EFFECT ON INCOME AND CONCEPT OF INCLUSIVE MARKET DEVELOPMENT (IMD) THROUGH CONTRACT FARMING IN BANGLADESH

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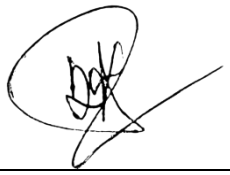

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CERTIFICATE

This is to certify that the thesis entitled '**EFFECT ON INCOME AND CONCEPT OF INCLUSIVE MARKET DEVELOPMENT (IMD) THROUGH CONTRACT FARMING IN BANGLADESH'** submitted to the Faculty of Agribusiness Management, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **Master of Science in Agribusiness And Marketing,** embodies the result of a piece of bona fide research work carried out by **Anika Taslim**, Registration Number: **13-05500** 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 duly been acknowledged.

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DEDICATED TO
MY BELOVED PARENTS,
RESPECTED SUPERVISOR
& CO-SUPERVISOR

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ABSTRACT

The present study was designed to analyze effect on income and inclusive market development (IMD) through contract farming. The main objectives of the study were to explore contract farming as a tool of IMD, its role in increasing income and make a comparison between contract and non-contract farmers for the same crops. Primary data were collected from Belabo Upazila of Narsingdi district. To serve research objectives, one hundred non-contract bean growers, sixty contract bean growers were selected from the study area. The total production of bean was higher for contract farmers (18897.5 kg) than that of non-contract farmers (12893 kg) and the total volume of sales was higher for contract farmers (18707.63 kg/ha) than that of non-contract farmers (12600.81 kg/ha). The contract farmers get more price (Tk. 17.26 /kg) for their products than that of non-contract farmers (Tk. 16.56 /kg). Therefore, profit was undoubtedly more in the case of contract farmers. The majority of the contract farmer agreed that contract farming increased their income and productivity, improves product quality and living standard. Lack of incentives, lack of commitment, limited government support, poor infrastructural facilities, less bargaining power of farmers, weak law enforcement, and lack of monitoring were the major problems faced by contract farmers. The study also suggested some recommendations to improve the present situation such as adequate infrastructure, adequate government support, strong law enforcement, price reduction, the establishment of standard vegetable packaging industries, and standard cold storage.

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LIST OF ABBREVIATIONS AND ACRONYMS

BBS	Bangladesh Bureau of Statistics
WB	World Bank
ADB	Asian Development Bank
CF	Contract Farming
IMD	Inclusive Market Development
IG	Inclusive Growth
M4P	Making Markets Work for the Poor
etc.	et cetera, and the other
SPSS	Statistical Package for Social Science
UNDP	United Nations Development Program
FAO	Food and Agriculture Organization
WBCSD	World Business Council for Sustainable Development
NASFAM	National Smallholder Farmers Association of Malawi
%	Percent
Ha	Hectare

CHAPTER I

INTRODUCTION

1.1. Background

Agriculture is a means of food security, but it is a livelihood for a vast population in Bangladesh and a means of reducing poverty (accounting for 90% of reduction in poverty between 2005 and 2010 (World Bank, 2016) and fostering sustainable economic development. In many countries, agriculture is undoubtedly still one of the pertinent sectors, and its contribution to strengthening a nation's economy cannot be disputed. The agriculture sector includes a wide variety of industries in many parts of the world, including crops and horticulture, animal husbandry, fisheries, food processing, non-food processing, planting, and many more. Contract farming is an old phenomenon that involves a farmer or a group of farmers agreeing to trade farmers' produce for certain services with a private individual or organization or government. Such services include credit facilities, inputs (fertilizers, chemicals, and seeds), extension services, tractor services, and training in technical skills. According to Prowse (2012), contract farming is a contractual arrangement under which a farmer and a company make a verbal or written agreement before production starts for the company to provide the farmer with material or financial support in exchange for farm produce over a period of time. The arrangement is such that the farmer undertakes to supply negotiated quantities of farm produce to the firm based on the quality standards and delivery requirements (FAO, 2008). A common agreement in agriculture all over the world is to produce and sell on a contractual basis. For a long time, contract farming has existed, particularly for perishable agricultural products delivered to the processing industry, such as milk for the dairy industry or canned fruit and vegetables. Contract farming became more significant in the agricultural and food industries of developed and developing countries at the end of the 20th century. The farmer receives the necessary assistance through contract farming in the form of quality inputs, extension services, and the assured demand for their produce, while the company receives the assured supply of raw materials. Such inter-linked contracts for input and output markets can yield productivity benefits that can be shared between farmers and firms (Barrett *et al*., 2012). In its different types, contract farming provides a degree of control over the production process and the product without the business entering directly into production. The seed companies resort to contract farming intending to procure an assured supply of genuine seeds in the required quantity at the right time, under their

supervision. Similarly, farmers enter into contract farming primarily to minimize marketing price risk and also to reap higher profits from the activity of seed production. Contractual requirements may be more or less extensive, including, among many others, provisions relating to production technology, costs, risk sharing, and efficiency. The producer is obliged to produce and supply agricultural commodities in compliance with the requirements of the contractor. In turn, the contractor agrees to buy the product at a specified price and usually takes part in production activities through, for example, the provision of inputs and the provision of technical advice. Virtually any commodity may be produced under a contract, but the nature of the commodity invariably has important implications for the agreement's content and type. Any commodity may be produced under contract, but the nature of the commodity invariably has important implications for the content and type of the agreement. For example, commodities have different production cycles. Some require only a few weeks to grow, while others may take several years, as is typical for many tree crops, forestry production, and some livestock. Among other aspects, the growth cycle will generally determine the duration of the contract and may influence other elements such as delivery arrangements. Long-term relationships are essential when long-term investments are made but may not always be needed for short-term crops.

In less privileged farming sectors, well-coordinated contract farming systems assist growth. Contract farming with profitability, a key component, depends on the satisfaction of both farmers and companies. Both the farmers and contractor or businessman can benefit from Inclusive Market Development (IMD), and contract farming can provide a forum for linking both parties.

1.2. Statement of the problem

Due to the presence of middlemen and huge post-harvest losses, most of our country's farmers do not get a fair price for their produce. Furthermore, the lack of inputs and other infrastructural support also challenging facts for farmers because most of them are poor. As a result, many small farmers are well removed from the mass economy. If farmers can sell their produce at a fair price and become an active part of the value chain and supply chain, this scenario would shift. Through creating a connection between poor farmers and businessmen, all these will be possible. Contract farming facilitates better linkage among production, processing, marketing, and all actors in the value chain and supply chain. Contract farming can integrate the poor with the market, helping them to increase income and establish a better standard of living. In theory, contract farming is

seen as a major intervention in providing farmers with finance, inputs, and markets to increase production, crop quality, and profits. The study, therefore, seeks to investigate the effect of contract farming on increasing income and the inclusive growth of the economy.

1.3. Research questions

- What are the effect of contract farming on income and inclusive market development?
- How do the production costs and marketing costs differ among contract and non-contract farmers for the bean production?
- What are differences in terms of yield and profit exist between contract and non-contract farmers?
- What are the major constraints and suggestions of contract farming?

1.4 Objectives

1.4.1. General objective

The overall objective of this study is to provide a better understanding of the effect on income and IMD through contract farming in the Narsingdi district of Bangladesh.

1.4.2. Specific objectives

a. to evaluate effect of contract farming on income and inclusive market development

b. to analyze production costs and marketing costs of contract and non-contract farmers for bean production

c. to compare and explain the differences in yield and profit between contract and non-contract farmers

d. to document various problems faced by the contract farmers and the businessmen and suggestions for improving contract farming

1.5. Significance of the study

Contract Farming (CF) has great potential to connect small farmers to the market and increasing their income. By reducing risk, uncertainty, and transaction costs, they have the potential to link farmers to markets and stimulate agricultural production in the face of globalization. The inclusive market development concept can make a bridge between poor farmers and private sectors or businessmen. Because businessmen need a low-cost, timely supply of high-quality raw materials and poor farmers need financial, input, technological, or other infrastructural support, both parties can be benefitted from IMD, and contract farming can provide a platform for connecting both parties here. Besides, contract farming can reduce production and marketing cost of the poor farmers. Finally, the research will assist to suggest policy recommendations for introducing and encouraging contract farming and IMD for the development of agriculture sector in our country.

1.6. Research gap

After analyzing and evaluating the literature, it is clear that contract farming is a popular farming practice in many developed and developing countries. But in Bangladesh, it has been conducting on a very small scale in comparison to other countries. Therefore, several types of research on contract farming in Bangladesh had been taken place but no studies considered its impact on income and inclusive market development. Thus, it is interesting and important to explore how contract farming influence production costs, marketing costs, yield, and income and can be a tool for inclusive market development.

1.7. Structure of the thesis

This report will be organized based on six chapters. The first chapter will describe the background, objectives, and significance of the research. The second chapter will represent a review of previous studies. The third chapter will consist of research methodology and the analytical techniques to increase yield, profit and inclusive market development through contract farming. Chapter four will represent the result of the research. Chapter five will demonstrate the discussion of key findings and conclusions. Finally, chapter six contains limitations and recommendations.

CHAPTER II
LITERATURE REVIEW

The main aim of this chapter is to review the literature related to the scenario of contract farming in Bangladesh; the concept of contract farming; the concept of inclusive market development and also find the research questions and gap related to this research.

