



Existing Cut Flower Business in Bangladesh: Problems and Solutions

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ARTICLE INFO	ABSTRACT
<p>Received date: Sep. 21, 2018</p> <p>Accepted date: Dec. 18, 2018</p>	<p>Present study was undertaken to find out the problems of cut flower business and their solutions in Bangladesh. Both primary and secondary data were collected in this study. Primary data were collected from 5 flower growers from each at Savar, Manikgonj and Tangail, and 5 middlemen, 5 wholesalers, 5 retailers and 5 customers at each flower market of Agargaon, Nabinagar and Shahbag during the period of June, 2017 to May, 2018 for investigating the problems of flower business in Bangladesh. The study was conducted on Rose (red), Rose (white), Gerbera, Calendolla, Gladiolus (white), Gladiolus (yellow), Gladiolus (pink), Marigold, Night queen (single) and Night queen (double). Now flower business is one of the major businesses in many developing and underdeveloped countries. At present time flowers are very popular and hit in the national and international market. In Bangladesh, the prices of different flower were fluctuated in different special days of the year, different days of the week and different months of the year. The highest price was observed in Thursday, Friday and Saturday of a week; July to October months of a year and Valentine's day, Bengali new year and Pahela Fulgun. On the other hand, lowest price was observed in Sunday to Tuesday of the week; March to May month of the year. As there are different kinds of flower are produced in different districts of Bangladesh, there will be a glorious prospect of flower production in Bangladesh.</p>

Key words: Cut flower, growers, traders, retailers, wholesalers

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1. INTRODUCTION

Flower is the symbol of beauty. Flowers have been regarded as an embodiment of human taste and aesthetics. Flowers have a pious place in the mind of human beings all over the world. Without flowers, the world would not have been as beautiful as charming today. For its beauty, demand of flower is increasing day by day. To meet this rising demand, floriculture becomes popular and in recent days it has

emerged as one of the most lucrative business in all over the world. A huge prosperity of flower business has in Bangladesh. It has a potential market to export in China as well as near countries of Bangladesh. Bangladesh exported cut flowers as worth 16.58 million USD during July-November 2013 into a few destinations like India, Pakistan, Italy, Portugal, Saudi Arabia, the United States, South Korea, the Philippines, Singapore, Japan, Germany, Britain, Denmark and France. In Bangladesh, small scale flower

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production initially started in late seventies by some innovative farmers with the production of tuberose but large scale commercial production was started in mid eighties at Jhikargacha Upazila of Jessore district (Sultana, 2003). Commercial production of flower in Bangladesh started from mid 1980S at Jessore district. The importance of flowers has been raised throughout the world and today floriculture has developed into an intensive form of agriculture (Siddika, 2004). Sher Ali pioneered commercial flower cultivation at Godkhali of Jessore in 1983 (ref.). He demonstrated that cut flowers give three to four times' higher return than any other crops. Many farmers started to grow flowers in 4-5 villages of Godkhali Union. Currently about 1, 50,000 peoples are directly involved in cut flower cultivation or business in Bangladesh. Siddika (2004) reported that commercial production of flower in Bangladesh started from mid 1980 S at Jessore district. Now flower is commercially cultivated in all the districts of Bangladesh. New farmers are involving in flower business every year. At present in Bangladesh some Non-Government Organization (NGO) and private entrepreneurs such as Bangladesh Rural Advancement Committee (BRAC), Proshika, Dipta Orchids Limited have already taken initiative for large-scale production and marketing of flowers. Hossain & Rahman (1994) reveals that the capital investment in flower business has been increasing. They also reported i) the total number of shop exhibits an increasing trend, ii) merchandizing patterns have been diversified, iii) the scale of flower made products is rising and iv) all sales are for cash. There was a return of 1.47 Rupees to 2.36 Rupees to producers from the production of different types of flowers each. On the other hand, there was a return of 1.18 Rupees against per Rupee spent by the retailer. The floriculture industry is increasing every year in Bangladesh. Now-a-days, industries are doing business billions of dollars and million of employees worked their throughout the world (Donohou, 2003). Flower is a horticulture product that is commonly loved by everyone having a minimum sense of pleasure and feeling (Hossain & Rahman, 1994). In recent years, it seems that a revolution has taken place particularly in Dhaka citizen's attitude towards flowers uses (Shams, 1999). At the primary stage, flowers were mainly used by human beings to provide interesting ornamental effects and its business was confined around the hotels of the capital and business cities of the World (Hossain & Rahman, 1994). Now the flower business is one of the major businesses in many developing and underdeveloped countries. Flowers are used at all our social, cultural and religious occasions as cut flower which are preferred for bouquets and flower arrangement. Global export of cut flowers and flower buds for bouquets, fresh or dried was 7375, 7680, 8387, 8480 and 8442 million UDS in 2009, 2010, 2011, 2012 and 2013, respectively. Top 10 cut flower-exporting countries are the Netherlands, Colombia, Ecuador, Kenya, Belgium, Ethiopia, Malaysia, Italy, Germany and Israel. Top 10 cut flower-importing countries are the United States of America, Germany, United Kingdom, Netherlands, Russian Federation, France, Japan, Belgium, Italy and Switzerland.

Bangladesh imported some items of flower from different countries and also exported different kinds of flower every year after fulfilling her domestic demand. According to Salahuddin (2013), developed countries like the European Union (EU), the United States of America and Japan find the importing market in Bangladesh, is a good sign. They also find investment in flower cultivation in Bangladesh due to labor inexpensive. Though Bangladesh is a new participant in export market, it has a bright prospect in future to earn foreign currency as like as garment industries by exporting flowers and potted plants (Salahuddin, 2013). It has good potential in the production of cut flowers due to favorable environment and fertile land (Joynal, 2013).

