SOCIO-ECONOMIC IMPACT OF FLORICULTURE ON FARMERS' LIVELIHOOD: A STUDY IN DHAKA, BANGLADESH

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SHER-E-BANGLA AGRICULTURAL UNIVERSITY

SHER-E-BANGLA NAGAR, DHAKA

June, 2022

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REGISTRATION NO.: 14-05967

A Thesis

Submitted to the Department of Development and Poverty Studies, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE (MS)

IN

DEVELOPMENT AND POVERTY STUDIES

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This is to certify that the thesis entitled "**SOCIO-ECONOMIC IMPACT OF FLORICULTURE ON FARMERS' LIVELIHOOD: A STUDY IN DHAKA, BANGLADESH**" submitted to the Department of Development and Poverty studies, Sher-e-Bangla Agricultural University, Dhaka-1207, in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE (MS) in DEVELOPMENT AND POVERTY STUDIES**, embodies the result of a piece of bona fide research work carried out by **ROMANA MOJUMDER,** Registration No. **14-05967** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

I further certify that any help or source of information, received during the course of this investigation has been duly acknowledged.

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Dedicated

To

My Mother

ABSTRACT

Bangladesh has seen a substantial increase in flower production over the past few decades due to increased domestic and global demand. Roses, marigolds, tuberoses, and gladioli may all be grown in Bangladesh because of the country's mild temperature and fertile soil. The objectives of this study were to comprehend the socioeconomic traits of flower farmers, evaluate the effects of floriculture on their lives using indicators of livelihood outcomes, and pinpoint the challenges farmers encounter when growing flowers. Using random sampling strategy, primary data were gathered through interviews with a sample of 100 flower-growing farmers from the Birulia union in Savar Upazila, Bangladesh.The primary data were collected from 22 November to 20 December,2022. Both Quantative and Qualatative Data Analysis Methods were used.The results showed that the average size of their small to medium-sized farms was 1.50 hectares. 4.94 lakh Taka was the typical yearly household income from floriculture. Using five indicators—food security, ability to battle vulnerability and poverty, resiliency to natural disasters, adaptability to seasonality impacts, cost-effectiveness and profitability—the study also assessed the benefits of floriculture on farmers' livelihoods. The research showed that floriculture boosted farmers' resilience to natural catastrophes, increased their ability to resist vulnerabilities and shocks, and contributed to food security. The majority of farmers were able to overcome seasonal impacts and generated profits even if other participants experienced difficulties during the lean season. Farmers thought that as a result of better living circumstances, they were better able to manage risks and disruptions and maintain their level of life. The study identified a number of difficulties faced by flower farmers, including viral diseases, high labor costs, severe water shortages, transportation issues, challenges with flower processing, insufficient credit support, intermediaries' influence on flower prices, limited familiarity with old cultivation techniques,insufficient marketing facilities, and a lack of suitable selling locations. Overall, Bangladesh's flower farming sector has demonstrated tremendous potential for expansion and social advancement. Flower farmers may further improve their lives, support rural development, and boost their profitability in both local and foreign markets by addressing the issues and putting the suggested solutions into practice.

ACKNOWLEDGEMENT

Alhamdulillah, all praises are due to the almighty **Allah** for His gracious kindness and infinite mercy in all the endeavours which create that opportunity for the author to successfully complete the research work required for the partial fulfilment of the degree of Master of Science.

Now, the author would like to express her inexpressible gratitude to her Supervisor, **Fatema Sarker,** Associate Professor, Department of Development and Poverty Studies, Sher-e-Bangla Agricultural University, Dhaka-1207, for her ever-inspiring guidance, scholarly comments, and constructive suggestions throughout the research process and thesis preparation. Without her insightful intellectual counsel, precise constructive criticism, and assistance, this job would never have been completed. The author would like to express her gratitude to her respected Co-supervisor, **Dr. Mohammad Mizanul Haque Kazal,** Professor,Department of Development and Poverty Studies, Sher-e-Bangla Agricultural University, Dhaka-1207, for his proper guidance.

The author would like to express her deepest respect and boundless gratitude to all the respected teachers of the **Department of Development and Poverty Studies**, Sher-e-Bangla Agricultural University, Dhaka, for their valuable teaching, sympathetic co-operation, and inspirations throughout the course of this study and research work.

The author wants to convey her appreciation to the 100 **flower farmers** who participated actively in this survey.

The author wants to convey her heartfelt gratitude to her Elder Brother **Mahmud Numan**, her younger brother **Jahid Hasan,** her friend **Ayesha Siddika,** Sister-in-law **Noor-E-Anika** for their assistance throughout the data gathering procedure.

The author is at a loss for words to express her gratitude to her parents for their unwavering devotion and unflinching support.

June 2022

Romana Mojumder

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ACRONYMS AND ABBREVIATIONS

AIS	: Agriculture Information Service
BBS	: Bangladesh Bureau of Statistics
BEC	: Bangladesh Economic Census
DAE	: Department of Agricultural Extension
DFID	: Department for International Development
et al	: And Others
etc	: Etcetera
FAO	: Food and Agriculture Organization
GDP	: Gross Domestic Products
No	: Number
NGO	: Non-Governmental Organization
SAU	: Sher-e- Bangla Agricultural University
UN	: United Nations
UNDP	: United Nations Development Program
UNICEF	: United Nations Children's Fund
%	: Percentage

CHAPTER 1

INTRODUCTION

1.1 General Background

Flowers have a pious place in the minds of human beings all over the world and they are linked with human civilization and social-fabric everywhere. Without flowers the world would not have been so beautiful, as charming and as cherishing today. In fact, flower is considered as a mark of love and respect from the very beginning of the civilization. Individual consistently utilizes these floral products in different occasions. Flower is there in all our occasions- be it a happy one or otherwise. It makes us feel better and soothes us in distress. Flowers are not only an attractive element for humans; rather they attract insects and birds, which serve as pollinators for the plant itself. The seeds that flowers drop and pollinate locally produce more plants, and more fruits and vegetables for us to eat. In addition, certain bugs such as bees, produce honey from the nectar of the flowers, but also pollinate the flowers as they do so allow them to produce seeds. People usually use flowers in all their ceremonies like wedding, birthday and anniversary day greetings, religious offerings and sometimes in social, political and historical occasions (Haque *et al.,* 2012). The beauty and color of flower allow everybody to pass on messages and to communicate feelings of one perfectly (Mannan *et al.,* 2007).

Through the 1970's activities of the European flower industry had begun to influence cut flower production and sales beyond the borders of Europe. Cut flower sales through the Dutch flower auctions had gained a share of the US market (Chowdhury & Khan, 2015) .This was achieved by promotion activities in the USA supported by the Holland Flower Council (Wernett, 1998). Kenya, Israel, Zimbabwe, Ecuador, Uganda appeared as major flower exporting countries as the cut flower trade turned into a multibillion-dollar world industry with United States, Germany, the Netherlands, the United Kingdom, Switzerland, Italy, France, and Japan begin major world consumers (Arya, 2014).

Around 165 million people exists in its 1,47,570 square kilometer of land (BBS, 2022). Most of the rural people are dependent for their livelihood mainly on agricultural activities. In Bangladesh, agriculture contributes 11.50% of the gross

domestic product (GDP) of the country in the year of 2021-2022 (BEC, 2022). Agriculture sector can be allocated into many subsectors like livestock, poultry farming, forestry and horticulture etc (Njenga *et al.*, 2013). Floriculture, viticulture, arboriculture are sub-sectors of horticulture. Floriculture is a branch of horticulture dealing with the cultivation of flowers etc. It has been defined by Uffelen *et al*.,(2005) as Floriculture is cultivation/production and marketing of a widespread variety of plants and planting material: starting from parent plant parts and cuttings to the end product for the market like cut flowers, foliage, potted plants, garden plants, nursery stock, trees, flowering leafy, annuals, perennials, flower bulbs and tubers. According to Getu (2009), flowers are expensive products with high social value and rarely used for food. The demand for these luxurious products has augmented in the international market in recent years. Most developing nations which have geographic advantage take it as a solution to accomplish rapid economic growth (Frank and Cruz, 2001).

The history of floriculture in Bangladesh may be ancient but flower business is not elder than a decade. Flower cultivation was started commercially from the 80's in Jhikargachha upazilla of Jessore district. Afterward, it was stretched to Jessore Sadar, Sharsha and Chowgachha upazilla as well as Kushtia, Chuadanga, Dhaka, Mymensigh and Satkhira districts. Commercial farming of flowers inaugurated in the country in 1983 on 30-decimal of land in Jessore (Shaibur *et al.*,2022). Now, flowers are grown on nearly 1,000 acres of land in 22 districts, mostly in Dhaka and Khulna divisions. The increase in area under floriculture and eagerness of the growers revealed the potentiality of the industry. The employment generation for both men and women are increasing with the increase in area at about 15.79% (BBS,2020) per year under floriculture . Considering the higher capital mobilization and profit margin from floriculture compared to other field crops, the high lands of Dhaka, Chittagong, Jhassore,Cox's Bazar, Chuadanga, Jhenidah, Kushtia, Bogura, Rangpur, Mymensingh has the potentiality to enlarge the industry. The market growth and market size of floriculture over all Bangladesh revealed the potentiality of its further extension (Setu, 2018). Bangladesh has an economic advantage in flower production due to its tropical temperature, suitable soil and terrain, as well as the access to low-priced labour and low capital investment requirements. More than 28,000 farmers are engaged in flower cultivation, according to the Department of Agricultural Extension (DAE).Its demand in Bangladesh grew as more and more people have been elevated to urban middle

class. Within decades, flower cultivation has grown into an industry. The increase in demand is the sign of a change in people's attitude. The varieties of flowers being grown are increasing day by day with the innovation of new technology.

With this background floriculture in Bangladesh is escalating which have a great socio-economic impact on farmers' livelihood. Impact can be characterized as positive and negative, essential and optional long-haul effects produced by a developmental intervention, directly or indirectly, planned or unintentional (Garbarino and Holland, 2009).

Research on the socioeconomic impact of floriculture is essential because it provides valuable insights into the advantages and difficulties associated with the cultivation and trade of flowers. Understanding the socioeconomic impact enables policymakers, industry stakeholders, and researchers to make informed decisions regarding the growth and propagation of the floriculture industry. Such research can cast light on floriculture's contribution to national and local economies, including its role in generating income, employment opportunities, and foreign exchange earnings. In addition, it assists in identifying the social implications, such as the empowerment of women producers, the reduction of poverty, and rural development. In addition, studying the socioeconomic impact enables the identification of constraints and barriers faced by flower farmers and businesses, thereby facilitating the development of strategies to address these obstacles and improve the floriculture industry's overall sustainability and profitability.

1.2 Importance of floriculture

There are several ways that flower production can have impact on the economy. Food is produced by flowering plants, and in certain cases the bloom itself is edible. Flowers have a critical role in pollination, which is essential for the on-going production of food. Flowers have a huge economic influence due to the significance of food crops. They are occasionally also employed medically. Flowers help hasten the healing process for sick people who are getting well. Flowers have been shown to reduce the length of time needed for healing when placed in plain sight outside the recovery room of patients who have undergone a medical treatment (Park and Mattson, 2008). Flower cultivation has been initiated as a lucrative business which pledges higher potential to earn money compared to other crops. National GDP is

largely influenced by flower sector (Rakibuzzaman *et al.*, 2018).The income per hector is significantly larger than that of any other agricultural produce and it is an intensive kind of farming.

The attractiveness of the surroundings in the towns and countryside will be substantially enhanced by growing colourful flowers in the homestead area and in the parks. They will also fulfil our everyday needs, such as those for house decor or hair ornamentation. Flowers also make people happier and lift their spirits. Our historic towns and cities have a run-down appearance. The cities will appear much attractive if the residents and local governments support the growth of flowers, at least in part.

Commercially, floriculture may provide our struggling farmers with fantastic opportunity. A variety of commercial flower varieties may be grown in Bangladesh because to its favourable environment. The farmers can use a portion of their property to cultivate popular and commercial flowers like marigolds and tuberose (Mim, 2020). They need less maintenance and typically provide more profits than many other crops. The government can set up associations for the flower farmers and assist them in marketing their wares by setting up a network of retail establishments in major cities and marketplaces.

The number of wealthy individuals who can afford to purchase flowers and floricultural goods, such as aromatics and fragrances, has increased. Some of the expensive essential oils from these flowers utilized in the production of these cosmetics include tuberose, rose, and jasmine. Presently, other nations supply the manufacturers with the bulk of their needs (Mim, 2020).

Bangladesh imports a very little amount of flower and can thus almost completely satisfy its domestic need. Domestic production currently meets 95% of local demand, with the remaining 5% imported from China, India, and Malaysia (Sohel, 2022) . The use of new technologies and the engagement of the younger generation are helping to increase flower output in order to meet the soaring demand. With the development of new technology, the variety of flowers being grown grows every day. Over the years, the demand for flowers as an agricultural product has been rising, making floriculture, the commercial cultivation of flowers, an emerging sector for the country *(*Shaibur *et al.* 2022).

Presently, commercial flower cultivation in Bangladesh encompasses more than 50 different flower species, including the Rose *(Rosa rubiginosa),* Genda *(Tagetes erecta),* Chameli *(Jasminum sambac),* Jasmine *(Jasminum officinale),* Shefali *(Nyctanthes arbortristis),* Rajnigandha *(Polianthes tuberosa),* Gandharaja *(Gardenia jasminoides),* Gladiolus *(Gladiolus palustris),* Dopatti *(Impatiens balsamina),* Hasna Hena *(Cestrum nocturnum),* Chandramallika *(Chrysanthemum indicum),* Dahlia *(Dahlia pinnata),* Rangena *(Melanoides tuberculate),* Dolanchampa *(Hedychium coronarium),* Konakchampa *(Pterospermum acerifolium),* Jaba *(Hibiscus rosasinensis),* Cosmos *(Cosmos bipinnatus),* Malati *(Aganosma heynei),* and Kamini *(Murraya paniculate)* (Sohel, 2022) A decade ago, only a few varieties of flowers were being commercially cultivated across the country.

