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Original Article

Problem Confrontation of Vegetable Growers in Production and Marketing of Vegetables: Evidence from Northern Region of Bangladesh

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A B S T R A C T

The main purpose of the study was to explore the problem confrontation of vegetable growers in production and marketing of vegetables in the selected areas of Bogra district of Bangladesh. The study also aims to explore the relationships between the selected socio-demographic characteristics of the respondents and their problem confrontation in case of production and marketing of commonly cultivated vegetables. Data were gathered from 100 randomly sampled vegetable growers of Atmul and Mokamtola union under Shibganj upazila (Sub-district) during the period of 25 January to 20 February, 2020 by combining a mix of different methods such as survey, group discussion and Key Informant Interview (KII) method. Ten selected socio-demographic characteristics of vegetable growers namely age, education, household size, farm size, annual family income, farming experience, organizational participation, training experience, access to credit and extension media contact were considered to investigate the relationships with the problem confrontation of vegetable growers in case of production and marketing of most commonly cultivated vegetables. Most of the vegetable growers (77%) had faced medium level of problems compared to 19% of the respondents had faced high level of problems while only 4% of the respondents had faced low level of problems in case of production and marketing of vegetables. Correlation analyses indicated that socio-demographic attributes of the respondents namely household size, farm size, annual family income, access to credit and training experience had significant contributions towards problem confrontation of vegetable growers in production and marketing of vegetables. It is evident that vegetable growers faced range of problems in case of production and marketing of commonly grown vegetables. This research gears towards realization of problem confrontation scenario of vegetable growers and to take proper initiatives by the policy makers of agriculture sector to improve the productivity of vegetables in Bangladesh.

Introduction

The economy of Bangladesh is heavily dependent on agriculture (Sheikh and Rahman, 2018). The overall prosperity of Bangladesh is mostly dependent on the development of the agriculture sector, which accounts for 15% of the country's GDP (BBS, 2016). About 63% of the labor forces are employed in agriculture of which 57% is employed in the crop sector. Rice accounts for the majority of agricultural production in Bangladesh, accounting for around 75% of total cropped land, whereas horticulture crops such as root and tuber crops account for only 7% of total cropped land (BARI, 2017). Vegetables are grown on 2.63% of total cultivable land (BBS, 2016). Bangladesh is one of the pioneer countries in South Asia in term of vegetable production (Ali, 2015). Producing vegetables is profitable, and the future performance of this sector will decide how well the country will be able to produce diversified agricultural products and achieving higher agricultural growth rates (DAE, 2016). Vegetables are the most significant component of our diet since they provide essential vitamins, minerals, and fibers for human health. They provide the necessary dietary fiber for digestion and

wellness, as well as being crucial for maintaining health and treating nutritional problems. (Terry and Leon, 2011). Many vegetables are considered preventive foods that help to avoid diseases and conditions such as dyslipidemia, heart disease, diabetes, and constipation. However, the present consumption of vegetables in Bangladesh is 126 g/day/head (23 g leafy vegetables, 89 g non-leafy vegetables and 14 g fruit), which is far below the minimum average requirement of 400 g/day/head (WHO, 2013). However, according to Household Income and Expenditure Survey (HIES, 2016), fruit and vegetable consumption, including potato, is currently 253 g/day/head which indicates a poor dietary status in Bangladesh. The contribution of vegetables is ever important for ensuring food and nutritional security for the people of Bangladesh (Yeasmin, 2016). Horticultural crops span 873 thousand hectares in Bangladesh, with a total yield of 110 million metric tons. (BBS, 2016). The majority of the farmers produce vegetable for home consumption. Major part of commercially produced vegetable is transported to the capital or other cities through different marketing channels. However, compared to other crops, vegetable production is problem sensitive like high infestation of pests and diseases, sensitive to adverse climatic condition and perishable in nature. Problems cannot be solved unless they are identified and handled at the appropriate time and in the appropriate manner. Despite the fact that a number of studies have been conducted on difficulties or constraints in vegetable cultivation by Basak and Pandit, 2013; Kshash, 2018 and Yeasmin, 2016 but no significant influence has been observed.

