



Women Empowerment in Agriculture: Empirical Evidence from Lalmonirhat District

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ARTICLE INFO	ABSTRACT
<p>Received date: Sep. 23, 2018 Accepted date: Dec. 25, 2018</p>	<p>Attention to women empowerment in relation to their engagement in agriculture of Bangladesh is not new, but it has not been acted upon accordingly. Considering the significance in mind, this study was conducted to assess and scrutinize the factors affecting women's empowerment attainment as economically active participants in agriculture. A total of 120 respondents (women) under day-laborer (57), tenant farmer (25) and farmer (38) group were selected using proportionate stratified random sampling technique. Descriptive statistics, perception index, multidimensional women empowerment in agriculture index (MWEAI) and logistic regression were employed as analytical tools. The results derived from perception analysis indicated that majority of the respondents had moderate to high favourable perception on greater extent of women's engagement in agriculture as economically active participants of which many had low to moderate favourable perception on their consequent empowerment attainment. The result of MWEAI indicated that 44.7%, 65.3% and 82.4% respondents were empowered under the day-laborer, tenant farmer and farmer group, respectively. The overall estimated value of MWEAI specified that 64% of the respondents as economically active participants in agriculture were empowered. Age, received training, NGO membership, media exposure and voice against violence had positive and significant impact on higher empowerment attainment whereas family size had negatively significant impact on the same. Finally, the study affirmed that women's greater extent of engagement in agriculture largely enabled them in attaining better empowerment which must be appreciated by the policy makers by formulating gender inclusive policies to assist these women in overcoming the gender based barriers blocking their pathway towards finest empowerment attainment.</p>

Key words: Agriculture, Agency, Development, Empowerment, Women

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1. INTRODUCTION

Bangladesh is an agro-based developing country with a high level of gender disparity. Agriculture is the largest employment sector in Bangladesh and as of 2016; it employs 46% of the total labor force and comprises around 15% of

the country's GDP (BBS, 2015). In Bangladesh about 81% of women live in rural areas (BBS, 2015) and its rural social structure is plagued with many problems such as poverty, inequality, unemployment, disempowerment and underdevelopment (Nessa *et al.*, 2012). Rural women also comprise the largest work force in the informal sector of

To Cite: Khan, S.M. (2019). Women empowerment in agriculture: empirical evidence from Lalmonirhat district. *EBAUB J.*, 1, 82-91.

Bangladesh and they are concentrated in the more precarious and lowest paying jobs, such as household help. In addition to that, rural women in Bangladesh generally earn less than the minimum wage and less than men, even when they have similar occupations. As a result, the income differences between women and men in Bangladesh are larger in the informal sector than in the formal one (Kabeer, 2001).

Attention to women empowerment through engagement in agriculture is not new, but it has not always been acted upon accordingly. An overview done by Malik (2013) stated that the challenge of poverty and inequality in South Asia is not only huge but also highly discriminatory against women. The report also states that poverty and disempowerment has been feminized in most parts of the world, but in South Asia it truly has a woman's face. Following such statement, Government of Bangladesh (GoB) has been putting all its exertions to reduce poverty and inequality, to empower women and to re-shape the structure of gender relations in accordance with the strategic national economic, social and political development. Though the GoB has done fabulous job in reducing poverty almost near to the target level, it needs to fine-tune the mechanisms which are being used to attain the target of reducing inequality, of empowering women and of re-shaping the structure of gender relations among its population. A silver lining to the cause in recent years has been the gradually transforming social mentality which has acknowledged the increasing awareness of women's productive roles in agriculture and their contribution to development. With more and more women coming out of their 'Social Veils', one can see women in Bangladesh now actively participating in decision-making; both household and agriculture (Hossain and Jaim, 2011).