Table 1.1 Total area and production of flowers in Bangladesh

Years	Area (Hectare)	Production (M.T.)
2009-10	1774	23720
2014-15	3520	56649
2020-21	3930	32120

Source: BBS 2021

Cultivated land area for floriculture is increasing over the years but compared to that total production is fluctuated (Table 1.1).

1.3 Objectives of the study

The central point of the research work is to explore the impact of flower cultivation on farmers' livelihood. Following objectives are designed out in order to deliver an appropriate track to the research work:

i. To explore socio-economic characteristics of flower farmers'.
ii. To investigate the impact of floriculture on farmers' livelihood using livelihood outcome indicators;and
iii. To assess the extent of constraints faced by the farmers' during flower cultivation.

1.4 Scope of the study

The present study is deliberate to have an understanding the impact of flower cultivation on farmers' livelihood and to explore its contribution with their selected characteristics:

i. The findings of the study will, in particular, be pertinent to the study area at Savar Upazila of Dhaka district. The findings may also be pertinent to other locale of Bangladesh where socio-cultural, psychological and economic circumstance do not differ much than those of the study areas.
ii. The findings of the study may also be secondary to the field worker of extension service to improve their action strategies on impact of flower cultivation on farmers' livelihood.
iii. The findings of the study will be conducive to accelerate the development in agriculture, farmers' logistic supports, information needs and the way of diffusion especially tuned to key role players in the society as well as impact of flower cultivation on farmers' livelihood. The outcomes might also be supportive to the planners and policy makers, extension workers and beneficiaries of the agriculture.
iv. To the academicians, it may aid in the further conceptualization of the systems model for analysing the impact of flower cultivation on farmers' livelihood. In addition, the findings of this study may have other pragmatic evidence to all aspects of impact of flower cultivation on farmers' livelihood which may be used to form a theory of floriculture aspects.

1.5 Justification of the study

Globally, horticulture (including floriculture) has turned into a leading sector for poverty reduction in developing countries. If, there should be an occurrence of low obtaining power and restricted access to nourishment, especially for the rural poor, food security remains a basic concern. Besides this, price hike of recent days recommends us to expand income to overcome this circumstance. Commercial floriculture may be a critical income generating area for many developing countries like Bangladesh is to ensure food security.

Bangladesh has a colossal potential for flower both for export and local market. Different agro climatic conditions are able of producing variety of blossoms all the year round. There is an awesome opportunity for Bangladesh to earn a lot of foreign

currency from the foreign market if the generation and marketing of flowers are well developed. Commercial production of flower in Bangladesh started since 1983 as some of the innovative farmers in the country adopted flower cultivation as feasible alternatives to cash crops and field crops (Setu, 2018).

At present, approximately 12000 farmers are engaged in floriculture and 4000 to 5000 farmers produces ornamental plants on commercial basis. The area coverage under commercial cultivation is approximately 5000 to 6000 hectares of land while commercial nurseries have covered approximately 2000 to 2500 hectares of land. Bangladesh has to spend roughly 2-3 million (Tk) in importing flower and ornamental plants to meet the market demand in every year (Sayla, 2010). But, we have 4,66,607.57 hectares of fallow land in Bangladesh and this fallow land may be used to meet up the domestic demand and also for exporting (BBS, 2021). It is a matter of hope that if floriculture could have been developed with necessary scope then the efficiency in marketing might be achieved within a short span of time: Beside this, floriculture can make a potential contribution to our Gross Domestic Product (GDP) and can create employment opportunity and can also increase participation of rural women in income generating activities and subsequently have the great impact to promote the livelihood.

In Bangladesh, no study is directly focusing on the Impact of floriculture on farmers' livelihood using livelihood indicators. Some studies focused only marketing practices of flower business (Mou, 2012; Khan, 2013) and some studies investigated the prospects of floriculture (Rakibuzzaman *et al.* 2018). Studies that have been done on floriculture sector, they are not sufficient to understand the impacts that the sectors have on the livelihoods of local people though the studies used different methodology, and theoretical support to deal with the issues. Hence, the researcher attempted to fulfil the knowledge gap left by previous studies through examining the impacts of floriculture industry on the main livelihood activities of local people in the areas of savar, Dhaka by exploring challenges, views and experiences of relevant stakeholders. Otherwise, the profitability and sustainability of this industry will be stagnant. Therefore, the research results hoped to contribute for further research and help to monitor and evaluate the sector from different angles.

The study provides idea about socio-economic impact of flower cultivation on farmers' livelihood. The government and some of the NGO in Bangladesh has

initiated program on flower cultivation, livestock, fisheries, housing, credit, saving etc. So, it is logical to investigate about socio-economic impact of flower cultivation on farmers livelihood. The findings of the study are therefore, expected to be conducive to the researchers, academicians and policy makers who are concerned with of floriculture. Keeping the above facts in view, a study has undertaken which is entitled “Socio-economic Impact of Flower Cultivation on Farmers Livelihood Under Biruliya Union at Savar, Dhaka”.

1.6 Concluding Remarks

Flower cultivation has emerged as a lucrative agricultural enterprise in many countries around the world, and it has brought substantial socio-economic benefits to farmers. This industry has generated new employment opportunities, enhanced income levels, and promoted rural development, resulting in improved livelihoods for the farming communities. The study on the socio-economic impact of flower cultivation on farmers' livelihood under the Biruliya Union at Savar, Dhaka, can be the significant positive effects of flower cultivation on the farmers in the area. The cultivation of flowers will provide a reliable source of income for many farmers in the Biruliya Union, which will contribute to poverty alleviation and improved the standard of living in the region.

CHAPTER 2

LITERATURE REVIEW

Review of literature gives a clear and concise direction to the researcher for conducting the experiment. In this chapter, review of literatures relevant to the objectives of this study is presented. This is mainly concerned with "socio-economic impact of flower cultivation on farmers' livelihood". There was serious dearth of literature with respect to research studies on this aspect. So, the directly related literatures were not readily available for this study. Some researchers addressed various aspects of the impact of flower cultivation on farmers‟ livelihood and its effect on client group and suggesting strategies for their emancipation from socio-economic deprivations. A few of these studies relevant to this research are briefly discussed in this chapter under the following sections:

Section 1: Concept of floriculture

Section 2 : Review on floriculture in Bangladesh and world perspective

Section 3: Research gap of the study

Section 4: Conceptual framework of the study

2.1. Concept of floriculture

Floriculture or flower farming, is a branch of horticulture concerned with the production of blooming and attractive plants for gardens and for floristry, including the floral industry. It may also be defined as "The section of horticulture associated with commercial production, marketing, and sale of bedding plants, cut flowers, potted flowering plants, foliage plants, floral arrangements, and non-commercial home gardening"(Gudeta.,2012) . The flower cultivation has developed into a crucial and successful industry in the agriculture sector of Bangladesh. Flower nurturing as a money-making initiative was introduced in our nation in the 1980's Bangladesh, being given with favourable climatic condition, rich terrain, and a set of great labor is capable of producing a huge range of flowers, foliages, orchids, and decorative plants of world grade (Chowdhury & Khan et al., 2015). Our country features a really favorable state for flower cultivating, thanks to variance in climate, terrain, and vegetation. Recently flower is put into the export item. It is an emerging area that has a tremendous possibility to contribute to the GDP of the country (Islam & Rahman,

2013). In another survey, nearly 20 Lac persons are busy themselves in flower industry - as claimed by Bangladeshi flower businessperson. Flowers and floral goods are exported from Bangladesh to Pakistan, Italy, Portugal, Saudi Arabia, India, United States, South Korea, Philippines, Singapore, Japan, Germany, Britain, Denmark, and France. Recently, Bangladesh has collected Tk. 60 crore from exporting flowers during FY 2009 -2010(Ara and Hosen, 2017).

Export income is one of the most crucial driving engines for emerging economies, of which Bangladesh is not an exception. Bangladesh exports several things to different regions of the world. Cut flower is one of the promising export items and it would be a developing export product in near future. Export of this commodity is rising every year. Over the previous couple of years, the export of cut flowers and greenery has exceeded target by over 10 percent as it had shown out to be an emerging business with significant potentials for the entrepreneurs that would extend the country's export basket (Chowdhury & Khan, 2015).

2.2 Review on Floriculture in Bangladesh and World Perspective

2.2.1 Review on Floriculture in World Perspective

According to Hamrick (2004), exports of roses (representing 75% of flower exports by weight) from Kenya to the Netherlands auction market grew by 19% in 2003, hence intensifying competition. In countries such as Tanzania, Uganda, Ethiopia, Malawi, Zambia, and Namibia, existing farms are being extended and new ones are being built. However, established flower growers have found that investing in more than one African nation helps to mitigate risk.

According to Belwal and Chala (2008), the Asia/Pacific region produces the most flowers with a total production area of 244,263 hectares, followed by Europe (54,815), Central/South America (45,980), North America (26,135), Africa (5,697), and the Middle East (3,845).

Several nations are both producers and consumers, according to Belwal and Chala (Gobie et al., 2019). In Israel, Africa, and South and Central American nations, cut flowers have been produced primarily for export without regard for a possible home market. In contrast, in Asia, where cut flowers were first grown for export, the market potential has shifted swiftly to incorporate options to service the local market as well.

This unprecedented occurrence is a result of the region's rapidly developing economy, large population densities, and consumers' evolving perceptions of the significance of flowers to their way of life.

Jagtap et al., (2009) attempted to determine the economic viability of marigold selling in Pune (Maharashtra). Thirty cultivators were sampled from the villages of Khed Tahasil in the Pune district in 2006-2007, and statistics were gathered. The acquired data were analyzed using a basic tabular manner, and statistical tools, such as arithmetic averages and percentages, were calculated for interpreting the results. On 0.40 hectares, the average marigold flower yield was reported to be 2,850 kg. The surplus of marigold sold on the market was disposed of through three distinct ways.

Ocheing (2010) described the floriculture sector of Kenya in terms of the contribution of small farmer and big farmer flower production and exports. It was discovered that small farmers' contribution to flower production was declining and remained negligible in comparison to major farmers. It was suggested that a partnership between exporters and farmers be formed to increase the exports of this business.

Gudeta (2012) discovered that floriculture was common in several African nations, including Kenya, Uganda, and Ethiopia. The majority of people in African nations are impoverished and farm flowers for cheap wages. The marginal farmer cannot maintain a subsistence level, and the majority of them are victims. To preserve the farmers' rights, they form an association.

Garcia (2013) discovered that floriculture in the Philippines was a very profitable sector that contributed to an increase in living standards. The increased usage of floricultural products in hotels and restaurants, as well as the flood of visitors, provided small scale farmers with additional marketing options and better profits. The Philippines government imported certain cut flowers to meet domestic demand, despite the country's indigenous cut flower producing capabilities.

Hernandezl *et al*., (2013) reported that socioeconomic conditions in the floriculture sector in Tabasco, Mexico were less established and that returns from floriculture were lower than other crops such as papaya (US$ 936/hec from floriculture and US$ 9,332 from papaya). This is due to the fact that the floriculture sector in Mexico is still in its infancy, and a great deal of development is still required.

Mathur and Pachpande (2013) determined that floriculture yields a greater income per unit of land area than fruit and vegetable growing. The income from rose was 8.4 lakhs per hectare, while the income from fruits, vegetables, and rice was 20,000 rupees per hectare, 15,000 rupees per hectare, and 10,000 rupees per hectare, respectively.

Wei *et al*., (2013) noted that the global floriculture market is enormous and that the floriculture business has the potential to empower women. According to research conducted in Papua New Guinea, women play a crucial role in the floriculture business with the aid of supporting networks.

In a second assessment on the current state of the cut flower sector in Kathmandu, Paudel (2014) outlined the manufacturing process, storage and maintenance procedures, the marketing system, and the industry's difficulties. In addition to identifying economic opportunities for cut flowers in Nepal as well as export barriers, the research also proposed certain regulations to encourage this industry.

According to De and Singh (2016), the present flower crops in the Northeast area include orchids, roses, lilies, bulbous ornamentals, bird of paradise, gerbera, marigold, tuberose, begonia, and dahlias, among others. This region is home to 856 of the known 1,331 orchid species, as well as rare and endangered species of other ornamentals. State-by-state analysis of the region's floricultural activity, infrastructure, marketing and transport facilities, restrictions, potential, and pertinent initiatives.

According to Ninama *et al.*, (2016), floriculture is the "sunshine industry" in Asia, particularly India, since it gives small and marginal farmers exceptional self-employment and compensation. Increasing prosperity has led to a rise in demand for floriculture goods in recent decades. Floriculture is a burgeoning industry with significant potential on both the local and international markets. In India, commercial floriculture is undergoing growth, but the country has a long history of cultivating various varieties of flowers. A steady growth in demand for cut and potted flowers has made floriculture one of India's most important commercial enterprises.

Harisha (2017) reported that the floriculture industry in India has a number of production-level issues, most of which are connected to the availability of basic inputs, adequate irrigation, and trained labor. Also in the marketing stage, Indian merchants are confronted with significant obstacles relating to product diversity and differentiation. With the rising participation of super markets in the flower sector,

transport management is increasingly becoming an important aspect for Indian flower merchants.

Padmini and Kodagoda (2017) discovered that the floriculture sector is a high-income-generating agribusiness that has the ability to contribute to Sri Lanka's socioeconomic development. They noted that the growth of floriculture in the country is driven by the joint activities of producers. Indirectly, producers said that a growth in the use of flowers and indoor plants in the nation has led to a positive demand for their products, necessitating an expansion of operations. To extend their operations, the primary obstacles for producers were financial constraints and the high cost of land. Growers and the government must build a national and worldwide market for floriculture goods on par with other export agricultural crops in the country.

