent and independent variables, Pearson's product moment correlation was used. Step-wise multiple regressions were analyzed to determine the contribution of the selected independent variables. Path analysis was computed to measure the direct and indirect effects of selected characteristics of the *char* women to their role performance in maintaining sustainable livelihoods.

Results and Discussion:

Role performance of char women

This was determined in three steps: firstly determining weights for each of the selected roles/activities based on each of the five components of the livelihood asset pentagon; secondly, determining the weighted role performance index for each of the individual components; and finally, a composite role performance index based on the weights of these five components. The role performance of the *char* women ranged from 53.31 to 92.6, 28.24 to 91.90, 45.15 to 83.16, 35.94 to 85.19 and 20.0 to 77.7 against the possible range of 20 to 100 with mean values of 71.36, 62.41, 60.43, 61.21 and 51.56 and coefficient of variation of 11.36%, 21.95%, 10.56%, 15.06% and 21.62% for the five capitals respectively. The respondents were categorized on the basis of their performance score (possible range) into three categories - high, medium and low performance.

For role performance based on human capital, 71.5% of the *char* women were found in the medium category, 28.5% in high performance and nobody in low. In natural capital, 70.5% were in medium, 15% in high and 14.5% in the low role performance category. For physical capital, 97.5% came under medium, 1% in low performance and 1.5% in high. With social capital, 87.5% performed medium roles compared to 7.5% in low and only 5% in high. In financial capital 68.5% of the respondents were found under medium, 30.5% under low and 1% in high. Thus it was found that the *char* women performed 23.24% by utilizing human capital, 20.33% by utilizing natural capital, 19.69% by utilizing physical capital, 19.94% by utilizing social capital and 16.80% by utilizing financial capitals for maintaining their livelihoods.

Variables related to role performance

A total of 15 selected characteristics of the *char* women were considered as independent variables. To test the relationship of these characteristics to role performance, they were computed. For age, the coefficient was 0.113, for family size 0.206*, for family education 0.053, for farm size 0.013, for annual income 0.083, for training experience 0.113, for agricultural knowledge 0.515**, for social participation 0.421**, for time spent in household and farming activities 0.351**, for organizational participation 0.279**, for innovativeness 0.373**, for cosmopolitanism - 0.115, for extension media contact 0.296**, for risk orientation -0.017 and for participation in income-generating activities 0.689**.

(** significant at 0.01 level of probability)

Out of 15 independent variables, 8 - family size, agricultural knowledge, social participation, time spent in household and farming activities, organizational participation, innovativeness, extension media contact and participation in income generating activities correlated positively with the women's role performance.

Contribution of variables to role performance

Linear multiple regression analysis was computed in order to determine the characteristics contributing to their role performance. Only those variables which had significant relationships with role performance, were included. Nine variables - family size, organizational participation, time spent in household and farming activities, social participation, agricultural knowledge, innovativeness, extension media contact and participation in income generating activities were included. The findings of the regression

analysis are presented in Table 1. The regression coefficients of only 6 variables were statistically significant. The other three had no significant contribution. The results of the general linear multiple regressions are also presented. The R² value was 0.669 with an F value of 64.91 (significant at 0.000 level). This final analysis indicated that 66.9 % of the total variation in role performance was explained by these six variables and the remaining 33.1% remain unexplained.

Table 1: Regression coefficient of role performance status of char women with their characteristics

Characteristics of char women	Regression coefficients		t value	Significant level
	Unstandardized	Standardized		
(constant)	34.819		17.486	0.000
Participation in income generating activities	0.801	0.517	11.544	0.000
Agricultural knowledge	0.301	0.252	5.569	0.000
Social participation	0.267	0.126	2.632	0.009
Organizational participation	1.219	0.179	4.167	0.000
Innovativeness	0.750	0.148	3.174	0.002
Family size	0.564	0.118	2.804	0.006
R ² =0.669		Adjusted R ² = 0.658	F value = 64.915	P=0.000

Therefore, it can be concluded, based on these findings, that whatever variation was in the role performance, it was mainly due to the contributions of these six variables. The unique contribution by each of the variables was also determined by taking the changes in R² value for a particular variable in the stepwise regression model.