The nature of agricultural employment for women in northern Bangladesh has been changed a lot, from unpaid family labor to paid farm workers (Galhena *et al.*, 2013) and that's why, before implementing any further national initiative by the GoB, it is of immense worth to measure the intensity of rural women empowerment attainment as well as to scrutinize the factors affecting women's empowerment attainment as economically active participants in agriculture of northern Bangladesh. In Lalmonirhat district, women have been engaged with agriculture - mostly as family labor - since long time. But, due to center based rapid urbanization and industrialization, swift out-migration of men (Afsar, 2003) and commercialization of vegetable farming in northern Bangladesh (Nazneen *et al.*, 2011), some labor scarcity has been experienced here. Such labor scarcity have created the scope for women to work as economically active participants in agriculture and consequently, the women have started filling the void space of agricultural fields where men were used to be. Such replacement of women in the agricultural fields has created a new era in the northern districts in which women's role in agriculture is shifting from unpaid family workers to paid farm workers, a phenomenon termed as "feminization of agriculture" (Jaim and Hossain, 2011). Considering these facts and agro-ecological dimensions, the study was conducted in Lalmonirhat district of northern Bangladesh. On the other

hand, in Bangladesh, the vital role played by women in agriculture has not been aptly acknowledged as well as accurately remunerated as it should have been. This study rationally assumed the fact that paid employment of women in agriculture must have contributed to their empowerment status to a large extent. That's why; this study identified the most imperative query of modern time that whether women's increasing role as economic participant in agriculture of Lalmonirhat district has empowered them in the household and community level or not. The justifiable answer regarding such fundamental query was of crucial concern to modern rural socialists and to this study. Thus, the study made an attempt to comprehend the roles and extent of women's engagement in agriculture and to evaluate their empowerment attainment considering their increasing participation as economically active participants in the agriculture sector of two selected upazila in Lalmonirhat district of Bangladesh.

The overall objective of this study was to assess the perceptions and attainment of empowerment by the rural women pertaining to their increased engagement as economically active participants in agriculture of Lalmonirhat district. In order to do so, this study focused on attaining the following specific objectives. i) To evaluate respondents' perceptions and their empowerment attainment concerning their participation in agriculture; ii) To scrutinize the factors affecting respondent's empowerment attainment; and iii) To formulate strategic gender inclusive policy recommendations for enhanced empowerment attainment by women in agriculture.

2. MATERIALS AND METHODS

This study purposively selected 4 villages namely *Ghonotari*, and *Baburkamar* under the *Aditmari Upazila* and *Kuchlibari* and *Taherpur* under the *Kaliganj Upazila* of *Lalmonirhat* district where economically active women in agriculture were available. To evaluate the respondents' perceptions, three categories of economically active women in agriculture-day-laborer, tenant farmer and farmer group – were selected purposively. The study used the proportionate stratified random sampling technique to select 120 respondents (women) to collect data using household survey. Primary data were collected during the period of August to September, 2016. By using the prepared interview schedule, primary information was collected regarding the respondent's age, education, land ownership and farm size, asset ownership, income and expenditure, membership in social organizations, production and household decision making, daily time frame with activity log, sensible individuality perception, etc.

Firstly, perception index was used to evaluate respondents' own perception on various aspects of their livelihood. In order to measure the perceptions of the respondents, a 5- point Likert Scale was used. There were 21 statements including only the favour judgments against the 5-point scale. All the statements were arranged randomly under four headings i.e., women in agriculture, women's

roles and extent of engagement in agriculture, asset and skill orientation and women's empowerment attainment. Each respondent was asked to indicate her extent of judgment against each statement along a 5-point scale, i.e., 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. Weights assigned to these responses were 5, 4, 3, 2 and 1, respectively in favour. The total score of a respondent was determined by summing up the weights for responses against all the 21 statements. Perception score of a respondent could, thus, range from 21 to 105. On the other hand perception score for each respondent was calculated by using Perception Index and it was calculated by using the following formula:

$$\text{Perception Index (PI)} = 5 \times \text{SA} + 4 \times \text{A} + 3 \times \text{U} + 2 \times \text{DA} + 1 \times \text{SDA} \text{ (in favour)}$$

Where, SA = perception as 'strongly agree'; A = perception as 'agree'; U = perception as 'undecided'; DA = perception as 'disagree'; and SDA = perception as 'strongly disagree'.

