Research Note

IMPACT OF ENTREPRENEURSHIP DEVELOPMENT ON HOUSEHOLD INCOME AND EXPENDITURE: AN EMPIRICAL STUDY ON TRIBAL WOMEN IN SYLHET REGION OF BANGLADESH[1]

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ABSTRACT

Bangladesh poses an important role to promote livelihood status for tribal community. This empirical research arises from the perceived need to get better understanding about tribal women's income through entrepreneurship development and contribution to their family. The study was to analyze the impact of entrepreneurship development on household income and expenditure for tribal women using multistage sampling technique. It employed primary data collected from 360 tribal women, of them 180 for entrepreneurs and remaining 180 for non-entrepreneurs in two districts namely, Sylhet and Moulvibazar in Sylhet region of Bangladesh. For examining women's contributions, the present research studied four enterprises (i.e. pig farming, shop keeping, handloom weaving, and bamboo handicrafts) for four tribal communities such as *Garo, Khasia, Monipuri*, and *Patro*. Propensity Score Matching (PSM) method and Regression analysis were used to determine the impact of entrepreneurship development. The research findings revealed that entrepreneurship development had positive and significant impacts on enterprise income, total expenditure and income in household level. It is recommended that enterprises should be local, cultural, and social based with more financial and technical support from GO and NGOs. Government should give emphasis on developing sufficient road, bridge, water supplying facilities and developing specific marketing channel as well.

Key words: Entrepreneurship, women's contribution, enterprise income, household expenditure.

I. INTRODUCTION

Entrepreneurship may be a great opportunity to improve livelihoods and get access to and control over the physical resources. Entrepreneurship as "the ability of a person to see a

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business opportunity, to get together the capital needed to take advantage of the opportunity, and to start a business, taking the risk of failure in the hope of reaping the rewards of success (Koontz and Fulmer, 2000)." It aims to develop the upstream profit with a willing to mobilize resources and achieve or promote the achievement of wider interest (Schumpeter, 1935). The emergence of women entrepreneurship in tribal societies and its contribution to their economy is quite visible in Bangladesh today. About 1.41 million people are tribal which constitute 1.13% of the total population (BBS, 2011). More than forty five tribes such as *Khasia, Chakma, Mog, Murong, Tipra, Kuki, Luci, Monipuri, Garo, Patro, Bishnupriya, Hajong, Koach*, and *Sawntal*, etc., are living in Bangladesh (Ahmed, 2012). There are also ten other groups called ex-tribal groups such as *Bede, Bhuimali, Bhuiyan, Ganghu, Jalia (Kaibartta), Kukamar, Kurmi, Mahto, Malla (Mallo)*, and *Namasudra* who have lost their distinct identities, languages, cultures, and traditions gradually, integrated into the mainstream Bengali society and culture (Malony, 1984).

Majority of tribal households are living in the most remoted and less favoured area where the agricultural production has lagged behind. These minority groups are poor and have below standard health and sanitation facilities, low levels of education, and low income, etc. (Elhaut, 2006). In the tribal society, women play a very important role in the highly labour intensive production process with their male counterparts in the field and contributed to their family income. Generally they do not get enough time to do some income generating activities outside home, and age, sociocultural traditions and taboos also arresting them within the surrounding of their houses and make their conditions more disadvantageous particularly. Moreover, low level of education, motivation, and friendly environment were not positive elements of showing interest to earn for them (Bhasin, 1991). Various national policies and development programs have given emphasis on tribal women to enhance their awareness, knowledge, and skills which could make them empowered. With active and multidimensional process of various programs, they realize their human rights and power in all spheres of life and improve their livelihood status. These multidimensional national policies are also supported and influenced them to create local based business activities to improve their economic condition. With the technical and financial support of GOs and NGOs, they have adopted different home-based enterprises such as pig farming, livestock and poultry farming, shop keeping, fruits and vegetables cultivation, clothes weaving, which help them to undertake the entrepreneurial activities. These enterprises are still facing problems in the context of both production and marketing. Without empirical evidences, answer to the livelihood improvement through the question of entrepreneurship development is not so simple and straightforward.