Tizazu and Workie (2018) investigated the social, economic, and environmental issues of floriculture sector development in Ethiopia, and their findings revealed that the floriculture industry suffers from an insufficient infrastructure system required for the industry's continued development, a problem that should be addressed with the respective stakeholders. In addition, the industry is accused of having severe environmental and social repercussions, which may hinder its future expansion. To support the continued development of the business in Ethiopia, it is advised that stakeholders get ongoing training on health and safety concerns, and that the application of environmental protection norms and responsibilities be monitored regularly.

Vahoniya *et al.,* (2018) noted that floriculture is a time-honored farming practice in India with enormous potential to provide self-employment for small and marginal farmers. In recent years, it has evolved as a globally successful agricultural enterprise. Searching for a market is a fundamental precept for all producers of floriculture, which motivates them to join a producer association that enhances the value and quality of their goods. The Netherlands is the best industrial hub in the world, although India exports more to the United States and the United Kingdom at now. Southern India is responsible for the majority of flower production, but West Bengal is the leader in cut flower production and Tamil Nadu is the leader in loose flower production.

Gobie (2019) did a research on the Ethiopian floriculture industries with the goals of explaining the Socio-Economic Consequence of Floriculture to Ethiopia, the Socio-Economic and Environmental perspective of Floriculture Industries, and identifying the economic impact of floriculture in Ethiopia. Ethiopia offers geographical advantages for a floriculture sector, such as its high altitude, huge unexploited arable land, and favorable environment for flowers, in addition to its ability to accomplish quick economic growth. As a result of the Ethiopian government's increased focus on favorable investment conditions and a more conducive environment for private sector growth, the floriculture sector has experienced rapid growth in recent years, attracting more investors.

Anumala and Kumar (2021) discovered that over 145 nations are active in this industry worldwide, with the Netherlands, the United States, Columbia, and Italy as the biggest growers and traders. In 2018, the Netherlands continued to be the global leader in the floriculture sector, accounting for 43.7% of global exports. In Asian nations such as India, China, Thailand, Japan, Sri Lanka, etc., there has been a continuous increase in demand and production. India is the second-largest flower-growing nation, behind China, and ranks fourteenth in floriculture exports. However, India's share in worldwide floriculture exports in 2018 is just 0.40 percent, which may be attributable to deficiencies in maintaining international quality standards, a lack of integrated cold chain management, and unstructured market and distribution networks.

Malviya *et al.*, (2022) conducted a study of the floriculture industry's current developments in India, focusing on main cut flower producing states, industry growth, and export potential. The major concentration was on cut and loose flowers grown commercially. Throughout the past two decades, documentation has been performed. This study aimed to examine export performance, export composition, the mode of transport for floriculture exports, and the proportion of floriculture exports. India produces around 19 lakh tons of loose flowers and 8.90 lakh tons of cut flowers annually on 3.40 lakh hectares of land, generating substantial money for the government through local and international trade.

Gelaye (2023) found that the floriculture division is an emerging sector in Ethiopia, and the number of farms, income, job opportunities, and diversity of flowers are

increasing. However, the health risks and environmental fates of the sector are also increasing. Ethiopian floriculture farms lack waste disposal technologies and workers' protective equipment and safety, and the chemicals, plastics, and corrugated irons used in the farms are carelessly disposed everywhere. Pesticides, plastics, and fertilizers are also freely discharged into water bodies and terrestrial land, which is causing the development of health risks; aquatic life hazards; and soil, water, and air pollution. However, Ethiopia has no strong and functional system or structure to control the impacts of floriculture farms.

According to the study made by Dolan *et al*., (2002), there are a number of problems affecting Kenyan flower farm workers. These include: employment insecurity, lack of overtime payment, non-representation, absence of complaint procedure, low wages, lack of promotion, poor health and security issues, inadequate transportation, lack of support for pregnancy and maternity leave, and lack of awareness of rights and codes. Especially, for women lack of adequate maternity leave creates anxiety about securing women flower farm workers' income. As a result, pregnant workers may hide their pregnancies or be forced to abort.

Sepulveda (2004) concluded the experience of Columbia in the floriculture industry. Columbia is the second largest flower exporter after Holland. It provides 13% of the flowers to the world market and contributes to 60% of the flowers destined to the USA. In spite of its world standing in the sector, flower farms do not seem to comply even with minimum labor rights. Some of the problems in the flower farms include: unfair dismissal, failure to pay salaries, failure to comply with precautionary measures for pesticide handling and application, high workload, illegal sanction procedures, ill treatment of pregnant workers and lack of pension and provident funds. Employers may increase some sanctions imposed on workers without being part of the work regulations. It is common for labors to be suspended from work, three to twenty days.

Kinderli and Belgin (2007) noted the problems and potential of floriculture in Turkey. Classifying the floriculturists into two groups' big-modern enterprises and small-family enterprises. Four different green houses were selected to analyse the production of roses. The result indicated that the plastic greenhouse used for flowers production by big- modern enterprises resulted in more profit as compared to geo-thermal heating.

Adenuga *et al*., (2012) noticed that the subsector of horticulture is hampered by a lack of knowledge. Low levels of employment and a rise in poverty were caused by floriculture. The average economic return for farmers' labor and management was 174,974.7 Nigerian Nira (Nigerian money) per hectare. Inadequate capital was the most significant factor impeding the production of floriculture, whereas farm size, labor, manure, educational level, experience, and age of the farmers had a large impact on their incomes.

Gaeta (2012) conducted research on floriculture from a pre-harvest and post-harvest perspective in order to analyze the production level. In his study, he discovered that a lack of human resource development, underprivileged technology, poor infrastructure, and a poor cool chain preserving system were the most significant challenges flower growers faced. It was discovered that flower producers were forced to discard half of their harvest owing to a shortage of storage facilities, resulting in an economic loss for society as a whole.

According to a survey by Evers *et al.*, (2014), Europe accounted for two-thirds of the global import value of cuttings. Germany topped the list as the largest European importer of cuts with a roughly 20 percent share. Visible difficulties include employees' health and safety conditions, the absence of a recognized workers' union, lower earnings, a lack of medical facilities, and sexual harassment.

2.2.2 Review on Floriculture in Bangladesh perspective

Jalil *et al*., (2007) assessed the export potential of some selected flowers such as tuberose, rose, gladiolus and marigold of Bangladesh. They used exponential model for defining the growth pattern of cut flower export and made forecast on growth pattern. They also described the scope of Bangladesh for expanding floriculture export as it enjoys comparative advantages in terms of favourable climatic conditions to meet seasonal market opportunities in the overseas market.

Jahan (2009) attempted to see the production and marketing cost structure and profitability of some selected flowers such as tuberose, rose, gladiolus and marigold. Primary data were collected through stratified random sampling technique. The study covered primary market (Jessore), wholesale market (Dhaka city) and retail market (Dhaka city) for flower business. On an average, the net marketing margin was highest for retailers (Tk. 28.10) and lowest for wholesaler (Tk.9.03).

Haque *et al.,* (2012) studied on economics of marigold cultivation in some selected areas of Bangladesh. The per hectare costs of marigold cultivation were Tk. 1,47,234 and Tk. 1,02,858 on full cost and variable cost, respectively. The major share of full cost was for human labour (34%), land use (18%), fertilizer (15%), and irrigation (10%). The yield of marigold was 2,650,447 flowers per hectare. The gross margin and net return were Tk.1, 62,186 and Tk.1, 17,812 per hectare, respectively. The net return was 81% higher than lentil, 85% higher than mustard, and 6% lower than potato cultivation. The benefit cost ratios were 2.57 and 1.80 on variable cost and full cost basis, respectively. Cobb-Douglas production function revealed that human labour, land preparation, seedling, urea, TSP, MoP, and irrigation had positive effect on marigold cultivation.

Mou (2012) studied the production and profitability of some selected flowers in comparison with their competing crops. The study revealed that gross margins of flower and vegetables per hectare were Tk.1,359,824.20 and Tk.46,362.14, respectively. The average marketing margin of three intermediaries i.e., BRAC, wholesaler-cum-retailer and retailer in Dhaka city, were Tk. 187.56, Tk. 638.39 and Tk.689.72 per 100 flowers, respectively.

In a research on flower farming in Jessore, Islam and Rahman (2013) portrayed flower agriculture as a lucrative enterprise with more return potential than other agricultural commodities. They focused mostly on economic perspectives, such as the favorable impact on national GDP development and employment creation, as well as the possibility to capture the international market owing to reduced manufacturing costs.

Salahuddin (2013) presented an economic research estimating the productivity and profitability of commercial floriculture in some parts of Bangladesh's Jashore district. In the research region where roses, marigolds, and gladiolus predominate, he discovered that floriculture was profitable.

According to Omar *et al*., (2014), retail level post-harvest losses were the greatest at 39.82 percent per hundred flowers, followed by wholesaler (27.52 percent), producer (18.87 percent), and local trader (13.78 percent). Due to post-harvest losses, the local merchants', wholesalers', and retailers' marketing margins declined by 6.14, 8.88, and 7.65 percent, respectively. Rose (White), marigold, Jasmine (Yellow), and Tulip

(Purple) post-harvest losses lowered the total marketing margin by 12.16, 62.55, 3.83, and 17%, respectively. Both with and without post-harvest loss, the market for tulips (purple) was more efficient than other flower markets.

Hossain *et al.,* (2016) examined the price fluctuation and cost-benefit ratio of several Bangladeshi-grown flowers. The results suggested that different regions of the nation generate different types of flowers. The city of Dhaka contains a large number of flower marketplaces and stores. Different days of the week, months of the year, and special days of the year resulted in varying prices for various flowers. The manufacturing costs of different types of flowers vary.

Prodhan *et al.*, (2017) investigated the significance, current status, research accomplishments, production practices, post-harvest handling, and future of the Gerbera flower in Bangladesh. In addition, it explained the limitations of Gerbera cultivation and provided suggestions for overcoming such limitations. As a cut flower, the Gerbera is in high demand throughout the country.

Manjira (2018) analysed the socioeconomic state of cut-flower (rose and gerbera) producing farmers in order to evaluate the profitability and variables impacting the production of cut flowers, as well as to determine the most important distribution channel and value addition of cut flowers. The per-hectare total cost, gross return, gross margin, and net return increased from Tk. 327019, Tk. 902484, Tk. 648214, and Tk. 575465 to Tk. 538479, Tk. 2116800, Tk. 1646766, and Tk. On a full cost basis, the benefit cost ratios for rose and gerbera production were 1:2.76 and 1:3.93, while on a cash cost basis, they were 1:3.55 and 1:4.55, respectively. Although rose and gerbera production were both very profitable, gerbera production was more profitable than rose production. Significant seedling coefficient values of 0.124 for rose and 1.049 for gerbera revealed that gerbera produced a larger yield than rose.

According to Rakibuzzaman *et al.,* (2018), floriculture is a multibillion-dollar, multinational sector that encompasses the production of bedding and garden plants, foliage plants, potted flowering plants, cut flowers, cut cultivated greens, and floriculture supplies. It has been discovered that flower production is a lucrative enterprise with a greater potential for profit than other crops. The flower industry has a major impact on the national GDP. The demand for flowers, particularly cut flowers, is expanding on both the domestic and foreign markets. Despite the fact that

Bangladesh has been exporting cut flowers such as tuberose and gladiolus, the global demand for high-value cut flowers is increasing. Bangladesh has the same potential to generate foreign money as other nations, but fundamental obstacles such as inadequate infrastructure, bad packaging, a lack of technical expertise in manufacturing and marketing, and an ineffective management system are the primary causes. In addition, there are cut flowers of exceptional value, such as Nandini, that have tremendous potential in our nation.

Laboni, Promy, and Abdullah (2019) investigated the export potential of Bangladesh's flower sector. They discovered that flower cultivation is highly profitable in comparison to agricultural crops due to natural advantages such as fertile soil, favorable climate conditions, and other facilities, a promising future for the flower business and floriculture, which is Bangladesh's competitive advantage. By reducing obstacles, Bangladesh may assure ongoing flower production, paving the road for export.

Tooba (2020) conducted a study to determine the profitability of gladiolus farming; and to identify problem faced by the gladiolus growers. The average yields of gladiolus were 2,00,000 per hectare for the farmers. The gross returns per hectare was Tk. 6,00,000. It was observed that per hectare net return was Tk. 2,00,150. Cost and returns were worked out to estimate profitability of gladiolus production. Per hectare total cost, gross return, net return and gross margin were Tk. 3,99,850, Tk. 6,00,000, Tk. 2,00,150 and Tk. 2,67,050 respectively. Benefit Cost Ratio was 1.6.

Orin (2021) undertaken a study to determine the financial profitability and resource use efficiency of Tuberose cultivation in some selected area of Jashore district. Tuberose cultivation is profitable in the study area. The results revealed that per hectare average costs of tuberose cultivation were estimated at Tk.2,12,920. Average yield was estimated 3, 35,775 stick per hectare. The gross return and net return were Tk. 6, 82,550 and Tk. 4,69,630 per hectare respectively. Undiscounted Benefit Cost Ratio (BCR) was found 3.2. The production function exhibited increasing returns to scale. Production function analysis suggested that human labor, bulb and Manure had positive and significant effect on the yield of Tuberose.

Brishty *et al.*, (2022) studied on the socio-economic status of Gerbera growers, production technology and the opinions of the farmers about field diseases to have a

clear view about Gerbera production in Jashore, Bangladesh. In a 5 (five) year basis, total cost of production is Tk. 15,62,700. Total revenue generated is Tk. 64, 80,000 whereas, net profit is Tk.49,17,300. According to most (24%) of the farmers' perception, gerbera diseases are originated from soil. Most of the farmers (98%) apply pesticide to get rid of diseases those affect gerbera cultivation.