Secondly, Women's Empowerment in Agriculture Index (WEAI) was a newly designed survey-based index to measure the empowerment, agency and inclusion of women in agriculture based on 5 domains i.e., production, resources, income, leadership and time (Alkire *et al.*, 2012). Nonetheless, after reviewing some contemporary literatures on women empowerment (Nazneen *et al.*, 2011; Kabeer, 2011; Hossain, 2012; Hanmer and Klugman, 2016), this study came to develop in-sight on a new domain of women empowerment entitled "sense of individualism" covering three indicators namely; self-reliance, equal right and voice against domestic violence which have hardly been included in measuring women empowerment. Thus, this study used the modified version namely Multidimensional Women Empowerment in Agriculture Index (MWEAI) that comprised a total of six domains in place of the five domains of women empowerment used by WEAI to measure the women empowerment.

Finally, the specification of the employed logistic (logit) regression model is as follows.

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \beta_8 X_{8i} + \beta_9 X_{9i} + U_i$$

Here, Y = Binary dependent variable, assigned with value 1 for respondents being empowered and zero for otherwise.

X_1 = Age (years); X_2 = Educational attainment (years of schooling); X_3 = Farm size (acres); X_4 = Family size (number of persons); X_5 = Income (BDT per year);

X_6 = Training received by the respondents i.e., 1 = yes, 0 = no;

X_7 = NGO membership by the respondent i.e., 1 = yes, 0 = no;

X_8 = Media exposure of the respondents i.e., 1 = yes, 0 = no; and

X_9 = Voice against domestic violence by the respondents i.e., 1 = yes, 0 = no.

β_0 = Intercept; $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8$, & β_9 = Coefficients of respective independent variables and U_i = Error term.

3. RESULTS AND DISCUSSION

Socio-economic status of the respondents

Because the central focus of this study was women's participation in agriculture as economically active participants and their empowerment status, all the sampled and selected respondents were women. In day-laborer group, the young women (24.2%) were highest in percentage followed by the old-aged (14.2%) and middle-aged women (9.2%). Both the small (20%) and large (12.5%) household was highest in percentage in case of day-laborer group followed by farmer (11.7% and 5.8%) and tenant farmer group (7.5% and 5%). Results on marriage practices indicated that the monogamy practice was higher among the respondents in farmer group (93.0%) followed by the tenant farmer group (86%) and day-laborer group (74%). In the study area, among the illiterate respondents, a higher percentage was found in the day-laborer group (21.6%) followed by the tenant farmer Group (3.3%). Then again, among the respondents with primary level of educational attainment, a higher percentage was found in the day-laborer group (19.2%) followed by the tenant farmer group (10%) and farmer group (9.1%). Among the respondents with secondary level of educational attainment, a higher percentage was found in the farmer group (15.8%) followed by the day-laborer (6.7%) and tenant farmer group (5.8%). To end with, the respondents with higher secondary education was found to be higher (6.7%) in farmer group.

Results regarding land ownership pattern indicated that 24.2% households - who were day-laborer by occupation - hardly owned any cultivable land (only homestead area) and thus termed to be landless in nature. Among the land owners, 27.5% households were minor land owners. Then again, 21.7% households were little land owners and 17.5% households were intermediary land owners. Finally, only 9.2% households were holding land in the range of 3.01 and above acres of land and thus enjoyed the status of big land owners. Regarding annual average household income, the results indicated higher annual household income for farmer group (BDT 3,04,700) followed by the tenant farmer (BDT 2,73,500) and day-laborer group (BDT 1,70,400). Results also showed that out of 57 respondents under day-laborer group, only 22 replied to receive training and 35 didn't receive any training. Concerning media exposure, only 12 respondents responded high, 21 respondent responded medium and 24 respondents responded low exposures to media. Then again, out of 25 respondents under tenant farmer group, only 16 replied to receive training and 9 didn't receive any training. Concerning media exposure, only 7 respondents responded high, 10 respondent responded discriminatory wage structure for men and women in the study area.

