

# Strengthening vegetable marketing policy through indexing of rising constraints

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**Abstract-** The present study was designed to assess the constraints affecting market performance of selected vegetables: namely potato, egg plant, pointed gourd, okra, aroid and red amaranth. Total 100 respondents were randomly selected from two upazilas- Bogra sadar and shibgonj of Bogra district. Both tabular and quantitative analyses were conducted to achieve the objectives of the study. Spread values of vegetables grower to consumer were almost doubled. The average spread value change of vegetable at town market was 19.67 % higher than village market. The major findings of the study revealed that production of all the selected vegetables were profitable but respondents faced constraints due to improper marketing systems. Growers, wholesalers, retailers and consumers of vegetable put first priority accordingly on low market price, irregular supply by growers, high wholesale market price and high retail market price. All the respondents were put emphasis on to stretch out constraints early and proper steps should ensure by government to minimize all the risk.

**Index Terms-** horticultural crop, constraint, vegetable marketing policy, Bangladesh, agriculture

products. Farmers are compelled to sell their products at the harvest time when the prices are minimal resulting in a very low return for their produced products. Ultimately, the farmers who produce and bear the risks associated with the crop production are deprived of the major benefits of their products (Faruqee, 2005). For Bangladesh, identifying the constraints on the expansion of vegetables production and marketing are important, since the supply of vegetables is quite irregular in most Asian countries, including Bangladesh (Ali, 2000). Farmers who are engaged in the production of vegetables often earn higher incomes than those engaged in the production of cereal crops alone (Weinberger and Lumpkin, 2005). Vegetables like egg plant, radish, cabbage, bitter gourd, cauliflower, and okra gave returns at least three times higher than rice (Ateng, 1998).

So far, there have been several studies of the possibility of horticultural sector improvement in Bangladesh. Most of them have highlighted the potential of horticultural crops like vegetables (Weinberger and Genova II, 2005; Ali, 2000), Keeping these points in mind, the study was undertaken for Potato, Egg plant, pointed gourd, Okra, Aroids/Taro and Red Amaranth in terms of investigating profitability point of view.

The specific objectives of this study was as follows-

- i) To examine the present marketing situation of vegetables.
- ii) To assess the constraints affecting market performance and to propose policy recommendations to provide the growers fair price and a lower price to the consumers for enhancing market performance.

## II. METHODOLOGY

Seven crops, such as Potato, Egg plant, Pointed gourd, Okra, Bitter gourd, Aroids/Taro and Red Amaranth were selected for this study. The study was conducted in Shibgonj and Sadar Upazila of Bogra district was selected purposively due to the high production regions of selected crops. On the other hand, the most prominent wholesale market is here in Mohasthangor, Shibgonj. We selected five village market and five town markets from these two Upazila. Five village markets were Bilhamla hat, Mohasthangor hat, Pirob hat, Bihar hat and Shibgonj hat. Five town markets were Raza bazar, Banani bazar, Namazgor bazar, Mathidali bazar and Godarpa bazar. From the population, 25 growers, 25 wholesalers, 25 retailers and 25 consumers of vegetables were selected randomly for the year of 2014. Data for

the present study were collected through pre-designed and pre-tested interview schedules. Data were collected between August and September 2014. After necessary adjustments, collected data were analyzed to achieve the stipulated objectives of the study. Tabular methods of analysis using averages, percentages, ratios etc. were done for the study.

The following formula was used to calculate the different parameters and the cost of production of selected vegetables:

i. Net Return = GR - GC

Where, GR = Gross Return = P×Q

Q= Yield per acre (kg)

P= Sale price of the product (Tk.)

GC= Gross Cost = TFC+ TVC

Where, TFC= Total fixed cost per acre (Tk.)

TVC= Total variable cost per acre (Tk.)

ii. Gross Margin (GM) = GR- TVC

Where, GR= Gross Return

TVC= Total variable cost per acre (Tk.)

iii. Benefit Cost Ratio (BCR) = Gross Return (GR)/Gross Cost (GC)

Gross Return per acre represented the average price of the main product and its by-products. Gross Margin (GM) analysis has been estimated as the difference between gross return (GR) and Variable Cost (VC). That is GM= GR-VC (Yang, 1965). The Net Return (NR) analysis considered fixed cost which includes costs for land use, interest on capital, etc. So net return per acre was calculated by deducting all costs (variable costs and fixed costs) from total (i.e. NR=GR-GC). Thus, per acre GM and NR of the relevant vegetables were estimated to compare among the alternative vegetables to identify the most profitable vegetable. Benefit Cost Ratio (BCR) is a relative measure which is used to compare benefits per unit of costs. It helps to analyze the financial efficiency of the vegetable farms and market.