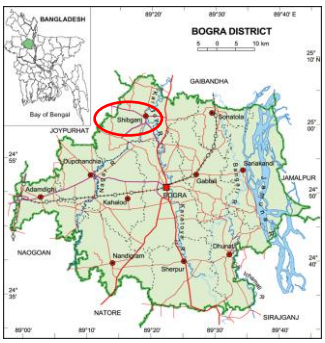
Commercial fresh vegetable cultivation is a demanding task that requires a combination of production and marketing skills from the growers. This is a consequence of the special attributes of fresh produce. Vegetables, as high value crops, often require an intensive input regime, necessitating large labour input in planting and harvesting. In Bangladesh, higher profit variability is evident in case of commercial cultivation of vegetables due to variability in yields and market prices (Weinberger and Genova II, 2005). It is reported that due to various constraints farmers are not getting expected benefit from their investment. Moreover, constraints vary from one farmer to another due to influence of various factors (Rahman *et al*., 2008-10). Fresh vegetables, for example, are more perishable than other agronomic crops, which means they have fewer storage options (Adeniji, 2008). Competition exists with high-quality vegetables imported from neighboring countries, often having lower prices. As a consequence of this growers are forced to accept the market price close to or during their harvesting period. Furthermore, traditional risk mitigation options (future markets) do not exist for fresh vegetables. Thus, growers are more vulnerable to market fluctuations (Huka *et al*., 2014). Most of the cases, small-scale vegetable farmers of the rural areas where there are unavailability of proper agricultural markets and self-owned transport; they are compelled to seek out nearby markets that they rely on to dispose of their products at competitive and stable prices. Growers must adapt to a changing market situation that includes increased demand for more varieties and higher quality. If the produced vegetable does not satisfy the specified criteria, the grower is forced to sell at a lesser price or not at all. In the last few years, crop production has increased by two to three times. However, it is clear that high crop production cannot be sustained indefinitely without an efficient agricultural marketing system. When the farmers do not receive the desired price for their products they lost their interest to continue vegetable farming as for financial crisis. Vegetables, as high value crops, often require an intensive input regime, necessitating large labor input in planting and harvesting. In Bangladesh, higher profit variability in commercial cultivation of vegetables is evident due to variability in yields and market prices (Weinberger and Genova II, 2015).

For Bangladesh, identifying the constraints on the expansion of vegetables production is important, since the supply of vegetables is quite irregular in most Asian countries, including Bangladesh (Ali, 2015). Only a small proportion of total cropped areas of Bangladesh are under vegetables production. Most of the agricultural production in Bangladesh is concentrated in rice, occupying about 75% of total cropped areas (BBS, 2016), whereas only 7% of the total cropped land is used for horticulture crops, including root and tuber crops (BARI, 2017). According to the Hortex Foundation estimation, 2016 the area under vegetable cultivation accounts for only 1.79% of the total cropped areas. From this small proportion of the land area, Bangladesh produces about 1.63 million metric tons of vegetables annually, of which about 60% are produced in winter and the rest in summer (Horetx Foundation, 2015). Therefore, production is not well distributed throughout the year and produce for domestic use is relatively scarce in the off-season. Analyses of the success of agribusiness can be found in many developed and less developed countries around the world. Many of these analyses have also targeted small producers. Kshash (2018) conducted study on constraints affecting summer vegetable cultivation. Basak and Pandit (2013) conducted study on commercial cultivation of vegetables. Determination of these problems could be useful in enhancing productivity of vegetables throughout the year. The present study was formulated to have an understanding about problem confrontation of vegetable growers in terms of production and marketing of vegetables. Improved knowledge on problems faced by the growers can be useful to address challenges hindering increased vegetable productivity. This study is the first attempt to determine the problems faced by the vegetable growers in case of production and marketing of commonly grown vegetables from Northern region of Bangladesh. Addressing the problems faced by the vegetable growers will result in improved productivity of vegetables throughout the year.