Some of the literature indicated that women's income is the source of power and opportunities that may otherwise hinder their lives (Al-Amin, 2008; Rahman and Naoroze, 2007; Haque and Itohara, 2008; Fakir, 2008). Their involvements in income-generation activities change their attitudes (Ahmed et al., 1997). A number of studies recognize that women's income generating activities are not only crucial but also urgent priority to improve their livelihoods or living standard (Afrin et al., 2008). Few studies have been conducted in Chittagong hill

areas earlier to find out the socioeconomic conditions, *Jhum* cultivation and problems of tribal people. Still there are very few studies on the impact of entrepreneurship development and livelihood status for the major tribes in Sylhet. Moreover, a number of studies (Sarma, 2014; Janardhan and Krishna, 2016; Sharma and Varma, 2008; Kabir et al, 2006; Soni, 2015; Roy and Manna, 2014; Raja and Radhaakrishnan, 2016) have been conducted in home and aboard, some of them are entrepreneurship development related, and some of them are on socioeconomic conditions of tribal people but no systematic and comprehensive study has so far been conducted on tribal women in Bangladesh for improving their livelihood through entrepreneurship development, particularly in Sylhet region, which is the main focused area in this study.

This research is very important to the government, policy-makers, decision makers, and researchers in the entrepreneurship development sector as a general study which would give a foundation for future and further business related policy, especially in designing and implementing programs of entrepreneurship development for tribal women. The findings of the research also help explaining the theoretical background of entrepreneurship development for tribal women in the country context. Thus, the study is carried out to assess the impact of entrepreneurship development on household income and expenditure for entrepreneur tribal women and compare with non-entrepreneurs who are not involved in entrepreneurial activities in Sylhet region of Bangladesh.

II. MATERIALS AND METHODS

Sylhet is the area of origin for the largest ethnic minority groups. Tribal people are considered generally family oriented, follow and support community based culture. Besides formal administrative structure, the living areas of each ethnic/tribal community are traditionally divided into different *para/punji.* Each of the *para/punji* is headed by a *para/punji* chief, traditionally known as headman. They are empowered to solve conflicts and ensure justice in tribal courts in accordance with the customary laws of the indigenous peoples. A multistage sampling technique is used to ensure that the survey is representative of targeted tribal women. For the study, two districts were selected purposively from Sylhet region; Sylhet and Moulvibazar as tribal women's involvement with entrepreneurial activities is quite new and well over there. Two upazilas from each district, namely Gowainghat and Sylhet sadar were selected from Sylhet and Sreemangal and Kulura were from Moulvibazar. Two unions were also selected randomly from each upazila, namely Khadim Nagar and Tultigor unions of Sylhet sadar upazila and, Fatehpur and Jaflong of Gowainghat upazila. From Sreemangal upazila, Rajghat and Kalighat, and Kulaura and Kadirpur unions of Kulaura upazila were also randomly selected for the study.

In addition, two tribal women groups were also selected purposively for the purpose of this research. Based on involvement of tribal women in income generating activities, all tribal women in each upazila were classified into two categories: tribal women a) who involved in entrepreneurial activities called entrepreneur tribal women and b) who are not involved in entrepreneurial activities called non-entrepreneur tribal women. Both are basically involved in

agriculture and non-agriculture related income generating activities for their livelihoods. For the selection of tribal women entrepreneur, only four enterprises out of eleven, were considered purposively, in which the selected two enterprises as pig farming and bamboo handicraft are agricultural enterprises. In Sylhet district, 175 tribal women were selected randomly from 585 in which 77 women were entrepreneur and ninety eight were non-entrepreneurs. In Moulvibazar district, 185 of tribal women from 617 were randomly selected who are living under 4 unions in which 82 of tribal women were non-entrepreneur. Thus, the sample size stood at 360. For this study, the easy statistical tool of percentage as 30% was applied for the selection of entrepreneurs and non-entrepreneurs tribal women. Both structured and semi-structured interview schedule were used to collect primary data. The following statistical techniques were used to identify and determine the impact of entrepreneurship development on household income and expenditure of tribal women, one of the major objectives of the study. In order to examine the impact of entrepreneurship development on household income and expenditure, Propensity Score Matching model was used, as follows:

Propensity Score Matching (PSM) Modeling

Propensity score matching (PSM) is widely used to estimate treatment effects when all treatment confounders are measured (Abadie and Imbens, 2009; Ravallion, 2005; Cobb clark and Crossley, 2003; Heckman et al., 1998). Rosenbaum and Rubin (1983) defined the propensity score "pscore" as the conditional probability of assignment to a treatment given a vector of covariates including the values of all treatment confounders". The basic assumption when using a counterfactual is that the untreated samples approximate the treated samples if they had not been treated, i.e. $E(Y_{oi}/I = 1)$ (Heckman et al., 1998). The assumption of Conditional Independence (CIA) must hold true for a matching method to be valid. The CIA argues that enterprise outcomes were independent of entrepreneurs conditional on a set of observables (X), which can be written as:

$(Y_1, Y_0) \perp I/X$ ……………………………………………...................…………..(1)

In the present study, the counterfactual income and expenditure were the same as the income and expenditure levels that have existed if the tribal women had no access to enterprise activities, which is specified as;

$$E(Y_0|X, I = 1) = E(Y_0|X, I = 0) = E(Y_0|X)$$ ………………………........…..(2)

The equation 2 represents the counterfactual income of the treated group and was equal to the observed income of the untreated group. Under conditional independence, therefore, the average treatment effect on the treated (*ATT*) can be computed as:

$$ATT = E(Y_1 - Y_0|X, I = 1) = E(Y_1|X, I = 1) - E(Y_0|X, I = 1)$$………....(3)

Balancing properties needed to be satisfied to be valid of propensity score matching which implied that two tribal groups with the same probability of participating in the program were placed in the treated and untreated samples in equal proportions. The propensity score was estimated by a binary choice model, which, in this study, was represented by a binary probit

model. Once the propensity score (pscore) was estimated, the data were split into equally spaced pscore intervals, implying that, within each of these intervals, the mean pscore of each conditioning variable were equal for the treated and non-treated households. A further requirement for the propensity score was the common support or overlap condition. Common support can be written as:

$$(Overlap) \quad 0 < P(I = 1|X) < 1 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(4)$$

There are many methods to estimate ATT. Tribal women with and without participation in enterprises were, therefore, matched based on their propensity scores (pscore) used the Nearest Neighbour (NN) and Kernel matching method. Brief discussions of these two methods are given below:

Nearest neighbour matching method

Nearest Neighbour (NN) is the most straightforward matching estimator. In this method, each treated individual is matched with an individual in the non-treated group that exhibits the closest propensity score. In Nearest Neighbour matching, it is possible that women in the non-treated group can neighbour more than one woman in the treated group. Therefore, after matching, the difference between their incomes was calculated as the average effect of program participant on household income/expenditure (ATT). Nearest Neighbour matching set can be written as:

$$C(i) = \min_j \| p_i - p_j \| \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(5)$$

Where $C(i)$ is the set of non-treated units matched to the treated unit i with an estimated value of the propensity score of p_i. Let T be the set of treated and C the set of non-treated units, and Y_i^T and Y_i^C be the observed outcomes of the treated and non-treated units respectively. Then Nearest Neighbour matching can be written as:

$$NN^M = \frac{1}{N^T}\sum_{i \in T} Y_i^T - \frac{1}{N^T}\sum_{j=C} w_j Y_j^C \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(6)$$

Where the weights w_j are defined as $w_j = \sum_i w_{ij}$

Kernel matching method

In general, Kernel is the simply density function. Here all the observations in the comparison group inside the common support region are used, the farther the comparison unit from the non-treated unit the lower the weight. The weight assigned to non-entrepreneur j is in proportion to how close she/he is to entrepreneur i. Here the neighbourhood is

$$C(p_i) = \{j | h > \| p_i - p_j \| \} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (7)$$

Where h is the tolerance level.

