Assessing the Women Participation in Vegetables Value Chain

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Abstract

A study was attempted in Sadar Upazila of Jessore District, Bangladesh during February, 2019 to analyze value chain of vegetables, identifying value chain actors and women participation in this value chain focusing two promising vegetables namely brinjal and pointed gourd. Data were collected from both primary and secondary sources. The primary data were collected through face-to-face interview of 5 Loop aggregates, 45 farmers, 10 wholesalers, 15 retailers and 15 consumers using a pre-tested structured questionnaire and analyzed using STATA software. The value chain analysis was undertaken in qualitative terms. Socio-demographic and economic variables were analyzed by using descriptive statistics. The level of male and female farmers in these activities has been calculated by three different score (Participation index = regularly involved x 2, occasionally involved x 1 and never involved x 0) given on the basis of extent of participation. To analyze the access of males and females to and control over resources and benefits of vegetables, Chi-square test was applied for measuring the degree of association among variables. Vegetables value chain actors identified in the study that include input suppliers, producers, LOOP aggregators, retailers, wholesalers, aratders and consumers. The study identified that value chain was fully dominated by male but at the lower level, women involvement was also considerable. They have mainly participated in activities such as, harvesting, sorting, cleaning and storing of vegetables. Policy aiming at increasing farmers' access to modern inputs, more women participation, improving extension activities and the coverage of LOOP system are recommended in the existing value chain to accelerate the chain's development.

Keywords: Value chain, Vegetables, Women participation

Introduction

Bangladesh could not be achieved unless a breakthrough is achieved in the agricultural sector (Akter *et at*., 2016). Agriculture, the main occupation of the people, with 40.6% of total labour force engaged in agriculture (BBS, 2018). Within the agriculture sectors (crops, forests, fisheries and livestock), vegetables crops are attractive one (Fatema, 2006). Trend of gradually increasing the vegetables cultivated land clearly evidence that farmers are more diverse towards vegetables production. During the last decades, Jessore district becomes one of the prominent vegetables producing zone in Bangladesh due to fertile land and better weather and a lot of green vegetables are being grown by labourious farmers (Karim and Biswas, 2016). Women's participation in rural development, more particularly in agricultural development in Bangladesh is the most important strategy. About half (49%) of the population of Bangladesh is women among them 45.6% are associated with the farming activities (AIS Diary, 2012). With these present circumstances, women have faced some serious constraints in carrying out vegetables production activities. That means they cannot play a vital role in vegetables value chain activities. Among the five stages of agricultural value chain include production, distribution, processing, marketing and consumption (Schipmann, 2006), women have less access on any one of these stages. They have less access to information, technology, inputs and credit than men. Despite those constraints women farmers provided the majority of labour, planting inputs, hoeing and harvesting activities (Ozkan *et al.,* 2000). The higher production of vegetables causes the rapid change in production, marketing strategy, the involvement of women. This kind of study has not yet to be done in recent time. The general objective of the study is to analyze the value chain of vegetables, identify the value chain actors, their activities and assessing women participation in vegetables value chain in the study area.

Materials and Methods

The study was attempted in Sadar Upazila of Jessore District, Bangladesh during February, 2019 to analyze value chain of vegetables, identifying value chain actors and women participation in this value chain focusing two promising vegetables namely brinjal and pointed gourd. Data were collected from both primary and secondary sources. The primary data were collected through face-to-face interview of 5 LOOP aggregators (is a new marketing system of small-scale farmers introduced by an Indian NGO named Digital Green in which farmers sell their vegetables and access to markets through village level aggregators), 45 farmers, 10 wholesalers, 15 retailers and 15 consumers using a pre-tested structured questionnaire and analyzed using STATA software. The value chain analysis was undertaken in qualitative terms. Socio-demographic and economic variables like age, education status, family size, occupation, monthly income, gender, source of finance, production etc. were analyzed by using descriptive statistics such as frequency, mean, percentage and standard deviation. The level of male and female farmers in these activities has been calculated by three different score (Participation index = regularly involved x 2, occasionally involved x 1 and never involved x 0) given on the basis of extent of participation. To analyze the access of males and females to and control over resources and benefits of

vegetables, Chi-square test was applied for measuring the degree of association among variables.

