Effects of Empowerment Factors on Agriculture Women Laborers in the Northern Part of Bangladesh

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ABSTRACT

Women's empowerment has become an important index of the development indicators globally. This paper proposes an index on women's empowerment (WEI) working in the agricultural sector of Bangladesh. To conduct this study, the data and necessary information were collected from 385 female agricultural laborers from the northern part of Bangladesh using multi-stage sampling technique. The cross-sectional data has been used for univariate analysis, to carry out the description of the variables; bivariate analysis, to find the associations among the variables; and binary logistic regression analysis, to evaluate the effects of selected socioeconomic factors on WEI. The results revealed that the average WEI value was 52.70. In Chi-square test, respondents' age, marital status, family head, physical fitness, family income, religion, and education were found statistically significantly associated with WEI. Finally, the binary logistic regression model identified respondents' age and education were the significant predictors of WEI. To increase WEI, education among women should be enhanced.

Key words: *Women's empowerment index; Mobility indicator; Decision making power indicator; Political and legal awareness indicator; Binary logistic regression model;*

Women participation in the workplace, leadership role in the political and social arenas and access to credit can be regarded as women's empowerment. Women can play an acute and prospective transformative role in agricultural growth in developing countries, though they often face persistent difficulties and economic constraints. The women's empowerment index (WEI) in agriculture measures the empowerment, agency, and inclusion of women in the agriculture sector in an effort to identify the ways to overcome those obstacles and constraints. It also measures women's empowerment relative to men within their households. The WEI is a significant innovation in its field and targets to increase understanding of the connections between women's empowerment, food security, and agricultural growth. Nevertheless, it measures the roles and extent of women's engagement in the agriculture sector in making decisions about agricultural production, access to and decision making power over productive resources, control over the use of income, leadership in the community, and time use. Women's empowerment is one of the 18 targets of the United Nations Millennium Declaration (UNMD) (*UN, 2008*). Women's sense of self-worth, women's right to have and to determine choices, women's right to have access to opportunities and resources, women's right to have the power to control their own lives, both within and outside the home, and women's ability to influence the direction of social change to create a more just social and economic order, nationally and internationally are the main five components of women's empowerment. But, the UNMD suggested the three main indicators to measure

women's empowerment, *viz.*, ratios of girls to boys in primary, secondary and tertiary education levels; the share of women in wage employment in the non-agricultural sectors, and proportion of seats held by women in National Parliament (*UN, 2008*). While these indicators rightly assess progress at the country level, other measures may be more suited to measure women's empowerment at the individual level. Moreover, the socioeconomic factors can play the significant roles in women's empowerment. Economic empowerment increases women's access to economic resources and opportunities. However, this access is often hindered by discrimination and persistent gender inequalities. Women's economic participation and empowerment bring direct benefits to women but also have a strong impact on poverty and growth, and are essential for achieving the Millennium Development Goals (*OECD, 2011*).

Women are playing an important role in agricultural growth in developing countries, like Bangladesh. In the rural areas of Bangladesh, agriculture is the principal occupation and in most districts, the agricultural cultivation is being practiced. In the northern part of Bangladesh, agriculture is the main activity since this area is known as the granary of Bangladesh where a huge number of women laborers actively participated in agricultural works. In Bangladesh, women's empowerment and the domains included in measuring empowerment have varied greatly. The eight indicators were identified for women's empowerments which are mobility, ability to make small purchases, ability to make larger purchases, involvement in major household decisions, relatives freedom from domination within the family, political and legal awareness, and involvement in political campaigning and protest (*Hashemiet. al., 1996*). Again, only four domains were used for women's empowerment in rural Bangladesh, *viz.*, self-esteem, role in decision making, freedom of mobility, and control over resources (*Mahmud et. al., 2012*). On the other hand, the WEI in agriculture was defined as an aggregate index comprised of five domains of empowerment in agriculture and a gender parity index to estimate the percentage of women who are empowered or whose achievement are at least as high as the men in their households (*Alkireet. al., 2013*). However, such measures of empowerment are limited in several ways (*Alkire, 2005; Narayan-Parker, 2005; Alsop, Bertelsen, and Holland, 2006; Kishor and Subaiya, 2008*). Thus, the empirical measure of women's empowerment is at least multi-dimensional. Importantly, the three specific domains relate to mobility, decision making, and political and legal awareness. Each of these domains is likely to improve the economic independence of women, enable them to build social networks outside the household, and give them access to credit. Therefore, the aims of this study are to build up the WEI based on three specific domains relating to agriculture to identify the associated factors of WEI, and the factors affecting WEI.