Constraint/Challenge Facing Index (CFI) for any one of the identified dimensions could range from 0 to 300 where constraints were ranked according to Constraints Facing Index of vegetable marketing. For this purpose, a Constraint/Challenge Facing Index (CFI) was computed by using the following formula as used by Mansur (1989) and Raha (1989).

iv. Constraint Facing Index (CFI) =  $P_l \times 1 + P_m \times 2 + P_h \times 3$

Where,  $P_l$  = Constraint facing score of respondents having less severe

$P_m$  = Constraint facing score of respondents having moderately severe

$P_h$  = Constraint facing score of respondents having highly severe

### III. RESULTS AND DISCUSSION

#### 3.1. Costs and returns of vegetable production

Production cost plays a vital role in the decisions of the growers. The costs refer to the total amount of funds used in production. In this study, the total costs per acre were worked out. Hence, total variable and fixed costs were calculated separately (Table 1). In the present study it was observed that total costs of potato production by the sample growers was Tk. 43,000/acre, of which variable cost was Tk. 22,500/acre and fixed cost was Tk. 20,500/acre (Table 1). A total return from the production of potato was Tk. 129,000/acre, while gross margin was Tk. 106,500/acre and net return was Tk. 46,000/acre. In case of egg plant production, a total cost was Tk. 47,150/acre, of which variable cost was Tk. 26,150/acre and fixed cost was Tk. 21,000/acre (Table 1). A total return from the production of potato was Tk. 291,200/acre, while gross margin was Tk. 265,050/acre and net return was Tk. 244,050/acre. Whereas it was the highest return of any other vegetables. In case of pointed gourd production, a total cost was Tk. 35,200/acre, of which variable cost was Tk. 19200/acre and fixed cost was Tk. 16000/acre (Table 1).

A total return from the production of potato was Tk. 158,400/acre, while gross margin was Tk. 139,200/acre and net return was Tk. 123,200/acre. A total cost of okra cultivation was Tk. 28,700/acre, of which variable cost was Tk. 13,400/acre and fixed cost was Tk. 15,300/acre (Table 1) and net return was Tk. 83,300/acre. Here fixed costs were more than total variables cost. On the other hand, a total cost of bitter gourd cultivation was Tk. 45,200/acre, of which variable cost was Tk. 25,100/acre and fixed cost was Tk. 20,100/acre (Table 1) while net return was Tk. 64,000/acre. The total cost of aroids/taro cultivation was Tk. 33,900/acre and net return was Tk. 56,100/acre. Again, the total cost of red amaranth cultivation was Tk. 23,600/acre and net return was Tk. 12,400/acre which was almost half of the total cost of red amaranth cultivation. The study was found that net return of egg plant production was the highest among the selected vegetables against the total production cost while in case of red amaranth was the lowest.

**Table 1. Per acre production cost (Tk/acre) and returns at grower's level:**

Parameter	Potato (pakri)	Egg plant	Pointed gourd	Okra	Aroids	Bitter gourd	Red Amaranth
A. Total variable costs	22500	26150	19200	13400	18000	25100	9000
i)Human labor cost	7200	8400	6000	4800	6300	8100	3600
ii)Land preparation cost	2100	2100	2100	2100	2100	2100	2100
iii)Seed cost	2000	1800	1200	400	2000	1500	200
iv)Fertilizer cost	4000	4200	3400	2500	3200	4000	1000
v)Irrigation cost	2000	2400	1800	1600	1200	2000	800
vi)Pesticide cost	3200	5250	3200	1000	1200	5400	800
vii)Others cost	2000	2000	1500	1000	2000	2000	500
B. Total fixed costs	20500	21000	16000	15300	15900	20100	14600
i)Land rent cost	12000	12000	12000	12000	12000	12000	12000
ii)Family labor	6500	6500	3200	2800	2400	6600	2100
iii) Interest on borrowed money (%)	2000	2500	800	500	1500	1500	500
C. Total costs (A+B)	43000	47150	35200	28700	33900	45200	23600
D.Total returns	129000	291200	158400	112000	90000	109200	36000
E. Grossmargin (D-A)	106500	265050	139200	98600	72000	84100	27000
F. Net return (D-C)	46000	244050	123200	83300	56100	64000	12400