1.1 Obstacles of cut flowers in Bangladesh

Cut flowers sector in Bangladesh is suffering from various obstacles. Major obstacles of this sector are:

- Price of flower is always fluctuated. It fluctuated in different days of the week, different month of the year and different special days of the year. Farmers who produce flower are not happy for this fluctuation of price.
- The floriculture industry is increasing every year and now it is an industry of billions of dollars and employs million of people throughout the world.
- Lack of research institution, research work, skilled workers and other skilled manpower in this sector.
- Inadequate improved technology, quality seed. Bangladesh is producing only a few types of flowers. It is now essential to increase the variety of flowers to meet the demand of the local and global markets.
- Lack of infrastructure and permanent flower market and market information.
- Inadequate cold storage, poor cool chain system and poor transportation system. Actually there is no cold storage in Bangladesh to preserve or store flowers during emergency. For this reason a large amount of flowers perish in the field or market.
- Perfume industry, herbal cosmetic industry etc. forward linkage industry of cut flowers are absent in Bangladesh.
- Absence of permanent flower market in major cities: There are no permanent wholesale flower markets in Dhaka, Chittagong, or any other divisional/district towns of Bangladesh.
- Diversifying use of flower, such as, food materials, perfume, medicine, ornament
- Lack of skilled manpower.
- Poor knowledge about flower export. A very limited number of businesses are involved with export occasionally.
- Little knowledge about flower preservation. Farmers use jute bags for packaging flowers. When these flowers reach markets in Dhaka, Chittagong or other divisional or district level towns, they dry up. Many flowers are wasted during transportation.

- Unavailability of large amount industrial loan. Policy-makers do not yet consider the industrial or commercial aspects of flower. As a result, flower growers or businesses get small amount of agriculture loan instead of industrial/SME loans.
- Bangladeshi flower growers/businessmen are not aware about post-harvest value addition of flowers.
- Fertilizer, seed, polyethylene sheet, water for irrigation, new variety of flowers etc. are not easily available in the local market.

1.2 Objectives

Bangladesh has a glorious prospect in flower business. Along with glorious prospects there are some problems also present in this sector. Keeping the foregoing subject matter in mind the present investigation was undertaken with the following objectives:

1. To investigate the present situation of cut flower business in Bangladesh.
2. To investigate the problems of cut flower business in Bangladesh.
3. To find out the solution of different problems of cut flower business.

2. MATERIALS AND METHODS

This experiment was conducted to find out the problems of flower business in Bangladesh and their solutions. The data were collected in the period from June, 2017 to May, 2018. This paper was prepared using both primary and secondary data. It is basically a survey type of data collection. During data collection the target respondents from the population were randomly selected. The primary data were collected through face to face interview from 5 flower growers from each at Savar, Manikgonj and Tangail, and 5 middlemen, 5 wholesalers, 5 retailers and 5 customers from each flower market of Agargaon, Nabinagar and Shahbag. So the sample size of this study was 75 respondents. The study was carried out on Rose (red), Rose (white), Gerbera, Calendolla, Gladiolus (white), Gladiolus (yellow), Gladiolus (pink), Marigold, Night queen (single), and Night queen (double). Secondary data were collected from different books, journals, newspapers, and some information was collected through internet browsing. The data were collected; analyzed and mean data were calculated by using MS-Excel.

3. RESULTS AND DISCUSSION

Keeping in mind the objectives of this study the results and discussions were discussed in two heads namely prospects and problems of flower business in Bangladesh.

3.1 Supply Chain

Concept of supply chain has come into existence since 1980s. A supply chain is an integrated process through which a number of business entities e.g. producers, manufacturers, distributors and retailers cooperate in an

effort to: (a) acquire raw materials (b) convert this raw materials into specified final products and (c) deliver this final products to retailers. Supply chain is developed to improve efficiency through better flow of scheduling and resource utilization, increase the ability to manage and control the quality through the chain, reduce risk and increase the ability of the agricultural industries to respond quickly to changes in consumer demand.

A supply chain is dynamic and involves the constant flow of information, product and funds between different stages. Stages are: (a) customer, (2) retailers, (3) wholesalers/distributors, (4) manufacturers and (5) components raw materials suppliers. Successful supply chain management requires many decisions relating to the flow of information, product and funds. Supply chain decision phases are categorized as design, planning and operational depending on the time frame during which the decision made and supply. Supply chain design, planning and operation decisions play a significant role in the success or failure of a farm.

Managing the chain of events in this process is what is known as supply chain management. Effective management must take into account coordinating all the the different pieces of this chain as quickly as possible without losing any of the quality or customer satisfaction, while still keeping costs down. In addition, key to the success of a supply chain is the speed in which these activities can be accomplished and the realization that customer needs and customer satisfaction are the very reasons for the network. Reduced inventories, lower operating costs, product availability and customer satisfaction are all benefits which grow out of effective supply chain management. Supply chain management of agricultural product both for domestic and international marketing. Being perishable in nature and essential for human beings, efficient supply chain management of the agricultural commodities has both social and economic impact.

3.2 Overview of Floriculture in Bangladesh

Flower traders have said that flowers demand have been increased with increasing income of citizen in Bangladesh. Now various festivals have been observed enthusiastically with colorful flowers, ceremony of family, business and state's festival have not been observed without flowers. Even fresh flower is essential in daily life for decoration. Floriculture has been expanding in various districts in Bangladesh, mostly in Jessore, Jhinaidah, Chuadanga, Mymensingh, Gazipur, Manikgonj, Tangail, Narayngonj, Rangamati. Almost 16 thousands farmers are engaged in floriculture, they are cultivating flower in 12 thousand acres in Bangladesh; Rose, Rojonidondha, Ganda, Jervera, Gladioli have been cultivated for commercial purpose, flowers of 800 core taka supplied from Bangladeshi farmers in various festivals, national days and daily's demand, according to flower businessman, 20 lac people are engaged in flower business that not only in floriculture also in transports and sales.

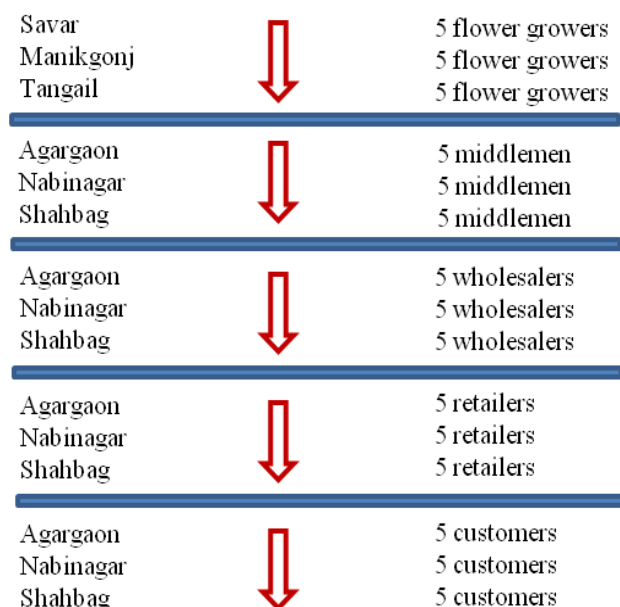


Fig. 1 Collection method of primary data.