Materials and Methods

Research context and design

The study was conducted in two unions namely Shibganj and Atmul of Shibganj upazila (sub-district) under Bogra district (Figure 1 and Figure 2). The villages namely Uthali from Shibganj union and Shankarpur from Atmul union was selected purposively for investigation because various kinds of vegetables namely potato, tomato, brinjal, chilli, cabbage, cauliflower, radish, red amaranth, okra, bottle gourd, sweet gourd, cucumber, bean, pointed gourd, bitter gourd, snake gourd, teasle gourd, wax gourd etc. grown well in these unions than other unions of this sub-strict. Due to increasing rate of varieties of vegetable production throughout the year, good communication facilities and researcher's perception about better co-operation from the vegetable growers motivated the researcher to select the study area (Jahan and Khatun, 2016).



Study area

Figure 1. Map of Bogra district showing the study area

Figure 2. Map of Shibganj upazila showing the study area

Shibganj upazila (sub-district) covers an area of 315.92 sq. km, located in between 24°55' and 25°07' north latitudes and in between 89°11' and 89°28' east longitudes. It is bounded by gobindaganj (gaibandha) upazila on the north, bogra sadar, kahaloo and dupchanchia upazilas on the south, sonatola and gabtali upazilas on the east, kalai and khetlal upazilas on the west (Banglapedia, 2021). The climate of this area is warm and temperate. In winter, much less rainfall is experienced in Bogra than in summer. The average temperature is 24.8 °C and the precipitation is about 2060 mm (BMD, 2021).

Population, sampling and data collection

The study employed a mixed methods approach including both qualitative and quantitative data collection methods. The population of the study consisted of vegetable growers of the study area. An updated list of vegetable growing household was collected from agriculture office of Shibganj upazila. The total numbers of vegetable growers in the study area was 500. A total of 100 vegetable growers were selected as the sample size of the study by using Taro's formula (1967) as given below.

$$n = \frac{N}{1 + N(e)^2}$$

Where, n = sample size, N = population size, and e = level of precision, which was set at 9%.

Among the listed vegetable growers 100 respondents were randomly selected as the sample of the study by following simple random sampling technique which represented 20% of total population. Data were gathered by using a combination of methods including survey method, Group Discussion (GD) method and Key Informant Interview (KII) method. In case of survey method a pre-structured interview schedule was used as data collecting instrument which included both open and closed ended questions on six dimensions on production and marketing of vegetables like seeds, diseases and pest management, field management, technological, advisory services, transportation, marketing and storage. Data were collected from the randomly sampled respondents from the period of 25 January to 20 February, 2020.

Measurement of variables

To understand the socio-demographic condition of the vegetable growers such as age, education, household size, farm size, annual family income, farming experience, organizational participation, training experience, access to credit and extension media contact were selected as the explanatory variables. Same set of variables were used by Basak and Pandit, 2013; Kshash, 2018 and Rana *et al*., 2017. Appropriate methods were used to operationalize respondent's characteristics by developing suitable scales. Problem confrontation of the vegetable growers in production and marketing of vegetables was the focus variable of the study. For measuring the problems of the vegetable growers, twenty statements related to production (Seed, vegetable field management, diseases and pest management, technological, advisory services) and marketing (Transportation, storage and marketing) of vegetables were used to collect data from the respondents. A four point rating scale such as 'high', 'moderate', 'low' and 'not at all' were used. Specific weights were given to these responses as 3, 2, 1 and 0 respectively to collect data from the respondents (Ullah *et al*, 2011; Ghosh and Hasan, 2013).

So, Problem Confrontation Score (PCS) = N_{hp} ×3+ N_{mp}×2+N_{lp}×1+N_{na}×0

Where,

N_{hp} = Total number of respondents expressing their problem as 'high' for the statement

N_{mp}= Total number of respondents expressing their problem as 'moderate' for the statement

N_{lp} = Total number of respondents expressing their problem as 'low' for the statement

N_{na} = Total number of respondents expressing their problem as 'not at all' for the statement

Thus, the respondents' prospective problem confrontation score could vary from 0 to 60. In all circumstances, a score of 0 indicates no problem while a score of 60 indicates severe problem in vegetable production and marketing.