Hajong *et al.,* (2022) undertaken a study to assess the production and marketing system of different flower cultivated in Jashore district. Gladiolus, rose, marigold, chrysanthemum, tuberose, gerbera, jasmine, gipsy etc. flower were cultivated commercially in Jashore. Among the cultivated flower gladiolus, rose, tuberose, gerbera and marigold were 57%, 41%, 69%, 17% and 71% farmer respectively. Benefit cost ratio on the total cost basis was highest in gerbera cultivation (2.67) followed by tuberose (1.88), rose (1.81), gladiolus (1.78) and marigold (1.56) respectively. Farmer, farmer cum trader, paiker, arathdar cum paiker, retailer, consumer etc. were the main market actors of flower. Flower cultivation was profitable as its BCR was more than one. But some flower required huge amount of investment.

Tahera *et al.,* (2022) studied to analyse the profitability and existing value chain of cut flowers in Bangladesh. Among the two kinds of cut flowers per hectare total cost was Tk. 373,246.95 for marigold and Tk. 740,275.98 for gladiolus. Per hectare net return was Tk. 282,475.25 for marigold and Tk. 681,274.02 for gladiolus. The benefit-cost ratio (BCR) for marigold and gladiolus was 1.75 and 1.92 respectively, which indicated that cut flower cultivation was profitable in the study areas. The average estimated marketing cost per hundred flowers was highest for the retailer followed by the local trader and wholesaler. The average estimated value addition per hundred flowers was highest for the retailer followed by the wholesaler and local trader.

Jahan (2009) found the flower-farmers and intermediaries faced various production and marketing problems in the study areas. Based on the finding, the problems included development of storage facility, provision for scientific knowledge, training facility, establishment of permanent flower wholesale markets etc.

Haque *et al.,* (2012) found that the lack of technical knowledge, nonavailability of high yielding variety, and infestation of insects and diseases were major problems for marigold cultivation.

Mou (2012) showed that lack of mother stock and their high price, price of fertilizer and insecticides, lack of scientific knowledge & training, attack by pest & disease, lack of extension work came out as major financial and technical problems of the flower farmers while inadequate & underdeveloped transportation & communication system, low market price, lack of market information, unstructured market are among major market related problems.

Omar *et al*., (2014) revealed that lack of storage facilities, inadequate and under developed transportation and communication system, absence of scientific and modern harvesting technology, lack of infrastructural facilities and standardized packing method are the main reason which deteriorate the quality of flower and enhance the post-harvest losses of flower.

Chowdhury and Khan (2015) studied on identifying the prospects and challenges of the industry and would also attempt to provide some propositions to improve the export performance of cut flower industry. Even though the cut flower industry in Bangladesh is small when compared to global market, this industry is showing great prospects in the international market. The rapid growth in production of cut flowers has been driven largely by opportunities to supply high-income markets in Europe, United States, and Asia. Improved cultivation and post harvest techniques combined with widely available air transport makes it possible to take advantage of cost, seasonality, and climatic affect in producing flowers for these markets. Bangladesh, being gifted with favorable climatic condition, fertile land, and a set of excellent workforce is capable of producing a large variety of flowers, foliages, orchids, and ornamental plants of international standard.

Prodhan *et al.*, (2017) found that deficiency of mother stock and their high cost, cost of fertilizer and pesticides, absence of scientific knowledge & training, attack by pest & disease, absence of extension work came out as significant financial and technical issues of the plant farm owners while insufficient & not developed transportation & communication program, low rate, absence of industry details, unstructured industry are among significant industry related issues. On the other hand promotion intermediaries specified cost uncertainty, the absence of adequate industry details, lacking storage space facilities, unsold plant, insufficient shop-space, demand variation, strikes as their issues and constraints.

Orin (2021) found that the lack of scientific knowledge, high yielding variety and lack of storage facilities were reported to be major problems in tuberose cultivation. Supply of credit on easy terms, supply of inputs and machinery by responsible authority, formation of farmer's organization can play an important role in increasing tuberose production.

As the lack of studies or information on the livelihood related work of flower farmers in Bangladesh. Although some studies mention the profitability and potential of flower cultivation, there is a need for more in-depth research on the livelihood of farmers of the flower industry. Despite the existing studies on flower cultivation and the floriculture industry in Bangladesh. Some studies conducted the research on the basis of profitability of flower. No study is undertaken in the area of Savar, Dhaka focusing livelihood impact of the flower farmer. There is a dearth of Livelihood related work . Hence the researcher attempted to find out the impact of floriculture on farmers livelihood in the area of Savar, Dhaka.

2.3 Research gap of the study

Very few researches had been done to solely evaluate the impact of flower cultivation on farmers' livelihood. Moreover, Several qualitative studies (Mou, 2012; Islam and Rahman, 2013) on livelihood status of farmers but only a few researchers followed systematic method of livelihood to assess the impact of flower cultivation on farmer' livelihood. This was one of the research gaps of the study. Hence, the researcher carried out the present study to assess the impact of flower cultivation on farmers' livelihood at Biruliya, Savar under Dhaka district following the rural livelihood method which is important to be able to identify and understand the research approach suitable for any given study because the selection of a research approach influences the methods chosen, the statistical analyses used, the inferences made and the ultimate goal of the research (Creswell, 1994). No research was undertaken previously following the methodology which was followed by the present researcher. This was also a significant research gap of the study. The methodology of the present work was very unique in this regard. So, the researcher implemented the research program following the methodology as mentioned. Again, no research was found which carried out taking the indicators of impact of flower cultivation on farmers' livelihood this was carried out by the researcher in the present study. This is another research gap of the present work. Hence, the researcher followed the current research program using

those indicators to assess the impact of flower cultivation on farmers' livelihood. Lastly, no research was conducted to assess the impact of flower cultivation on farmers' livelihood using rural livelihood method which was used in the present study. This is also a research gap of the present research.

2.4 Conceptual framework of the study

Livelihood and its related issues: It is possible to describe livelihoods as "a method of earning a living," which refers to the style of life as opposed to income and consumption alone (Stroud, 1996; Avnimelech, 1998; Chambers and Conway, 1991). A means of subsistence consists of individuals, their capacities and activities for subsistence, including possessions (tangible and intangible). Intangible assets are claims and access, whereas tangible assets are assets and stores (Avnimelech, 1998). Afterwards, other scholars modified this definition slightly (Carswell, 1997; Scoones, 1998). The notion of livelihood encompasses not only the income-generating activities conducted by a family and its members, but also the social institutions, intra-household relationships, and processes of resource access throughout the life cycle (Ellis, 2000; Arce, 2003).

The two primary ideas of livelihoods, namely environmental and social sustainability, serve as the foundation for the sustainability of livelihoods. A way of life is ecologically sustainable when it preserves or improves the local and global assets on which it depends and has net positive impacts on other ways of life. A way of life is socially sustainable if it can withstand and recover from adversity and provide for future generations (Chambers and Conway, 1991).

According to Chambers and Conway, it is possible to earn a living. Equity must include adequate and decent livelihoods for all (a goal); equity in assets and access are prerequisites (means) for achieving adequate and decent livelihoods. Sustainable resource management is a value (or aim) in and of itself, and it offers the circumstances (a method) for future generations' livelihoods to be sustained.

Chambers and Conway (1991) supplied the conventional definition of sustainable livelihoods, and the present research follows their notion. A "livelihood comprises the capabilities, assets (stores, resources, claims and access), and activities required for a means of subsistence: a livelihood is sustainable if it can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide

sustainable livelihood opportunities for the next generation; and if it contributes net benefits to other livelihoods at the local, global, short-term, and long-term levels while not undermining its own." Numerous international organizations, including DFID, CARE, IDS team, and the United Nations Development Program, base their livelihood strategies on this criteria (Carney *et al*., 1999).

Livelihood model

The framework shows a way of thinking on livelihoods through the differing contexts such as constraints and opportunities, and ensuring that important factors are not ignored (Ashley and Carney, 1999). There are several livelihood models developed by researches but in most models the main elements are similar and addresses of these are as follows:

Context: The external environment in which households exist and which is responsible for many of their sufferings (social, economic, political and environmental dimensions, conditions and trends).

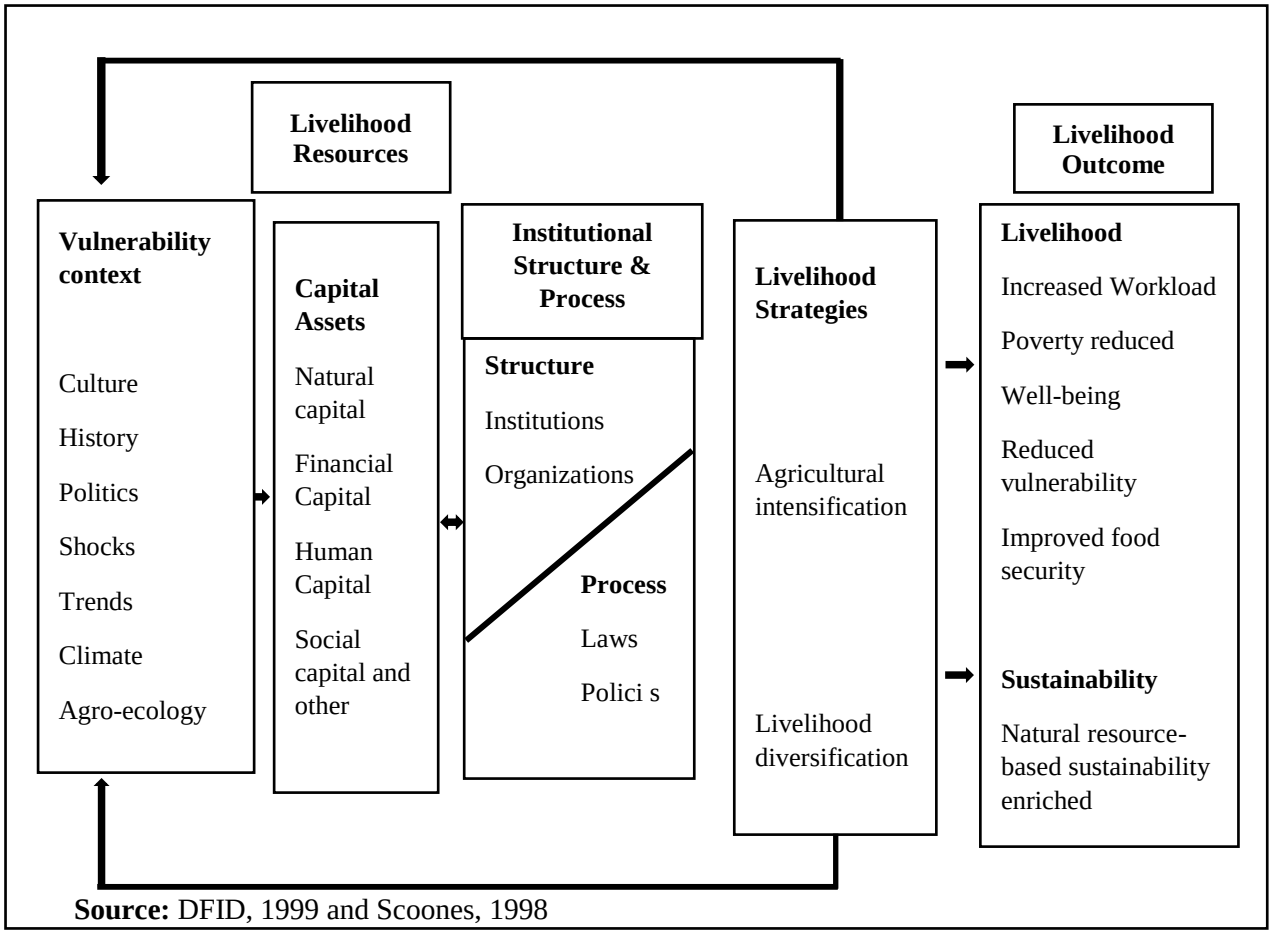
Assets and capabilities (financial, natural, physical, human, political and social capital): The resources poor people possess or have access to and use to achieve a livelihood.

> **Natural capital** – the natural resource stocks (soil, water, air, genetic resources etc.) and environmental services (hydrological cycle, pollution sinks etc) from which resource flows and services useful for livelihoods are derived.
>
> **Economic or financial capital** – the capital base (cash, credit/debt, savings, and other economic assets, including basic infrastructure and production equipment and technologies) which are essential for the pursuit of any livelihood strategy.
>
> **Human capital** – the skills, knowledge, ability to labour and good health and physical capability important for the successful pursuit of different livelihood strategies.
>
> **Social capital** – the social resources (networks, social claims, social relations, affiliations, associations) upon which people draw when pursuing different livelihood strategies requiring coordinated actions.

Policies, institutions and processes: (sometimes called transforming structures and processes): The institutions, organizations, policies and legislation that define access to assets and choice of livelihood strategies.

Livelihood strategies: The ways which lead to the building up of assets and capabilities to develop their livelihoods (i.e., consumption, production, processing, exchange and income generating activities).

Outcomes: Successful livelihood strategies should lead to more safe income and more economically sustainable livelihoods of people. These include better health, nutrition, water, shelter, education, etc. enlarged well-being, reduced vulnerability and more sustainable use of the natural resource base. The framework of livelihood presents the main factors, which constrain or enhance livelihood opportunities of people as well as the typical relationships between these. The widely used sustainable livelihoods framework that contains these elements has been presented below (Figure 2.1).