Regarding women in agriculture sector of the study area, the perception index scores affirmed that women played a vital role in agriculture as 3rd statement scored 456

Table 1 Age, family size, marriage type, religion, education level, land ownership status, average farm size, average annual household income, monthly household expenditure pattern, training received, NGO membership, media exposure and voice against violence.

Variables	Classification	Day-laborer Group (N = 57)	Tenant Farmer Group (N = 25)	Farmer Group (N = 38)
Age	Young (16 – 25)	29 (24.1)	4 (3.33)	9 (7.5)
	Middle-aged (26 – 45)	11 (9.1)	14 (11.6)	22 (18.3)
	Old-aged (46+)	17 (14.1)	7 (5.83)	7 (5.83)
Family Size	Small (Up to 4 members)	24 (20)	9 (7.5)	14 (11.6)
	Medium (5-7 members)	17 (14.1)	10 (8.33)	18 (15)
	Large (8+ members)	15 (12.5)	6 (5)	7 (5.83)
Marriage Type (%)	Monogamy	74	86	93
	Polygamy	26	14	07
Religion	Islam	42 (35)	23 (19.1)	32 (26.6)
	Hinduism	11 (9.1)	2 (1.6)	5 (4.1)
	Christianity	4 (3.3)	0 (0.0)	1 (0.8)
Education level	Sign only	26 (21.6)	4 (3.3)	0 (0.0)
	Primary (Up to Class 5)	23 (19.1)	12 (10)	11 (9.1)
	Secondary(Class 6 to SSC)	8 (6.6)	7 (5.8)	19 (15.8)
	Higher Secondary(HSC Pass)	0 (0.0)	2 (1.7)	8 (6.7)
Land Ownership Status	No Land (Only homestead land)	29 (24.1)	0 (0.0)	0 (0.0)
	Minor (0.05 to 1.00 acres)	22 (18.3)	11 (9.1)	0 (0.0)
	Little (1.01 to 2.00 acres)	06 (5)	8 (6.7)	12 (10)
	Intermediate (2.01 to 3.00 acres)	0 (0.0)	06 (5)	15 (12.5)
	Big (3.01 acres and above)	0 (0.0)	0 (0.0)	11 (9.1)
Average Farm Size (ha)	-	0.35	1.05	1.39
Average Annual Household Income (in BDT)	(Respondent +Husband +Other)	170400 (46800+108000+ 15600)	273500 (109000+144000+ 20500)	304700 (162000+216000 +26700)
Monthly Household Expenditure pattern (%)	Food	41.25	44.56	45.38
	Clothing	11.56	11.40	11.72
	Child Education	13.90	11.66	14.14
	Family Health	10.74	11.16	11.32
	Social Activities	11.34	12.60	13.16
	Others	11.21	9.62	4.28
	Total	100	100	100
Training Received	Yes	22 (18.3)	16 (13.3)	27 (22.4)
	No	35 (29.2)	09 (0.75)	11(9.1)
NGO Membership	Yes	24 (20)	18 (13.3)	28 (23.5)
	No	33 (20.75)	07 (0.75)	10(9.6)
Media Exposure	High	12 (10)	07 (0.6)	19 (16.7)
	Medium	21(16.7)	10 (0.9)	13 (10.7)
	Low	24 (20)	08 (0.7)	06 (0.5)
Voice against Violence	Yes	19 (16.7)	18 (15)	30 (25)
	No	38 (34.7)	07 (0.6)	08 (0.7)

The figures in the parentheses indicate the percentage (Source: Field survey, 2016)