Data processing and analysis

Before final analysis, the gathered data were carefully edited and coded. To minimize errors and faults, any incorrect data was avoided. The data was managed using the Statistical Package for Social Sciences (SPSS). The study's conclusions were made using descriptive statistics such as percentage, frequency, mean, standard deviation, and rank order, as well as inferential statistics such as correlation analysis.

Results and Discussion

Selected socio-demographic characteristics of the respondents

The selected characteristics of the respondents have been presented in Table 1. The findings show that highest proportion of the respondents (72%) was in middle aged category followed by old respondents (15%) and young (13%) with an average of 46.38 years and standard deviation of 8.96. Most of the respondents (44%) had secondary level of education followed by 26% and 25% of the respondents had no schooling and primary level of education while 5% of the respondents had higher secondary level of education with a mean of 5.31 years of schooling and standard deviation 4.04 . It is expected that education is one of the important factors in determining respondents' level of knowledge and behavioral pattern. It helps them to broaden their outlook and expands their horizon of knowledge. The household size of the respondents ranging between 2 to 10 members with a mean of 5.30 members was higher than that of the national average of 4.48 (BBS, 2015) and standard deviation of 1.57. The farm size of the respondents ranged from 0.05 ha to 2.14 ha with a mean of 0.68 ha and standard deviation 0.57.

Table 1. Distribution of the respondents according to socio-demographic characteristics (n=100).

Characteristics (scoring system)	Possible score range (observed range)	Categories	Respondents (N=100)		Mean	Standard Deviation
			Number	Percent (%)		
Age (Actual years)	Not defined (30 to 75 years)	Young (18-35)	13	13	46.38	8.96
		Middle Aged (36-55)	72	72		
		Old (>55)	15	15		
Education (Year of schooling)	Not defined (0 to 16 years of schooling)	No schooling (0)	26	26	5.31	4.04
		Primary (1-5)	25	25		
		Secondary (6-10)	44	44		
		Higher secondary (>10)	5	5		
Household size (No. of members)	Not defined (2 to 10 members)	Small (up to 4)	35	35	5.30	1.57
		Medium (5-7)	54	54		
		Large (above 7)	11	11		
Farm size (Hectare)	Not defined (0.05 to 2.14 ha)	Landless (<0.02)	0	0	0.68	0.57
		Marginal (0.02-0.20)	28	28		
		Small (0.21-1)	48	48		
		Medium (1.1-3.0)	24	24		
		Large (>3.0)	0	0		
Annual family income ('000' BDT)	Not defined (10 to 370)	Low (up to 150)	81	81	114.72	66.18
		Medium (151-250)	16	16		
		High (> 250)	3	3		
Farming Experience (Years)	Not defined (5 to 40 years)	Low (up to 10)	10	10	18.50	8.75
		Medium (11-20)	27	27		
		High (>20)	63	63		
Organizational participation (Scores)	Not defined (0 to 3)	No participation (0)	39	39	0.83	0.82
		Low (1-2)	56	56		
		Medium (3-4)	4	4		
		High (>4)	1	1		
Training experience (Days)	Not defined (0 to 7 days)	Not received (0)	37	37	1.51	1.85
		Short duration (1-2)	41	41		
		Medium duration (3-4)	12	12		
		Long duration (>4)	10	10		
Access to credit ('000' BDT)	Not defined (0 to 100)	Not received (0)	80	80	3.72	12.84
		Minimum amount (up to 15)	13	13		
		Medium amount (16-25)	4	4		
		High amount (>25)	3	3		
Extension media contact (Scale scores)	0 to 30 (1 to 18)	Low (up to 10)	55	55	10.60	4.08
		Medium (11-20)	45	45		
		High (>20)	0	0		