Source: DFID, 1999 and Scoones, 1998

Figure 2.1: Sustainable livelihood frame

CHAPTER 3

METHODOLOGY

Methods play significant role in scientific research. To achieve the objectives of the study, a researcher should be very careful while formulating methods and procedures in conducting the research. According to Mingers (2001), research method is a structured set of guidelines or activities to generate valid and reliable research results. The purpose of this chapter is to describe the study area, research design and the procedures used to collect and analyze the data for answering the research questions. The study was conducted based on primary data collected through field survey by using a suitable pre-tested questionnaire from Biruliya union, Savar Upazila under district of Dhaka, Bangladesh during Month of November and December ,2022.To fulfil the research objectives, the researcher have applied a "mixed methods" approach of qualitative and quantitative methods. Integration of quantitative and qualitative approaches permits a more complete and synergistic utilization of data in providing a better understanding of research problems and complex phenomena than either approach alone (Fetters & Freshwater, 2015). Mixed methods also mirror the way individuals naturally collect information by quantitative and qualitative data. This methodology runs a broader spectrum of ways to better understand complex research problems in different contexts. Considering all of this advantage of mixed method, the researcher used this method.

3.1. Locale of the study

Selection of the study area is very important. The study was conducted in Birulia Union under Savar Upazila in Dhaka District.

Savar Upazila has divided into Savar Municipality and 13 union parishads: Aminbazar, Ashulia, Banogram, Bhakurta, Birulia, Dhamsona, Kaundia, Pathalia, Savar, Shimulia, Tetuljhora, and Yearpur. **Birulia** union is one of the union among the unions of Savar upazila which was selected purposively as the study area. The farmers of this union Birulia are mostly engaged in flower cultivation.

Birulia union (23°51'28.9"N 90°18'33.0"E) is located at Savar upazila of Dhaka district. It is situated on the bank of the Turag River and about 25km from the center of Dhaka city. It is very close to Dhaka-Manikgonj highway.

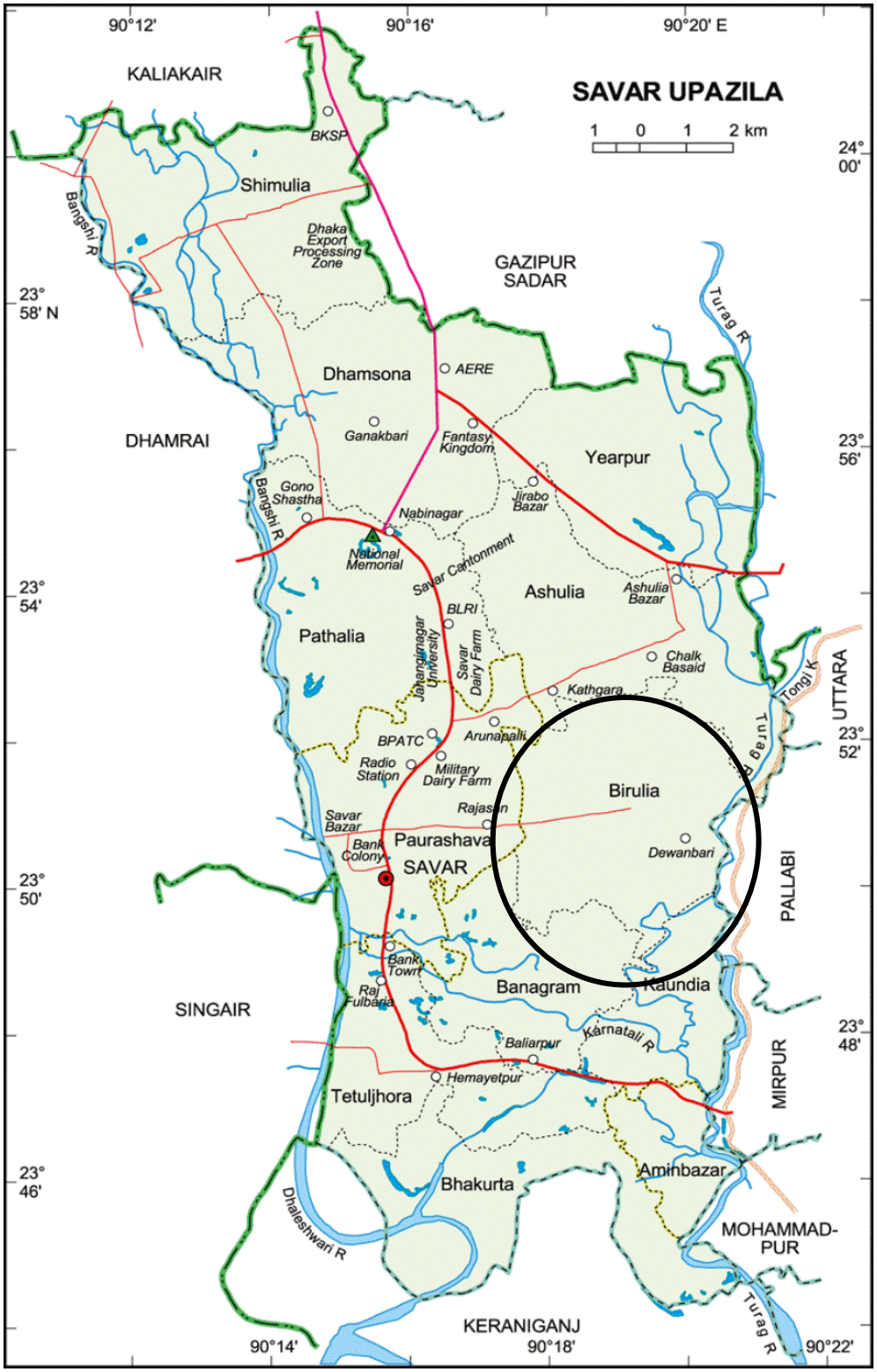


Fig 3.1: Map showing Birulia union in Savar upazila under Dhaka District.

Quantitative method

3.2 Population of the study

All the farmers who cultivate flower at the village of Bagnibari, Basutia, Maistopara and Shampur under Biruliya Union, at savar upazila in Dhaka district constituted the population of the study. For this purpose, an up-to-date list of the flower farmers were prepared with the aid of the village elites and Sub-Assistant Agricultural Officers of that union. The total number of the flower farmers at that four villages in Birulia union were 350.

3.3 Sample size and sampling procedure of the study

Simple random sampling method was used to collect data. Simple random sampling is a technique where every item in the population has an even chance and likelihood of being selected. Two approaches aim to minimize any biases in the process of this method. These are lottery method and use of random numbers. The researcher used lottery method. From 350 flower farmers, 100 farmers are selected using lottery method for the study.

Table 3.1: Sample of the study:

Name of the selected upazila	**Name of the selected area**	**Name of the selected village**	**Sample size**
Savar(Dhaka District)	Birulia Union	Bagnibari	25
		Basutia	25
		Maistopara	25
		Shampur	25
		Total	100

3.4 Data collection methods and tools

3.4.1. Data collection methods

Different types of data and information are required to complete a meaningful study. For this reason, primary and secondary information were collected rigorously.

3.4.1.1. Primary data collection

Primary data refers to the first-hand data gathered by the researcher herself. Sources of primary data are observations, questionnaires, and interviews. Individual interviews were conducted in a face-to-face situation with a structured and pre-tested questionnaire for collecting primary data. Five questionnaires were used for pre-tested interview. After pre-tested interview, the researcher went for the final interview. Interviews were conducted in respondent's house. With the aim of achieving the researcher first objective "Obtaining Socio-economic characteristics of flower farmers and third objective 'Identifying constraints of flower farmers''. Quantitative data are collected through structured questionnaires.

3.4.1.2. Secondary data collection

Secondary data are information that have already been collected by others for other purpose (Ghauri and Grönhaug 2005; Saunders *et. al.*, 2009) and includes books, journal articles and websites of organizations and catalogues. The study depends on secondary data like articles by experts in the area, codes developed by the association and authorities both national and international, Scientific books and other website documents. According to Ghauri and Grönhaug (2005) and (Windle 2010 p. 323) secondary data has an advantage of cost effectiveness, efficiency, convenience, and time and money savings and also ease of access.

3.4.2. Data collection tools

Structured interview schedules were prepared to accomplish the objectives of the study. A structured interview schedule was prepared containing open and closed formed questions. The open questions allowed for the respondents to give answers using their own language and categories (Casley and Kumar, 1998). The questions in this schedule were formulated in a simple and unambiguous way and arranged in a logical order to make it more attractive and comprehensive. The instruments were first developed in English and then translated into Bengali. The survey tools were initially constructed based on an extensive literature reviews and pre-tested. The schedule was pre-tested with 15 randomly selected flower farmers in the study area. The pre-test was helpful in identifying faulty questions and statements in the draft schedule. Thus, necessary additions, deletions, modifications and adjustments were made in the schedule on the basis of experiences gained from pre-test. The

questionnaires were also checked for validity by Honourable supervisor and educational experts at Sher-e-Bangla Agricultural University (SAU). Finally, based on background information, an expert appraisal and the pre-test, the interview schedule was finalized.

3.4.3. Data collection period

During data collection, necessary co-operation was obtained from local leader and obviously from the respondents. Before going to the respondent's home for interviewing they were informed verbally to ensure their availability at home as per schedule date and time. According to the survey experience in some cases, the respondents felt hesitate to give answer at some aspect of questioning. The primary data were collected from 22 November 2022 to 20 December, 2022.

Figure 3.2: Data Collection

3.5 Data Processing

For uniformity and completeness, several interview schedules were randomly confirmed after field data collection. Bogdan and Biklen (2006) argue that data collecting includes data analysis. Editing and coding preceded data entry. All data were meticulously input into Microsoft Excel. Randomly compared exported data to finished interview schedule. To reduce mistakes, all data were summarized and examined. Errors were corrected. Excel created the summery tables.

3.6 Data Analysis

a) Quantitative data analysis

Collected primary data from sample surveys were coded where appropriate, entered a database system using Microsoft office software package. Finally, data were calculated with Microsoft Excel program.

b) Qualitative data analysis

Although quantitative approaches were used for this study, high weight has been given for qualitative method. This is because of its importance for assessing views and experiences of relevant stakeholder on the issues under study. In such away, the following qualitative data collection techniques were employed to generate data from different sources.

3.7 Focus Group Discussion

The researcher adopted this strategy by holding five focus group discussion. There are numerous sorts of questions based on context, resources, institutions and organizations, tactics and outcome associated that have affect of farmers' livelihood. The goal of FGD is to create and cross check data acquired from individual informants and to gain general information on the livelihood effect of the flower farms intervention in the areas which satisfy the second part of the objective. For focus group discussion, the researcher scheduled group discussion on the basis of the farmers' comfortable time. The farmers were co-operative enough. Number of focus group discussion and member of the group is mentioned below:

Table 3.2 : Focus group discussion

Number of focus Group Discussion	Member of the group
First	7
Second	6
Third	6
Fourth	7
Fifth	5

3.8 Personal Observation

During field stay, the researcher has personally perceived both the condition of workers in the industry and the livelihood condition of households. Specially, the researcher has observed household 's situation including adjacent neighbourhood, nearby ecology and livelihood sources in order to understand the actual reality and compare it with what informants said.

CHAPTER 4
SOCIO-ECONOMIC CHARACTERISTICS OF THE FLOWER FARMERS

This chapter deals with the socioeconomic characteristics of the sample farmers. Socio-economic characteristics of the farmers are important in influencing production planning. People vary from one another in various areas. Behaviour of a person is mostly governed by his/her qualities. There are various linked and component traits that describe an individual and strongly impact development of his/her behaviour and personality. It was, therefore, assumed that enterprise combination, consumption pattern, purchase pattern, and employment patterns of different farm household would be influenced by their various characteristics. In the current research farmers were chosen from the four villages of Birulia Union in Savar upazila, then socioeconomic factors of the sample homes were studied. These were family size and composition, age distribution, occupation, level of education, involvement of women, land ownership pattern etc. A short overview of these characteristics is provided below:

4.1 Age Distribution of the Sampled Farmers

Age of farmers have an impact on the productivity and on the better management of the agricultural system. In the current study, all types of farmers in the study region were divided into various age groups as given in Figure 4.1. The flower farmers were categorized into three age groups: young age (up to 35 years), middle age (36-50 years) and old age (over 50 years).

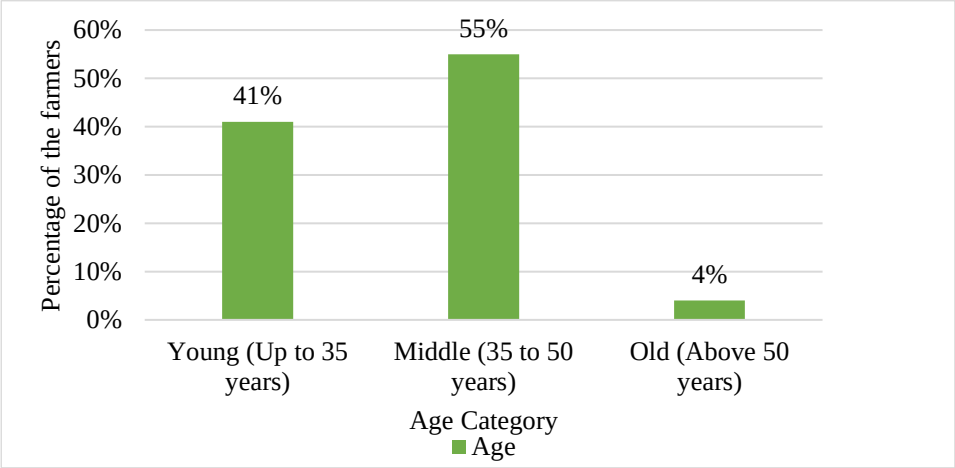


Figure 4.1: Distribution of the sample farmers according to the age

Out of the entire sample farmers 41% belonged to the age range of up to 35 years, 55% belonged to the age group of 36-50 years and 4% fell into the age category of over 50 years. This data show that majority of the sample farmers were in the most active age group was middle aged indicating that they gave higher physical efforts for floriculture. This age group is thought to have considerable vitality and risk bearing capabilities. Previously Akter (2021), Tooba (2019), Manjira (2018), and Hasan (2017) also found similar kind of result but Das (2021), Orin (2021), and Zaman (2013) found that majority of the flower farmers were young aged.