2.1. The overall scenario of contract farming in Bangladesh

Agriculture is the backbone of the economy of Bangladesh. The development of Bangladesh depends largely on the advancement of the agriculture sector which contributes 14.23% of the GDP (BBS, 2019). Approximately 70% of the total population lives in rural areas, relying directly or indirectly on agriculture for their livelihood. In the agriculture sector, about 63 percent of the labor force is working, of which 57 percent is working in the crop sub sector (FAO). Demand for contract farming in developing countries, including Bangladesh, has risen rapidly in recent decades, driven by growing wealth, population, and urbanization levels. In Bangladesh, vegetables are grown in 2.63 percent of cultivable land (BBS, 2015). Bangladesh is the world's third-largest producer of vegetables (FAO, 2019). In our country, the cultivation of vegetables under contract farming is growing day by day. Vegetables are high value crops to farmers than other crops. Bangladeshi vegetables are being exported to about 38 market destinations (Hortex foundation, 2016). The big buyers are based in two regions: the UK and the Middle East. Exports of processed and frozen vegetables have, however, begun on a small scale in recent years. The regular supply chain is for intermediaries to collect orders from exporters, go to production areas, collect crops from farmers / local markets, and arrange to deliver the same to exporters on the day of shipment. To ensure quality, the government has made 'contract farming' mandatory for the shipment of agricultural products.

Contract farming in Bangladesh is not a new phenomenon, but it is limited in scale and operation. Contract farming was first introduced into seed production in Bangladesh in early 1960. Selected crops are currently produced under contract farming procedures. Bangladesh, as the dominant country in agriculture, has a wider scope for growing agricultural production, innovation, and the value chain of farmers through contract farming. There are many challenges to achieving success in contract farming, including the development of a suitable contract farming model for

the appropriate product. It is a growing agri-business in the agricultural input and output markets. This includes the cultivation and processing of seeds and goods, dairy, fish farming, poultry, vegetables, floriculture, livestock, tea, ginger, potatoes, pulses, sugarcane, etc. Ahmed (2008) indicated that contract farming would have to be accustomed to community life to save the cultivable land of the region. Jahangir (2009) found that the shortage of sufficient cold storage facilities and current weak marketing help has long deprived farmers of perishable goods such as vegetables and fruits. Better storage facilities can be provided by contract farming. Most farmers in Bangladesh belong to small and marginal categories and are found to be low in terms of capital. At the same time, agro-processing farms do not have land in their hands to grow high-value crops. That is why these companies come forward with contracts to provide a resource to poor farmers with such expensive inputs, improved crop varieties, and advanced technology (RCDC, 2011)

2.2. Contract farming

The literature provides several definitions of contract farming.

Contract farming is known as an agreement between farmers and buyers, which specifies the production and marketing of agricultural products (Minot, 1986). It is an agreement between farmers and firms in producing and providing agricultural products at a certain price (Eaton and Shepherd, 2001). Contract farming is an institutional solution to the problems of market failure in the markets for credit, insurance, and information (Grosh, 1994; Key & Runsten, 1999). It has long been used in various fields of economic activity as a means to strengthen supply chains, with varying degrees of success (Glover, 1987; Runsten and Key, 1996; Eaton and Shepherd, in FAO, 2001). Contract farming usually involves a large-scale buyer, such as an exporter or a food processor that needs to ensure a steady supply of raw materials meeting certain quality standards. As such, contracting is rare for basic staple foods but relatively common for industrial crops (e.g., sugarcane, tobacco, and tea), poultry, dairy, and horticulture, particularly when produced for high-income consumers who are willing to pay a premium for quality and food safety (Jaffee & Morton, 1994; Minot, 1986). But when multinational agribusiness firms are involved, contract farming may also increase access to lucrative export markets (ERS, 1997; Eaton and Shepherd, FAO, 2001; Delgado *et al.*, 2003). Additionally, contract farming arrangements have become important to date agricultural production systems especially in cash crops and applied also in

developing countries as a means to address these changes (Eaton et al., 2008). It is a system for the production and supply of agricultural produce under forwarding contracts. The essence of such contracts is a commitment to provide an agricultural commodity of a type, at a time and a price, and in the quantity required by a known buyer (Singh, 2002).

Therefore, contract farming is an agreement between two parties based on a certain price, time, and quantity, and the agreement is perceived to be mutually beneficial.

2.2.1. Reasons to enter into contract farming

Researchers identified several reasons to enter contract farming.

According to Eaton and Shepherd (2001), and Bijman and Ton (2008), the main objective of contract farming is to overcome certain problems and constraints that small scale farmers face in farming. Warning & Key (2002) stressed that contractual farming can be used to solve marketing problems as it guarantees farmers a ready market for their produce. Ton *et al.* (2017) asserted that though contact farming is a commercial initiative, it can deal with the marketing of agricultural products by smallholder farmers. It can link farmers to output markets in exchange for inputs, credit, and or agricultural extension services (Da Silva & Rankin, 2013, and World Bank, 2007). Contract farming significantly raises farmers' incomes (Sokchea and Culas 2015; Miyata *et al*. 2009; Birthal *et al.* 2008; Key and Runsten 1999; and Warning and Key 2002). It is generally observed as an institutional mechanism to reduce transaction costs emerging out of market imperfections (Minot 2011; Kutlu 2012; Jia and Bijman 2014). Therefore, a firm may choose to contract with small farmers only if the region is dominated by them, due to the nature of the crop. They may also contract small farmers out of a desire to access credit at concessional rates or to tap in cheap and abundant family labor and thus reduce costs (Glover and Kusterer 1990; Singh 2012). It is also likely to exacerbate the problem of socio-economic differentiation among farmers (Glover and Kusterer 1990; Little 1994; Warning and Key 2002). An assessment of its impact on the rural economy thus cannot be dissociated from the participation of small and asset poor farmers. A pro-smallholder approach is largely followed in the majority of the policies as a poverty reduction strategy for overall economic development (Oya 2012). One of the most prominent strategies to enhance agricultural production is the use of contract farming arrangements (Oya, 2012). Numerous contract farming studies have emphasized risk reduction as a principal incentive for producers to enter into contracts (Roy, 1972; Covey and Stennis,

1985; Dornbush and Boehlje, 1988; Herbert and Jacobs, 1988; Lawrence and Kaylen, 1990; Johnson and Foster, 1994; Knoeber and Thurman, 1995). Reputation plays an important role in self-enforcing agricultural contracts. This self-enforcement mechanism of agricultural contracts has been found both in developed countries (e.g., Allen and Lueck, 2003; Bogetoft and Olesen, 2004) and developing countries (e.g. Key and Runsten, 1999). Warning and Key (2002: 257). Several studies have considered the economic and social impact of contract farming on smallholder farmers (Smalley, 2013; Barrett et al., 2012; Bellemare, 2012; Miyata et al., 2009).

Therefore, the literature indicates different reasons for the farmers such as overcoming constraints related to farming, increasing income, reducing transaction cost, social and economic impact, reputation, access to credit, enhancing agricultural production, improve marketing, and cheap, available labor for the processors to engage in contract farming.

2.2.2. The main benefit of contract farming

The main benefit of contract farming is to increase household income.

In early assessments of contract farming in Africa, many studies showed a positive effect on income using comparative case study analysis (Minot, 1986, Glover and Kusterer, 1990, Little and Watts, 1994 and Porter and Phillips-Howard, 1997). Minot (1986) reviewed contract farming in developing countries and found that in general contract farming improved the income of farmers. In contrast, the frequent failure of contract farming was also an important finding in the study. Despite some social problems that happened, Porter and Phillips-Howard (1997) conclude that African farmers were generally better off as a result of their participation in contract farming. Another review of a study on contract farming revealed that tobacco contract farming arrangements allow smallholder farmers to achieve higher yields, diversify into new crops, and increase income (Bijman 2008). Smallholder farmers may also benefit through reduced risk in production and marketing, improved access to inputs, technical assistance, and credit. Kumwende and Madola, (2005) suggest that most of the farmers, who were participants in contract farming have been experiencing changes in income earned as they access inputs packages from firms. In countries like Brazil and India, farmers were assured of the income from the payment received at the time of selling their tobacco. In comparing contract farmers and non-contract farmers in Shandong province in China contract farmers were benefiting from high yields presumably due to the technical assistance and specialized inputs provided by firms. They

were offered higher prices of their quality products by the firms (Miyata et al, 2007). Therefore, an increase in income through increasing yield is the main emphasized factor for farmers who are engaging in contract farming.

2.2.3. Role and impact of contract farming in the developing countries

The role and impact of contract farming in the developing countries constitute a debated ground (Masakure and Henson 2005; Winters et al 2005; Oya 2012; Prowse 2012) and has been a topic of interest and some controversy at least since the 1970s (Glover, 1984; Minot, 1986; Morrisey, 1974).