Data showed (Table 2) that the average total cost of potato production was Tk. 12.35/kg while the net profit was Tk. 5.65/kg, whereas benefit costs ratios for the cultivation of potato by the sample farmers were 1.46 over profit, respectively (Table 2).

The productivity or yield of potato in study areas was 7.2 ton/acre which is higher than the national average yield of 6.4 ton/acre (BBS, 2008). The estimated BCR of the present study was lower but close to the result presented by Azimuddin *et al.* (2009) for potato production in Comilla and Munshigonj.

### 3.2. Profitability of vegetables at grower's level

Significant variations in production, varieties, and quality also increase the marketing cost (Harris-White, 1995). The net profit margin of a specific agency is the net earnings, after

paying all marketing costs (Khushk, 2001). On the data (Table 2) showed that Egg plant was the most profitable vegetable in the study area during cultivation season 2014 according to BCR (3.38), where net profit per kg was 15.72 Tk. against average total cost 8.28 Tk/kg. On the other hand, Red Amaranth was the least profitable vegetable in the study area during cultivation season 2014 according to BCR (1.29), where net profit was 2.67 Tk./kg against average total cost 9.33 Tk./kg that was ranked 7<sup>th</sup> of profitability out of seven selected vegetables. The benefit cost ratios of egg plant, okra, aroids, pointed gourd, bitter gourd, potato and red amaranth over profit were 3.38, 2.20, 2.00, 1.88, 1.74, 1.46 and 1.29 respectively which were ranked similarly 1<sup>st</sup> to 7<sup>th</sup>. The present finding consisted with the findings of Mohammed (2007).

**Table 2. Profitability of vegetables at grower's level**

Parameters	Potato (pakri)	Egg plant	Pointed gourd	Okra	Aroids/ Taro	Bitter gourd	Red Amaranth
A. Average production cost (Tk/Kg)	6	4.43	7.33	7.18	9.41	10.76	7.87
B. Average marketing cost (Tk/Kg)	6.35	3.85	4.37	3.27	3.09	4.14	1.46
i)Grading(Tk/Kg)	0.34	0.32	0.37	0.42	0.44	0.54	0.24
ii)Transport(Tk/Kg)	0.58	0.52	0.60	0.60	0.60	0.60	0.60
iii) Cold storage rent(Tk/Kg)	3.53	-	-	-	-	-	-
iv) Market toll(Tk/Kg)	0.50	0.50	0.50	0.50	0.50	0.50	0.25
v) Loading – unloading cost(Tk/Kg)	0.25	0.30	0.30	0.25	0.25	0.25	0.25
vi)Personal expense(Tk/Kg)	0.25	0.82	0.85	0.75	0.55	0.75	-
vii)Wastage (Tk/Kg)	0.90	1.39	1.75	0.75	0.75	1.50	0.12
C. Average total cost per kg (Tk) (A+B)	12.35	8.28	11.70	10.45	12.50	14.9	9.33
D. Average wholesale price per kg (Tk/ kg)	18	24	22	23	25	26	12
E.Net profit (Tk/ kg) (D-C)	5.65	15.72	10.30	12.55	12.25	11.10	2.67
F.i) Average yield per acre (kg)	7200	10400	4800	4000	3600	4200	3000
ii)Total return per acre (Tk)	129600	291200	105600	92000	90000	109200	36000
iii)Net profit per acre (Tk)	40680	163488	49440	50200	44100	46620	8010
iv) Gross cost per acre (Tk)	889200	86112	56160	41800	45000	62580	27990
G.i) BCR on profit	1.46	3.38	1.88	2.20	2.00	1.74	1.29
ii)Profitability Rank	06	01	04	02	03	05	07

### 3.3. Marketing average cost of vegetables incurred by growers, wholesalers, retailers and consumers.

The marketing costs of some selected vegetables for the study areas are shown in Table 3. The estimated average marketing costs per ton vegetables incurred by the growers were

Tk. 3920. The estimated average marketing costs per ton vegetables incurred by the wholesalers were Tk. 3635 and by the retailers were Tk. 3380. More costs occurred by transportation cost by wholesalers and retailers.