Results and Discussions

Value chain analysis of vegetables

According to McCormick and Schmitz (2002) value chain mapping enables to visualize the flow of the product from production to end consumer through various actors. Value chain actors are those who are actually directly involved in value chain activities like supplying inputs, producing, processing, marketing and consuming (Stein and Barron, 2017). In this study, a number of the vegetables value chain actors such as input suppliers, farmers, LOOP aggregators, aratdars, wholesalers, retailers and consumers were identified. According to KIT *et al*., (2006) the direct actors are those involved in commercial activities in the chain (input suppliers, producers, traders, consumers) and indirect actors are those that provide financial or non-financial support services, such as credit facilities, government, NGO's cooperatives, researchers and extension agents. Inputs such as seeds, fertilizers, pesticides and farm implements are supplied by NGO & cooperatives, Department of Agricultural Extension (DAE), Bangladesh Agricultural Research Council (BARC), Bangladesh Agricultural Development Corporation (BADC), traders and informal farmers to farmer's exchange. The vital vegetables chain actors are farmers/producers done major value chain functions include ploughing, planting, fertilization, irrigation, weeding, pest/disease controlling, harvesting and post-harvest handling. LOOP aggregator is a service provider who accumulates vegetables from LOOP farmers and then sells to different markets. They manage and organize transport such as, Van, Nachimon, Alamshadhu, Pick-up and Truck for transportation which can carry 550kg, 1750kg, 2250kg, 3500kg and 6500kg respectively. LOOP aggregators established trust and transparency with the farmers and never impose any commission from them. Farmers willing pay to the aggregators according to their margin which is ranges from 0.25-1.00 Tk./kg (LOOP dashboard, 2019). Wholesalers are traders that buy vegetables from LOOP aggregators, local commission agents and also directly from farmers, usually those in surplus areas for resale in deficit to larger market centers and retailers with better financial and information capacity. Retailers are the last link between producers and consumers. There are two types of retailers in the study area local retailers and central retailers. Local retailers are buying vegetables either from farmers or wholesale traders. While urban or central traders in major cities mostly buy from wholesalers and sell to urban consumers. Consumers are the final destination in the vegetables value chain. Consumers are those who purchase the products for consumption. Both male and female have equal access to purchase and consumption of vegetables. A support service provider does not perform the basic function in a value chain. Instead, they refer to general investment and preparatory activities benefitting all or at least serval value chain actors simultaneously. Support service includes training and extension, information, financial and research services. In the study area the most common service providers are DAE, BADC, BARI, DAM, many financial institution, private transporters etc. Some service providers extend services beyond one function and others are limited to a specific function.

Socio-demographic characteristics of value chain actors

Sampled household

Result showed that among 45 sampled family 32 (71.11%) household are male-headed and 13 (28.89%) are female-headed in the study area. The results revealed that there were more male farmers than females because females are busier in households work than field works. The average family size 4.80 in the study area which is close to the average national family size (HIES, 2010). The results showed that almost 93% of farmers were attain various levels of education. It shows the great opportunity of the adoption of new innovation and diversification of crop by the farmers. The Middle-aged farmers (26-50 years) are more involved in vegetables production activities that implies the respondents are strong enough to take the heavy farm work for vegetables production.

Table 1. Demographic characteristics of sampled household

Variables	Indicators	Numbers	Percentage	Average
Sex	Male	32	71.11	
	Female	13	28.89	
Education	Illiterate	3	6.67	
	Primary	22	48.89	
	Secondary	18	40.00	
	Graduation	2	4.44	
Age group	18-25 years	01	2.22	
	26-50 years	38	84.44	
	Above 50 years	06	13.33	
Family size	Small (1-3 members)	06	13.33	
	Medium (4-6 members)	36	870.00	
	Large (7 to above)	03	6.67	4.80 (Avg.)
Extension services	Yes	35	77.8	
	No	10	22.2	
Credit	Yes	15	33.3	
	No	30	66.7	
Market information	Yes	39	86.7	
	No	06	13.3	
Own transport facilities	Yes	15	33.3	
	No	30	66.7	
Farm size (acre)		0.17 (Min.)	3.56 (Max.)	1.012 (Mean)
Land allocation for brinjal		0.05 (Min.)	0.58 (Max.)	0.189 (Mean)
Land allocation for pointed gourd		0.07 (Min.)	0.41 (Max.)	0.165 (Mean)

The survey report showed that the average farm size of sampled household was 1.01 acres ranges from 0.17 to 3.56 acres. About 18% and 16% of their total cultivated land were allocated for brinjal and pointed gourd cultivation respectively. About 77.8% of the farmers agreed that they had access to extension service in the 2018 production year. Although there were a number of formal and semi-formal financial institutions provided credit, a majority of 66.7% farmers are not interested to take loan or credit from bank or NGO's due to the burden of credit. Almost 86.7% of sampled farmers had access to market information from different sources

such as, LOOP mobile application, aggregators, DAE, traders, radio/television and friends/relatives (**Table 1**).

Traders

The average age of aggregator was about 40.25 retailers about 47.2 and the wholesalers was 45.4 years. The aggregators, retailers and wholesalers average experience was nearly 2, 15 and 14 years respectively. The survey further indicates that 100% of sample traders were males, rare women participation may have in vegetable trading in the country. In this study, a good sign is that most of aggregators, retailers and wholesalers are educated (**Table 2**).