4.2 Educational Status of the Respondents

In the current study, all types of farmers in the study region were divided into various age groups as given in Figure 4.2. The flower farmers were categorized into seven different categories: illiterate, can write name, primary, high school, Higher Secondary ,graduation and post-graduation.

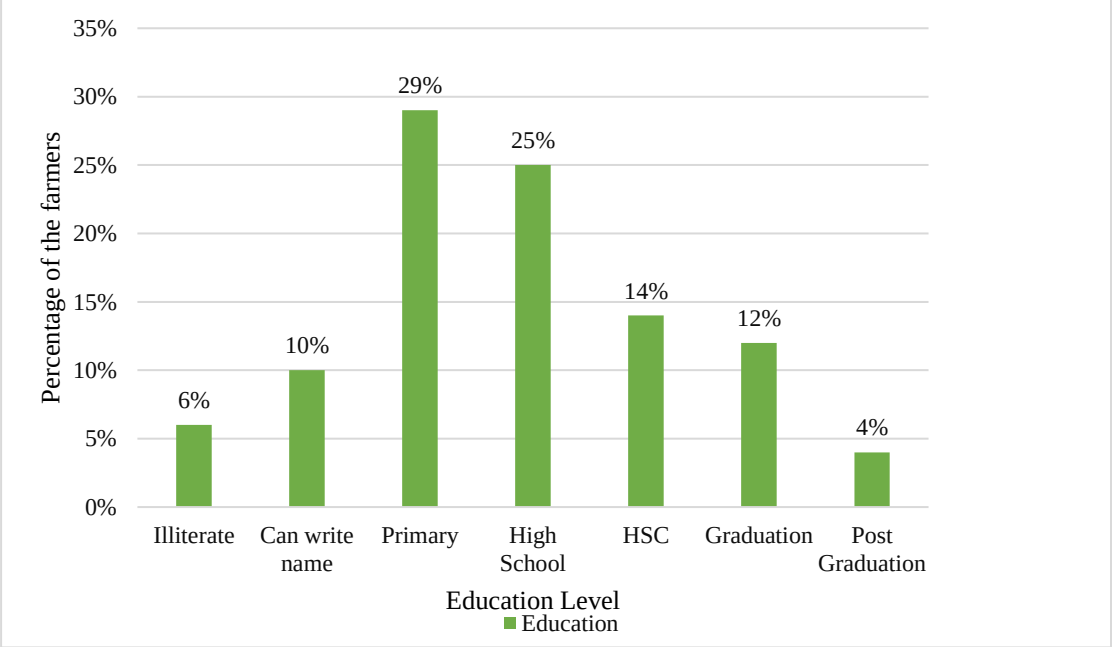


Figure 4.2: Distribution of the sample farmers according to the level of education

Out of the entire sample farmers 6% were illiterate, 10% were can write name, 29% had completed primary education, 25% had completed high school education, 14% had completed HSC, 12% had completed graduation and 4% had completed post-graduation. This data show that majority of the sample farmers had primary level education. Previously Akter (2021), Das (2021), Orin (2021), Manjira (2018), Hasan

(2017) and Zaman (2013) also found similar kind of result but Tooba (2019) found that majority of the flower farmers had secondary level education.

4.3 Marital Status

Marital status of the farmers was shown in Figure 4.3. On the basis of training scores, the respondents were classified into two categories namely, married and unmarried.

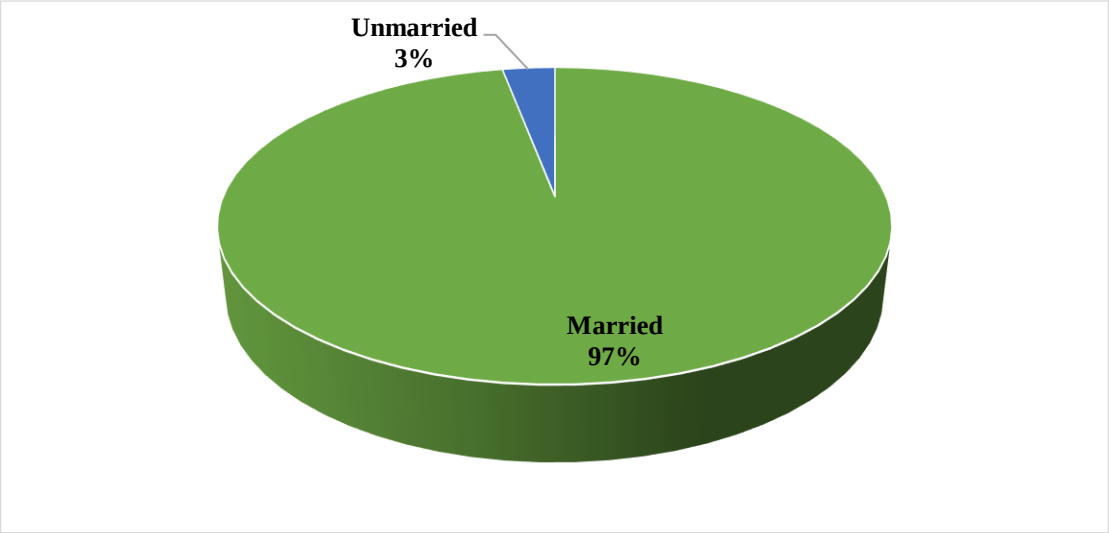


Figure 4.3: Distribution of the sample farmers based on marital status

Data of Figure 4.3 reveals that the majority (97%) of the respondents were married, whereas only 3% of the respondents were unmarried in the study area. Previously, Hasan (2017) also found the similar result but his area was different region.

4.4 Farm Size

The farm size of the respondents ranged from 0.32 to 4.24 ha. Based on their farm size, the respondents were classified into five categories following the categorization of DAE(1999). These categories were landless (≤0.02 ha), marginal (0.021 to 0.2 ha), small (0.21 to 1.0 ha), medium farm holder (1.01 ha to 3.0 ha) and large (above 3.00 ha). The distribution of the farmers according to their farm size is presented in Table 4.1.

Table 4.1: Distribution of the sample farmers according to the farm size

Category	Basis of Categorization (ha)	Observed Range (ha)	Floriculture Farmers		Average
			Number	Percent	
Landless	≤0.02	(0.4-3.012)	-	-	1.50
Marginal	0.021-0.20		-	-	
Small	0.21-1.00		36	36.00	
Medium	1.01-3.00		57	57.00	
Large	Above 3.00		7	7.00	
Total			100	100.00	

Table 4.1 indicates that the medium farm holder constitutes the highest proportion (57%) followed by small farm holder (36%), and large farm holder (7%) whereas there were no landless and marginal farm holder. The findings of the study reveal that majority of the farmers were small to medium sized farm holder. The findings from Table 4.1 indicated that average farm size of the study area was 1.50 ha. Previously, Tooba (2019) also found similar kind of result.

4.5 Annual Household Income from Floriculture

Annual household income from floriculture of the respondent farmers ranged from 0.85 to 14 lakh taka. On the basis of annual income, the respondents were classified into three categories, viz. low, medium and high annual household income from floriculture. The distribution of the farmers according to annual household income from floriculture are presented in Table 4.2.

Table 4.2: Distribution of the sample farmers according to the annual household income from floriculture

Category	Basis of Categorization (‘00000 Taka)	Observed Range (‘00000 Taka)	Floriculture Farmers		Average (lakh)
			Number	Percent	
Low	<5	(0.85-14)	50	50.00	4.94
Medium	5-10		43	43.00	
High	Above 10		7	7.00	
Total			100	100.00	

Data in Table 4.2 revealed that the farmers having low annual household income from floriculture constitute the highest proportion (50%), while the lowest in high income was 7% which was followed by medium income 43%. The findings from Table 4.2 indicated that average annual household income from floriculture of the study area

was 4.94 lakh Taka. Previously, Tooba (2019), Hasan (2017) and Zaman (2013) found similar result but Akter (2021) found that majority of the farmers annual household income were Tk 10-20 lac.

4.6 Access to Credit

Farmers access to credit was shown in Figure 4.4. On the basis of training scores, the respondents were classified into two categories namely, yes and no.

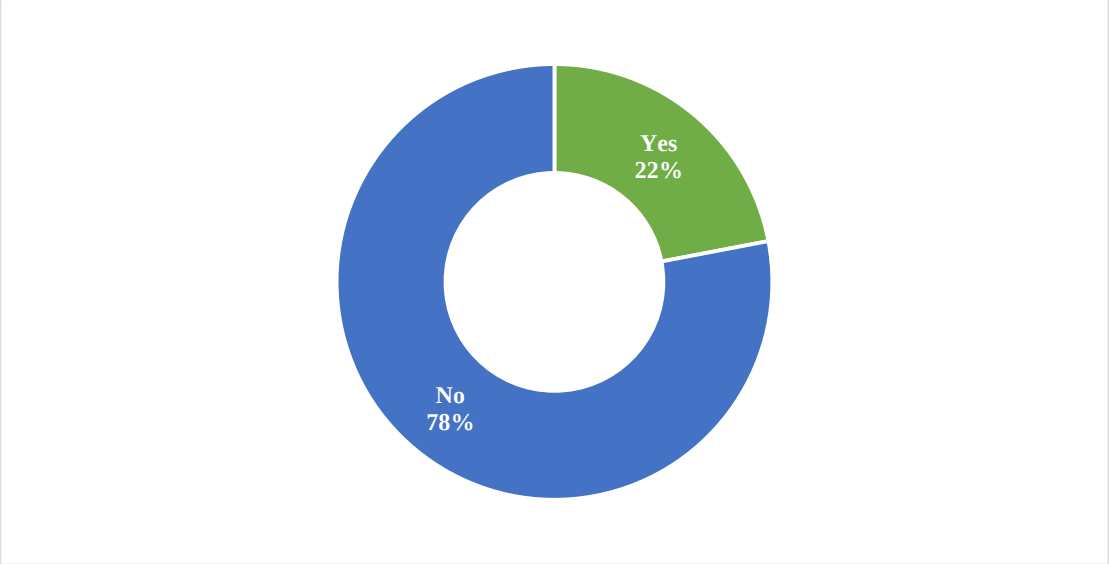


Figure 4.4: Distribution of the sample farmers based on access to credit

Data of Figure 4.4 reveals that the majority (78%) of the respondents didn't have access to credit, whereas only 22% of the respondents had access to credit in the study area. Das (2021) and Akter (2021) also found majority of the farmers had no access to credit.

4.7 Awareness of Extension Contact

Farmer's awareness of extension contact was shown in Figure 4.5. On the basis of extension contact scores, the respondents were classified into two categories namely, yes and no.

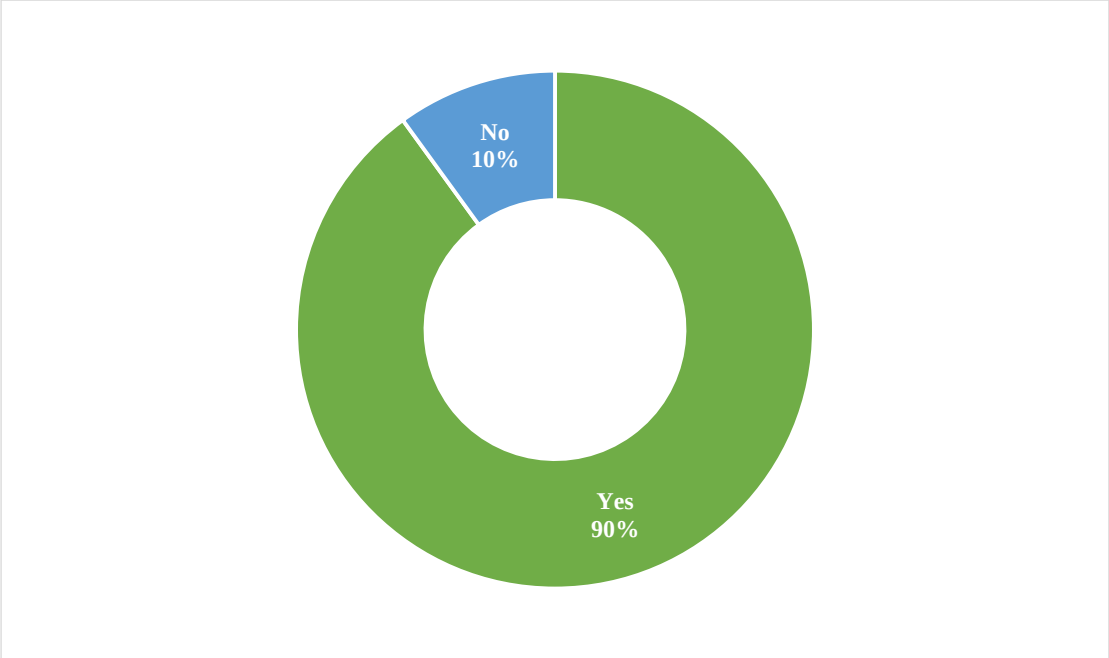


Figure 4.5: Distribution of the sample farmers based on awareness of extension contact

Data of Figure 4.5 reveals that the majority (90%) of the respondents had awareness of extension contact, whereas only 10% of the respondents had no awareness of extension contact in the study area.

4.8 Training Received

Training received by the farmers was shown in Figure 4.6. On the basis of training scores, the respondents were classified into two categories namely, no training and training received.

Figure 4.6: Distribution of the sample farmers based on training received

Data of Figure 4.6 reveals that the majority (92%) of the respondents received training, whereas only 8% of the respondents didn't receive any training in the study area. Previously Akter (2021) and Tooba (2019) also found same kind of results.

4.9 Membership of Organization

Farmers membership of organization was shown in Figure 4.7.The respondents were classified into two categories namely, yes and no.