Source: Field survey, 2020

The highest proportion of the respondents (48%) had small sized farm followed by 28% of the respondents had marginal sized farm while 24% of the respondents had medium size farm and none of the respondents had large sized farm. Data presented in Table 1 shows that the highest proportion of the respondents (81%) had low annual family income followed by medium income (16%) while only 3% of the respondents had high annual family income. The farming experience of the respondents ranging between 5 to 40 years, the average being 18.50 years and standard deviation of 8.75. It is evident from the findings that majority of the respondents (63%) had high level of farming experience, while 27% had medium level of farming experience and only 10% of the respondents had low level of farming experience. The organizational participation score of the respondents ranging between 0 to 3 having a mean of 0.83 and standard deviation of 0.82. Majority of the respondents (56%) had low organizational participation compared to only 4% and 1% of the respondents had medium and high level of organizational participation while a significant portion of the respondents (39%) had no organizational participation. The training experience of the respondents ranged between 0 to 7 days with an average of 1.51 days and standard deviation of 1.85. Data presented in Table 1 indicates that the majority of the respondents (41%) had short duration training experience compared to 12% of the respondents had medium duration training experience and 10% of the respondents had long duration training experience while 37% of the respondents had no training experience. The extension media contact score of the respondents ranged from 1 to 18 with a possible score of 0 to 30. The result of the study indicates that the highest proportion of the respondents (55%) had low extension media contact followed by 45% had medium extension media contact while none of the respondents had high extension media contact.

Problems faced by vegetable growers in production and marketing of vegetables

Problems faced by the vegetable growers in production and marketing of vegetables were measured through twenty

statements of the predetermined dimensions namely seed, disease and pest management, vegetable field management, technological, advisory or extension services and transportation, marketing and storage with a four-point rating scale. Overall problems faced scores of the respondents varied from 13 to 45 against the possible range of 0 to 60, with a mean of 33.64 and standard deviation 6.63. Based on the observed scores, problems faced by the respondents were classified into three categories as shown in Figure 3.

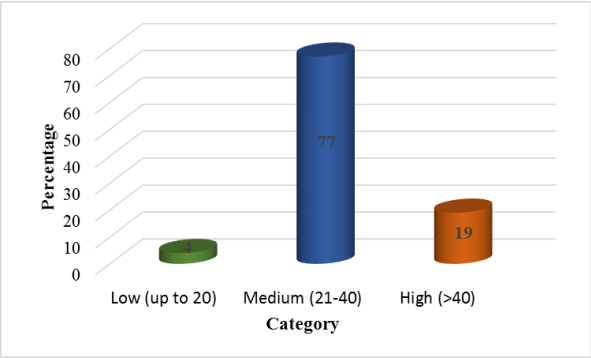


Figure 3. Problem confrontation of vegetable growers in production and marketing of vegetables (Source: Field survey, 2020).

Problems faced by the vegetable growers presented in Figure 3 shows that majority of the respondents (77%) had faced medium level of problems while 19% had high level and 4% of them had low level of problems in production and marketing of vegetables. The findings indicated that most of the respondents had faced medium problems on vegetable cultivation. The findings of the study is similar with the findings of number of other studies. Asif *et al*., 2017 reported that majority of the farmers faced medium level of problems in using mobile phone in receiving information on vegetable cultivation and for commercial vegetable cultivation while (Basak and Pandit, 2013) and Kshash (2018) reported that half of the respondents (50%) faced high level of constraints while 41.25% faced medium constraints for summer vegetable cultivation.

Table 2. Dimension wise problem confrontation of the respondents in production and marketing of vegetables.

Dimensions of problem	Statements	Average PCS (1-3)	Rank order
Seed	Lack of good quality vegetable seed	2.40	2
	High market price of vegetable seed	2.35	5
	Lack of credible source of seed	2.16	12
Diseases and pest management	High price of pesticides	2.27	8
	Lack of knowledge on diseases and pest management	2.21	10
	High occurrence of insects and pests	2.38	3
Technological	Lack of diseases and pest resistant varieties	2.07	15
	Insufficient knowledge on IPM practices	2.01	17
Vegetable field management	Lack of capital	2.43	1
	High price of fertilizer	2.30	7
	Adverse weather condition	2.13	13
	High wage of labourer	2.32	6
	Lack of farm machinery	1.95	19
Advisory or extension services	Lack of training facilities on commercial vegetable cultivation	2.24	9
	Low level of contact with extension agents	2.10	14
	Lack of field demonstration facilities	1.91	20
Transportation, storage and marketing	Low price of vegetables during harvesting	2.36	4
	Lack of storage facilities	2.03	16
	Influence of middlemen	2.19	11
	Unavailability of food processing industries	1.99	18