Heckman, Ichimura and Todd (Heckman et al., 1998) described the Kernel matching methods as follow:

$$E(\Delta Y) = \frac{1}{N}\sum_{i \in T}\left[Y_{i,1} - \frac{\sum_{j=1}^{N_i^C} Y_{j,0}^i K\left(\frac{P\left(X_{j,0}^i\right)-P\left(X_{i,1}\right)}{b_w}\right)}{\sum_{j=1}^{N_i^C} K\left(\frac{P\left(X_{j,0}^i\right)-P\left(X_{i,1}\right)}{b_w}\right)}\right] \dots\dots\dots\dots(8)$$

Where T is the set of observation who are involved in different enterprises (treatment group) and N is the number of treated cases; $Y_{i,1}$ and $X_{i,1}$ are dependent and independent variables for the ith treated case; $Y_{j,0}^i$ and $X_{j,0}^i$ are dependent and independent variables for the jth non-treated case that is within the neighbourhood of treatment case i, i.e., for which $\left|P\left(X_{j,0}^i\right) - P\left(X_{i,1}\right)\right| < b_w/2$; N_i^C is the number of comparison cases within the neighbourhood of i; $K(\bullet)$ is a Kernel function; and b_w is a band width parameter. In practice, the choice of $K(\bullet)$ and b_w is somewhat arbitrary.

Linear Regression Model

Regression analysis is used to identify the linear combination between independent variables used collectively to predict the dependent variables (Miles and Shevlin, 2001). Regression analysis helps to see how the typical value of the dependent variable changes when any one of the independent variables is varied while other independent variables are held fixed.

The factors that contribute to the household income of tribal women are analyzed using a regression model. For testing the significance of individual of relevant variables are tested t-statistics. The overall quality of fit of the model has been tested by ANOVA specifically F and R^2 tests. The following equation is estimated using to assess the enterprise income contributed to the household income;

$Y=a+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+error$ ....(9)
Where
Y = Household income
X_1 = Income from crops,
X_2 = Livestock and poultry,
X_3 = Business,
X_4 = Labour selling,
X_5 = Service, and
X_6 = Enterprise etc.
b_1........b_6 = Co-efficient

III. RESULTS AND DISCUSSION

The findings derived from the analysis of quantitative data and are being presented here, keeping the objective of the study in mind. The impact of entrepreneurship development on household income and expenditure were analyzed and presented in this section.

Impact on enterprise income

Probit estimates of the propensity scores (pscore) are presented in Appendix with output from STATA software. For the matching method, a common support region of tribal women was selected and balancing propensity was satisfied. Income was classified into two categories; enterprise income and non-enterprise income. Income from enterprise activities was more important in their household income to evaluate the impact of entrepreneurship to improve household income through entrepreneurial activities. Table 1 presents the non-parametric matching estimates of the average treatment effect of participation in entrepreneurship on the treated (ATT).

The result revealed that average enterprise income increased due to participation in entrepreneurial activities which were Tk. 3028 and Tk. 2801 and this estimation were statistically significant at 10% and 1% levels of significance based on the Nearest Neighbour, and Kernel matching methods, respectively (Table 1). It implies that enterprise income was better and significantly increased entrepreneur's income. The study unveiled that entrepreneurship development had positive and significant relationship with entrepreneur's income.

Table 1. Impact of entrepreneurship development on enterprise income

Matching method	Number of treated groups (entrepreneurs)	Number of non-treated groups (non-entrepreneurs)	Average treatment on treated (ATT)[a]	SE	t-statistics
Enterprise income Nearest Neighbour matching	180	56	3028	2137.494	1.42
Kernel matching	180	177	2801	321.390	8.72

[a]Value of ATT are in Bangladesh currency Taka

Moreover, necessary financial and technical support from local NGOs contributed to a practice of own management of tribal women in order to control their business as a profitable enterprise. These factors contributed to improve the enterprise income of the entrepreneurs. Khan et al. (2012) also studied that Community Based Fisheries Management (CBFM)-2 project positively influenced and significantly increased fishing income of the project fishers, which support this study. It, therefore, revealed that any practices of own management impact positively on personal income of the participants. However, the enterprise income has increased the household income as well as socioeconomic condition more often by entrepreneurs than non-entrepreneurs.

Impact on total household expenditure

The impact of entrepreneurship development on total household expenditure in the study areas depends on different items such as food, cloths, health, house, education and others. The result revealed that entrepreneurs' households spent more (Tk. 25971 to Tk. 26619) on food

and non-food items than non-entrepreneurs households, which was also statistically significant at 1% levels in Nearest Neighbour and Kernel matching methods respectively (Table 2).