Table 2: Stepwise multiple regression analysis showing contribution of the selected characteristics to role performance of char women

Variable entered	Multiple R ²	Change in R ²	Variation Explained (%)	Significant t level
Participation in income generating activities	0.475	0.475	47.5	0.000
Agricultural knowledge	0.575	0.100	10.0	0.000
Social participation	0.618	0.043	4.3	0.000
Organizational participation	0.639	0.021	2.1	0.009
Innovativeness	0.655	0.016	1.6	0.002
Family size	0.669	0.014	1.4	0.006

Table 3 shows that among the six variables, participation in income-generating activities

contributed 47.5%, agricultural knowledge 10%, social participation 4.3%, organizational participation 2.1%, innovativeness 1.6% and

family size 1.4% to explained variation 66.9%. However, those women who had more participation in income-generating activities, better agricultural knowledge, more social participation, more organizational participation,

higher innovativeness and large family size were found to perform better in maintaining sustainable livelihoods.

Path analysis for measuring direct and indirect effects of selected independent variables on role performance of char women

Since stepwise regression analysis does not show separately the direct and indirect effects of the independent variables on dependent variable, path analysis was performed in order to fulfill this shortcoming and to have a clear understanding of the direct and indirect effects of the selected six variables. Variables through which substantial indirect effects were channeled were also explored. The 'path coefficient' of selected independent variables with respect to role performance of char women is shown in Table 3.

Table 5: Path coefficients showing the direct and indirect effects of selected independent variables on the role performance of char women

Independent variables	Direct effect	Total indirect effect	Variables through which indirect effects are channeled	
			value	variable
Participation in income generating activities	0.517	0.172	0.07837	Agricultural knowledge
			0.02671	Social participation
			0.01969	Organizational participation
			0.03566	Innovativeness
			0.01156	Family size
Agricultural knowledge	0.252	0.262	0.16078	Participation in income generating activities
			0.0378	Social participation
			0.02398	Organizational participation
			0.03182	Innovativeness
			0.00802	Family size
Social participation	0.126	0.294	0.10960	Participation in income generating activities
			0.0756	Agricultural knowledge
			0.03132	Organizational participation
			0.05905	Innovativeness
			0.01876	Family size
Organizational participation	0.179	0.100	0.05687	Participation in income generating activities
			0.03376	Agricultural knowledge
			0.02205	Social participation
			-0.00799	Innovativeness
			-0.00437	Family size
Innovativeness	0.148	0.224	0.12459	Participation in income generating activities
			0.05418	Agricultural knowledge
			0.05027	Social participation
			-0.00967	Organizational participation
			0.00531	Family size
Family size	0.118	0.087	0.05066	Participation in income generating activities
			0.01713	Agricultural knowledge
			0.02003	Social participation
			-0.00662	Organizational participation
			0.00666	Innovativeness

Data also indicated that six variables (participation in income-generating activities, agricultural knowledge, social participation, organizational participation, innovativeness and family size) had direct positive effects. Further data showed that among the independent variables, participation in income-generating activities had the highest positive

value (0.517) of the direct effect on role performance; its total indirect effect was 0.172, which was exerted through agricultural knowledge (0.078), social participation (0.026), organizational participation (0.019), innovativeness (0.035) and family size (0.011). Agricultural knowledge had the second highest direct effect of 0.252. The total indirect effect

of agricultural knowledge was 0.262, exerted through participation in income-generating activities (0.160), social participation (0.037), organizational participation (0.023), innovativeness (0.031) and family size (0.008). All six variables had indirect effects in various degrees and were channeled through each other. Social participation had the highest (0.294) substantial indirect effect, mostly channeled through participation in income-generating activities (0.109), agricultural knowledge (0.031), organizational participation (0.059), innovativeness and family size (0.018).

4. Conclusion and Recommendations:

Char women performed best in human capital rather than other components of the livelihood asset pentagon. The overall role performance in the study area did not reach a satisfactory level, because of the geographical location, vulnerable conditions, lack of GO and NGO services and the personal, economic, social and psychological characteristics of *char* women. Out of fifteen characteristics, 8 were correlated with role performance and entered into only 6 in multiple regressions. These six cover 66.9% combined of total variation, containing direct and indirect effects on role performance. Therefore, attempts should be made by government and non-government organizations to carry out programs of upliftment and motivation for *char* women to

increase participation in different income-generating activities, training for increasing agricultural knowledge and innovativeness and to encourage their involvement in social and organizational participation.

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