Table 2 Perception Index Scores

Sl. No.	Statements	Nature of judgment					Perception Index	Rank
		Strongly agree	Agree	Undecided	Disagree	Strongly disagree		
i. Women in agriculture								
A	Planning of farming women’s	22	18	12	32	26	308	12
B	Permission by husband to get involved in agriculture	35	31	6	28	20	393	8
C	Vital role played in agriculture by women	52	33	4	21	10	456	6
ii. Women's roles and extent of engagement in agriculture								
D	Selection of crops to be produced in a season	31	28	3	36	22	370	9
E	Selection of production method	12	16	10	51	31	287	17
F	Majority of agricultural field works done by women	47	27	2	28	16	421	7
G	Purchase of farming inputs	10	19	12	43	36	284	19
H	Selling of farming outputs	8	17	11	36	48	261	20
iii. Women’s asset and skill orientation								
I	Training is essential for women	61	48	1	6	4	516	1
J	Lack of land rights	72	26	4	12	6	506	2
K	Wage discrimination is high	75	23	2	11	9	504	4
iv. Women’s empowerment attainment								
L	Women’s access & control over land	11	14	3	32	60	244	21
M	Women’s access & control over earnings	17	35	7	38	23	345	10
N	Women’s autonomy in production	18	10	8	56	28	294	15
O	NGO membership	82	12	1	19	6	505	3
P	Women’s speaking capacity in public	15	12	7	56	30	286	18
Q	Women’s capacity to build group solidarity	19	9	6	60	26	295	14
R	Women’s burdensome workload	56	33	4	19	8	470	5
S	Women’s sense of self-reliance	17	12	5	58	28	292	16
T	Women’s equal right	21	13	5	53	28	306	13
U	Women’s voice against domestic violence	31	7	4	48	30	321	11

(Source: Field survey, 2016)

and got ranked 6th among all statements. Apart from this, a large number of respondents positively agreed on accustomed rule of seeking permission from their husband's in getting engaged as economically active participants in agriculture as the 2nd statement scored 393 and got ranked 8th among all statements. The 1st statement under this heading got ranked 12th as few respondents responded to plan the farming operation.

Regarding women's roles and extent of involvement in the agriculture sector of the study area, the perception index

scores indicated that women did perform majority of the agricultural field works as this statement scored 421 and got empowerment framework. The 2nd rank of the perception index score was occupied by the 10th statement with a total score of 506. A large number of the respondents significantly agreed and responded that in many cases, women from rich economic background did own both, homestead area and cultivable land but women from poor economic background hardly owned any homestead area, let alone the chance of owning cultivable land. As a

Table 3 Comparison of WEI results for three groups derived from MWEAI (in %)

Domains and corresponding indicators under the MWEAI	Day-laborer group (%)	Tenant farmer group (%)	Farmer group (%)
A. Production	12.38	52.33	76.33
i. Input in Productive Decisions	5.22	27.17	44.11
ii. Autonomy in Production	7.16	25.16	32.22
B. Resource	18.69	45.86	68.13
i. Ownership	7.27	21.47	41.04
ii. Purchase, Sale or Transfer	11.42	24.39	27.09
C. Income	43.35	71.71	92.21
i. Permission of Earning	26.18	47.29	64.07
ii. Control over Income	17.17	24.42	38.14
D. Leadership	47.47	68.37	86.37
i. Group Member	17.16	35.16	47.13
ii. Speaking in Public	16.12	19.02	19.16
iii. Group Solidarity	14.19	14.19	20.08
E. Time	42.74	63.54	65.49
i. Workload	24.32	35.25	36.19
ii. Leisure	18.42	28.29	29.30
F. Sense of Individualism	37.63	44.28	57.59
i. Self-reliance	15.18	17.09	22.13
ii. Equal Right	12.31	15.12	19.21
iii. Voice against Domestic Violence	10.14	12.07	16.25

(Source: Field survey, 2016)

Table 4 Estimated values of indexes and MWEAI.

Indexes	Estimated values of indexes		
	Day-laborer Group	Tenant Farmer Group	Farmer Group
Disempowered Headcount (%)	56	35	18
Average Inadequacy Score (%)	54	33	16
Women Disempowerment Index (D_w)	0.56	0.35	0.18
Women Empowerment Index ($E_w = 1 - D_w$)	0.44	0.65	0.82
MWEAI (Group-wise)	0.447	0.653	0.824
MWEAI		0.6413	

(Source: Field survey, 2016)

Table 5 Empirical results of logistic regression.