**Table 3. Marketing average cost of vegetables incurred by growers, wholesalers and retailers.**

Cost Item	Growers		Wholesalers		Retailers	
	Tk/ton	%	Tk/ton	%	Tk/ton	%
Grading cost	380	9.70	250	6.88	150	4.44
Transportation	590	15.05	1940	53.37	1930	57.10
Loading unloading cost	270	6.90	375	10.32	375	11.08
Market toll	500	12.75	300	8.25	200	5.92
Spot /shop rent	-	-	100	2.75	100	2.96
Personal expense	660	16.83	200	5.50	200	5.92
Wastage	1020	26.02	250	6.88	300	8.88
Donation	-	-	220	6.05	50	1.48
Others	500	12.75	-	-	75	2.22
Total	3920	100	3635	100	3380	100

### 3.4. Comparative study about the most gainer in the vegetable marketing channel.

On the data (Table 4) shows that the growers (43.17 %) were the most gainer in the vegetable marketing channel in the study area during cultivation season 2014 according to an average gaining percentage of selected seven vegetables rather than wholesalers (37.08 %). The least gainer was the retailers according to the average percentage (19.74%) of gaining.

Although the growers the most gainer in the vegetable marketing channel but they could not win the race of profitability because they had loan of larger share of invested capital. Potato growers who were solvent, they stored their potatoes in cold storage and were maximum beneficiary by growing potato. But most of potato growers did not get proper price for their potatoes due to improper marketing system early marketing.

**Table 4. Comparative study about the most gainer (Tk/Kg) in the vegetable marketing channel.**

Item	Growers			Wholesalers			Retailers		
	Production cost	Sale cost	Gain	Buy cost	Sale cost	Gain	Buy cost	Sale cost	Gain
Potato (pakri)	12.35	18	5.65 (38.56)	18	24	6 (40.96)	24	27	3 (20.8)
Egg plant	8.28	24	15.72 (42.81)	24	35	11 (29.96)	35	45	10 (27.23)
Pointed gourd	11.70	22	10.30 (42.38)	22	33	11 (45.27)	33	38	3 (12.35)
Okra	10.45	23	12.55 (45.55)	23	34	11 (39.93)	34	38	4 (14.52)
Aroids/ Taro	12.50	25	12.25 (63.64)	25	29	4 (20.74)	29	32	3 (15.58)
Bitter gourd	14.9	26	11.10 (44.22)	26	35	9 (35.86)	35	40	5 (19.92)
Red Amaranth	9.33	12	2.67 (25.02)	12	17	5 (46.86)	17	20	3 (28.12)
Average gaining %	-	-	43.17	-	-	37.08	-	-	19.74

### 3.5. Comparative scenario of vegetable marketing price village and town

The main thing was that the average spread value change of vegetable at town market was 19.67 % higher than village market. Data revealed that the spread values of potato, egg plant, pointed gourd, okra, aroids, bitter gourd, and red amaranth were 8-9, 17-23, 14-17, 14-16, 6-8, 11-15 and 9-11 Tk/kg respectively at village market on an average of 12.71(Tk/kg). On the other hand, the spread values of potato, egg plant, pointed gourd, okra,

aroids, bitter gourd, and red amaranth were 10-11, 21-23, 16-17, 22-24, 8, 15-21 and 13-15 Tk/kg respectively at town market on an average of 15.21(Tk/kg). The highest spread value was for okra and the highest spread value was for aroids both in village and town market, but the lowest change was 10 % higher than village market for egg plant at town market. Again the highest spread value was 53.33 % for egg plant at town market than village market (Table 5).