METHODOLOGY

Data and necessary information were collected from 385 women agriculture laborers through a structured questionnaire by using multi-stage random sampling technique. The data were collected from the northern part of Bangladesh during the period June to August 2013. Administratively, Bangladesh has 7 divisions (Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet), 64 districts, and 490 Upazilas (subdistricts). Each division was subdivided into districts and each district into Upazilas. Each urban area in an Upazila was divided into wards, and into mohallas (an area of a town or village; a community) within a ward. A rural area in the Upazila was divided into Union Parishad (UP) (the smallest rural administrative and local government unit) and Mouzas (a specific land area within which there may be one or more settlements) within a UP. Dinajpur district under Rangpur division was selected purposively from the northern part of Bangladesh. In the first stage, 4 Upazilas (Ghoraghat, Nawabganj, Khansama, and Dinajpur Sadar) were randomly selected out of 13 Upazilas of Dinajpur district. In the second stage, four UPs (Bulakipur, Daudpur, Ververy, and Fazilpur) were selected from the above 4 Upazilas. In the third stage, twelve villages were randomly selected (every three villages from each UP) out of all villages of those 4 UPs. At the 4th stage, the women agriculture laborers (respondents) were selected by means of random sampling technique from each village. Every adult woman (aged 18 years and over) laborer was chosen from each family and finally, 385 respondents were interviewed successfully. Researchers were actively participated in collecting data during this period. Respondents have been informed the purpose of this study and also they were assured that the collected

information will be used only for the research purpose and their information will be preserved confidentially.

Index for women's empowerment :

Defining the index: The three indicators were considered to derive a WEI which were mobility, decision making, and political and legal awareness.

Mobility indicator: The mobility of women was assessed by asking whether the following tasks were permitted to be performed alone, jointly or not at all. The tasks were: i. visiting a market for shopping, ii.visitinga market for selling, iii. visiting a healthcare center, iv. going to a movie, v. visiting outside the village, vi.visitinga cooperative society or Non-Government Organizations (NGOs), vii. moving within the village independently, viii. visiting friends and relatives, ix.visiting Upazila headquarters or a bank, and x. moving anywhere seeking work. The responses were given a score of '2' for performing the task alone, a score of '1'for performing the task jointly with the partner, and a score of '0' if the respondent did not perform the task at all.

Decision making power indicator: The indicator of decision-making power combined 16 items relating to the role of women in making decisions within her household: i. enrolment of children to school, ii. going to a doctor for her children, iii. involvement with any cooperative or NGO, iv. visither father's house or other relative's house, v. purchase items for the family, vi. purchase or sale of land, vii. adoption of a family planning method, viii. spending her own money, ix. spending her husband's money, x. the marriage of their sons and daughters, xi. when to have children, xii. the number of children to have, xiii. an offering presentation to relatives on a particular occasion, xiv. borrowing or lending money, xv. house repairing and xvi. when and where she was employed. For each item, women were asked whether she could make these decisions alone (coded 2), jointly with her husband/other family members (coded 1), or not at all (coded 0).

Political and legal awareness indicator: The indicator of political and legal awareness combined 16 items relating to women's knowledge and ability to perform the following: i. name of the Chairman of her own UP, ii.name of the ward member of her area, iii.name of the Prime Minister, iv.name of the Parliament Member (MP)of her area, v. casting of votes independently for election, vi. campaign for a political candidate, vii. significance registering the marriage, viii. permission

required for second marriage, iv. The law of inheritance, x. bargaining about wage fixation, xi. protesting against unfair prices, xii. protesting against family violence, xiii. protesting against violence in society, xiv. asking for justice, xv. protesting for herself, and xvi. protesting for others. A score of '1' was given for each positive response, and '0' for otherwise.

Index construction: The WEI was developed in the following two stages. First, an index was calculated for each indicator; then, a composite index, WEI, was constructed by summing the indices of the three indicators.

$$EI_{ij} = \frac{\sum_{j=1}^{n} X_j}{M} \times 100$$

where,

$EI_{ij,}$the indicator index of *i*-th female laborer for *j*-th indicator; X_j, the value of individual issues of *j*-th indicator; *M,* maximum possible score or outcome; and *n, the*number of individual issues of an indicator.