PCS= Problem confrontation score
Source: Field survey, 2020

Table 2 provides information about the severity of problem confrontation of the vegetable growers in production and marketing of vegetables. It is evident from the Table 2 that 'Lack of capital' having score of 2.43, has ranked first as the problem confrontation based on the responses of the respondents. The findings may be due to their poor socio-economic condition and limited access to resources. In addition the findings of the study also found that they do not receive credit support from government or other organization. 'Lack of good quality vegetable seed' having score of 2.40, has ranked second highest problem confrontation based on the responses of the vegetable growers. The findings indicate that unavailability of good quality seed is considered as one of the major barriers of vegetable production. Seeds having inferior in quality can cause huge economic damage of the vegetable growers by reducing crop productivity. This observation is supported by the findings of Kahsay *et al*., (2016) who reported that the main reason for low productivity is lack of use of improved seed and fertilizers. 'High occurrence of insects and pests' ranked third (2.38). Now a-days high occurrence of insects and pests is considered as one of the major hindrance of vegetable production. Because high incidence of insects and pests cause loss of vegetable production not only quantity but also quality. This occurs due to excessive use of chemical fertilizers and pesticides as well as low use of organic fertilizers and bio-pesticides in vegetable cultivation. As a result insects and pests develop resistance against the

commonly used pesticides and thus causes death of beneficial organisms. 'Low price of vegetables during harvesting' ranked fourth (2.36). Most of the vegetable growers do not get the fair price of their products due to underdeveloped marketing system and influence of middlemen. Sometimes, the vegetable growers face huge economic loss due to price volatility of vegetables. In addition, most of the vegetables are perishable in nature. As a consequences, farmers are demotivated in vegetable cultivation. Huka *et al*., (2014) found that that price fluctuation is harmful to producers and consumers; although high prices can be welcomed by farmers, price fluctuation is dangerous, as farmers, and other agents in the food chain, risk losing investments if prices fall. 'High market price of vegetable seed' ranked fifth (2.35). The findings indicated that there is lack of availability of good quality vegetable seed within the purchasing capacity of the vegetable growers. So, proper initiatives are required from both government and non-government seed producing agencies to ensure good quality vegetable seeds at reasonable price for good quality vegetables. Other problems faced by the vegetable growers were high wage of labourer, lack of farm machinery, high price of fertilizers and pesticides, lack of training facilities, lack of disease and pest resistant varieties, adverse weather condition, lack of well-developed transport and marketing facilities. Well-developed transport facilities determine the quality and timely delivery of the farm produce. Unreliable transport can lead to late delivery (Khapayi and Celliers, 2016). Human labor cost constituted a major portion of total production cost (Abdullahi and Tsowa, 2014; Adeoye and Olubunmi, 2016). Kshash (2018) also found that farmers faced a number of constraints closely related to the dimensions such as production, financial, technical and marketing in case of summer vegetable cultivation.

Relationship between respondents selected socio-demographic characteristics and their problem confrontation in production and marketing of vegetables

The aim of this section is to investigate the relationship between the respondents' specified characteristics and their problem confrontation in production and marketing of vegetables. The linkage between the explanatory variables and focal variables was determined by using Pearson's Product Moment Correlation Coefficient (r). Table 3 shows the results of the correlation analysis.

Table 3. Summary output of correlation analysis (n=100).