**Table 5. Comparative scenario of vegetable marketing price village and town**

Name of the vegetables	Village market				Town market			
	Sold by growers (Tk/kg)	Sold by whole sellers (Tk/kg)	Sold by retailers (Tk/kg)	Spread value (Tk/kg)	Sold by growers (Tk/kg)	Sold by whole sellers (Tk/kg)	Sold by retailers (Tk/kg)	Spread value (Tk/kg)
Potato (pakri)	18-19	24-25	26-28	8-9	18-19	24	28-30	10-11 (+23.53)
Egg plant	23-25	32-36	40-48	17-23	23-25	32-36	44-48	21-23 (+10.00)
Pointed gourd	22-23	33-34	36-40	14-17	22-23	33-36	38-40	16-17 (+6.45)
Okra	22-24	32-36	36-40	14-16	22-24	36-40	44-48	22-24 (+53.33)
Aroids	22-26	28-30	30-32	6-8	22-26	26-27	30-35	8 (+14.29)
Bitter gourd	25-27	30-35	36-42	11-15	25-27	28-36	40-48	15-21 (+38.46)
Red amaranth	11-13	16-18	20-24	9-11	11-13	18-20	24-28	13-15 (+40.00)
Average (change%)	-	-	-	12.71	-	-	-	15.21 (+19.67)

**3.6. Identified Constraints and their nature faced by growers, wholesalers, retailers and consumers of vegetable marketing:**

Comparative Constraints facing index of growers, wholesalers, retailers and consumers and their nature faced by potato farmers according to their opinion on vegetable marketing were investigated in this study. Constraint/Challenge Facing Index (CFI) for any one of the identified dimensions could range from 0 to 300 where constraints were ranked according to Constraints Facing Index of vegetable marketing.

**3.6.1. Constraints and their nature faced by growers according to their opinion**

Among the constraints in case of vegetable production and marketing ranked 1<sup>st</sup> was low market price of vegetable, rank 2<sup>nd</sup> was lack of marketing facilities, 3<sup>rd</sup> was the effect of middle men, 4<sup>th</sup> was Lack of capital and equipments, 5<sup>th</sup> was Rot in storage condition, 6<sup>th</sup> was Lack of preservation facilities, 7<sup>th</sup> of Low yield of vegetables, 8<sup>th</sup> was Lack of processing facilities, 9<sup>th</sup> Poor transportation and 10<sup>th</sup> was Lack of good seed during vegetable growing season 2013-14 (Table 6). Hence therefore, most of the vegetable growers put emphasis on low market price of vegetable (highly severe 63%) rather than lack of marketing facilities (highly severe 63%).

**Table 6. Constraints and their nature faced by growers according to their opinion**

Constraints	Severity of constraints (%)					CFI	Ranked
	Highly severe	Moderately severe	Less severe	Not at all	Total		
Low market price	63	28	9	0	100	254	01
Lack of marketing facilities	46	32	22	0	100	224	02
The effect of middle men	27	37	8	28	100	163	03
Lack of capital and equipments	12	25	57	6	100	143	04
Rot in storage condition	15	26	34	25	100	131	05
Lack of preservation facilities	6	21	44	29	100	104	06
Low yield of vegetables	0	17	44	39	100	98	07
Lack of processing facilities	7	18	39	36	100	96	08
Poor transportation	0	13	59	28	100	85	09
Lack of good seed	2	12	31	55	100	61	10

### **3.6.2. Constraints and their nature faced by the wholesalers according to their opinion.**

Among the constraints of vegetable marketing ranked 1<sup>st</sup> was irregular supply by growers, rank 2<sup>nd</sup> was loss or rot during transportation, 3<sup>rd</sup> lack of marketing facilities, 4<sup>th</sup> was lack of preservation facilities, 5<sup>th</sup> was lack of processing facilities, 6<sup>th</sup> was lack of capital and loan, 7<sup>th</sup> was rot in storage condition, 8<sup>th</sup> was unexpected toll during transportation, 9<sup>th</sup> poor transportation

and 10<sup>th</sup> was high rate of transportation during vegetable growing season 2013-14 (Table 7). Therefore, most of the vegetable wholesalers put emphasis on irregular supply by growers (highly severe 43% and 1<sup>st</sup> ranked according to CFI) and loss or rot during transportation (highly severe 45% and 2<sup>nd</sup> ranked according to CFI) rather than lack of marketing facilities (highly severe 12%, moderately severe 59 % and 3<sup>rd</sup> ranked according to CFI).