3.3 Export of Flower

Bangladesh exported cut flowers, worth \$16.58m, during July-November 2013 into a few destinations like India, Pakistan, Italy, Portugal, Saudi Arabia, the United States, South Korea, the Philippines, Singapore, Japan, Germany, Britain, Denmark and France.

3.4 Income Generation

Flower business is a good source of income for many male and female persons throughout the country. Commercial orientation of floriculture has become evident in the recent times. By growing flower farmers get higher income and profit from per unit area as compared to other crops. According to Dadlani (2003), cultivation of flower is reported to give 3-5 times and 1.5-2 times more returns than obtained from rice and vegetable cultivation, respectively.

3.5 Main Flower Growing Areas of Bangladesh

In Bangladesh flowers are cultivated commercially in few areas only. Small scale flower production initially started in late seventies by some innovative farmers with the production of tuberose, but large scale commercial production was started in mid eighties in Jhikargacha Upazila of Jessore district. Now it speeded largely in Dhaka, Tangail, Gazipur, Mymensingh, Chuandanga, Jhenidah, Khulna, Pirojpur, Natore, Bogra, Rangpur, Kushtia Chittagong, and Jessore. At present Jessore district turned to be the major flower production belt in Bangladesh. About 10,000 hectares of land covers flower cultivation taking the lead by Jessore district. Mou (2012) stated that the major production is concentrated at Godkhali in Jessore which covered about 60 percent of total flower production.

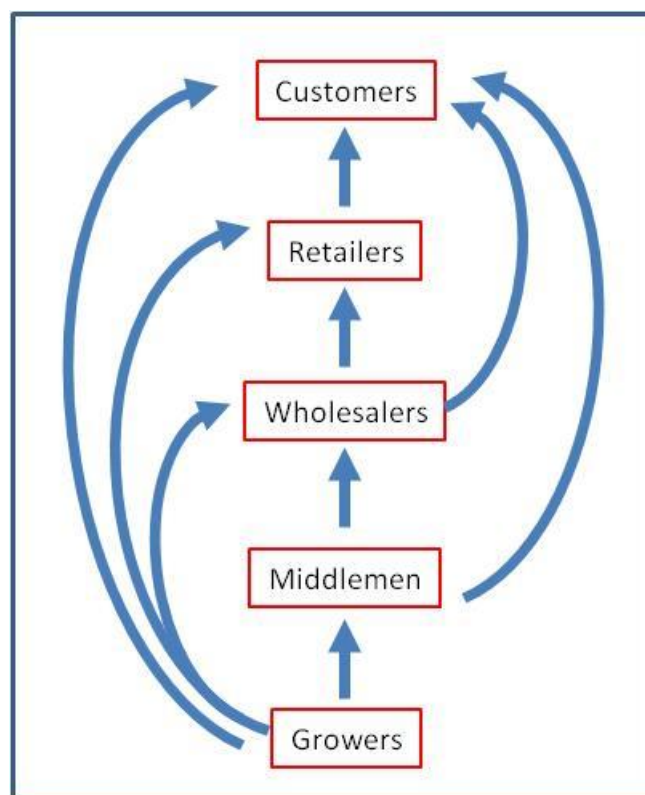


Fig. 2 Supply chain of cut flower in Bangladesh available.

3.6 Soil and Climate

The availability of favorable soil and climate in different region of the country makes it possible for the production of important flower crops almost all through the year in some parts of the country.

3.7 Labor

In Bangladesh labor is available and the labor cost is comparatively lower than other countries. Both male and female labors work in flower business in Bangladesh. Male labor works from production to marketing while the female workers dominate the sector mainly in flower collection, sorting and packaging.

3.8 Types of Flower Cultivated in Bangladesh

Different kinds of cut flowers are grown in Bangladesh. Salahuddin (2013) stated that the varieties of flowers that Bangladesh can supply include rose, tuberose, gladiolus, anthurium, carnation, gerbera, gypsophila, limonium, anthurium, philodendron, leather fern, orchid-dendrobium, mokkara, oncidium, lily and foliage. In our country we also can increase the production of flower by applying tissue culture system.

3.9 Flower Markets and Shops of Dhaka City

There are many flower markets in Dhaka city but the most important and biggest flower market is Shahbag Market and Agargaon market. In Dhaka and around the Dhaka city, a lot

Table 1. Price per 100 pieces of different flower at different days of a week in growers.

Name of Flower	Price (Taka) of 100 flowers at the different days of a week							Average price (Taka) of a week
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
Rose (Red)	180	180	185	190	250	240	240	209.28
Rose (White)	140	150	160	170	240	230	230	188.57
Gerbera	900	950	1000	1000	1300	1300	1200	1092.85
Calendolla	50	55	65	70	100	100	80	74.28
Gladiolus (White)	500	600	700	750	1000	1000	800	764.28
Gladiolus (Yellow)	450	500	550	600	800	800	700	628.57
Gladiolus (Pink)	500	550	600	650	750	750	650	635.71
Marigold	60	65	70	75	90	90	80	75.71
Night queen (Single)	140	145	150	160	190	190	170	163.57
Night queen (Double)	210	215	220	240	290	290	270	219.28
Average price of a day	313	341	370	390.5	510	499	442	-

Table 2. Price per 100 pieces of different flower at different months of a year in growers

Cut flowers	Price (Tk.) per 100 flower at different months												Average
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
Rose (Red)	250	170	140	210	240	310	340	345	350	330	290	250	268.75
Rose (White)	210	165	130	205	230	290	330	330	330	310	270	240	253.33
Gerbera	1050	1000	900	950	1000	1200	1400	1450	1350	1100	1000	1150	0
Calendolla	70	60	40	50	55	65	75	85	90	75	70	60	66.25
Gladiolus (White)	1000	900	800	850	850	900	1100	1200	1200	1100	1000	1050	995.83
Gladiolus (Yellow)	800	850	700	750	800	850	900	1000	1050	1100	1050	1000	904.16
Gladiolus (Pink)	750	700	600	650	650	700	800	900	950	950	850	800	775
Marigold	70	60	50	55	65	75	85	90	95	100	75	75	74.58
Night queen (Single)	170	160	150	155	155	160	190	195	190	195	185	180	173.75
Night queen (Double)	210	200	215	210	200	260	280	290	295	300	280	260	250
Average price of a month	458	426.5	372.5	408.5	424.5	481	550	583.5	600	581	517	491.5	-

of flower shops are present in different corner.