Table 2. Impact of entrepreneurship development on total expenditure

Matching method	Number of treated groups (entrepreneurs)	Number of non-treated groups (non-entrepreneurs)	Average treatment on treated (ATT)	SE	t-statistics
Total expenditure Nearest Neighbour matching	180	56	25971	7734.068	3.36
Kernel matching	180	177	26619	5246.314	5.07

Value of ATT are in Bangladesh currency Taka

Table 2 shows that if tribal women become an entrepreneur through entrepreneurial activities, they spent more for their basic needs, securing improved socioeconomic status and livelihoods than non-entrepreneurs. Khan et al., (2012) noted that participation in the Community Based Fisheries Management-2 project allowed participant households to spend more for their basic needs than the non-participation households, which is similar to the findings of the present research. Patil (2015) also reported that about 50% women entrepreneur contributed 40 to 60% of their income from their enterprises towards family expenses and about 2% contributed more than 80% of their income for family expenses. It could be inferred that tribal women could take the responsibility of family expenditure on a major scale towards family needs.

Impact on household income

The result indicated that the participation of tribal women in entrepreneurial activities allowed more earn (Tk. 30015 to Tk. 31509) than non-entrepreneur's household, and the associated t-statistic was significant at 1% level in Nearest Neighbour, and Kernel matching methods, respectively (Table 3). From the result, it might be inferred that the impact of enterprise income of tribal women was positive on their household income than non-entrepreneurs, spending more on basic needs and improving livelihoods as well.

Table 3. Impact of entrepreneurship development on household income

Matching method	Number of treated groups (entrepreneurs)	Number of non-treated groups (non-entrepreneurs)	Average treatment on treated (ATT)[a]	SE	t-statistics
Household income Nearest Neighbour matching	180	56	30015	8326.995	3.61
Kernel matching	180	177	31509	5776.050	5.46

[a] Value of ATT are in Bangladesh currency Taka

CPD (2004) reported that rural women in Bangladesh contributed considerably to household income through farm and homestead production and engaged as wage labour. In another study, Haque and Itohara (2008) reported that personal income of rural women through participation in various earning activities significantly contributes to an increase in their household income, which is consistent with the present study.

Impact of enterprise income on household income

A regression analysis is performed to determine the impact of enterprise income from different income activities on their household income. The regression model is also well fitted to the data since $F = 923.82$, $P = 0.000$ is found to be highly statistically significant. The result of linear regression analysis indicated high multicollinearity means that 96.9% (Adjusted $R^2 = 0.969$) of the variance in the household income could be explained by family member through participation from different income activities on household income. The result also indicated that income from livestock and poultry, labour selling, business and crops had the highest potential on household income.

Table 4. Contribution of different income sources to entrepreneur's household income (n=180)

Items of entrepreneur's household income	Entrepreneur's household income	
	Average income	Percentage
A. Agricultural income	**18470**	**21.82**
Crops and vegetables	13826	16.33
Livestock and poultry	4644	5.48
B. Non-agricultural income	**54744**	**64.68**
Business	7096	8.38
Service	2333	2.75
Labour selling	20079	23.72
Others (driving, rickshaw pulling etc.)	6766	7.99
C. Enterprise/non-enterprise income of tribal women	**29879**	**35.30**
Total household income (A+B+C)	**84642**	

Source: field survey, 2015

The regression analysis revealed that enterprise income has a positive relationship with household income of coefficient value (1.045). The result indicated that household income increased with the increase of enterprise income, where enterprise contributed Tk 1.045 more to their household income. The estimated regression function is Y = 10648.196 + 1.045 enterprise income and also shows a linear relationship.

The annual household income come from different income sources namely crops, livestock and poultry, labour selling, business, service, enterprise, and others (i.e. rickshaw polling, rent, motor or van driving etc.) which presented in the Table 4. The result also indicated that enterprises income was the principal source of income and contributed about 35% to the household income. The next highest income come from labour selling (about 24%), whereas livestock and poultry (5%) and service (3%) was contributed very small amount to the household income respectively. It might be inferred that enterprise income are the highest potential income activity. Thus, entrepreneurship development put positive impact on enterprise income, household income and expenditure and also increased their household income which directly improved their livelihood status.