**Table 7. constraints and their nature faced by the wholesalers according to their opinion**

Constraints	Severity of constraints (%)					CFI	Ranked
	Highly severe	Moderately severe	Less severe	Not at all	Total		
Irregular supply by growers	43	35	15	7	100	214	01
Loss or rot during transportation	45	22	33	0	100	212	02
Lack of marketing facilities	12	59	28	1	100	182	03
Lack of preservation facilities	17	32	49	2	100	164	04
Lack of processing facilities	8	39	31	22	100	133	05
Lack of capital and loan	13	42	4	41	100	125	06
Rot in storage condition	5	27	35	33	100	104	07
Unexpected toll during transportation	11	20	13	56	100	86	08
Poor transportation	0	31	17	52	100	79	09
High rate of transportation	3	27	12	58	100	75	10

### **3.6.3. Constraints and their nature faced by retailers according to their opinion**

Among the constraints of vegetable marketing ranked 1<sup>st</sup> was high market price, rank 2<sup>nd</sup> was lack of marketing facilities, 3<sup>rd</sup> the effect of middle men, 4<sup>th</sup> was lack of preservation facilities, 5<sup>th</sup> was weight loss or rot at shop, 6<sup>th</sup> was lack of capital and easy loan, 7<sup>th</sup> was competitive marketing, 8<sup>th</sup> was

sudden fall of market value, 9<sup>th</sup> Poor transportation and 10<sup>th</sup> was unsold vegetables during vegetable growing season 2013-14 (Table 8). Hence therefore, we can see that most of the vegetable retailers put emphasis on High market price (highly severe 24%, moderately severe 56 % and 1<sup>st</sup> ranked according to CFI) rather than lack of marketing facilities (highly severe 11%, moderately severe 69 % and 2<sup>nd</sup> ranked according to CFI).

**Table 8. constraints and their nature faced by retailers according to their opinion**

Constraints	Severity of constraints (%)					CFI	Ranked
	Highly severe	Moderately severe	Less severe	Not at all	Total		
High market price	24	56	20	0	100	204	01
Lack of marketing facilities	11	69	20	0	100	191	02
The effect of middle men	12	38	32	18	100	144	03
Lack of preservation facilities	9	39	27	25	100	132	04
Weight loss or rot at shop	6	48	16	28	100	130	05
Lack of capital and easy loan	0	37	32	31	100	105	06
Competitive marketing	0	26	47	27	100	99	07
Suddenly fall of market value	30	2	0	68	100	94	08
Poor transportation	0	12	45	43	100	69	09
Unsold vegetables	0	6	53	41	100	65	10

### 3.6.4. Constraints and their nature faced by customers according to their opinion

Among the constraints of vegetable marketing ranked 1<sup>st</sup> was high market price, rank 2<sup>nd</sup> was lack of quality vegetables, 3<sup>rd</sup> lack of marketing facilities, 4<sup>th</sup> was the effect of middle men, 5<sup>th</sup> was chemical polluted vegetables, 6<sup>th</sup> was monopoly marketing, 7<sup>th</sup> was rot in home storage condition, 8<sup>th</sup> was excess

price wants by retailer, 9<sup>th</sup> dishonest retailers and 10<sup>th</sup> was crowd market of vegetables during vegetable growing season 2013-14 (Table 9). Hence, most of the vegetable retailers put emphasis on high market price (highly severe 72% %, moderately severe 20 % and 1<sup>st</sup> ranked according to CFI) rather than Lack of quality vegetables (highly severe 31%, moderately severe 35 % and 2<sup>nd</sup> ranked according to CFI).

**Table 9. constraints and their nature faced by customers according to their opinion**

Constraints	Severity of constraints (%)					CFI	Ranked
	Highly severe	Moderately severe	Less severe	Not at all	Total		
High market price	72	20	8	0	100	264	01
Lack of quality vegetables	31	35	27	7	100	190	02
Lack of marketing facilities	33	12	27	28	100	150	03
The effect of middle men	17	39	19	25	100	148	04
Chemical polluted vegetables	9	48	23	20	100	146	05
Monopoly marketing	0	27	62	11	100	116	06
Rot in home storage condition	0	15	67	18	100	97	07
Excess price wants by retailer	0	12	55	33	100	79	08
Dishonest retailers	0	32	10	48	100	74	09
Crowd market of vegetables	0	7	52	41	100	66	10

### 3.7. Suggestions to overcome the constraints faced by growers, wholesalers, retailers and consumers according to their opinion on vegetable marketing.