3.10 Diversifying use of Flower

Cut flower

Seasonal flowers or flowering annuals are much in demand all over the world for beautifying our landscape. The cut flowers in Bangladesh context fall under two categories. The stem less flowers, mainly the traditional flowers, used loose or in value added forms like gardens and the modern day cut flowers with stem used for decoration purpose in arrangement, bouquets etc. and many other purposes. The flowers which are more important in the cut flower trade are carnation, chrysanthemum, calendula, gerbera, marigold tube rose and orchid. The use of cut flowers in home decoration has become an integral part of living in human

society particularly in affluent countries. But due to high energy and labor cost their production in these countries is limited during winter months. In Bangladesh most of the flowers are grown in the open during winter month and a great potential thus exist for their production for export. Besides their demand in the export markets in the recent times require for cut flowers in the domestic trade has also developed. Large scale cultivation of important flowers has been taken up near big cities. While no definite information is available about the total area under commercial flower production in Bangladesh. In Bangladesh besides the exquisite cut flowers of rose, carnation, gladiolus and tube rose which are preferred for bouquets and flower arrangements, there is considerable demand for rose flowers for making garlands for flower decoration and for offering at

Table 3. Price 100 pieces of different flower in different special days of the year in growers.

Name of Flowers	Valentine's Day (14 th February)	International Mother Language Day (21 st February)	Independent Day (26 th March)	Bengali New Year's Day	National Victory day (16 th December)	English New Year	Pahela Falgun	Average price of each flower type
Rose (Red)	340	310	250	330	290	280	320	302.85
Rose (white)	330	310	290	320	280	270	310	301.42
Gerbera	1400	1100	1100	1300	1100	1050	1200	1178.57
Calendolla	110	80	85	100	90	80	100	92.14
Gladiolus (white)	1200	900	950	1100	950	950	1000	1007.14
Gladiolus (yellow)	800	750	600	850	700	690	800	741.42
Gladiolus (pink)	900	850	800	900	750	710	800	815.71
Marigold	110	95	95	110	95	85	100	98.57
Night queen (single)	210	190	195	210	190	170	200	195.00
Night queen (double)	310	270	250	320	230	210	300	270.00
Average price of a special day	571	485.5	461.5	554	467.5	449.5	513	-

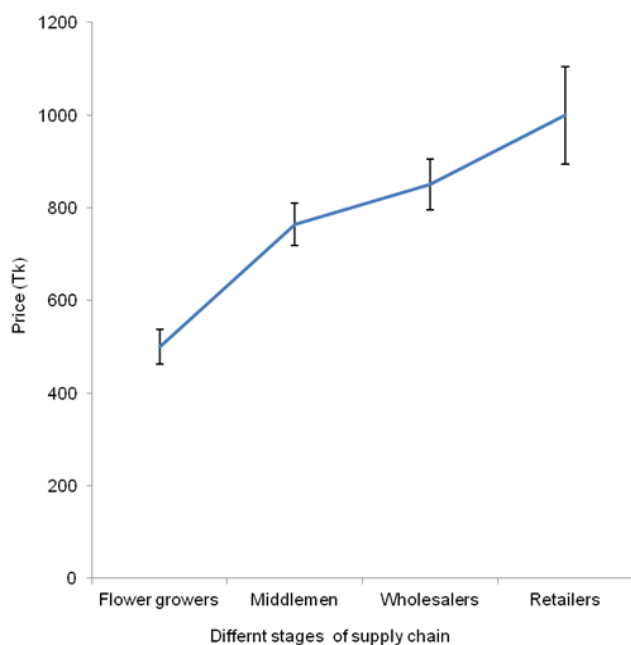


Fig. 2 Price (Tk) of 100-flowers at growers, middlemen, wholesalers and retailers.

religious and social function. Flowers like marigold and chrysanthemum are mainly used for this purpose.

Food materials

Flowers are not only cultivated for decorative purpose but also for food materials. Some flowers are used as food materials. Lotus is used as food materials besides its sanctity

and aesthetic value. Almost all parts of the lotus plant are edible. The fresh rhizomes are consumed as vegetable either roasted or in curry form. The dried rhizomes slices are used in making curry or fried chips. The rhizomes are used in preparing a kind of arrowroot which is aromatic, sweet and nutritious. The carpels or nuts embedded in the fruiting receptacle are edible and nutritious. These are eaten after removing the outer covering and the embryo which is very bitter. The nuts which are sweet and delicious are eaten in different ways like raw, roasted, boiled and candied. The nuts are rich in protein (17.2%) and total carbohydrates, mainly starch (60.6%). They also contain sucrose (401%) and iron (2.3%) besides small quantities of fat, fiber, calcium, phosphorous and ascorbic acid. The tender leaves, petioles and flowers are eaten as vegetables. Orchids are used to flavor food, as salads. In the tropics of Asia, roasted tubers of gastrodia are eaten like potatoes. The leaves of the *Habenaria intermedia* are cooked as vegetable. The genus *Dendrobium* is famous in the USA as food orchid. *Dendrobium* hybrid (bigibbum type) flowers are sold in the USA as edible decorations for food.