Table 2. Demographic characteristics of Traders

Variable		Aggregator		Retailor		Wholesaler	
		Number	%	Number	%	Number	%
Sex	Male	4	100	15	100	10	100
Education	Primary	0	0	3	20	0	0
	Secondary & Higher Graduation	3	75	9	60	3	30
	Graduation	1	25	3	20	7	70
Religion	Muslim	4	100	15	100	9	90
	Hindu	0	0	0	0	1	10
		Mean	SD	Mean	SD	Mean	SD
Age		40.25	4.92	47.2	2.94	45.4	2.54
Experience		2	0	15.3	1.64	13.6	3.29

Consumers

About 66.7% were male and 33.3% were female consumer, ages ranging from 21 to 52 years with an average of 35.8 years. The education level of consumer's results showed that a negligible number of consumers (6.7%) have no education (**Table 3**).

Table 3. Demographic characteristics of Consumers

Variables	Indicators	Numbers	Percentage
Sex	Male	10	66.7
	Female	05	33.3
Marital status	Single	03	20.0
	Married	12	80.0
Education	Illiterate	01	6.7
	Primary	06	40.0
	Secondary	04	26.7
	Graduation	04	26.7

Gender roles in value chain at producer level

Gender issue shapes the value chain activities in the chain especially at production level. The activities were considered for determining the extent of participation of both male and female farmers in vegetables value chain presented in table 4. Supply of seeds/seedlings are the main input for vegetables cultivation which dominated by male (100%) compare to female (65%). The result showed that Male respondent participation in land preparation index was 99%, in fertilizer application 93%, application of pesticides/insecticides 80%, in irrigation 95%. The result indicated that in harvesting male participation index was 78% and female participation was 79%. About 68% of females are regularly joining in these activities. Male participation regularly but females are participated in harvesting more than male (**Table 4**).

Table 4. Men and Women participation in vegetables value chain activities

Item of operation	Men						Women					
	Extent of participation			Participation index	Percentage (%)	Rank	Extent of participation			Participation index	Percentage (%)	Rank
	Regularly	Occasionally	Never				Regularly	Occasionally	Never			
Seeds/ seedlings supply	45	0	0	90	100	I	22	15	8	59	65	IV
Land preparation (Power tiller/Animal Power)	44	1	0	89	99	II	6	4	35	16	18	VIII
Fertilizers	39	6	0	84	93	IV	5	3	37	13	14	IX
Insecticides/Pesticides	36	0	09	72	80	VI	9	4	32	22	24	YI
Irrigation	43	0	2	86	95	III	8	4	33	20	22	YII
Harvesting	35	0	10	70	78	VII	31	10	4	72	80	II
Cleaning, Grading	22	11	12	55	60	VIII	32	9	4	73	81	I
Storing	11	19	15	41	43	XI	27	18	0	72	80	III
Selling	39	6	0	84	93	V	13	5	27	31	34	V

Participation index = Regularly involved x 2, Occasionally involved x 1and Never involved x 0

The cleaning/grading and sorting are mainly dominated by female and their participation index was 80% and 78% which was comparatively higher than male 60% and 43% respectively. The selling of vegetables was highly dominated by male and their participation index was 93%. Female farmers have little access in this activity (34%) and about 60% of them never sold their vegetables in the market by own.

Gender access to resources and control over benefits

The chi-square test statistics revealed that there is statistically significant gender difference in the level of access to input acquisition and female had lower access to input acquisition compared to male.

Table 5. Gender access to and control over resources and benefits of vegetables

Variables		Male (%)	Female (%)	Chi-square value
A. Resources				
Inputs acquisition	Yes	87	60	4.61*
	No	13	40	
Credit acquisition	Yes	56	69	2.02
	No	44	31	
Bangladesh Agricultural Research Institute (BARI)	Yes	93	33	0.00
	No	7	67	
Extension services from Govt.	Yes	100	42	0.00
	No	0	58	
Extension services from LOOP	Yes	98	47	0.90
	No	2	53	
Local and International NGO's	Yes	22	76	1.45
	No	78	24	
Market Information	Yes	98	29	0.42
	No	2	71	
B. Benefits of Vegetables				
Consumption	Yes	98	91	10.48*
	No	2	9	
Income	Yes	98	67	0.51
	No	2	33	

* indicates significant at the level of 10%

But there was no significant difference in access to credit acquisition between male and female. The chi-square test statistics also revealed that there is no significant difference in access to BARI, extension services from Govt. organization, extension services from LOOP, extension services from local and international NGO's and market information. But there is statistically significant gender difference in the level of access to and control over consumption and income where females had lower access to and control over consumption and income compared to male (**Table 5**).

Conclusions

Based on the results of the study it can be concluded that Policy aiming at increasing farmers' access to modern inputs, more women participation, improving extension activities and the coverage of LOOP system are recommended in the existing value chain to accelerate the chain's development.

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