IV. CONCLUSION AND POLICY RECOMMENDATIONS

The setting of tribal society is different from mainstream in many aspects as culture, language, food habit and life style, where the role of tribal women still evaluated by the code of customary beliefs in their society. Traditionally, they are doing household works, going outside for shopping, selling their labour or working in field with male counterparts, and looking after family members. With the help of GOs and NGOs, their rising level of awareness and understanding influenced them to adapt some income generating activities as small enterprises, not stopping their household activities, rather doing some income generating activities in extra or in idle time. Entrepreneurship development is an essential elements for their socioeconomic progress. Their participation in small enterprise activities also influenced them personally, socially and economically in increasing their access to and control over livelihood capitals also. It is critical not only for their own benefits but also for the development of their whole society.

Entrepreneurship development of tribal women made some positive impacts on increasing total family income and family expense, buying their necessary personal items like cloths, household furniture, ornaments etc., and saving from their income. However, it could not ensure livelihoods security for tribal women, but adopting new idea of enterprises to improve household income and expenditure and also directly improved their livelihood status. Based on some constraints, the present study is recommended that no single policy could be prescribed for improving livelihood; rather mixed policies have to be followed for the entrepreneurship development. Government might be emphasis on local, cultural and their social based enterprises with the establishment of local market. Sufficient infrastructure development (such as road, bridge, and water supplying facilities etc.) was another important issue followed by adequate training facilities, and providing financial support at low rate of interest in time. Therefore, in the implementation of holistic strategies of financial credit

(short-term, mid-term and long-term) for the development of enterprises, the responsible agencies such as GOs and NGOs could include the above mention suggestions during the program planning.

REFERENCES

Abadie, A. and Imbens, G. 2009. *Matching on the Estimated Propensity Score*. National Bureau of Economic Research Cambridge, Mass., USA.

Afrin, S., Islam, N., and Ahmed, S.U. 2008. "A multivariate model of micro credit and rural women entrepreneurship development in Bangladesh". *International Journal of Business and Management,* 3 (8): 169-185.

Ahmmed, F. (2012). Challenges of aging and coping mechanisms among the Khasi and Garo tribal groups: an ethnographic observation. *Journal of International Social Issues,* 1 (1): 23-38.

Ahmed, S.M., Adams, A., Chowdhury, A.M.R., and Bhuiya, A. 1997. Income-earning women from rural Bangladesh: changes in attitudes and knowledge. *Empowerment,* 4: 1-12.

Al-Amin, S. 2008. Role of women in maintaining sustainable livelihoods of Char landers in selected areas of Jamalpur District. PhD Thesis, Dept. Of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.

BBS 2011. *Population Census 2011.*Bangladesh Bureau of Statistics,Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka.

Bhasin, V. 1991. Status of women in the Himalayas: a case of Gaddia. *Journal of Human Ecology,* 2 (2): 107-116.

Cobb Clark, D.A., and Crossley, T. 2003. Econometrics for evaluations: an introduction to recent developments. *Economic Record,* 79 (247): 491-511.

CPD 2004. Nature and impact of women's participation in economic activities in rural Bangladesh. In Centre for Policy dialogue (CPD) and International Rice Research Institute (IRRI) Policy Brief 7. http://www.cpdbangladesh.org/pulications/cpdiri/cpdiri_7 (Accessed on 11 December, 2016).

Elhaut, T. 2006. Indigenous peoples and ethnic minorities. Message of the Director of Asia and Pacific Division". *Making a Difference in Asia and the Pacific, IFAD,* Issue 10, Retrieved from: http://www.ifad.org/newsletter/pi/10.htm (Accessed on 15 October, 2014).

Fakir, S.K. 2008. Women empowerment through participation in income generating activities of Sabalamby Unnayan Samity. PhD Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Haque, M., and Itohara, Y. 2008. Participation and decision making role of rural women in economic activities: a comparative study for members and non-members of the micro-credit organizations in Bangladesh. *Journal of Social Sciences,* 4 (3): 229-236.

Heckman, .J, Ichimura, H., and Todd, P. 1998. Matching as a econometric evaluation estimator. *Review of Economic Studies,* 65 (2): 261-294.

Janardhan, G., and Krishna, D.S.R. 2016. Socio-demographic, economic and living conditions of the tribal women: a study in the agency area of Khamman District of Telangana State. *International Journal of Research in Commerce, Economics & Management,* 6 (2): 12-14.