In the last three decades, the growing role of contract farming has attracted the interest of policymakers and researchers (e.g. Glover 1983; Glover 1987; Minot 1986; Glover and Kusterer 1990; da Silva 2005; Setboonsarng 2008). Small-scale farmers in many developing countries face several production and marketing constraints, such as limited access to services, including effective extension and rural credit, which are crucial pre-conditions for upgrading commodity value chains (Wiggins *et al*., 2010). Low fertilizer use intensity has been cited as one of the main factors limiting rice productivity growth in Sub-Sahara Africa (SSA) (Fuglie *et al*., 2013; Koji, 2009). Smallholder rice farmer's poor access to credit is induced by their lack of collateral or by the high-interest rates demanded by financial institutions (Jan *et al.*, 2012; Barrett *et al.*, 2012; Deb & Suri, 2013; Oya, 2012). There are several new technologies available to boost rice production but just a few farmers are aware of these technologies. There is also poor access to the market and a lack of economies of scale (Rehber, 1998; Simmons, Winters, & Patrick, 2005). A few farmer have the knowledge of the technologies but cannot adopt the new and improved technologies due to the high cost associated with it. Contract farming is seen as a strategy that can address these deficiencies. It has long been prevalent in developed countries and in recent times has spread widely in developing countries (Wong, Darachanthara, & Soukkhamthat, 2014). It is also perceived as a strategy for agricultural transformation in developing countries because of its potential to address agricultural marketing and production challenges concurrently. Contract farming can benefit farmers directly through access to credit, inputs, remunerative markets, and improved technology, thus increasing their productivity and income (Little and Watts 1994; Simmons *et al.* 2005; Christensen, Sayāmwālā, and Witchayānon 1993; and Ton *et al.* 2007). It also improves access to capital and credit (Hudson, 2000). The engagement of

smallholder farmers in contract farming will result in proper coordination and allocation of resources, goods, and services thereby reducing poverty and improving the livelihoods of farm households (Jari & Fraser, 2009). Some scholars commend contract farming as an efficient way for peasants to get involved in the capitalist market (Chimbwanda 2011, UNCTAD 2009, and World Bank 2007). However, some studies also have shown contract farming as an endorsement of monopolistic exploitation that makes small farmers proletariats, without land dispossession (Clapp 1988, Sivramkrishna and Jyotishi 2008, Watts 1994, De Schutter 2011). Chevalie (1983) expressed contract farmers as 'propertied proletarians' cited from Lenin.

2.2.4. The trend towards practicing contract farming in many developing and developed countries

There is a trend towards practicing more contract farming in many developing and developed countries.

The trend towards more contract farming, and the reasons behind it, have been extensively described for the agro-food industry in developed countries (e.g. Martinez and Reed, 1996; Royer and Rogers, 1998). Developing countries are impacted by the same trends in the agro-food system, and also experience an increase in contract farming. However, for developing countries, several developments may lead to an even more rapid expansion of it. One of these developments is the rise of supermarkets in food retailing. Over the last two decades, the number of supermarkets has grown rapidly in the urban areas of developing countries, particularly in Asia and Latin America (Reardon and Berdegué, 2002). Another development relevant for contract farming in developing countries is the reduction of the role of the state in providing marketing, input, and technical services. As the provision of inputs and services by independent firms is often weak, it can solve the problem of farmer access to inputs (Key and Runsten, 1999). A third development refers to the ambition of donors, development NGOs, and governments of developing countries to strengthen smallholder access to markets. These agencies consider contract farming as one of the main instruments to link small-scale farmers to domestic and even foreign markets and thereby to reduce poverty (IFAD, 2003; Dannson, 2004; World Bank, 2007).

Therefore, farmers' participation in more contract farming plays a vital role in poverty reduction and market linkage.

2.2.5. The negative impact of contract farming

Several researchers identified a few negative impacts of contract farming and there were controversies regarding this.

Critics of contract farming argue that large agribusiness firms use contracts to take advantage of cheap labor and transfer production risk to farmers. Contract terms may be exploitative and smallholders may have to accept due to weak bargaining power (e.g. Setboonsarng 2008; Eaton and Sheperd 2001). Abdulai & Al-hassan (2016) indicated that "while some studies are of the view that contract farming improves access to ready markets by smallholder farmers, others opined that contract farming lowers the incomes of smallholder farmers because the contractors have greater market power over the farmers. Little and Watts (1994) challenge the welfare impact of contract farming on the income of the beneficiaries; Singh (2002) question the exploitative nature of contract farming due to the monopsonistic powers of the companies; and Key and Runsten (1999) claim that rural inequalities are a negative outcome of it. It is evident that shows situations where farmers received limited gains from participating in contract farming (Key and Runsten, 1999 and Simmons et al., 2005). Conversely, other authors warn about certain undesirable welfare effects for smallholders (Wilson, 1986; Rickson and Burch, 1996).

Several skeptics indicate the exclusion of the small farmers from the contractual arrangements (Glover and Kusterer 1990; Runsten 1994; Little and Watts 1994; Delgado 1999; Kirsten and Sartorius 2002; Singh 2002). On the contrary, optimists such as Key and Runsten (1999) for Mexico, Warning and Key (2002) for Senegal; Miyata et al (2009) for China; Briones (2015) for the Philippines; Sriboonchitta and Wiboonpoongse (2014) for Thailand and Birthal et al (2005); Erappa (2006); Nagaraj et al (2008); Pandit et al (2009) and Singh (2011) for India present the cases of the inclusion of small farmers in the contract farming schemes. The evidence on the inclusion or exclusion of small farmers from the remunerative value chains is mixed reflecting a theoretical ambiguity.

Therefore, limited gain, risk transfer to producers, and rural inequalities are the main negative impact of contract farming.

2.3. Concepts of inclusive market development or inclusive business

Inclusive market systems are those that involve and support a variety of actors, including poor and marginalized groups (such as women, youth, the ultra-poor, and persons with a disability) who are often excluded – or even exploited – by traditional market systems. Market systems initiatives mustn't restrict themselves to 'market-ready' individuals, but target marginalized individuals who have not previously participated significantly in markets. World Vision Australia believes that if we are to understand the ability of market economies to eradicate poverty, poor and marginalized people must be able to actively engage in markets and share in their rewards. Structural barriers that prohibit them from accessing markets and job opportunities, financial services and credit, land and property, business knowledge, and emerging technologies are often faced by people living in poverty. These economic barriers for marginalized groups such as women, people with disabilities, and religious and ethnic minorities, among others, can be exacerbated by social barriers such as discriminatory social norms. Market systems need to be inclusive to reduce those issues.

The concept of inclusive business was first referred to formally in the United Nations report creating value for all: strategies for doing business with the poor (2008) published by the growing inclusive markets initiative and guided by an advisory board consisting of leaders in the field, including the International Business Leaders Council, the International Finance Corporation, the main bilateral donor (USAID and AFD), the World Business Council for Sustainable Development, University of Michigan and Harvard Business School. The report suggested that an inclusive business model is capable of benefiting the poor by including them, sustainably, in a company's value chain – on the demand side as buyers and users, and the supply side as suppliers, entrepreneurs, or workers. Inclusive business models, for shared benefit, create bridges between corporations and the vulnerable. For business, the benefits go beyond immediate profits and higher incomes: profits include stimulating creativity, generating opportunities, and reinforcing supply chains. For the poor, benefits include access to essential goods and services, higher productivity, sustainable earnings, and greater empowerment. Even before this UNDP report, in 2006 the World Business Council for Sustainable Development had discussed inclusive business as that which seeks to contribute towards poverty alleviation by including lower-income communities within its value chain, while at the same time not losing sight of the ultimate goal

of business, namely, to generate profits. According to the UNDP Inclusive Market Development Handbook (2010), the IMD approach is based on the notion that to ensure the efficacy of markets for the vulnerable, various measures in different places and at different times are necessary. This strategy aims to improve the whole market framework as required and can involve companies, business relationships, market structures, or the business environment. In other areas of growth, IMD may also be implemented, such as by leveraging the private sector to resolve disparities in educational services, to encourage energy and environmental solutions, or as a strategy in crisis prevention and recovery situations.

Definitions of inclusive businesses have been provided by many international organizations, such as the UNDP, ADB, UNIDO, and the World Business Council for Sustainable Growth, among others (Table 1). It is to be noted that there is no ‘definitive’ definition of ‘Inclusive Business’. Most of these organizations describe inclusive business as a process in which targeted groups, including large entrepreneurs and poor along with others, are involved in various roles in production and supply chains. In the production, distribution, and marketing segments, large entrepreneurs are generally involved, while the poor participate as producers and suppliers of raw materials and intermediate products and labor suppliers.