Variables	Coefficient (β)	S.E.	t value	Level of significance	Odds ratio
Age (X_1)	0.462***	.030	8.124	.004	.919
Education level (X_2)	0.138	.120	1.323	.250	1.148
Farm size (X_3)	0.306	.256	1.424	.233	.736
Family size (X_4)	- 0.315*	.189	2.777	.096	.730
Respondent's income (X_5)	0.005	.003	.020	.886	1.000
Received training (X_6)	0.904**	.706	1.642	.044	.405
NGO membership (X_7)	0.932*	.692	1.812	.078	.394
Media exposure (X_8)	1.373***	.683	7.021	.008	.164
Voice against violence (X_9)	1.655**	.686	5.016	.025	.215
Constant	8.706	2.743	10.070	.002	6.038

*** = significant at 1% level; ** = significant at 5% level; and * = significant at 10% level (Source: Field Survey, 2016)

consequence, there was severe landlessness among the low and middle class respondents which got identified as an absolute barrier to women's better empowerment attainment as noted by Okin (1989) and Young (1990) in liberal feminist approach by stating that without equal access and control over land by men and women, empowerment attainment by them is hard to imagine. On a similar pitch, the 3rd rank of the perception index score was occupied by the 15th statement with a total score of 505 which indicated to NGO membership of women to be effective option in attaining better extent of empowerment. The 4th rank of the perception index score was occupied by the 11th statement with a total score of 504. A large number of the respondents significantly agreed and responded that there was highly ranked 7th among all statements. Other than this, a large number of respondents positively agreed on selecting the crops to be produced in a particular season which scored 370 and got ranked 9th among all statements. Other three statements, 5th, 7th and 8th under this heading got ranked 17th, 19th and 20th respectively which indicated to the point that respondents had very limited scope in selecting agricultural production methods, buying farming inputs and selling farming outputs in the markets which placed the respondents in a subordinate position in the society as noted by Beauvoir (1983) through her proposition called '*The Second Sex*' under Feminist Phenomenological Approach.

Regarding women's consequent empowerment attainment, the perception index scores indicated that majority of the respondents had membership in the NGOs as this statement scored 505 and got ranked 3rd among all statements. Other than this, a large number of respondents positively agreed on experiencing burdensome workload due to their economically active participation in agriculture which scored 470 and got ranked 5th among all statements. Other eight statements, 12th, 13th, 14th, 16th, 17th, 19th, 20th and 21st under this heading got ranked 21st, 10th, 15th, 18th, 14th, 16th, 13th and 11th, respectively which indicated to the fact that respondents had very limited scope in having access and control over land and earnings, having autonomy in production, capacity to speak in public and to build group solidarity among women, and having sense of self-reliance, equal rights compared to men and voice against any form of domestic violence done by their male counterparts which in turn puts them in a disempowered position in the society as suggested by Caputi (2013) in power feminism.

Results of Women Empowerment Index (WEI) of MWEAI

In a nutshell, on each and every domain of WEI, the result followed quite the same pattern which was that higher empowerment attained by the respondents as farmer followed by tenant farmer and day-laborer. The possible explanation for such differentiated empowerment score might be that as farmer and tenant farmer, a woman, on an average, had relatively more agency in every aspects of livelihood which is of the same opinion provided by Kabeer (2011) for better empowerment attainment. However, the interesting part of these patterned results can be well-looked

at when the margin of difference of attained WEI score among these three groups of women is to be taken into account. The interesting finding was that similar extent of empowerment attainment was experienced among these three groups of women regarding time and sense of individualism domain, considering their socioeconomic differences. The possible explanation could be found following the perceptions provided by Caputi (2013) as self-assertive livelihood based on convenient time in hand by women in the power feminism approach and Khader (2011) as higher empowerment attainment by rich women due to their lower adaptation to inappropriate preferences like male dependency, inferior positioning and greater victimization than the poor ones as in Lalmonirhat district.

Results of MWEAI

This study estimated the value of MWEAI for all three groups as well as on the overall cases in order to depict the overall empowerment attainment which is presented in Table 4 as follows.