Empowerment index: The empowerment index is based on *Biswas (2004)* and it was assumed that each indicator has an equal weight on the empowerment index.

$$Empowerment\ Index = EI_i = \frac{\sum_{j=1}^{N} EI_{ij}}{N}$$

where,

$EI_i,$ composite empowerment index of *i*-th woman; and *N,*the number of indicators considered in the composite index.

Socioeconomic factors: The socioeconomic factors that had the most significant effects on WEI in the previous studies were selected for study (*Hasanet. al., 2017; Hasanet. al., 2016; Islam et. al., 2015; Yogendrarajah R and Semasinghe, 2013;Hossainet. al., 2011; Mondal et. al.,2008; Linda, 2005; Jejeebhoy, 2002*). In this study, respondent's age, marital status, family head, physical fitness, family income, religion, and education were considered as the factors.

Measurement of variables: a. Outcome variable: The unit of analysis of the study was WEI of agriculture laborers. To assess WEI of agriculture laborers, 3 empowerment-related indexes were considered. The indexes were as follows: i. mobility index, ii. decision making index, and iii. political awareness index. *b. Explanatory variables:* This study used 7 explanatory

variables with categories shown in parentheses: age in years, x_1 (d"30, 1; 31-40, 2; >40, 3); marital status, x_2 (married, 1; otherwise, 2); family head, x_3 (herself, 1; husband, 2; others, 3); physical fitness, x_4 (unfit, 1; fit, 2); family income in taka, x_5 (d"6000, 1;>6000, 2), religion, x_6 (Muslim, 1; non-Muslim, 2); education, x_7(no education, 0; primary, 1;secondary and higher, 2).

Statistical analysis: Statistical analyses concentrated on 385 data of the women laborers. The data have been used for univariate analysis to describe the variables in a list, for bivariate analysis ($\div^2$-test) to determine the associations between the variables, and for binary logistic regression analysis to determine the relative risk of the independent variables to the dependent variable. To examine the relationships between WEI and socioeconomic characteristics of the respondents, both quantitative and qualitative statistics were applied in this study. For statistical analyses, each WEI was made a binary response. Bivariate analysis ($\div^2$-test) was used to determine the associations between WEI and socio economic factors. The binary logistic regression model was fitted for the WEI to identify the determinants of WEI among women agriculture laborers. In logistic regression analysis, WEI (*y*) is treated as the dependent variable and other variables are selected as independent variables ($x_i,i"ÿ$ 1, 2, …,7). The underlying binary logistic regression model corresponding to each variable was as follows

$$y = \log\left(\frac{\rho}{1-\rho}\right) = \beta_0 + \beta_{1x1} + \beta_{2x2} + \cdots + \beta_{7x7}$$

where *p,* the probability of more empowered (WEI $\geq$ 50, coded 1); 1-*p,* the probability of less empowered (WEI<50, coded 0).

The multicollinearity in this regression analysis waschecked by examining the standard error (SE) for theregression coefficient (β). However, there is no exactmethod to detect the multicollinearity problem in logisticregression analysis. In this study, the magnitude of SE was used to detect the multicollinearity problem. Ifthe magnitude of SE lies between 0.001 and 0.5, it canbe considered that there is no evidence of multicollinearity (*Chan, 2004*). In this study, the magnitudes of SE were less than 0.10, indicating an absence of multicollinearity.

Statistical significance was accepted at *p*<0.05. The results of regression analysis are presented by odds ratios (OR) with a 95 per cent confidence interval (CI)

for easyunderstanding of the effect of the corresponding factor,net of other confounders. Statistical Package for SocialSciences version 17.0 (SPSS Inc., Chicago, IL, USA)was used for statistical analysis.

RESULTS AND DISCUSSION

The results of mobility index, decision making index, and political awareness index are presented in percentages in Table 1, Table 2 and Table 3, respectively.