Table 1: Definition of 'Inclusive Business'

Organizations	Definition of Inclusive Business	Main components
World Business Council for Sustainable Development, 2006	An inclusive business is one that seeks to contribute towards poverty alleviation by including lower-income communities within its value chain while not losing sight of the ultimate goal of business, which is to generate profits.	❖ Inclusion of the lower-income community in the value chain ❖ Making profits
United Nations Development Programme,2010	Inclusive business models include the poor and other marginalized groups (e.g. women, youth, and indigenous people) on the demand side as clients and customers and on the supply side as employees, producers, and business owners at various points in the value chain. They build bridges between business and the poor for mutual benefit.	❖ Inclusion of poor and other marginalized groups. Demand-side as clients and customers and supply side as employees, producers, and business owners in the value chain
Asian Development Bank, 2014	Inclusive businesses are private sector investments specifically targeting this low-income market with the double purpose of making a reasonable profit (i.e. an internal rate of return of 8-20%) and creating tangible development impact through the provision of sustainable decent jobs and better income opportunities, as well as services that matter for the poor and low-income people's ($3) lives.	❖ Targeting poor and low-income people (US$3) ❖ Targeting low-income market ❖ Making a reasonable profit ❖ Creating decent jobs
World Business Council for Sustainable Development (WBCSD) & SNV Netherlands Development Organization, 2011	Inclusive businesses are entrepreneurial initiatives that are economically profitable and environmentally and socially responsible. Underpinned by a philosophy of creating mutual value, Inclusive Businesses contribute to improving the quality of life of low-income communities by integrating them in the business value chain: as suppliers of services and/or raw material, as distributors of goods and/or services, and as consumers, by offering goods and services to fulfill their essential needs at prices they can afford.	❖ Economically profitable and environmentally and socially responsible ❖ Integrating the low-income communities in the value chain as suppliers of services and/or raw material, as distributors of goods and/or services, and as consumers, by offering goods and services
Endeva-Enterprise Solutions for Development, 2010	The inclusive business integrates people living in poverty into the value chain as consumers or producers, thus making a positive contribution to the development of	❖ Integrates people living in poverty into the value chain as consumers or producers

	companies, the local population, and the environment.	
Organizations	**Definition of Inclusive Business**	**Main components**
International Business Leaders Forum, 2010 (Jackman & Breeze 2010)	Inclusive business models are designed to deliver mutual benefits for business and the poor – generating sales and profit, while also creating jobs, providing access to new products, and increasing incomes. Successful inclusive business initiatives may include the poor as clients and customers on the demand side, or as employees, producers, and business owners on the supply side.	❖ Generating sales and profit ❖ Creating jobs, providing access to new products, and increasing incomes ❖ Inclusion of the poor as clients and customers on the demand side, or as employees, producers, and business owners on the supply side
National Smallholder Farmers Association of Malawi (NASFAM) (Makwenda 2010)	Inclusive business refers to a sustainable business practice that benefits the lower-income members of society. An inclusive business model involves close working partnerships with local suppliers and service providers to share value among the partners. Inclusive business rests on both generating revenue and producing beneficial social impact.	❖ Close working partnerships with local suppliers and service providers to share value among the partners
Business Innovation Facility, 2011	The term 'inclusive business' refers to profitable core business' activity that also tangibly expands opportunities for the poor and disadvantaged in developing countries. Such business models can engage the poor as employees, suppliers, distributors, consumers, and/or innovators.	❖ Profitable business opportunities . ❖ Engage the poor as employees, suppliers, distributors, consumers, and/or innovators

Source: Moazzem and Rayan (2014)

2.3.1. Main focuses of inclusive growth (IG):

- IG focuses on economic development, which is a necessary and crucial condition for reducing poverty.

- IG adopts a long-term perspective and is concerned with sustained growth.

- IG focuses on the rate and trend of development of both. For accelerating poverty reduction, how growth is produced is crucial, and IG strategies must be adapted to country-specific circumstances.
- IG concentrates on productive employment rather than redistribution of wealth. Hence the focus is not only on employment growth but also on productivity growth.
- IG has not only the firm but also the individual as the subject of analysis.
- IG is in line with the absolute meaning, not the relative, of pro-poor growth.
- IG is not specified in terms of particular goals, such as job generation or distribution of income. These are future effects, not particular targets.
- IG is fuelled by market-driven growth sources with a facilitating role being played by the government.

2.3.2. Benefits of IMD

By widening their opportunities to lead lives they value, IMD will enhance poor people's lives. It may do so in the following ways:

- Creating employment and increasing incomes by the inclusion of poor people as customers, workers, producers, and small business owners in the value chains.
- Meeting basic needs such as food, clean water, sanitation, electricity, and services related to health.
- Increasing productivity, through access to products and services, from electricity to mobile telephony, from agricultural equipment to credit and insurance.
- Empowering the poor individually and communally (all these contributions promote the empowerment of poor people) to gain more control over their lives. Inclusive business models can give people the confidence and new sources of strength to escape poverty by raising awareness, by providing information and training, by including marginalized groups, by offering new opportunities, and by conferring hope and pride.

2.3.3. Inclusive market development by M4P

Inclusive market development can be achieved through various methods. The MP4 approach for IMD is more useful for developing countries. M4P means Making Markets Work for the Poor. The central idea of this approach is that the poor, and the incomes of the poor, depend on market systems. Increased productivity and sustainability of these business structures are thus contributing to an increase in their income situation and, as a result, a decrease in poverty. This method is based on the following four basic principles:

a. M4P is a systemic approach: It is important to understand at which point market systems fail concerning the poor and act to address such failure.
b. M4P seeks to bring about lasting change: The effectiveness of the market is enhanced by improving its mechanisms and by the interaction of its actors.
c. M4P seeks to be as inclusive as possible: Improvements are designed to reach as many poor people as possible.
d. M4P considers development cooperation as a facilitator: Development cooperation is to act as a catalyst that stimulates market functions or those of its actors, inspiring change without ever assuming a leading role itself. This approach was developed a few years ago and is now applied in many countries (e.g. SDC, DFID, Sida).

2.3.4. Inclusive growth and poverty reduction

Inclusive growth, which encourages people to contribute and benefit from economic growth, requires rapid and sustainable poverty reduction. To dramatically reduce poverty, the rapid pace of growth is undeniably important, but for this growth to be sustainable in the long term, it should be broad-based across industries and involve a large portion of the country's labor force. Inclusive growth is about increasing the rate of growth and expanding the size of the economy, while at the same time leveling the investment playing field and increasing the potential for sustainable employment. The relative definition could lead to sub-optimal results for both poor and non-poor households through a focus on inequality. Using the absolute meaning, to achieve the greatest rate of poverty reduction, the goal is to increase the rate of growth. Inclusive growth focuses on an ex-ante analysis of sources of sustained, high growth and constraints, not just on one group, the poor. By using more fully parts of the labor force stuck in low-productivity

activities or entirely excluded from the growth process, the study focuses on ways to improve the growth rate. This is in contrast to the literature on pro-poor development, which has historically focused on assessing the effect of development on poverty reduction through the monitoring of various indicators of poverty. Inclusive development policies are an important component of the majority of sustainable growth government initiatives. For instance, a country that has grown rapidly over a decade, but has not seen a substantial reduction in poverty rates may need to focus specifically on the inclusiveness of its growth strategy, i.e. on the equality of opportunity for individuals and firms.

CHAPTER III

METHODOLOGY

This chapter presents a detailed description of the methods adopted at different stages of the research. The methodology is an indispensable and integral part of any research. This chapter presents the methodology followed in the research, which included background of the district, selection of the study area, selection of vegetable, sample size and sampling technique, preparation of survey schedule, survey period, method of data collection, questionnaire pattern for contract and non-contract farmers, data processing, analytical techniques and problems encountered in data collection.

3.1. Background of the district

Figure 1: Map of Narsingdi district of Bangladesh

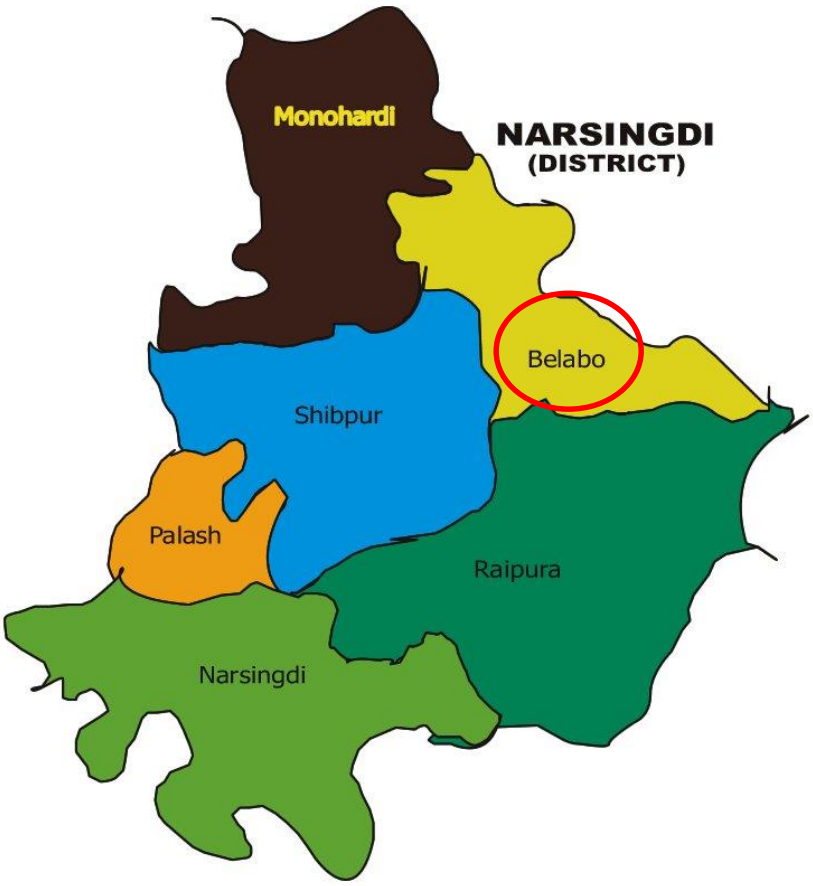

Figure 2: Map of Belabo upazila of Narsingdi district

Narsingdi is located 50 km north-east of Dhaka, the capital city of Bangladesh. It is a part of the Dhaka Division. Narsingdi is bordered by Kishoreganj in the north and north-east, Brahmanbaria in the east and south-east, Cumilla in the south and south-east, Narayanganj in the south and south-west and Gazipur in the west. Topographically, the district lies at an altitude of 3 masl (meter above sea level) with an annual average temperature of 36^0 C maximum, 12.7^0 C minimum, and 2,376 mm of rainfall. It comprises a total area of 14.8 km^2 (5.7 sq. mi), total population 2,224,944, and density 2,000/km^2 (5,100/sq. mi) (BBS 2011). Narsingdi district belongs to six Upazilas (sub-districts), 69 unions (collective forms of some villages), and 1,060 villages. Agriculture is the main occupation of the majority of the people (42.41 %) followed by service, commerce, transport, and others (DAE, 2013). Various kinds of vegetables-bean, brinjal, gourd, sweet gourd, kakral, Karola, ladies finger, cucumber, cabbage, cauliflower, tomato, potato, poi-shak, palong-shak, data-shak are produced in plenty in the district.