First to explain is the result of MWEAI in case of day-laborer group which was lowest (0.447) among all three groups. Such lowest value indicated that respondents as day-laborer had the least tendency towards realistic empowerment attainment, let alone the fact of attaining high empowerment by them, which was also evident by the results of highest inadequacy score (54%) and maximum value of women disempowerment index (0.56). Based on the secured domain and indicator values under the MWEAI, this study termed 55.3% day-laborer respondents as disempowered and rest of them (44.7%) as empowered which support the explanation provided by Kabeer (2011) for lower empowerment attainment by poor women than the rich ones. Next to explain is the result of MWEAI in case of tenant farmer group which was the transitional level (0.653) among all three groups of respondents. Such mid-way value of MWEAI indicated that respondents as tenant farmer had the modest tendency towards moderate to high empowerment attainment which was also evident by the results of intermediary inadequacy score (33%) and mediator value of women disempowerment index (0.35). Based on their secured domain and indicator values under the MWEAI this study termed 65.3% of these respondents as moderate to highly empower and rest of them (34.7%) as disempowered which agrees with the conception of women empowerment provided by Caputi (2013) in the power feminism approach as self-assertive employment by women enables them to attain transitional level of empowerment.

The very last but not the least to explain is the result of MWEAI in case of farmer group which was highest (0.824) among all three groups. Such highest value of MWEAI indicated that respondents as farmer had superlative tendency towards high empowerment attainment which was also evident by the results of lowest inadequacy score (16%) and minimum value of women disempowerment index (0.18) derived from 18% disempowerment headcount under this group. Based on the secured domain and indicator values under the MWEAI, this study termed 82.4% farmer

respondents as highly empowered and very few of them (17.2%) to be termed as partially disempowered in the study area which hold up to the opinion provided by Khader (2011) for higher empowerment attainment by rich women due to their lower adaptation to inappropriate preferences on a consistent basis than the poor ones in the society.

As a whole, table 4 depicted the estimated value of MWEAI as 0.6413 which evidently specified that 64% respondents as economically active participants in the agriculture sector of Lalmonirhat district were empowered and the remaining (36%) of the respondents were disempowered, of which majority respondents were day-laborers.

Results of factors affecting the respondents' empowerment attainment

The estimated equation of logistic regression model with results is as follows:

$$Y_i = 8.706 + 0.462X_1 + 0.138X_2 + 0.306X_3 - 0.315X_4 + 0.005X_5 + 0.904X_6 + 0.932X_7 + 1.373X_8 + 1.655X_9$$

Because of its mathematical distinctiveness, the logit model cannot be estimated by the standard OLS method as others can be. Keeping this view in mind, this study used the maximum likelihood method in estimating the logit model and the derived results are shown in Table 5.

First to explain is that the explanatory variable, age of the respondents had a positive (0.462) and significant (at 1% level) impact on the probability of becoming empowered by the respondents. To be precise, other factors held constant, the empowerment attainment by the respondents was positively influenced by 0.462 units, for one unit increase in the age level of the respondents. The justifiable explanation of such result was that the respondents with higher age had better scope and adequacy in attaining empowerment. Next to explain is that the explanatory variable, family size of the respondents had a significant (at 10% level) but negative (-0.315) effect on the probability of becoming empowered by the respondents. To be precise, other factors held constant, empowerment attainment by the respondents was negatively influenced by 0.315 units for one unit increase in family size of the respondents. One possible explanation for this could be that the lower the family size of the respondents, the better they were in terms of becoming empowered due to their lesser household responsibilities on a daily basis.