Table 1 shows an average mobility index (49.73%) with minimum and maximum values 2.60% (not at all) and 83.10 (individually), respectively. The study results revealed that most of the respondents were moved within their villages alone (83.10%), visited relatives with other family members (71.40%), and went to sell anything in the markets not at all (80.30%). On the other hand, a few respondents were gone to visit cinemas alone (3.40%), sold anything in the markets jointly (9.40%), and visited their relatives not at all (2.60%). Table 2 shows an average decision-making index (49.59%) with minimum and maximum values 2.10% (not at all) and 82.60% (jointly), respectively. The study identified that most of the women were offered their presentation jointly (82.60%), not impose a decision to buy or sell land at all (67.00%), made the decision to sell labor individually (54.80%). On the other hand, a few women laborers were decided to buy or sell land individually (4.70%), and jointly (28.30%); and visit relative houses (2.10%). Table 3 shows an average political awareness index (57.66%) with minimum and maximum values 8.10% and 97.90%, respectively. It is found that almost all respondents were known the name of their UP ward member's name, and they were not protested against the unfair prices of their commodities (91.90%).

Associations between WEI and socioeconomic variables and the effects of those variables on WEI are presented in Table 4 and Table 5, respectively.

The chi-square test identified that the respondents' age, marital status, family head, physical fitness, family income, religion, and education are statistically significantly (*p*<0.05)associated with WEI. Finally, the binary logistic regression model identified age and education are the statistically significant (*p*<0.05) predictors of WEI.

In this study mobility index, decision-makingindex, and political awareness index were used for WEI. Overall, the results of the study showed relatively low

Table 1. Percdentage distribution of respondents according to mobility issues and indices

Mobility issues	Individually	Jointly	Not at all
Move within villages	83.10	14.00	2.90
Look for work	51.20	20.30	28.60
Go outside of village	47.30	44.90	7.80
Visit relatives	26.00	71.40	2.60
Go to doctor	23.10	69.10	7.80
Buy anything in market	22.10	15.30	62.60
Go to NGOs	17.70	49.60	32.70
Go to Union Parishad	17.10	49.10	33.80
Sell anything in market	10.10	9.40	80.50
Go to cinema	3.40	49.40	47.30
Average mobility index		49.73	

Table 2. Percdentage distribution of respondents according to decision-making issues and indices

Decision-making issues	Individually	Jointly	Not at all
Offering presentation	10.10	82.60	7.30
Marriage of their childeren	5.50	82.00	12.50
House repairing	13.80	77.70	8.60
Borrowing/lending money	13.00	70.60	16.40
Visit relatives	27.50	70.40	2.10
Spend husband money	4.90	67.50	27.50
When to have children	13.80	67.00	19.20
No.r of children to have	12.50	64.40	23.10
Adopt family planning	14.30	62.60	23.10
Go to doctor	23.60	62.30	14.00
Buy essentials for family	20.00	53.50	26.50
Involvement with NGOs	14.00	53.50	32.50
Spend own money	47.50	46.00	6.50
When and where to selling labor	54.80	42.10	3.10
Admit children to school	30.40	35.60	34.00
Land buy or sell	4.70	28.30	67.00
Average decision-making index		49.59	

scores for the three domains and the WEI. This study identified that the average index for mobility and decision making are just below 50 and the average index for political awareness is around 58 resulting in an average WEI is below 53.

Women's empowerment is a multi-dimensional concept that has been previously measured using different indicators. The adopted methodologies in this paper were compared with that published literature |make it somehow comparable. For instance, similar to *Alkire et al. (2013),* our results showed that age is a significant factor in women empowerment. When

Table 3. Percdentage distribution of respondents according to political and legal awareness issues and indices

Political awareness issues	Yes	No
Know name of Ward Member	97.90	2.10
Know the name of Union Parishad Chairman	93.00	7.00
Know the name of Prime Minister	87.00	13.00
Casting of votes independently for election	82.90	17.10
Significance of registering marriage	73.20	26.80
Permission required to second marriage	71.70	28.30
Protesting against violence in society	69.10	30.90
Protesting for others	63.40	36.60
Name of Parliament Member of her area	63.10	36.90
Protesting against violence in family	60.80	39.20
Protesting for herself	49.40	50.60
Law of inheritance	39.70	60.30
Campaign for a political candidate	30.60	69.40
Ask for justice	23.60	76.40
Bargaining about wage fixation	9.10	90.90
Protesting against unfair price	8.10	91.90
Average political awareness index	57.66	

Table 4. Contingency analysis of women empowerment index with diffident socioeconomic factors