3.2. Selection of the research area

The selection of the research area is an important step for conducting any research because it indicates a premise from where required data would be collected following the objectives. Based on the high concentration of vegetable production and its location near to capital city Dhaka that facilitates collecting data timely with a limited timeframe and budget, one Upazila namely Belabo of Narsingdi district was selected purposively.

The main considerations behind the selection of the above Upazila as study are as follows:

- A large number of vegetable growers are available and farmers use a good portion of their land for producing vegetables in these study area.
- This village had some identical characteristics like topography, soil, and climatic conditions for producing vegetables.
- Easy accessibility and good communication facilities in this village.

3.3. Selection of vegetable

Bean is a widely grown important vegetable in Bangladesh. Among all vegetables, the bean was purposively selected. The research required data from both contract and non-contract farmers and a large number of farmers of Belabo Upazila of Narsingdi district were engaged in contract farming for bean production. That's why the bean producers of the focal areas were selected as targeted respondents to collect data.

3.4. Sample size

Farmer	**No. of respondents**
Contract	60
Non-contract	100
Organization and Businessmen	10
Total	**170**

The population for this research is defined as those persons involved in bean production (both contract and non-contract) in the Narsingdi district. A purposive sampling technique was selected to meet the objectives. One hundred non-contract bean growers and sixty contract bean growers were selected from the study area. Thus, the total sample size for farmers was 160. For

more information regarding contract farming, interviews of 10 organization and businessmen e.g. Hortex Foundation; Bangladesh Fruits, Vegetables and Allied Products Exporters Association; Supreme seed company; ACI agribusiness; Taasin Enterprise; Parley International; Aritra Trade International; Crown Fruits and Vegetables Export; Hoque Enterprise and matrix farm have been taken.

3.5. Preparation of survey schedule

For collecting data through the survey method preparation of the interview schedule is of crucial need. According to the objectives of the research, two sets of interview schedules were prepared: one for the farmers and the other for the agribusiness organizations and businessmen. The data regarding the volume of production, production cost, marketing cost, place of sales, sales prices and purchase price, the volume of post-harvest loss, production techniques, contract agreements, benefits of contract farming, problems faced by both contract and non-contract farmers, and their possible recommendation would be collected through the interview schedule. All the schedules were pre-tested and finalized after necessary correction, modification, and adjustment.

3.6. Study period

Data were collected from farmers by survey method with the help of a pre-designed and pretested interview schedule from July to December 2019.

3.7. Methods of data collection

Reliable data are directly related to the success and validity of the research. Primary data from respondents were collected through face to face interview. Before beginning the interview objectives of the research were clearly explained to the respondents so that they could understand and respond freely. The questions were asked systematically and in a very simple manner. It was also explained to the farmers that the study was purely academic. Farmers were requested to provide the correct information as far as possible. To minimize errors, data were collected in local units. However, those units were later converted into a standard unit. Interviews were mainly conducted at the leisure time of the farmers to keep them undisturbed and secure accurate information. For the research purpose, secondary data were collected from different sources like books, journals, newspapers, and documents of Bangladesh Bureau of Statistics. To obtain reasonable and accurate primary data the researcher visited the study area several times.

Adequate measures were taken to make the information reliable and accurate and thereby to make them meaningful.

3.8. Processing of data

The collected data were subsequently compiled, coded, edited, summarized, and scrutinized. The computer package Microsoft Excel and SPSS were used for data entry, aggregation, and analysis.

3.9. Analytical techniques

a. Descriptive statistics (frequencies and percentage) were used to describe socio-demographic characteristics, farming information, problems of contract farming, consequences of contract farming upon farmers, and rank of suggestions. It requires simple calculation, and is widely used, and easy to understand.
    i. Socio-demographic characteristics including marital status, educational qualification, type of family, major income source, female head's occupation, average annual savings, and average monthly income.
    ii. Farming information including the type of land, size of land holdings, no. of years engaged in farming, labor use, having storage place for crops, training or technical knowledge about modern agriculture, apart from farming other activities, type of fertilizers being used and methods of controlling pests and diseases.
b. The pie chart was used to describe types of contracts, contract duration, pricing methods, description of the contract party, and payment method.
c. Bar diagram was used to describe forms of contract, non-contract farmer's interest in engaging with contract farming, time of the transaction, and farmers' attitude about contract farming.
d. Independent samples t-test was employed to compare the cost of production, marketing cost, yield, sales, and profits between contract and not contract farmers.

3.10. Calculation of profit

Profit= Total volume of sales (kg) * per unit price (Tk/kg) - (Total cost of production + Total marketing cost).

CHAPTER IV
RESULTS AND DISCUSSION

4.1. Socio-demographic profile of the respondents

In this chapter, the socio-demographic profile of the respondent was analyzed. The study selected marital status, educational qualification, family type, size of family, and occupation as the socio-demographic characteristics.

4.1.1. Marital status

The table 2 shows the marital status of the respondents. It is seen that the majority of the respondents were married (94.4%) followed by a single (5%) and divorced (0.6 %)

Table 2: Marital status of the respondents

Marital status	Frequency	Percent
Single	8	5.0
Married	151	94.4
Divorcee	1	0.6
Total	**160**	**100.0**

Source: Field survey, 2019

4.1.2. Educational qualification

The table 3 shows the educational qualification of the respondents. Education levels ranged from illiterate to diploma or technical. It is inferred from the below table that, 38.8% of the respondents have completed primary level education, 28.1% of the respondents were illiterate but can sign, 21.3% of the respondents have completed secondary level education, 10.6% of respondents were illiterate and 1.3% of the respondents have completed a diploma or technical degree. Therefore, it is found from the analysis that the majority (38.8%) of the respondents were qualified with primary level education.

Table 3: Distribution of the respondents according to their education level

Education level	Frequency	Percent
Illiterate	17	10.6
Illiterate but can sign	45	28.1
Primary	62	38.8
Secondary	34	21.3
Diploma/Technical	2	1.3
Total	**160**	**100.0**

Source: Field survey, 2019

4.1.3. Type of family

The table 4 indicates that the majority (55%) of respondents had a nuclear family, while 45% had a joint family.

Table 4: Family type of the respondents

Family type	Frequency	Percent
Nuclear	88	55.0
Joint	72	45.0
Total	**160**	**100.0**

Source: Field survey, 2019

4.1.4. Major income source

The table 5 shows the respondent's major sources of income. It is seen from the below table that 55.6% of farmers are dependent on agriculture and allied activities for their income whereas, 16.3% of farmers rely on only agriculture as their earning source. A significant number of respondents (28.1%) were dependent on other activities as their revenue source.

Table 5: Major income source of the respondents

Income source	Frequency	Percent
Agriculture	26	16.3
Agriculture and allied activities	89	55.6
Other sources	45	28.1
Total	**160**	**100.0**

Source: Field survey, 2019

4.1.5. Female head's occupation

The table 6 shows the female heads' occupation. It is seen from the table below that the majority (83.8%) of females were housewives and only 16.3% of females were involved with earning activities.

Table 6: Female head's occupation

Occupation	Frequency	Percent
Housewife	134	83.8
Different earing activities	26	16.3
Total	**160**	**100.0**

Source: Field survey, 2019

4.1.6. Average annual savings

The table 7 shows that a substantial number of respondents (70.6%) average annual savings were between 1000 to 5000 taka, while only 10% of respondents save more than 5000 taka in a year. 19.4% of respondents earned less than 1000 taka in a year.

Table 7: Respondents average annual savings

Annual savings	Frequency	Percent
less than 1000	31	19.4
1000 to 5000	113	70.6
More than 5000	16	10.0
Total	**160**	**100.0**

Source: Field survey, 2019

4.1.7. Average monthly income

Average monthly income of the respondents is shown in table 8. On average 43.8% of respondents earned Tk. 20000 to Tk. 30000 per month and the 27.5% of the respondent’s monthly income Tk. 30000 to Tk. 40000 per month. 13.1% of the respondents earned less than Tk. 20000 per month whereas, 15.6% of respondents earned more than Tk. 40000 in a month.

Table 8: Respondents average monthly income

Monthly income	Frequency	Percent
less than 20000	21	13.1
20000 to 30000	70	43.8
30000 to 40000	44	27.5
more than 40000	25	15.6
Total	**160**	**100.0**

Source: Field survey, 2019

4.2. Farming information

It includes the type of land, size of land holdings, no. of years engaged in farming, labor use, having storage place for crops, training or technical knowledge about modern agriculture, apart from farming other activities, type of fertilizers being used and methods of controlling pests and diseases.