Data were collected by giving the suggestions to overcome the existing constraints faced by growers, wholesalers, retailers and consumers according to their opinion on vegetable marketing. For calculation of score, one (1) score was assigned for one suggestion of the respondents. Every respondent gave opinions according to importance of their constraints vegetable marketing.

Data (Table 10) indicates that the most important suggestion of the respondents had "to fix minimum price rate for sale this is

more than production cost" (ranked 1<sup>st</sup> by growers), "improve marketing facilities" (ranked 1<sup>st</sup> by wholesalers) and easy termed loan facilities (ranked 1<sup>st</sup> by retailers). Second ranked suggestion of the respondents had "introduction of govt. vegetable marketing policy" (by growers), Easy termed loan facilities (by wholesalers) and Improve transport facilities (by retailers). Third most important suggestion of the respondents had "easy conditioned equipments supply for vegetable cultivation and marketing" (by growers), "Increasing storage facilities for vegetables at local market" (by wholesalers) and "Improve infrastructure facilities of local vegetable market" (by retailers).

**Table 10: Suggestions to overcome the constraints faced by growers, wholesalers, retailers and consumers according to their opinion on vegetable marketing**

Suggestions and their ranking	Growers		Wholesalers		Retailers		CR
	score	ranked	score	ranked	score	ranked	
To fix minimum price of vegetables which is more than production cost	26	1	-	-	-	-	
Improve marketing facilities	10	4	23	1	8	5	01
Increasing storage facilities for vegetables at local market	-	-	12	3	4	9	
Quality and HYV seed for vegetable cultivation	6	7	-	-	-	-	
Easy conditioned equipments supply for vegetable cultivation and marketing	11	3	5	7	9	4	03
Controlled price of fertilizer and pesticide	6	7	-	-	-	-	
Introduction of govt. vegetable marketing policy	2	9	4	8	7	6	04
Easy termed loan facilities	8	6	15	2	12	1	02
Vegetable marketing co-operation summit is needed	-	-	9	4	5	8	
Improve transport facilities	-	-	4	8	11	2	
Improve infra-structure facilities of local vegetable market	-	-	7	5	10	3	
To control the effect of middle men	17	2	-	-	7	6	
Search for new export market of vegetable	-		6	6	-	-	
Increasing cold storage facilities	5	8	3	9	3	10	05
Smooth supply chain of vegetable	-	-	4	8	6	7	
Consumer's capacity of buying should be maximized	-	-	-	-	4	9	
Every body of the supply chain could be able to do their duties	-	-	3	9	2	11	
Problem should be identified through discussion with them and then taking early steps	9	5	2	10	3	10	
Govt. should ensure to minimize all the risk	6		3		9	4	
Total	100		100		100		

\* CR= Commonly Ranked

Common suggestions of all categories of the respondents were improve marketing facilities, increasing storage facilities for vegetables at local market, easy conditioned equipments supply for vegetable cultivation and marketing, introduction of govt. vegetable marketing policy, easy termed loan facilities, increasing cold storage facilities, problem should be identified through discussion with them and then taking early steps and govt. should ensure to minimize all the risk.