Kabir, M.S., Ali, R.N., Rahman, M.W., and Palash, M.S. 2006. Upliftment of rural women through small entrepreneurship development in some selected areas of Mymensingh District. *Journal of Bangladesh Agricultural University,* 4 (1): 157-164.

Khan, M.A., Alam, M.F., and Islam, K.J. 2012. The impact of co-management on household income and expenditure: an empirical analysis of common property fishery resource management in Bangladesh. *Ocean & Coastal Management,* 65: 67-78.

Koontz, O.H., and Fulmer, R.M. 2000. *Practical Introduction to Business*. Richard D. Irwin Incorporation.

Maloney, C. 1984. Tribal of Bangladesh and synthesis of bengal culture Bangladesh: land, forest and forest people, Society for Environment and Human Resource Development, Bangladesh" In: Qureshi M.S. (ed.) *Tribal Cultures of Bangladesh,* Rajshahi, Bangladesh. Pp 5-52.

Miles, J. and Shevlin, M. 2001. *Applying Regression and Correlation: A Guide for Students and Researchers.* London, saga Publications.

Patil, A.G. 2015. Status and scope of business activities of rural women entrepeneurs in Kolhapur District. *International Journal of Research in Commerce, Economics & Management,* 5 (3): 96-103.

Rahman, M.H. and Naoroze, K. 2007. Women empowerment through participation in aquaculture: experience of a large-scale technology demonstration project. *Bangladesh Journal of Social Science,* 3 (4): 164-171.

Raja, D.P. and Radhaakrishnan, V.R. 2016. Socioeconomic condition of women entrepreneurs through SHGs in Kancepuram District of Tamil Nadu. *International Journal of Research in Commerce, Economics & Management,* 6 (2): 15-17.

Ravallion, M. 2005. Evaluating anti-poverty programs, World Bank Policy Research, Development Research Group, Working Paper 3625.

Rosenbaum, P.R. and Rubin, D.B. 1983. The central role of the propensity score in observational studies for causal effects. *Biometrika,* 70 (1): 41.

Roy, D.S. and Manna, D.S. 2014. Women entrepreneurship and empowerment: an analysis from the perspective of small Urban India. *International Journal of Research in Commerce, Economics & Management,* 4 (2): 8-12.

Sarma, G. (2014): "An Analytical Study on Entrepreneurial Activity as a tool for Socioeconomic Development of Tribal Women in BTAD Area of Assam". *IOSR Journal of Economics and Finance,* 3 (2): 49-52.

Schumpeter, J.A. 1935. The analysis of economic change. *Review of Economic Statistics,* 17 (4): 1-10.

Sharma, P. and Varma, S.K. 2008. Women empowerment through entrepreneurial activities of Self Help Groups. *Indian Research Journal of Extension Education,* 8 (1): 46-51.

Soni, K. 2015. Entrepreneurship development in India. *International Journal of Research in Commerce, Economics & Management,* 5 (9): 43-47.

Appendix: Algorithm to estimate the propensity score Expenditure

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ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors
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n. treat.	n. contr.	ATT	Std. Err.	t
180	56	25971.287	7734.068	3.358

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Note: the numbers of treated and controls refer to actual
nearest neighbour matches
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ATT estimation with the Kernel Matching method
Bootstrapped standard errors
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n. treat.	n. contr.	ATT	Std. Err.	t
180	177	26619.055	5246.314	5.074

Income
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ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors
```

n. treat.	n. contr.	ATT	Std. Err.	t
180	56	30015.296	8326.995	3.605

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Note: the numbers of treated and controls refer to actual
nearest neighbour matches
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ATT estimation with the Kernel Matching method
Bootstrapped standard errors
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n. treat.	n. contr.	ATT	Std. Err.	t
180	177	31509.225	5776.050	5.455

Enterprise income
```
ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors
```

n. treat.	n. contr.	ATT	Std. Err.	t
180	56	3027.619	2137.494	1.416

```
Note: the numbers of treated and controls refer to actual
nearest neighbour matches
```

```
ATT estimation with the Kernel Matching method
Bootstrapped standard errors
```

n. treat.	n. contr.	ATT	Std. Err.	t
180	177	2801.018	321.390	8.715