Medicine

A few species of orchids have been considered to induce sterility among the women. *Gladiolus crassifolius* is used for headache and lumbago. *Gladiolus Saundesrii* mixed with food is effective against diarrhoea. The crushed and ground corms of *gladiolus ecklonii* are decocted and drunk to get rid of rheumatism and allied pains. Certain species of *chrysanthemum cinerariifolium* and *C. coccineum* are also cultivated as source of pyrethrum an important insecticide. There certain medicinal uses of dahlia. Tubers of this plant

contain significant amount of medicinally active compounds such as phytin and benzoic acid. Both leaves and flowers of marigold flowers are equally important from medicinal point of view. Leaf paste is used externally against boils and carbuncles. Leaf extract is good remedy for earache. Flower extract is considered as blood purified a cure for bleeding piles is also a good remedy for eye diseases and ulcers. Rose water is used in medicines. It has the property of cooling the body and often used in eye lotions and eye drops for its soothing qualities. The bulb of tuberose is considered diuretic and emetic. There rubbed with turmeric and butter and applied as a paste over red pimples of infants. Dried tube rose bulbs in the powdered form are used as a remedy for gonorrhea.

Dry flower

All kinds of flowers can be dried and preserve in various form. Dry flowers are used for indoor decoration. These products are becoming very popular due to nonperishable ability of the produce leading to their longer life indoors.

Ornament

Ladies used orchid flowers for the adornment of their hair. Marigold is known as friendship flower in the USA. It is used by the women in various special days such as; pohela boishak, wedding ceremony, marriage day, and any other occasions in Bangladesh. Kathbeli also used by women as ornament in the above mentioned day. Jaba and marigold flower is put in to the hair. Marigold and Kathbeli is used as band of hair, neck chain and brase lets etc. by the woman.

Perfume

The important aspects of commercial floriculture is the production of flowers for extraction of floral perfumes .Their exits a great demand for this both in the domestic as well as international markets . Their need in the perfumery trade in the cosmetic market as well as in the food industry is continuously growing. The two most important flowers which find their use in the perfume are rose and jasmine .The lotus flowers are used for extraction of perfume. The lotus perfume available in the trade is a bland of patchouli, benzoin and styrax with phenyl ethyl and cinnamon alcohols. Rose oil is an important commercial product obtained from rose petals. Bulgarian rose otto is largely used in perfuming soap and cosmetics .Rose water is also an important commercial products obtained from rose petals. It is used in perfume. It is used in sprinkled on the guests at wedding, feasts and other social functions. The natural oil of jasmine is used in high grade perfumes and almost all superior perfumes contain at least a small quantity of jasmine oil. It is used for perfuming expensive soaps and cosmetics, mouth washes, and dentifrices, bath salts and tobacco alcoholic washings of concentrate are used in handkerchief perfumes. The odor of jasmine flowers cannot be imitate by known synthetic aromatic chemical and natural isolate thus giving it an unique status in the perfume world. The jasmine oil is regarded as unique as it blends will with other floral extracts entities highly valued throughout the

world for producing high grade perfumes. The tube rose flowers emitted delightful fragrance and are the source of tube rose oil. The natural flower of tuberose remain today one of the most expensive of the perfumes raw materials. The essential oil present in different species' of tagetes of marigold can find a use in the perfumery industry.

Ornamental plants

During the last decade or so, we have witnessed a significant change in our urban housing system. More and more people now living in the multi strayed flats and apartments with little or no open space available for gardening primarily depend on potted flower plants for the touch of beauty. Even those who still live in sprawling bungalows with attached gardens depend upon potted flower plants for interior decoration of their premises.

Flower seeds

Improved and quality seeds are basic input for quality flower production. There has been limited availability of qualitative flower seed in our country. Most of the seeds are imported particularly from Europe and India.

Environment

Besides the important parks and gardens much flowers have been laid on development of gardens and public parks in many cities, towns and industrial areas. Flowers have played a significant role in improving the environment. The greater use of flowers certainly contributes to the improvement of the environment. For instance, some flowers have been found to be useful in preventing air and noise pollution in urban areas.

3.11 Problems of Flower Business in Bangladesh

In Bangladesh there are a lot of problems present in flower business. Among the problems some important problems of flower cultivation in Bangladesh are summarized below:

Fluctuation of flower market price

Price of flowers is always fluctuating. Farmers who produce flower are not happy for this fluctuation of price. Price of flower fluctuated in different days of the week, different month of the year and different special days of the year. For better understanding of the price fluctuation the fluctuation of the flower market price were discussed above mentioned heads as follows:

Fluctuation of flower price in different days of a week

Significant differences were observed in respect price in different varieties to varieties and different days of the week (Table 1). Average price of flower varied from 74.28 Tk. to 1092.85 Tk. in different varieties to varieties. The highest (1092.85 Tk) price was observed in gerbera which was followed by Gladiolus white (764.28 Tk), Gladiolus pink (635 Tk) and Gladiolus yellow (628.57 Tk), respectively. The lowest (74.28 Tk) was observed in Calendolla, Marigold (75.71 Tk) and Night queen single (163.57 Tk), respectively. On the other hand the average price of flower varied from

different days of the week. The highest average price was observed in Thursday (510 Tk.) and which was followed by Friday (499 Tk.) and Saturday (442 Tk.), respectively for all kinds of flower. The average lowest (313 Tk.) price was observed Sunday which was closely followed by Monday (341 Tk.) and Tuesday (370 Tk.).

Fluctuation of flower price in different months of the year

Significant differences were found in price of different flowers in different month of the year and among the flowers (Table 2). Average price of 100 pieces of different flower varied from 66.25 Tk. to 1150 Tk. among the flowers. The average highest (1150 Tk.) price was observed in gerbera which was followed by gladiolus white (995.83), gladiolus yellow (904.16) and gladiolus pink (775) respectively. The lowest (66.25) average price was observed in calendula which was followed by marigold (74.58), night queen single (173.75), night queen double (250) and rose white (253.33) respectively. The highest average price of 100 pieces of flower varied from different month of the year. The highest (600) price of different flowers was observed in September and which was followed by August (583.5), October (581Tk.) and July (550) respectively. The lowest (372.5) price was observed in March and which was followed by April (408.5) and May (424.5) respectively for all kinds of flower. It was observed that the price of flower started to increase from the month of June and reaches to a maximum in September and then started to decrease at a slower rate.