Binary variable (i.e., 1 = yes and 0 = no), training received by the respondents indicated a positive effect on the probability of becoming empowered by the respondents and this variable was statistically significant at 5% level. The regression coefficient of received training is estimated to be 0.904 which implied that holding other variables constant, if the received training criteria for the respondent increases by one unit, the empowerment attainment by the respondents would increase by 0.908 units. One possible explanation for this could be that the higher the training received by the respondents, the more efficient and conscious they are in terms of becoming empowered. Binary variable, respondent's NGO membership indicated a positive effect on the probability of becoming empowered by the respondents and this variable was statistically significant at

10% level. The regression coefficient of NGO membership was estimated to be 0.932 which implied that holding other variables constant, if the NGO membership criteria for the respondent increases by one unit, the empowerment attainment by the respondents would also increase by 0.932 units. Binary variable, respondent's media exposure indicated a positive effect on the probability of becoming empowered by the respondents and this variable was statistically significant at 1% level. The regression coefficient of media exposure was estimated to be 1.373 which implied that holding other variables constant, if the media exposure criteria of the respondent increases by one unit, the empowerment attainment by the respondents would also increase by 1.373 units. Binary variable, respondent's (women) voice against violence indicates a positive effect on the probability of becoming empowered by the respondents and this variable is statistically significant at 5% level. The regression coefficient of voice against violence is estimated to be 1.655 which implies that holding other variables constant, if the voice against violence criteria of the respondents increases by one unit, the empowerment attainment by the respondents would also increase by 1.535 units. However, differing results is observed by looking at the survey report on 'violence against women' which reported that married women in rural Bangladesh had gained conscious to a greater extent about their rights which had turned into the incidence of increasing violence against married women by their husbands. The report also specified that about 73% women in Bangladesh have experienced some form of violence done by their husbands during their conjugal life (BBS, 2015).

As a final point, the explanatory variables, education level, farm size and income of the respondents, had a tendency to exhibit positive effect on the probability of becoming empowered by the respondents but these variables were statistically insignificant.

4. CONCLUSION AND RECOMMENDATIONS

In the outset, the study revealed that majority of the respondents had moderate to high favourable perception on greater extent of women's engagement in agriculture as economically active participants but many of them had low to moderate favourable perception on their consequent empowerment attainment in the study area. This led to the conclusion that though the respondents had favourable perception on greater extent of women's engagement in agriculture as economically active participants as they were highly aware of their extent of engagement in agriculture but on an average, their perceptions on the consequent empowerment attainment by them was not that much favourable. Later on, the quantitative analysis done by this study through the estimation of MWEAI brought into being that the taking on of economically active participation in the agriculture sector by the women in the study area enhanced their empowerment attainment to a certain extent; though the extent of empowerment attainment varied quite largely among the three groups of women for which the primary

acting factor is their differentiated socioeconomic status and made publicized the fact that respondents from rich economic background had higher empowerment attainment than those from poor economic background. However, considering overall scenario, this study also accepted the fact that after the taking on of economically active participation in the agriculture sector, majority of the respondents enjoyed relatively better livelihood, both in terms of earnings and self-esteem;

Recommendations for policy implication

Based on the findings and conclusion of the study, the following recommendations for policy implication are forwarded made:

- i. GOs and NGOs working in the northern districts of Bangladesh ought to put further emphasis in increasing the extent of perception, among the women, on their better extent of empowerment attainment by getting engaged in the agriculture sector.
- ii. The dimension and duration of the training for women's knowledge and skill orientation must also be increased.
- iii. The women engaged as economically active participants in agriculture sector experience numerous troubles like lack of access to formal credit, lack of timely training facilities and so on. Therefore, apparent steps should be taken with iron hands by the policy makers of Bangladesh to solve the problems experienced by women while working as economically active participants in the agriculture sector.

Considering the above mentioned aspects of policy implication, to enable women in attaining higher empowerment attainment as economically active participants in agriculture of rural Bangladesh, the study also identified areas where policy can help close the gender gap. In this regard, following strategic actions are recommended by this study to be effectively undertaken.

- Establishment of sustainable farm and non-farm economy in rural areas of northern Bangladesh to create year-round employment opportunities for both men and women;
- Structural improvisation to foster the process of equalizing access to economic opportunities and reducing productivity gaps between men and women;
- Mediated negotiations through implementation and monitoring in ensuring legitimate access and control over inherited property by the rural women
- Gender inclusive policy formulation in addressing and reducing gender inequality and women disempowerment collectively.

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