4.2.1. Type of land

It is observed from the table 9 that 74.4% of respondents used both own and rented land for farming, where 18.1% of respondents used their own land and only 7.5% of respondent's use leased or rented land.

Table 9: Land type of the respondents

Land types	Frequency	Percent
Owned	29	18.1
Rented or leased	12	7.5
Both category	119	74.4
Total	**160**	**100.0**

Source: Field survey, 2019

4.2.2. Size of land holdings

Based on their farm size, bean farmers were divided into three groups. Majority of the respondents (63.8%) had a land size between 1 to 3 acres. Besides, respondents with a land size of 'below 1 acre' and 'more than 3 acres' were 29.4% and 6.9% respectively.

Table 10: Size of land holdings

Size of land holdings	Frequency	Percent
Below 1 acre	47	29.4
1-3 acres	102	63.8
Above 3 acres	11	6.9
Total	**160**	**100.0**

Source: Field survey, 2019

4.2.3. No. of years engaged in farming

The farming experience of a respondent was determined based on involvement in the farming activities related to agriculture. Bean farmers were classified into three categories based on their farming experience. The table below shows that the highest portion of the bean farmers (38.8%) had farming experience of 9 - 10 years, and 28.8% of farmers had 7-8 years of experience. At last 10% of farmers had less than 7 years' experience whereas 22.5% of farmers had more than 10 years' experience.

Table 11: Respondents no. of years engaged in farming

Farming experience	Frequency	Percent
Less than 7 years	16	10.0
7-8 years	46	28.8
9-10 years	62	38.8
Above 10 years	36	22.5
Total	**160**	**100.0**

Source: Field survey, 2019

4.2.4. Labor use

The table 12 illustrates type of labor used by the respondent. Table shows that 93.1% respondents used both own and hired labor in their farming activities whereas, 5.6% used owned labor and 1.3% used hired labor in their farming activities.

Table 12: Type of labor used by the respondents

Labor used	Frequency	Percent
Hired	2	1.3
Owned	9	5.6
Both hired and owned	149	93.1
Total	**160**	**100.0**

Source: Field survey, 2019

4.2.5. Having storage place for crops

Table 13 shows respondents having or not storage place for crops. It is seen from the table that, 94.4% farmers had no storage place for their crops whereas only 5.6% farmers had those facilities.

Table 13: Having storage place for crops

Storage place	Frequency	Percent
Yes	9	5.6
No	151	94.4
Total	**160**	**100.0**

Source: Field survey, 2019

4.2.6. Any training or technical knowledge about modern agriculture

The table 14 illustrates respondents access to any training or technical knowledge about modern agriculture. It is seen that 42.5% farmers had access to training or technical knowledge whereas 57.5% farmers had not any kind of training about modern agriculture.

Table 14: Respondents training or technical knowledge about modern agriculture

Knowledge about modern agriculture	Frequency	Percent
Yes	68	42.5
No	92	57.5
Total	**160**	**100.0**

Source: Field survey, 2019

4.2.7. Apart from farming other occupations of the respondents

Table 15 shows respondent's occupation apart from farming. It is seen from the table that 50% respondents were involved with business apart from their farming whereas, 42.5% respondents had no occupation except farming. Besides, 1.3%, 5% and 1.3% respondents were engaged with salaried employment, farm labor and other occupations respectively apart from farming.

Table 15: Apart from farming other occupations of the respondents

Other occupations	Frequency	Percent
No employment	68	42.5
Salaried employee	2	1.3
Business	80	50.0
Others	2	1.3
Farm labor	8	5.0
Total	**160**	**100.0**

Source: Field survey, 2019

4.2.8. Type of fertilizers being used by the respondents

The table 16 shows the type of fertilizers being used by the respondents. It is seen that both chemical and organic fertilizers were used by the farmers in the research area. All the contract farmers (100%) used organic fertilizers on their land. Besides, in case of non-contract farmers, 2% used chemical fertilizers, 8% used organic fertilizers and 90% used both organic and chemical fertilizers on their land.

Table 16: Type of fertilizers being used by the respondents

Type of fertilizers used	Non-contract		Contract	
	Frequency	Percent	Frequency	Percent
Chemical fertilizers	2	2.0	0	0
Organic fertilizers	8	8.0	60	100.0
Both	90	90.0	0	0
Total	**100**	**100.0**	**60**	**100.0**

Source: Field survey, 2019

4.2.9. Pests and diseases control method

The table 17 illustrates respondent's pests and diseases control method. It is seen that in the case of contract farming, 96.7% farmers managed pests and diseases by biological and organic control method whereas 1% farmers used chemical pesticides and 1% used IPM method. Besides, 68% non-contract farmers used chemical pesticides, 1% used IPM and 31% used both chemical pesticides and IPM for controlling pests and diseases.

Table 17: Pests and diseases control method

Non-contract			Contract		
Pests and diseases control method	**Frequency**	**Percent**	**Pests and diseases control method**	**Frequency**	**Percent**
Chemical pesticides	68	68.0	Biological and organic control method	58	96.7
Integrated Pest Management (IPM)	1	1.0	Integrated Pest Management (IPM)	1	1.7
Chemical pesticides and IPM	31	31.0	Chemical pesticides	1	1.7
Total	**100**	**100.0**	**Total**	**60**	**100**

Source: Field survey, 2019

4.3. Comparison of cost of production between contract and not contract farmers

It is observed from the table 18 that, there is a significant difference between the total cost of production of contract farmers (83346.66tk/hectare) and non-contract farmers (108070.50tk/hectare) which is significant at 5% level. The cost of seeds, fertilizers, the cost of pesticides, and insecticides are significant at 5% level. Harvesting cost is significant at $p<0.05$. As the contract farmers used biological control and IPM, that's why the cost of pesticides and insecticides is "0" for contract farmers, but the cost of insecticides and pesticides was Tk. 13737.00 per hectare for non-contract farmers. However, the cost of land preparation, irrigation, labor cost, and other costs are not significant.

Table 18: Comparison of cost of production between contract and not contract farmers

Items	Farm type		t	df	P-value
	Contract Mean	Non-contract Mean			
Cost for land preparation	4261.66	4645.00	-1.005	158	.225
Cost for seeds	2635.00	3469.00	-2.882	158	.000***
Cost for fertilizers	12500.00	18925.00	-5.160	158	.003***
Cost for irrigation	2861.66	3029.00	-0.589	158	.900
Cost for pesticides and insecticides	.00	13737.00	-15.437	158	.000***
Labor cost	52975.00	54745.00	-0.378	158	.982
Harvesting cost	4050.00	4028.50	0.058	158	.015**
Other cost of production	4063.33	5492.00	-3.830	158	.179
Total cost of production	83346.66	108070.50	-3.134	158	.016**

***, **, and * denotes significant at 1%, 5% and 10% level

Source: Field survey, 2019

4.4. Comparison of cost of marketing between contract and not contract farmers

The table 19 shows the comparison of marketing costs per hectare between contract and non-contract farmers. It is seen that contract farmers have no transportation, labor, and packaging cost. Therefore, the mean differences between the two types of farmers (contract and non-contract) regarding all these variables e.g. transportation cost, labor cost, packaging cost, cleaning and washing cost and other costs are significant at 1% level. On the other hand, “standardization and grading” costs are not significant.

Table 19: Comparison of cost of marketing between contract and not contract farmers

Items	Mean		t	df	P-value
	Contract	Non-contract			
Transportation cost	.00	4660.00	-12.004	158	.000***
Labor cost	.00	7620.00	-11.595	158	.000***
Packaging cost	.00	7435.00	-12.944	158	.000***
Standardization and grading cost	7666.66	6820.00	1.172	158	.055
Cleaning and washing cost	7800.00	12355.00	-4.704	158	.002***
Other cost	3625.00	5574.00	-4.274	158	.004***

***, **, and * denotes significant at 1%, 5% and 10% level

Source: Field survey, 2019

4.5. Comparison of yield and sales between contract and not contract farmers

The table 20 shows the comparison of yield and sales between contract and non-contract farmers. It shows that the total production of bean is higher for contract farmers (18897.5 kg) than that of non-contract farmers (12893 kg), total post-harvest loss of contract farmers (189.86 kg) is less than that of non-contract farmers (392.19 kg), the total volume of sales is higher for contract farmers (18707.63 kg) than that of non-contract farmers (12600.81 kg). The contract farmers get more price (Tk. 17.26 per kg) for their products than that of non-contract farmers (16.56taka/kg). All these are highly significant at $p<0.01$. On the other hand, the area of land used to cultivate bean is less for non-contract farmers (1.56 hectares) than that of contract farmers (1.62hectare) and $p>0.05$, therefore the area of land is not significant.

Table 20: Comparison of yield and sales between contract and not contract farmers

Items	Mean		t	df	P-value
	Contract	Non-contract			
Area of land used to cultivate bean	1.62	1.56	0.350	158	.729
Total production of bean	18897.50	12893.00	4.382	158	.001***
Total post-harvest loss	189.86	392.19	-6.863	158	.000***
Total volume of sales	18707.63	12600.81	4.509	158	.001***
Sales price \ kg	17.26	16.56	2.519	158	.001***

***, **, and * denotes significant at 1%, 5% and 10% level

Source: Field survey, 2019

4.6. Comparison of profit between contract and not contract farmers

The table 21 and figure 4 shows the comparison of profit between contract and non-contract farmers. It shows that profit is more in the case of contract farmers than non-contract farmers, therefore profits are significant at 1% level.