Fluctuation of flower price in different special days of a year

Statistically significant differences were observed for price of different flowers in different special days of the year (Table 3). The highest (571 Tk.) average price was observed in Valentine's Day and which was followed by Bengali New Year's Day (554 Tk.) and Pahela Falgun (513 Tk.) respectively. On the other hand the lowest (449.5 Tk.) average price was observed in English New Year which was followed by Independent day (461.5 Tk.) and National Victory day (467.5 Tk.), respectively. Among the flower the highest (1178.75 Tk.) price was observed in gerbera which was followed by gladiolus white (1007.14 Tk.) and gladiolus pink (815.71 Tk.) respectively. The lowest (92.14 Tk.) price was observed in calendula, marigold (98.57 Tk.) and night queen single (195.00 Tk.), respectively.

Amplify price in different stages of gladiolus (white)

The flower growers sold 100 white gladiolus flowers to middlemen by 500 Tk. The middlemen transfer 100 flowers to wholesalers with keeping a little benefit, sold by 764.28 Tk. The retailers collect 100 flowers from wholesalers with rate of 850 Tk per 100 flowers. Retailer sold the flowers to customers by the rate of 1000 Tk. This result stated that the price of 100 flowers increased by double price from 500 Tk to 1000 Tk per 100 flowers when 100 flowers transferred from grower to customer (Fig. 2).

3.12 Other Problems

Post harvest loss

Being perishable in nature flowers have to be harvested as soon as they get matured, otherwise their quality gets deteriorated.

Lack of cold storage facilities

Planting material of gladiolus is need to store low temperature otherwise corm will be rotten. There are no cold storage facilities for storing the planting materials and flower after harvesting in Bangladesh. On the other hand due to lack of storage facility farmers have to sell their produce on the same day even if the prices were ruling very low. Due to lack of facilities, the flower growers had to waste half of their produce due to lack of storage facilities leading to economic loss of the people as well as the society as a whole. Bangladesh has not sufficient of storage facilities for necessary commodities like potato, onion, tomato etc that's why cold storage of planting material of flowers is difficult to store and electricity problem is also hamper the stored product quality. Planting material of gladiolus is need to store low temperature otherwise corm will be rotten.

Limited availability of quality flower seed and cultivars

Several flowers are much in demand all over the country for beautifying our landscapes. There has been limited availability of quality flower seed and cultivars in our country. There is no sufficient modern variety of flowers in Bangladesh. Most of modern varieties are to be collected for outside of Bangladesh like India, Thailand and Singapore. For this reason, farmers are not get proper planting materials in proper time.

Access to modern varieties and quality planting material

There is no sufficient modern variety of flowers in Bangladesh. Most of modern varieties and quality planting material are to be collected for outside of Bangladesh like India, Thailand and Singapore. For this reason, farmers are not get proper planting materials proper planting materials proper time with economic price because of international trade barriers and others.

Narrow diversity in product range and poor quality of flowers

There are narrow diversity in product range due to available of planting materials mainly seeds, stem, seedling etc. Due to soil conditions and hot and warm weather stimulate the insect pest and disease infestation that deteriorate the quality of flowers.

Undeveloped communication system

Inadequate and undeveloped transportation and communication system is an important reason for post harvest losses of flower. For want of facilities transportation by road, rail and water they avail ability of flowers at different places in the country has not been improved. The research and development of floriculture has rather been slow.

Substandard quality of production

It is felt that there is no significant progress has been made in the development of floriculture industry and research in Bangladesh. There have been several constrains which have affected development of industry such as sub standard quality of production.

Inadequate infrastructure facilities

Most of the time farmers had to sell their flower standing in the open place. There is no well shed to protect farmer and flower from rain or sun. Most of the time farmers had to sell their flower standing in the open place. So lack of infrastructure such as pucca floor, tin shed, drainage, water supply etc. is the problems which increase the post harvest losses.

Traditional packing method

Packing materials is not enough for air circulation. The traditional packing method with rope and plastic is considered inadequate for long transportation. It also deteriorates the quality of flower by generating heat and moisture due evaporation and transpiration.

Poor marketing system with little modern techniques in sorting, grading and value addition

Due to lack of good facilities for sorting, grading and value addition, quality of flower is not prevailed. Good marketing system increases the quality and shelf life of flower. Siddika (2004) conducted a study on Marketing of commercial cut-flower in Bangladesh. She analyzed marketing system of some selected flower such as tuberose, rose, gladiolus, marigold and marketing margin for different traders, export potentiality for cut-flowers, problem involved and suggestion for improving the presenting system of cut-flowers.

Poor knowledge on plant nutrition, diseases and insect and improper use of agro chemicals

Our farmers are illiterate for this reason; they have not proper knowledge on plant nutrition, disease and insect pests and improper use of agro chemicals. High doses of fertilizer and agro chemicals burn the plant and as well as flower resulting poor quality of flower.

Lack of systematic research

Only floriculture division of Bangladesh Agricultural Research Institute (BARI), Gazipur conducted different research every year on flower in small scale. In Bangladesh flower is not major crops. For this reason; its research work is done in limited basis.

Low financial support from the government

Due to the poor economic condition of our farmer many important aspects of flowers are almost neglected. There is no incentive and support from the government to produce flower. The floral business is on limited scale and motivation is needed to expand this business by farmers through some incentives.

Non availability of trained and qualified manpower

In Bangladesh there is a lack of trained and qualified manpower to handle commercial floriculture activities such as production, post harvest handling. In view of commercial importance of floriculture in addition to its aesthetic contribution, it is essential that this important segment of horticulture is strengthened with suitable qualified and experienced scientific and technical manpower and given due support. But in Bangladesh there is a lack of trained and qualified manpower.

Undeveloped communication system

For want of facilities transportation by road, rail and water they avail ability of flowers at different places in the country has not been improved.

Lack of modern harvesting technologies

Flower is highly perishable and requires special kind of post harvest handling. Commercial flower farming is a new practice in Bangladesh. Farmers use the traditional method of harvesting. It deteriorates the quality of flower. It causes the loss at post harvest. There is a shortage of trained manpower to handle commercial floriculture activities such as production, post harvest handling.

Lack of flower based processing industry

The important aspects of commercial floriculture are the production of flowers for extraction of floral perfumes. Their exits a great demand for these both in the domestic as well as international markets. Their need in the perfumery trade, in the cosmetic market as well as in the food industry is continuously growing in the world. But in Bangladesh the research and development of floriculture industry has rather been slow. It is felt that there is no significant progress has been made in the development of floriculture industry and research in Bangladesh.