Characteristics	WEI			*p*-values
	<50.00	≥50.00	Total	
Age (in years)				
<30	64 (57.1)	48 (42.9)	112 (29.1)	
31-40	62 (44.6)	77 (55.4)	139 (36.1)	0.002
>40	50 (37.3)	84 (62.7)	134 (34.8)	
Family head				
Herself	23 (39.7)	35 (60.3)	58 (15.1)	0.007
Husband	137 (46.9)	155 (53.1)	292 (75.8)	
Others	16 (45.7)	19 (54.3)	35 (9.1)	
Physical fitness				
Unfit	14 (56.0)	11 (44.0)	25 (6.5)	0.030
Fit	162 (45.0)	198 (55.0)	360 (93.5)	
Income (in Taka)				
≤6000	20 (47.6)	22 (52.4)	42 (10.9)	0.001
>6000	156 (45.5)	187 (54.5)	343 (89.1)	
Religion				
Muslim	102 (42.9)	136 (57.1)	238 (61.8)	0.003
Non-Muslim	74 (50.3)	73 (49.7)	147 (38.2)	
Education				
No education	84 (43.3)	110 (56.7)	194 (50.4)	0.005
Primary	53 (52.0)	49 (48.0)	102 (26.5)	
Sec. and higher	39 (43.8)	50 (56.2)	89 (23.1)	
Total	176	209	385	

Note: Figures shown in the parentheses are percentages

Table 5. Results of logistic regression analysis for the effects of different socio economic variables on WEI

Variables	β	Odds ratio (OR)	95% CI for OR Lower	Upper
Age (in years)				
<30	1.131**	3.099	1.721	5.579
31-40	0.516	1.676	0.992	2.831
>40 (r)	—	1.000		
Marital status				
Married (r)	—	1.000		
Others	0.309	1.362	0.641	2.895
Family head				
Herself (r)	—	1.000		
Husband	0.505	1.657	0.771	3.562
Others	0.205	1.228	0.504	2.995
Physical fitness				
Fit (r)	—	1.000		
Unfit	0.739	2.093	0.853	5.135
Family income (in Taka)				
d"6000	0.054	1.055	0.539	2.066
e"6000 (r)	—	1.000		
Religion				
Muslim (r)	—	1.000		
Non-Muslim	0.162	1.176	0.748	1.848
Education				
No education	0.170	1.185	0.694	2.022
Primary	0.812**	2.252	1.149	4.411
Secondary and higher (r)	—	1.000		

Note: **p< 0.05, 'r' - reference category', 'CI' - confidence interval', 'β' - coefficient

derivinga women's empowerment in agriculture index, *Alkireet al. (2013)* found that for the sample areas in southwestern Bangladesh, more than 40% of women aged 26-55 years were empowered compared with less than 33 per cent of those in younger categories. On the other hand, while our results show that education is a significant factor to women's empowerment, *Alkireet al. (2013)* found that a same proportion of women were empowered with and without primary education. However, our results are consistent with other studies such as *Afzal et al. (2009),* who also reported education as an important tool of WEI. While our results suggest

a low WEI, results from *Alkireet al. (2013)* have shown that in Bangladesh there were also a high proportion of men who were not empowered. When investigating intra-household patterns, the authors demonstrated that although only 39 per cent of women in their sample areas in southwestern Bangladesh were empowered, almost 60 per cent of women enjoyed parity with the primary male in the household. Thus, it appears that a low WEI should not be interpreted as women being less empowered than men. It is likely that the community, both men and women, feels less empowered.

Nevertheless, policies that promote leadership and control for women would help improve their empowerment. Programs that would encourage women to move outside their home would greatly improve women's empowerment. For instance, *Hossain and Jaim (2011)* showed that NGOs microcredit programs and the systems of holding monthly meetings encouraged women to move outside their homes. Women are also more likely to become aware of their rights. This subsequently is likely to increase their empowerment status.

CONCLUSION

Women's empowerment is a complex concept that faces many challenges in conceptualization and measurement and varies greatly in accordance with social class and social context. Based on the results of the study, it is clear that the level of women's empowerment in socioeconomic settings of Bangladesh is somewhat satisfactory. Some socioeconomic factors like age, marital status, family head, physical fitness, income, religious identity, and education level play the important roles to develop their self-worth, dignity, and well-being in the society. Encouraging women's mobility means that women can take part in decision-making process in different matters in the family. Since the empowerment of women is a prerequisite for the elimination of poverty and the upholding human rights, the government of Bangladesh should consider laws for the protection of women's rights and provide credit and various training facilities to support women.

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