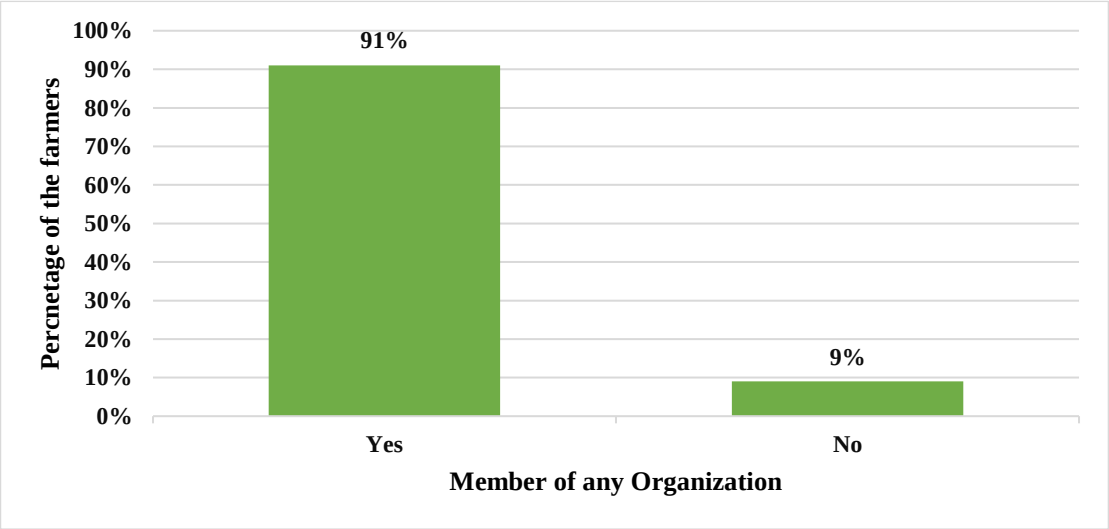


Figure 4.7: Distribution of the sample farmers based on member of organization

Data of Figure 4.6 reveals that the majority (91%) of the respondents were member of any organization, whereas only 9% of the respondents were not member of any organization in the study area.

CHAPTER 5
IMPACT OF FLORICULTURE ON FARMERS LIVELIHOOD

5.1 Introduction

This section provides the findings from the qualitative data of the present research endeavor. For assessing the impact of the floriculture on farmers' livelihood we analyzed he focus group discussions simply by recording them and arranged them in MS Excel sheets. However, this section will focus on the household portfolios of flower farmers, factors influencing their farming and lastly, impact of the floriculture on the farmers' livelihood.

From the perspective of the sustainable rural livelihood framework (Scoones, 1998) to assess the livelihood outcomes we need to first assess if the number of working days has been increased, poverty reduced, well-being and capabilities improved. So for that we investigate what is the context (policy), livelihood resource, institutional structures and livelihood strategies

5.2 Livelihood status in floriculture (Context)

(a) History

When the author asked about the history of the flower cultivation, One of the respondents from focus group discussion (FGD) said the history of floriculture. In his words he said,

> "In Savar, first started to cultivate rose commercially at Sadullapur village in 1991". He also added, "In 1991 only two farmers initiated flower business but at present almost all of the 35,000 inhabitants in this villages are in some way or other related to flower cultivation" (farmer, 40 years).

(b) Climate and agro-ecology

According to most of the members of the FGDs the agro-ecological conditions of the region has influenced the farmers to choose floriculture as their livelihood option. They mentioned that the loamy soil type of the area, high land and low chances of flooding are the main geographical characteristics for the floriculture in this location. One of the respondents' words,

> "High land is blessings for us because for flower cultivation high land is needed from avoiding flood" (Farmer, 30 year).

Also the proximity to the capital city, where is the business location is also another important context for this livelihood option. However, during the winter season most of the national international celebration of the days where flower is needed, the demand grows high. So farmers cultivate flower during this season.

(c)Terms of trade

Most of the farmers have the opportunity to sale the flowers to the capital because there is a huge demand for the cut flower almost all around the season. However, according to the most of the farmers of the FGDs, potentiality to export flower in future is also huge. One of the respondents said,

> "Everyday more than 1500 tourists are came Golap Gram to enjoy the rose garden and they buy lots of flower, they usually do not bargaining with us, as price we claim for the flower, they try to pay that price" (Female farmer,38 year).

Rest of the members also consent with his words. So, they see flower business as a profitable venture.

(d) Demography

In focus group discussion, Most of the farmers said that they need low labour. Because, family members can perform this activities. In the case of large scale cultivation, labour is needed. Co-operative group is present there.

(e) Other macro-economic condition

A Participant said,

> "Subsidy from government is little amount, it should be expanded''. Another participant added, "For poor farmers it is not enough for us" (Farmer,34 years).

According to the most of the respondents, they said that storage facility is not up to the mark. They also said that as it is lucrative business, if its storage facility is

developed, then remittances can be earned by exporting this areas flowers specially Rose.

5.3 Factors influencing changes in the livelihood (livelihood resources and institutional structures)

Livelihood resources in this region are natural, economic, human, social resources. According to the participants of the FGDs, the natural factors like the climatic condition and nature of the soil are the key reasons to get engage in the flower cultivation.

Economic assets, including basic infrastructure and production equipment and technologies which are available to get involved in floriculture.

Human capital like the skills, knowledge, ability to labour and good health and physical capability act as prime factor to get engage in flower cultivation.

According to the participants of FGDs, the social network, social claims, social relations, affiliations, associations are quite strong. Farmers club is present there.

One of the members said,

> " Farmers club is useful for us as it helps in many way such as it removes clashes among farmers, make social network , arrange training programme and so on(Farmer,42 years)"

Most of the participants in FGDs said that some people have own land and some have leased land. In spite of having own land, some people lease land for high amount of production.

In case of water availability one participants said,

> "It is a severe problem for us as its locate in highland'' Another respondents insists on, "we get water from submersible motor but not in enough, if it can set up more submersible motor, then water problem will be reduced, production increased more and more"(Farmer,55 years).

According to the participants in group discussion, marketing committee is present. They also added that transportation system is not bad. Flowers selling is easy by means of easy transportation.

Institutional structure and organizational settings of the region for instance the infrastructure and transportation to the capital is one of the crucial aspect for the farmers because of the high perishable nature of the flower.

The participants talked about the services of the extension officers. One of the participants said, they are friendly in behavior and helpful in any flower related problems".

Most of the members of FGDs has mentioned that they have received instructions and training from co-operation group. Most of them said that they got training from' BONDHON 'society.

From one FGDs some said that they are involved in floriculture for 20-25 years whereas another FGDs some respondents said that they are engaged in this occupation for 10-12 years.

Some of the women respondents from FGDs said that their involvement in floriculture was from the very beginning of their flower venture. Few of the respondents responds that their involvement in floriculture was for 7-8 years. Women farmers added that they are more conscious of their flower cultivations than previous because of easy access of information and agricultural extensions service. They also added that they help their husbands in cutting and harvesting flowers.

5.4 Impact of floriculture on farmers livelihood (Outcome)

For assessing impact of the floriculture on the livelihood status of the farmers we investigate five indicators. The indicators are used to determine the impact on the livelihood broadly. The indicators are;

i. Food security maintenance for the household throughout the year

ii. Increase in capability increase to fight against vulnerability and poverty

iii. Capability to cope up with natural hazards

iv. Seasonality effects

v. Cost effectiveness and profitability

i. Food security maintenance for the household throughout the year

Most of the participants in the five FGDs have demonstrated that the food security status of their household is maintained. According to them, the floriculture provide them enough income opportunities so that they can bear the household expenditures comfortably. In addition they also mentioned that they gain some capability to increase the strong stand against the poverty shocks.

One of the participant said with a big smile,

> "I have some surplus by which I can expand my flower business every year, can secure my children food security properly''(Farmer,52 years).

However, few of the participants mentioned that during the lean season, it sometimes becomes difficult for them to bear the household expenses.

One of the participants said,

> "Small farmer like me have to face many difficulties during lean season". She added that if they get proper incentive during their hard times, it will be blessings for them" (Farmer,56 year).

ii. Increase in capability increase to fight against vulnerability and poverty

Most of the participants in the five FGDs have mentioned that their capability increase gradually. As a result, they have enough capacity to fight against vulnerability and poverty.

> In their words, "prior to start floriculture we were vulnerable, we were incapable to fight against poverty and shocks''. They also added that floriculture is blessings for them (Farmer,55 years).

iii. Capability to cope up with natural hazards

Most of the respondents have illustrated that natural hazards like droughts take place sometimes, pest attack in flower. But they are able to cope up with natural hazards.one of the respondents said that my family achieved capability to adjust with natural hazards, in the past it became stressful situation to cope up but gradually situation improves after taking floriculture as their profession.

iv. Seasonality effects

Seasonality affects any kinds of agricultural production but if farmers have capability to stand with, it do not harm them much. Most of the respondents in five FGDs have mentioned that their income is good as more than 1500 tourists visits golapgram every day. A large portion of the farmers have addressed that seasonality does not affect them much as their investments are big. They have capability to cope up with seasonality effects. Few of the farmers have mentioned that Seasonality affects them a little bit as their investments are small.

v. Cost effectiveness and profitability

Most of the participants in the five FGDs have mentioned that flower business is lucrative and cost efficient.

One of the participants said,

> "Flower cultivation seems to me as profitable business". Another participants added "I improved my livelihood condition involving with flower cultivation as it is profitable venture for me"(Farmer,44 year).

According to the another respondents,

> "In the area of Savar in Dhaka District, having high land is a comparative advantage, flooding doesn't take place there''. "Most of the flower of Agargaon market and Shahabag comes from flower producer of savar" he added (Farmer,40 year).

After observation of the researcher, it can be said that by doing floriculture the farmers has improved their livelihood condition. It has positive impact on farmers' livelihood. They can cope up with any kind of hazards, shocks by doing flower cultivation .They have reduced their poverty and their standard of living has improved by adopting floriculture. Food security is considered as large indicators that has achieved by flower cultivation.

CHAPTER 6

CONSTRAINTS FACED BY THE FARMERS DURING FLOWER CULTIVATION

The purpose of this chapter is to determine the problems faced by flower farmers. Farmers had several difficulties in floriculture. This chapter will discuss some of the socioeconomic issues and limits associated with floriculture. Farmers challenges and limits were identified based on their perspectives. These problems were first counted in response of the number of respondents. Then the counts were transformed into percentage. Hereafter, the problem that obtained the greatest percentage was ranked number 1. And the other problems were ranked accordingly on the basis of greater percentage of respondents facing these problems, constraints (Table 6.1).

6.1 Flower Viral Disease

Viral diseases can have a devastating impact on the floriculture industry, particularly on the production and sale of flowers. Some of the most common viral diseases affecting flowers include mosaic virus, yellow vein virus, and leaf curl virus. These diseases can cause stunted growth, yellowing and distortion of leaves, reduced flower production, and even death of the plant. About 100% of floriculture farmers rated this as a serious concern (Table 6.1). Previously Akter (2021), Orin (2021), Manjira (2018), Hasan (2017) and Zaman (2013) also found similar kind of result.

6.2 High Labor Wages

High labor wages can significantly impact the profitability of the floriculture industry. The labor-intensive nature of flower cultivation and harvesting means that wages represent a significant portion of the total cost of production. When labor wages increase, it can result in higher production costs and ultimately lower profits for flower growers. About 100% of floriculture farmers rated this as a serious concern (Table 6.1). Previously Orin (2021) also found similar kind of result.

6.3 Severe Water Shortage

Water is a critical resource for the floriculture industry, and severe water shortages can have a significant impact on production and profitability. In areas with limited water resources, flower growers may face challenges in maintaining the necessary water supply to meet the needs of their crops. This can lead to reduced yields, smaller

flowers, and in some cases, the loss of entire crops. About 90% of floriculture farmers rated this as a serious concern (Table 6.1). Previously, Tooba (2019) also found similar kind of result.

6.4 Transportation Problem

Transportation is a critical factor in the floriculture industry, as flowers are highly perishable and require careful handling and timely delivery to maintain their quality and value. Transportation problems such as delays, damage, or mishandling of flowers can lead to significant losses for flower growers and distributors. About 75% of floriculture farmers rated this as a serious concern (Table 6.1). Previously, Orin (2021), Tooba (2019), Manjira (2018), Hasan (2017) and Zaman (2013) also found similar kind of result.

Table 6.1 Constraints faced by the farmers during flower cultivation

Problems	**Frequency**	**Percentage**
Flowers viral disease	100	100.00
High labor wages	100	100.00
Severe water shortage	90	90.00
Transportation problem	75	75.00
Flower processing problem	70	70.00
Insufficient credit support	50	50.00
Intermediaries group in terms of determining price of flower	45	45.00
Lack of knowledge about modern technologies of flower cultivation	45	45.00
Poor marketing facilities	30	30.00
Lack of suitable selling centre	20	20.00

6.5 Poor Marketing Facilities

Poor marketing facilities can present significant challenges for the floriculture industry, as it can limit the ability of flower growers to reach customers and promote their products effectively. Without access to effective marketing channels, flower growers may struggle to sell their products, leading to reduced revenues and

profitability. About 30% of floriculture farmers rated this as a serious concern (Table 6.1). Previously, Manjira (2018) also found similar kind of result.

6.6 Flower Processing Problem

Flower processing is an essential aspect of the floriculture industry, as it enables flower growers to prepare their products for sale and shipment to customers. However, processing problems such as improper handling, inadequate storage facilities, and inefficient transportation can lead to significant losses for flower growers. About 70% of floriculture farmers rated this as a serious concern (Table 6.1). Previously, Tooba (2019) also found similar result.