High price of seed and fertilizers

High price of seed, pesticides, insecticides and fertilizers hamper the flower cultivation.

Post harvest loss

Post harvest loss at different levels occurred due to over maturing due to delay in harvesting, plucking and assembling, packing, transportation, press due to wholesaling process, loading and unloading, cleaning and sorting, multiple handling and transportation, processing for sale, making flower base and unsold stock.

3.13 Recommendations

Following recommendations could be considered to overcome the problems of flower business:

- Flower growers should be grown flower and targeted to supply flower on selected days (Thursday, Friday and Saturday) of the week, different special days (Valentine's Day, Pahela Falgun, Bengali New year, etc.), selected months (August, September and October) of the year for

getting high price. Because price of cut flower generally increase in these time.

- Flower customers and consumers should buy flower on selected days (Monday, Tuesday and Wednesday) of the week, selected months (December, January, February) of the year. Because price of flower cooperatively low on these days and month.
- Modern flower packaging materials should be supply by the Government.
- Government should take the initiative for setting cold storage and flower processing industry.
- Agricultural Research Institute, NGOs and other agricultural organizations should be taken the initiative to develop different new varieties of flowers for commercial cultivation.
- Government agencies should take initiative to export flower from Bangladesh.
- Non-perishable flower packaging should be used. This could help the flower growers to add more value to flowers.
- Government/donor agencies/ development partners could take the lead in developing a preservation-friendly cold chain (storage & transport) system for the flower growers.
- City corporations, municipal authorities and district administrators could establish permanent wholesale flower markets.

4. CONCLUSION

The availability of favorable soil and climate in different region of the country makes it possible for the production of important flower in Bangladesh. So the prospects of flower production are very bright. Different kinds of flowers are produced in different parts of Bangladesh. Farmers and traders are showing keen interest in floriculture and flower business in Bangladesh, as a high value of agricultural crops. Hence, commercial floriculture has a remarkable positive impact on increasing total household income. The importance of flowers has been raised throughout the world and today floriculture has developed into an intensive form of agriculture. The demand for cut flowers is increasing in the world day by day. There is ample opportunity for increasing the profit from flower production due to increased demand. But the demand and price of different flowers are fluctuated. The price of different flowers is varied in different days of the week, different month of the year and different special days of the year. Some other problems are present in flower business. Post harvest losses affected the profit of flower grower income from floriculture. Flower business should be needed more attention and care for trading as perishable goods. There is scope remains for the future researchers to conduct study on different related aspects of floriculture and flower business like pre- and post-flower production condition, flower marketing, economic potential of dried flower and so forth. For increasing the

quantity and quality of flower business government should take necessary steps to overcome these problems.

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Appendix I: Questionnaire for Flower Growers

Introduction

This is a study being undertaken by an MBA. Student of Sonargaon University. The purpose of the study is to evaluate the Supply Chain and Cut Flower Business in Bangladesh. The questionnaire is basically for academic proposes only and respondents are assured of privacy and confidentiality. Thank you. Contact Line 01712396804. Please put tick marks in the appropriate box and fill in the blank space where appropriate.

Section A: Background Characteristics of Respondents

1. Sex (a) Male ☐ (b) Female ☐
2. Educational Background
 - (a) Primary Education ☐ (b) Secondary Education ☐ (c) Diploma ☐
 - (d) Graduate Degree ☐ (e) Post-graduate ☐ (f) Others (specify).....
3. Background Education in Agriculture
 - (a) Nil ☐ (b) Primary ☐ (c) Secondary ☐ (c) Diploma ☐
 - (e) Graduate Degree ☐ (f) Post-graduate ☐

Section B: Land Acquisition and Preparation

4. Which of the following factors did you consider as the most important factor for selecting the site for your farm?
 - (A) Fertility of the soil (b) Nearness to residence (c) Accessibility
 - (d) Price of the land (e) Availability of water (f) Good road network
 - (g) Availability of labor
5. What is the average size of your farm?
 - (a) 1-10 acres (b) 11-20 acres (c) 21-50 acres (d) 51-100 acres
 - (e) Above 100 acres
6. What method do you use to prepare your land?
 - (a) Ploughing and harrowing (b) Use of agro-chemicals to spray
 - (c) Bullock ploughing

Section C: Selection of Varieties for Cultivation

7. What variety/varieties have you planted on your farm?
 - (a) Hybrid (b) HYV (c) Local
8. What reason(s) did you consider for your choice?
 - (a) Fast growth rate (b) Bigger flower size
 - (c) Longer shelf-life (d) well adopted by consumers
 - (e) Resist handling pressure (f) Resistant to diseases and pests
 - (g) Meet export standards (h) higher yield per acre

Section D: Cultural Practices of Flower Farm

9. What method(s) do you often use to control weeds on your farm?
 - (a) Use of Agro-chemicals (b) Growing of cover crops
 - (c) Weeding by human labor (d) intercropping
10. What common pests do you encounter on your farm?
 - (a) Mealy bugs (b) scale insects (c) Aphid
11. Which of (No.10) causes the greatest damage?

.....
12. What method do you use to control the pests?
 - (a) Use of chemicals (b) cultural methods – pruning
 - (c) Biological methods (d) physical methods – steam of water, handpicking etc.
13. What common diseases are found on your mango farm?
 - (a) Leaf rust (b) bacterial spot (c) fungal spot (d) stem-end Rot

Which of them causes the greatest harm?

.....
14. Which of these methods do you use to control the diseases?
 - (a) Cultural methods – pruning, burning of diseased plants etc.
 - (b) Chemical methods – fungicides, nematicides etc.

Appendix I: Questionnaire for Flower Growers

15. What are the sources of infections?

- (a) Local flowers
- (b) The weather – rainfall and winds
- (c) Related crops.
- (d) Transport, harvest and packaging materials

Section E: Membership in Flower Farmers Association

16. Are you a member of the Flower Farmers Association?

- (a) Yes (b) No. If yes, how many members are in the association? ...