Table 21: Comparison of profit between contract and not contract farmers

Item	Mean		t	df	p-value
	Contract	Non-contract			
Profit	219363.1167	53684.1600	12.284	158	.000***

***, **, and * denotes significant at 1%, 5% and 10% level

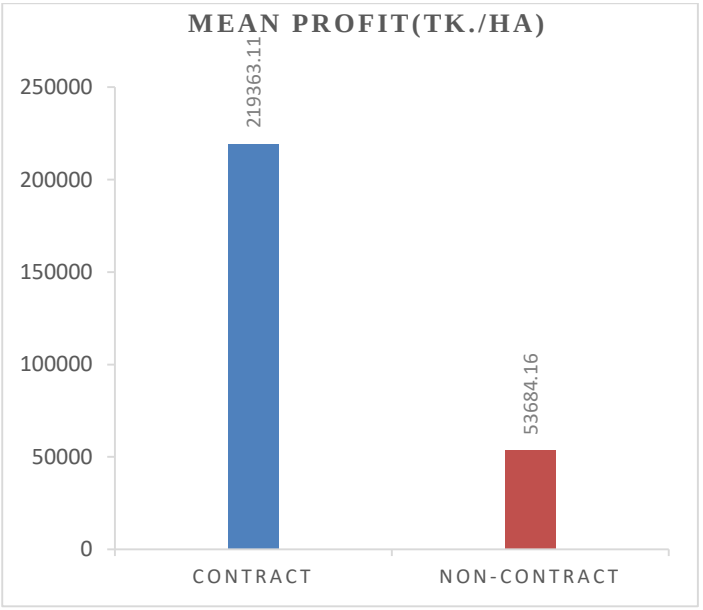

Figure 3: Profit between contract and not contract farmers

4.7. Contract farming-related information

4.7.1. Non-contract farmers interest in engaging with contract farming

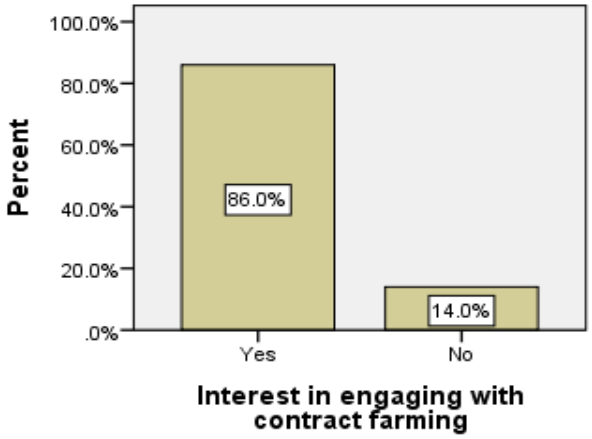

Figure 4: Interest in engaging with contract farming

The figure 5 showed that 86% of non-contract farmers were interested in engaging in contract farming, and the remaining 14% of the non-contract farmers weren't interested in engaging in contract farming.

4.7.2. Forms of contract

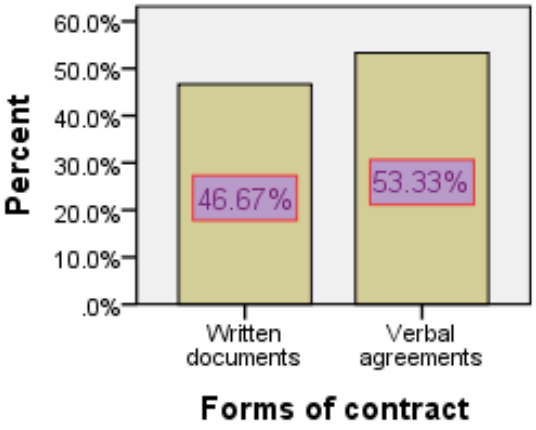

Figure 5: Forms of contract

The figure 6 shows the forms of contracts. 46.47% of farmers had written documents while 53.33% of farmers had verbal agreements.

4.7.3. Contract duration

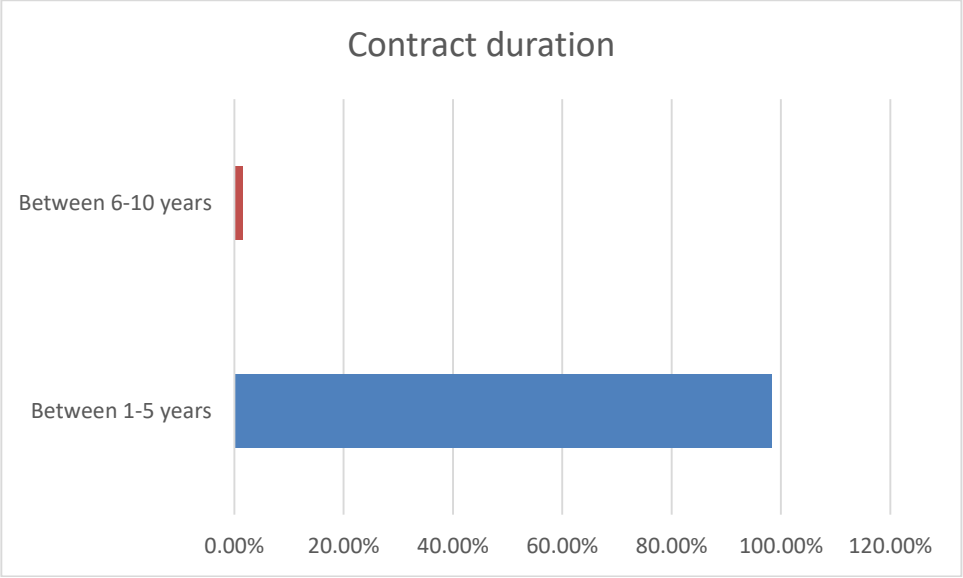

Figure 6: Contract duration

The above figure indicates that 98.33 % of contract farmers' contract period was between 1-5 years and the remaining 1.67% of contract farmers' contract period was between 6-10 years.

4.7.4. Pricing method

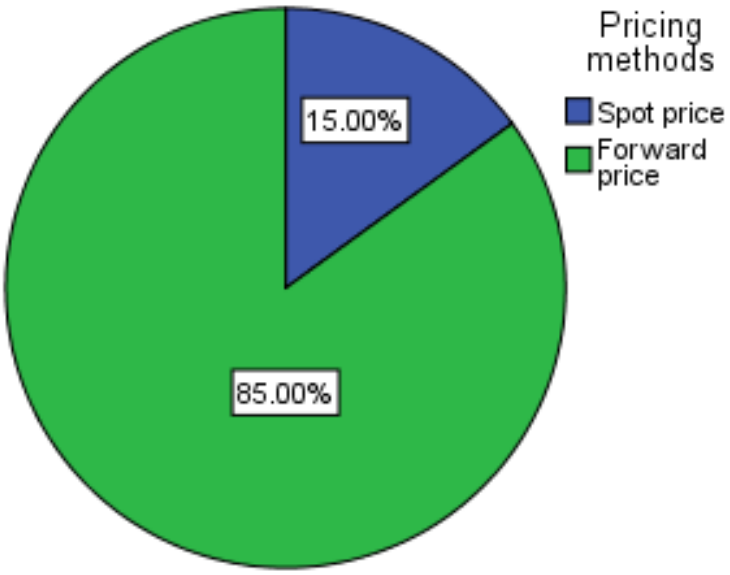

Figure 7: Pricing method

The figure 8 shows the price method of farmers. Normally 2 types of pricing methods were seen and they were spot price and forward price. This figure showed that forward pricing is most popular among contract farmers 85% farmers follow forward contract. Only 15% of farmers followed spot price.

4.7.5. Type of contract

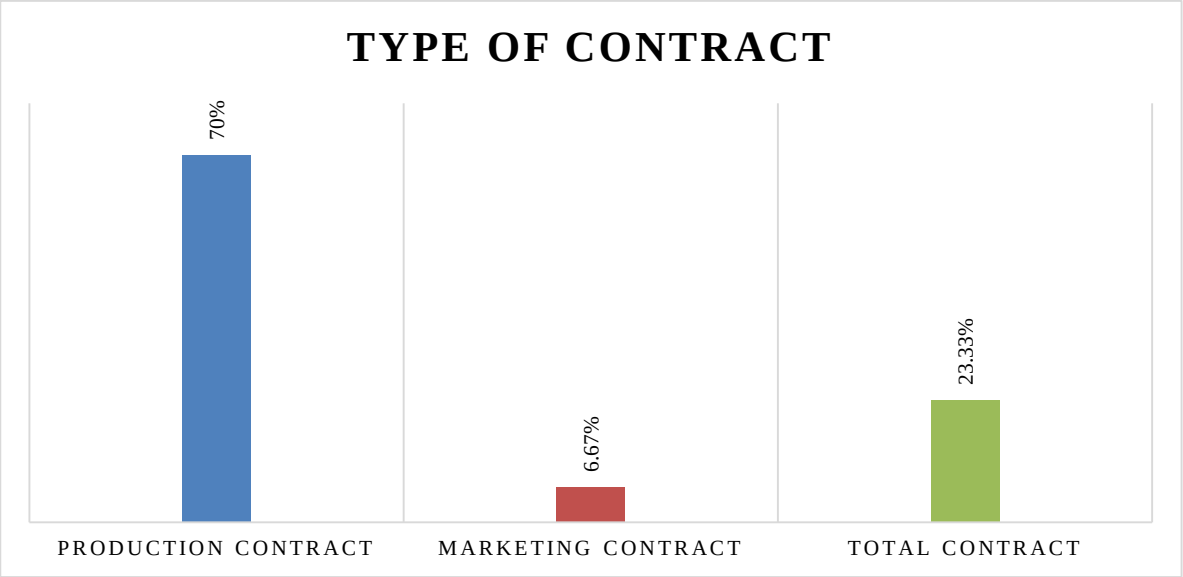

Figure 8: Type of contract

The figure 9 shows the type of contract farming in the study area. Most of the contract farmers were engaged in the production contract (70%) whereas 6.67% of farmers were engaged in the marketing contract and 23.33% of farmers were engaged in the total contract in the research area.