#### IV. CONCLUSION

The benefit cost ratios of egg plant, pointed gourd, okra, aroids/taro, potato and red amaranth were found over profit were 3.38, 2.20, 2.00, 1.88, 1.74, 1.46 and 1.29 respectively which were ranked similarly 1<sup>st</sup> to 7<sup>th</sup> respectively. It is, therefore, evident from the findings of the study that the cultivation of all the selected vegetables is profitable to the growers. Cultivation of egg plant requires highest costs (Tk. 47150/acre) and receives highest net returns (Tk. 244050/acre) as well as highest benefit cost ratios (3.38 over total profit) among all the vegetables, egg plant cultivation is also a labor intensive vegetable. It was also found from the study that the total costs of vegetables i.e., Potato, egg plant, pointed gourd, okra, aroids, bitter gourd and red amaranth cultivation were 43000, 47150, 35200, 28700, 33900, 45200 and 23600 to/acre respectively, as well as received the net returns of these vegetables were 46000, 244050, 123200, 83300, 56100, 64000 and 12400 to/acre respectively. The estimated average marketing costs per ton vegetables incurred by the growers were Tk.3920, which was higher than the wholesalers and the retailers. More costs occurred by transportation cost by wholesalers and retailers. The average spread value change of vegetable at town market was 19.67 % higher than village market. Among the constraints in case of vegetable production and marketing faced by the growers, ranked 1<sup>st</sup> was low market price of vegetable (highly severe 63%) rank 2<sup>nd</sup> was lack of marketing facilities and 3<sup>rd</sup> was the effect of middle men during vegetable growing season 2013-14. Most of the vegetable growers put emphasis on low market price of vegetable (highly severe 63%) rather than lack of marketing facilities. Most of the vegetable wholesalers put emphasis on Irregular supply by growers (highly severe 43% and 1<sup>st</sup> ranked according to CFI) and Loss or rot during transportation (highly severe 45% and 2<sup>nd</sup> ranked according to CFI). Among the constraints in case of vegetable marketing, ranked 1<sup>st</sup> was High market price and rank 2<sup>nd</sup> was Lack of marketing facilities during vegetable growing season 2013-14. Retailers put emphasis on High market price (highly severe 24%, moderately severe 56 % and 1<sup>st</sup> ranked according to CFI) rather than lack of marketing facilities (highly severe 11%, moderately severe 69 % and 2<sup>nd</sup> ranked according to CFI). The consumer ranked 1<sup>st</sup> was High market price (highly severe 72%) and rank 2<sup>nd</sup> was Lack of quality vegetables (highly severe 31% and moderately severe 35 %). Common suggestions of all categories of the respondents were improve marketing facilities, increasing storage facilities for vegetables at local market, easy conditioned equipments supply loan facilities, introduction of govt. vegetable marketing policy, increasing cold storage facilities. Most of them put emphasis that problem should

be identified through discussion with them and then taking early steps and govt. should ensure to minimize all the risk.

#### REFERENCES

- [1] Ali, M. ed. 2000. Dynamics of Vegetable Production and Consumption in Bangladesh. Shanhua, Taiwan: Asian Vegetable Research and Development Center.
- [2] Ateng, B. 1998. "Comparative Advantage and Crop Diversification in Bangladesh,"
- [3] Azimuddin, M., Alam, Q. M. and Baset, M. A. 2009. Potato for food security in Bangladesh. International J.I of Sust. Crop Production, 4(1):94-99.
- [4] Faruqee, R.ed. Bangladesh: Agriculture in the 21st Century. Dhaka: The UniversityPress.
- [5] Bangladesh Bureau of Statistics (BBS). 2008. Ministry of Planning, Government of the People's Republic of Bangladesh
- [6] Khushk, A. M. 2001. "Marketing of Vegetables and Fruits in Pakistan – Problems and Constraints," in Marketing of Vegetables and Fruits in Asia and the Pacific. Tokyo: Asian Productivity Organization.
- [7] Mahmud, W., S. H. Rahman, and S. Zohir, 20000. Agricultural Diversification: A Strategic Factor for Growth, in: Ahmed, R., Haggblade, S. and T. Chowdhury (eds.), Out of the Shadow of Poverty: Evolving Food Markets and Food Policy in Bangladesh. The John Hopkins University Press: Baltimore and London.
- [8] Nur Mohammed, M. Q.2007 "Examining the Production Performance of Vegetables Business Development in Bangladesh"
- [9] Harris-White, B., 1995. "Efficiency and Complexity: Distributive Margins and the Profits of Market Enterprise," in: G. J. Scott, ed., Prices, Products and People. Analysing Agricultural Markets in Developing Countries, Boulder CO: Lynne Rienner, pp.301-324.
- [10] Yang, W.Y. (1965), Methods of Farm Management Investment for Improving Farm Productivity, FAO, Rome, Italy.
- [11] Weinberger, K. and T. A. Lumpkin. 2005. Horticulture for Poverty Alleviation: The Unfunded Revolution. Taiwan: The World Vegetable Center.
- [12] Weinberger, K. and C. A. Genova II, 2005. "Vegetable Production in Bangladesh: Commercialization and Rural Livelihoods," Technical Bulletin no. 33. Taiwan: AVRDC – The World Vegetable Center.

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