17. What facility/support does the Association provide you?

- (a) Soft loans (b) farm implements (c) fertilizers, chemicals etc.
- (d) Education and Training

18. Mention any N.G.O. that gives assistance to your Association

- (a) (b)

Section F: Harvesting of Flowers

19. Have you had any form of training in harvesting flowers?

- (a) Yes (b) No

20. What measures do you put in place before harvesting?

- (a).....
- (b).....
- (c)

21. Which of the following maturity indices do you use for harvesting flower?

- (a) Flower size and shape
- (b) Number of days after bloom
- (c) Nature of flower

22. At what period of the day do you harvest the flower?

- (a) Early mornings (b) late mornings (c) afternoons (d) evenings

23. How many times do you harvest flower in a week?

- (a) Once (b) twice (c) three times (d) when necessary

Section G: Handling of Harvesting Flower

24. Which of the following problems do you encounter during harvesting of flower?

- (a) Inadequate labor (b) delay caused by buyers
- (c) No proper place to keep flower
- (d) Mechanical injuries to flower.

25. What criteria do you use to sort flower?

- (a) Physical injuries (b) Size of flower (c) Disease

26. Do you have packing houses where harvested flowers are kept?

- (a) Yes
- (b) No. If no, where do you keep them? (a) Under trees (b) Farm sheds
- (c) Open-air sheds

27. What containers do you use for packaging flower?

- (a) Paper cartons (b) Baskets (c) Plastic crates
- (d) Wooden crates (e) Polythene sacks

28. How are the produce transported from the farm to the point of sale?

- (a) Use of refrigerated vans/trucks (b) use of cargo trucks
- (c) Open buses (pick-ups (d) taxis (e) use of tractor

29. State some of the problems you encounter during transportation.

- i.....
- ii.....
- iii.....

30. How would you classify the nature of the roads from your farm?

- (a) Poor (b) Fairly good (c) Good (d) Very good

Appendix I: Questionnaire for Flower Growers

31. What do you do with excess produce?
 (a) For processing (b) Sell cheaply
 (c) Dried for future use (d) discard them
32. Are there enough processing factories in your area to process flower?
 (a) None (b) Yes (c) Few
33. Do you export some of the harvested flower?
 (a) Yes (b) No
34. At what stage of handling do you encounter the highest losses of flower?
 (a) During harvesting (b) Packaging (c) Transportation
35. State some ways by which post-harvest losses could be reduced in the flower business.
 i.....
 ii.....
 iii.....
36. How are the flower marketed?
 (a) Direct sales to consumers (b) through market women
 (c) To processors (d) to sold exporters
37. What type of treatment do you give to flower after harvesting?
 i.....
 ii.....
 iii.....
38. What criteria do you use to grade flower after harvesting?
 (a) Variety and weight (b) size and shape (c) color of flower
39. Which postharvest disease do you encounter?
 (a) Fungal spot (b) Bacterial spot
40. Are you aware of any technology that is used to control postharvest pests and diseases?
 (a) Yes (b) No. If yes, mention some of them

Appendix II: Interview Guide for Flower Sellers

Introduction

This is a study being undertaken by an MBA student of Sonargaon University. The purpose of the study is to evaluate the Supply Chain and Cut Flower Business in Bangladesh. The questionnaire is basically for academic purposes only and respondents are assured of privacy and confidentiality. Thank you. Contact Line 01712396804. Please put tick marks in the appropriate box and fill in the blank space where appropriate.

Section A: Background Characteristics of Respondents

1. Sex (a) Male ☐ (b) Female ☐
2. Educational Background
 - (a) Primary Education ☐ (b) Secondary Education ☐ (c) Diploma ☐
 - (d) Graduate Degree ☐ (e) Post-graduate ☐ (f) others (specify).....
3. Background Education in Agriculture
 - (a) Nil ☐ (b) Primary ☐ (c) Secondary ☐ (d) Diploma ☐
 - (e) Graduate Degree ☐ (f) Post-graduate ☐
4. Where do you sell the flower?
 - (a) By the roadside (b) In the open market (c) In refrigerated shops

Section B:

5. Who are the main suppliers of the flower?
 - (a) Commercial farmers (b) Small-scale farmers (c) Middlemen/Traders
6. In what containers do you use to transport the flower?
 - (a) Baskets (b) Wooden box (c) Plastic box (d) Paper cartons
 - (e) Polythene sacks
7. What diseases attack flower during sales?
 - (a) Anthracnose (b) Fungal spot (c) powdery mildew (d) stem-end rot
8. Which of the following criteria do you use to sort out the flower?
 - (a) Physical injuries (b) Bacterial/Fungal infection (c) Softened and Rotten flower
9. What criteria do you use to grade the fruits?
 - (a) Variety (b) uniform size and shape (c) blooming stage of flower
10. What type of transport do you use to cart the flower?
 - (a) Cargo truck (b) Open vans (pick-ups) (c) Tractor
 - (d) Taxis (e) Refrigerated vans/trucks
11. Where do you store flower during sales?
 - (a) Farm sheds (b) Open-air sheds (c) Packinghouse /Refrigerated houses
12. How do you classify the road network of the area you buy flower from?
 - (a) Poor (b) Fairly good (c) Good (d) Very good
13. State some of the problems you encounter in handling flower?
 - i.....
 - ii.....
 - iii.....
14. Do you give any form of treatment to the flower you handle?
 - (a) Yes (b) No. If yes, state some of the treatments you give
 - i..... ii..... iii.....
15. Are there enough processing plants in the area you sell the flower?
 - (a) None (b) Yes (c) Few
16. What pests have you identified in handling flower?
 - (a) Aphid (b) Mealybugs (c) Larva of different insect
17. What postharvest diseases have you seen on flower?
 - (a) Bacterial (b) Anthracnose (c) Fungal spot (d) stem-end rot
18. How many years have you been in flower trade?
 - (a) 1-5 years (b) 6-10 years (c) 11-20 years (d) above 20 years
19. Do you belong to any flower Sellers Association?
 - (a) Yes (b) No. If yes, how many are you?
20. Have you received any form of training in handling flower by the Ministry of Agriculture or by an N.G.O?
 - (a) Yes (b) No. If yes, how many times?
21. At what stage of handling do you encounter the heaviest losses?
 - (a) Transportation (b) Storage (c) Sorting and grading