6.7 Intermediaries Group in Terms of Determining Price of Flower

Intermediaries play a significant role in the determination of flower prices in the floriculture industry. These intermediaries, such as wholesalers and retailers, often act as middlemen between flower growers and end customers, providing services such as transportation, storage, and marketing. They can influence the prices of flowers by negotiating prices with flower growers based on market demand and supply, as well as other factors such as the quality of flowers and seasonality. About 45% of floriculture farmers rated this as a severe concern (Table 6.1).

6.8 Insufficient Credit Support

Insufficient credit support can present significant challenges for flower growers in the floriculture industry, particularly for small-scale growers who may not have the resources to invest in their operations or take advantage of market opportunities. About 50% of flower farmers rated this as a serious concern (Table 6.1). Previously, Akter (2021), Hasan (2017) and Zaman (2013) also found similar result.

6.9 Lack of Knowledge about Modern Technologies of Flower Cultivation

The lack of knowledge about modern technologies of flower cultivation can limit the growth and profitability of the floriculture industry. Advancements in technology have enabled flower growers to improve their productivity, reduce costs, and produce higher quality flowers. About 45% of floriculture farmers rated this as a severe concern (Table 6.1). Previously, Akter (2021), Orin (2021), Tooba (2019), Manjira (2018), Hasan (2017) and Zaman (2013) also found similar kind of result.

6.10 Lack of Suitable Selling Centre

The lack of suitable selling centres can present significant challenges for the floriculture industry, as it can limit the ability of flower growers to access markets and sell their products effectively. About 20% of floriculture farmers rated this as a serious concern (Table 6.1). Previously, Tooba (2019), and Hasan (2017) also found similar kind of result.

CHAPTER 7
SUMMARY, CONCLUSION AND RECOMMENDATIONS

7.1 Summary

Flower cultivation in Bangladesh has been growing rapidly over the past few decades, particularly in response to the increasing demand for flowers in domestic and international markets. The industry has emerged as a profitable agricultural enterprise for farmers, providing a reliable source of income and employment opportunities in rural areas. The country's favourable climate and soil conditions have made it suitable for the cultivation of a wide variety of flowers, including roses, marigolds, tuberoses, and gladioli. The production of flowers in Bangladesh has also contributed to the development of infrastructure, such as the construction of roads, storage facilities, and the establishment of marketplaces, promoting rural development and reducing post-harvest losses. The following goals were understanding socio-economic characteristics of flower farmers, investigating the impact of floriculture on farmers livelihood using livelihood outcome indicators and assessing the extent of constraints faced by the farmers during flower cultivation.

The study relied heavily on primary data, which the researcher gathered via interviews with sample farms. A total of 100 flower growing farmers were chosen from one union in Savar Upazila, namely the Birulia union. To acquire the requisite data, a sample survey was conducted using an explosive, simple random sampling approach to choose the flower growing farmers.

Majority of the sample farmers (55%) were in the most active age group was middle aged in the study area. Majority of the farmers (29%) had primary level education. Majority (97%) of the respondents were married in the study area. Majority of the farmers were small to medium sized farm hold and the average farm size of the study area was 1.50 ha. The average annual household income from floriculture of the study area was 4.94 lakh Taka. Majority (78%) of the respondents didn’t have access to credit(78%), had awareness of extension contact (90%), received training (92%), were member of any organization (91%) compared to others in the study area.

Farmers require cheap labour and co-operation organizations are prevalent. There are limited government subsidies and inadequate storage facilities among the macroeconomic conditions. Natural, economic, human, and social resources play a

role in determining alterations in way of life. Natural factors such as climate and soil are essential for flower cultivation, as are economic factors such as infrastructure and production tool. In flower cultivation, human capital, such as skills, knowledge, and physical ability, also plays a role. Farmers have robust social networks, affiliations, and associations, such as the farmers club. In addition, they have both owned and leased land with some utilizing submersible pumps for water accessibility. The marketing committee and transportation system are also essential to the efficient sale of flowers. Due to the high perishability of flowers, the institutional structure and organizational settings of the region, such as infrastructure and conveyance to the capital, are crucial for producers. When addressing flower-related issues, extension officers are cordial and helpful.

Five indicators are used to evaluate the impact of floriculture on producers' way of life: food security maintenance for the household throughout the year, increase in capability increase to fight against vulnerability and poverty, capability to cope up with natural hazards, seasonality effects, and cost effectiveness and profitability. The five FGDs have demonstrated that floriculture provides food security, enhanced capacity to combat vulnerability and destitution, and resilience to natural disasters. The majority of participants have demonstrated that their capacity grows progressively, enabling them to combat destitution and shocks. They also remark having a surplus to expand their flower business and ensure the dietary security of their children. Nonetheless, some participants encounter difficulties during the low season, which can be difficult for small producers. Providing these producers with the proper incentives during difficult circumstances can be advantageous. Seasonal effects have an impact on agricultural production, but the majority of farmers are able to withstand them. They have a decent income from more than 1,500 tourists per day, while some farmers endure seasonal effects as a result of their modest investments. Cost effectiveness and profitability are also crucial factors for floricultural producers. They believe that their living conditions have improved and that they are better able to withstand risks and disruptions, thereby alleviating destitution and raising their standard of living.

Additionally, this research found certain issues and restrictions related with flower cultivation faced by the farmers. The findings indicated that flowers viral disease, high labor wages, severe water shortage, transportation problem, flower processing

problem, insufficient credit support, intermediaries' group in terms of determining price of flower, lack of knowledge about modern technologies of flower cultivation, poor marketing facilities, and lack of suitable selling centre.

7.2 Conclusion

This research was carried out to estimate the impact of floriculture on farmers' livelihood and the challenges faced by farmers while cultivating flowers. Based on the findings, it can be concluded that the majority of sample producers are middle-aged, with primary education and marriage. The average annual household income from flower cultivation is 4.94 lakh Taka. Natural, economic, human, and social factors influence the flower cultivation industry in Bangladesh, including infrastructure, production equipment, natural factors, human capital, and social networks. Floriculture contributes to food security, combat vulnerability, and resilience to natural disasters. However, the research also identifies issues and limitations faced by Bangladeshi flower producers, such as viral diseases, high labor wages, water shortages, transportation issues, flower processing difficulties, inadequate credit support, intermediary influence on flower prices, lack of knowledge about modern cultivation technologies, inadequate marketing facilities, and a lack of suitable selling centres..

7.3 Recommendations

The following recommendations for helping flower farmers in Bangladesh might be made in light of the research findings and the highlighted problems:

a) **Access to credit:** Most farmers lack access to financing, thus it's crucial to set up financial assistance systems that are unique to the flower farming industry. For example, a specialized credit facility for floriculture may be set up, or low-interest loans could be made available.

b) **Disease management:** Since viral infections are a major obstacle to flower growing, farmers should be given information and instruction on how to avoid and control the spread of these illnesses. This can reduce crop losses and lessen the severity of illness.

c) **Skill enhancement and modern technologies:** Modern flower cultivation techniques are complex, but farmers might benefit from training programs and seminars to improve their understanding of these methods. It is possible to

increase flower production and quality through the dissemination of knowledge on new technology, effective watering systems, and enhanced post-harvest management procedures.

d) **Marketing and selling facilities:** Farmer dependence on middlemen can be reduced by facilitating direct access to domestic and international markets through the improvement of marketing facilities and the establishment of suitable selling centres or flower marketplaces. This has the potential to improve their profits by helping them get a higher price for their goods.

e) **Water Management:** In light of the acute water constraint, it is crucial to advocate for water-efficient measures like drip irrigation and rainwater collecting. Small reservoirs and community-based water management systems are two examples of water storage structures worth investigating as potential means of ensuring a steady supply of water even in the driest of times.

f) **Transportation facilities:** Improving the availability and efficiency of transportation links between flower fields and retail outlets is the topic of our sixth point. This can aid in keeping the flowers fresh and high in quality after they have been harvested.

g) **Storage facilities:** Investing in cold storage units or refrigerated vans is a great way to keep flowers fresh for longer and prevent spoiling. This would provide farmers a chance to save money by storing their harvests during high demand times and selling them at lower costs later.

h) **Government support:** The flower farming business would benefit greatly from enhanced government subsidies and incentives aimed squarely at the sector. Subsidies for inputs like as seeds and fertilizers, infrastructure projects, and funding for capacity-building initiatives are all possibilities.

Taking these steps would help the flower growing business in Bangladesh overcome the obstacles it faces and reach its full potential, which will in turn benefit farmers' incomes and the economy of rural regions as a whole.

7.4 Limitation of the study

a) The information was collected mostly through the recall memories of the respondents. As such mistakes might have happened in the statements.
b) Lack of experience and time hampered the in-depth of the study.
c) Primary data are extremely difficult to collect and may be contradictory. All the information is based on recall data of the flower farmers.

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APPENDIX

Department of Development and Poverty Studies
Sher-e-Bangla Agricultural University, Dhaka-120

An Interview Schedule for the Study Entitled

Socio- economic Impact of Floriculture on Farmers' Livelihood: A Study in Birulia, Savar (Dhaka).

Serial number: ☐

Types of the respondent
1. Owner
2. Labor
3. Both

Dear Respondent,
All of your information will be kept confidential and will be used for research purpose only. Please provide the following information.

A.General information

Name: …….....
Address: Village: …….……..……. Upazila: ……..……..
District: ……..… Mobile: ……..……

B.Socio-economic information

a. Family details:-

Sl. No.	**Relation with the Household**	**Age**	**Education (Year of Schooling)**	**Marital Status**	**Occupation**		**Income (Monthly)**
					Main	**Subsidiary**	
1.							
2.							
3.							

NB: Married=1, Unmarried=2, Widow=3, Divorce=4
Education: Write Name=1, Primary=2, Secondary=3, H.S.C=4, Graduate=5, Post Graduate=6, Uneducated=7
Occupation: No Work=o, Flower Cultivation=1, Agriculture=2, Fish Culture=3, Livestock Rearing=4, Labor=5, Business=6, Student=7, Housewife=8, Service=9 Others=10

b. Farm size / Size of land holdings:

Land Type	Area in Decimal
Own land	
Land for Flower cultivation	
Homesteads land	
Leased land	

c. Sources of Income (annual / yearly)

INCOME SOURCE	TOTAL INCOME(YEARLY)	LOWER INCOME(YEARLY)	HIGHER INCOME (YEARLY)
Floriculture			
Other income			

C. Access to credit:

Sl. No.	Question's/query	Response/Answer	Code
1	Any experience of credit obtaining		1=Yes, 2=No
2	(If yes) Last time credit obtained	1= Tk. 2= Tk. 3= Tk. 4= Tk.	1=Last season, 2= A year ago, 3=Two years ago, 4=Three years ago
3	(If no) Reason of not obtaining		1=No collateral, 2=Not aware of any credit facilities, 3= It's a difficult process, 4=Unable to repay, 5=Do not require credit, 6=Other

E. Access to Extension Service:

Sl. No.	Question's/query	Response/Answer	Code
1	Awareness to extension services in the area		1=Yes, 2=No
2	Availability of female extension officers in the area		1=Yes, 2=No
3	Comfort to consult a male extension officer		1=Yes, 2=No
4	Do the extension agents organize training programs for female farmers		1=Yes, 2=No

F. Are you a member of any organization?

i) Yes; …….. No: ……. (Put tick mark) if yes then------

ii) Name of the Organization: ……..

G. Please mention the problems faced by you in Flower cultivation :

a)……..

b)……..

c)……..

d)……..

e)……..

H. What are your suggestions to overcome the above problems?

a)……

b)……..

c)……..

d)……..

e)……..

Thank you for kind co-operation

Date:

Signature of the interviewer:

Focused group discussion guidelines

1. CONTEXT:

i. why do you operate your flower cultivation in this district?

Ans:

ii. Any subsidy or incentive get from govt? if yes then how much? Enough for your flower cultivation

Ans:

iii. what is your comparative advantage to operate your activities in Savar Biruliya?

Ans:

iv. which season you prefer most and why?

Ans:

v. Do you cultivate any other agriculture crop?

Ans :

vi. Do you cultivate this crop either not growing any other crops?

Ans :

vii. what is the potentiality do you think?

Ans :

viii. Any hamper in case of flood?

Ans :

ix. How many flower varieties do you cultivate? And which varieties give better production?

Ans:

x. In which soil flower produce most? .is affected by any pollution?

Ans:

xi. How about your storage facility?

Ans ;

2. RESOURCES:

i. Do you operate your cultivation on your own land?& how much?

Ans :

ii. what is your water availability?

Ans:

iii. Do you get any loan ? if yes then which sources(bank or ngo)?

Ans :

iv. Do get any subsidy? if yes then which sources and how much? Enough for your flower cultivation?

Ans:

v. what is your Education level? Do you receive any training?

Ans:

vi. Do you have any co-operation group?

Ans :

vii. Do you have any marketing committee?

Ans :

viii. what about your transportation system?

Ans :

ix. do you use hybrid seed and variety ?

Ans :

x. how do you do your irrigation? Is this facility enough?

Ans :

3.Institutions And Organizations

i. what is the wage rates?

Ans:

ii. have any governmental floriculture project present here?

Ans:

iii. have any private sector project remain?

Ans:

iv. Have any farmers club present?

Ans:

v. Do you do sharecropping?

Ans:

4.Strategies

i. do you export your produce?

Ans:

ii. Do you ever apply the new variety of flower production? if yes what is the prospects of that variety? If no then explain your limitation.

Ans:

iii. Do you want your area expand for wide range of floriculture?

Ans:

iv. what is your trading strategies?

Ans:

5.outcomes

i. Do you able to maintain your food security by your earnings?

Ans :

ii. Do you capable to reduce your poverty?

Ans :

iii. Do you have capability to cope up any type of Hazards (such as Floods)?

Ans :

iv. Is seasonality affect yours? How do you affect ?

Ans :

v. Have any cost barrier?

Ans :