Socio-demographic characteristics	Correlation co-efficient (r)
Age	-0.001
Education	0.182
Household size	0.352**
Farm size	0.493**
Farming experience	0.033
Annual family income	-0.375**
Extension media contact	-0.021
Access to credit	-0.284**
Training experience	-0.340**
Organizational participation	0.026

**Significant at 0.01 level of probability (2-tailed) (Source: Field survey, 2020)

The results indicate that the explanatory variables, namely household size, farm size, yearly family income, extension media contact, and training experience, were significantly associated with the respondents' problem encounters in vegetable production and marketing. The respondents' household size had a substantial positive relationship (0.352**) with the problem confrontation of vegetable growers in production and marketing of vegetables. The respondents with comparatively large household size had poor socio-economic status and low access to resources than the respondents with comparatively smaller household size. Basak and Pandit (2013) found a significant negative relationship between the concerned variables, however Kshash (2018) and Rana *et al*., (2017) did not find significant relationship between these variables. The respondents' farm size showed a significant positive relationship (0.493**) with the problems faced by the respondents in production and marketing of vegetables. Based on findings, vegetable growers with large farm sizes had greater problems than the respondents with smaller farm size. This is due to the fact that vegetable productivity encompasses total farm area, increased farm productivity in both quality and quantity through the use of current technology, updated information, improved production inputs, and vegetable marketing. As a result, when it came to vegetable production and marketing, respondents with larger farms faced more problems than the respondents with comparatively smaller farms. This finding is similar with a number of other studies who reported that farm size has a significant positive relationship with the constraints faced by the farmers for vegetable cultivation (Kshash, 2018; Khandker *et al*., 2014 and Begum *et al*., 2020). However, this differs from the study by Kabir *et al*., (2011) and Basak and Pandit (2013) who found significant negative relationship between the variables. The respondents' annual family income had a significant negative association (-0.375**) with the problems faced by the respondents in case of production and marketing of vegetables. Compared to vegetable growers with lower annual income, those with higher annual income had better socio-economic conditions and had better access to good quality vegetables seeds, irrigation facilities, fertilizers, and pesticides for diseases and insects management. As a result, vegetable growers with higher annual income had less problems compared to the respondents with lower annual income in production and marketing of vegetables. Uddin *et al*., (2012) and Singh *et al*., (2017) found significant negative relationship in case of small scale dairy farming, however Kshash (2018) reported significant positive relationship between the concerned variables. The respondents' access to credit had a significant negative relationship (-0.284**) with the problems faced by the vegetable growers in production and marketing of vegetables. The findings revealed that vegetable growers with more access to credit were more enthusiastic about adoption and implementation of various new technologies linked to vegetable production and marketing than those with less access to credit. This observation is supported by the finding of, Singh *et al*., (2017) and Uddin *et al*., (2012) who found no significant relationship between access to credit sources and the constraints experienced by the dairy farmers. The respondents' training experiences showed significant negative relationship (-0.340**) with the problems that vegetable growers faced in production and marketing of vegetables. The findings showed that training has a significant impact on comprehension of the difficulties and technical efficiency of the respondents. As a result, the vegetable growers who had more training experience had

less problems than those who had less training experience. According to Singh *et al*., (2017), there is significant negative relationship between the training received and the challenges faced by the dairy farmers in adopting good farming practices in India.

Conclusion

The present study aimed to investigate the problem confrontation of vegetable growers in production and marketing of vegetables. Promoting sustainable vegetable productivity is important for diversification of agriculture sector, poverty reduction, food security and employment generation. The study indicates that the vegetable growers faced different level of problems in production and marketing of vegetables. Among them majority of the respondents (77%) faced medium level of problems in case of the predetermined dimensions related to production and marketing of commonly grown vegetables. The socio-demographic characteristics of the respondents namely household size, farm size, annual family income, access to credit and training experience have significant contributions with the problem confrontation of respondents in production and marketing of vegetables. Considering the findings of the study inputs of vegetable production (credit support, quality vegetable seed, fertilizers and pesticides) should be made available and within the purchasing capacity of the vegetable growers by regular monitoring of market price and providing subsidy. Advisory services of the Department of Agricultural Extension (DAE) should be made regular and strengthened. Interventions are required from GOs and NGOs to undertake need based training, field demonstrations and workshops for the vegetable growers to improve their level of knowledge and skills in vegetable production, development of ICT based marketing channel to reduce the influence of middlemen, value addition of agricultural products and dissemination of newly developed technologies in case of vegetable production for sustainable agricultural development of Bangladesh.

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