4.7.6. Type of contracted party & payment method

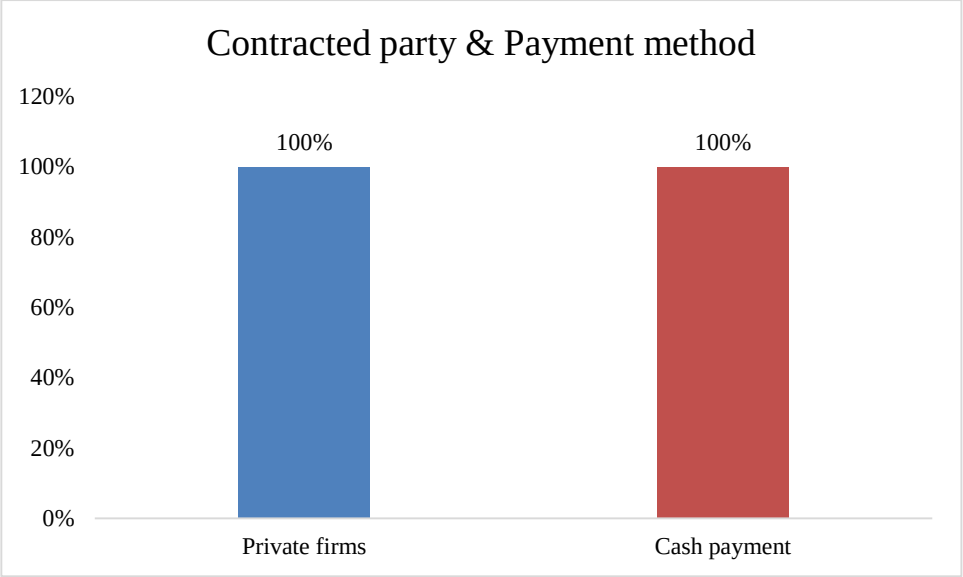

Figure 9: Contracted party & payment method

The above figure shows that 100% respondents were contracted with private firms and the payment method was cash for all of the contract farmers.

4.7.8. Payment time

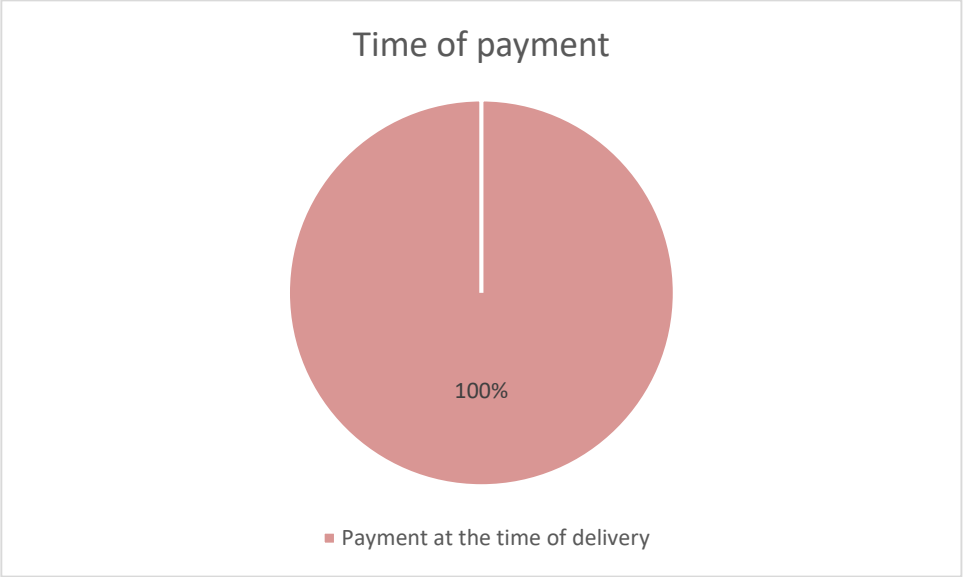

Figure 10: Time of payment

The above figure shows that 100% of the respondents' payment was at the time of delivery.

4.7.9. Attitude of non-contract farmers about contract farming

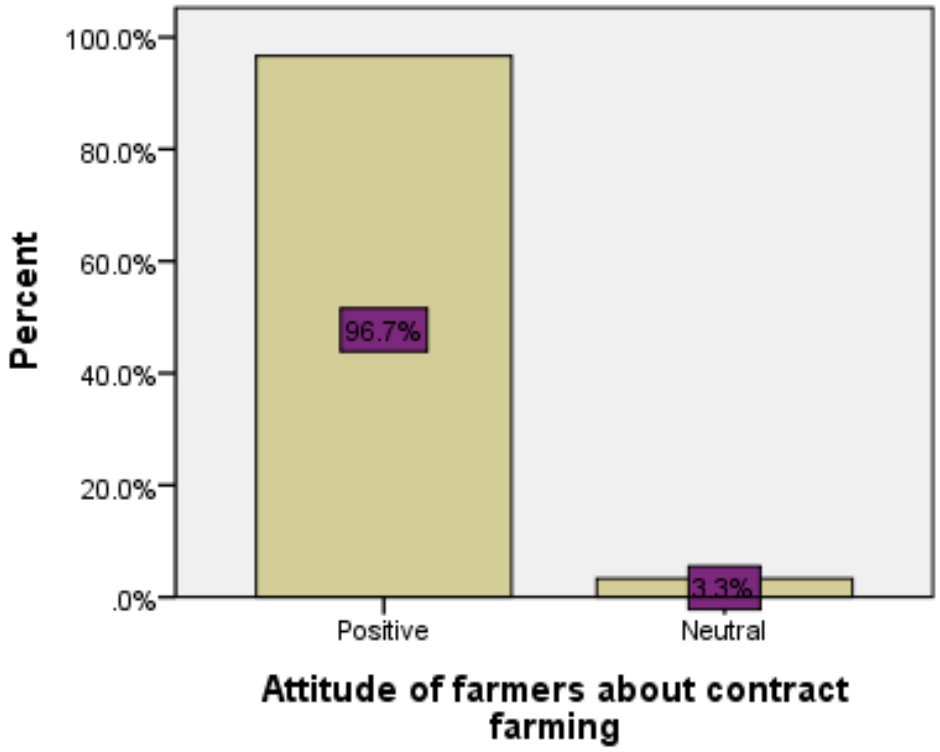

Figure 11: Attitude of farmers about contract farming

The figure 12 shows that the majority of the respondents (96.7%) had positive attitude about contract farming while by 3.3% of farmers had neutral attitude.

4.8. IMD approach in case of contract farming of vegetables

The three influencing factors of IMD: enable, encourage and empower can be fulfilled through contract farming. Both the exporters or inclusive businessmen and the contract farmers gets various support through contract farming. The information collected from both the businessmen and contract farmers are summarized in table 22.

Table 22: IMD approach in case of contract farming

Influencing factors of IMD	Exporter (Inclusive businessmen)	Farmer (Inclusive farmer)
Enabling	▪ Govt. enable exporters leveraging policy framework ▪ Establishing the infrastructure for quarantine and certification. ▪ Get govt. officials support from exporter/businessmen	▪ Get quality inputs such as seed, fertilizer, and crop protection products to improve vegetable yields ▪ Knowledge of better cultivation techniques and cropping practices
Encouraging	▪ Get technical support from BADC, DAM etc. ▪ Get cash incentives	▪ Get cash support. ▪ Get fair price ▪ Elimination of middlemen ▪ Reduce post-harvest loss ▪ Access to a wider market
Empowering	▪ Financial support from banks, donors at a low-interest rate	▪ Financial support from exporters ▪ Strengthen the voice of farmers

Source: Field survey, 2019

4.9. Problems of contract farming use

Table 23: Problems of contract farming

Variables	Worst problem	Problem	No problem at all
Lack of monitoring	17 (28.3)	39 (65)	4 (6.7)
Lack of incentives	53 (88.3)	7 (11.7)	
Poor infrastructural facilities	12 (20)	45 (75)	3 (5)
Lack of commitment	52 (86.7)	8 (13.3)	
Price risk	12 (20)	42 (70)	6 (10)
Less bargaining power of farmers	27 (45)	31 (51.7)	2 (3.3)
Weak law enforcement	33 (55)	25 (41.7)	2 (3.3)
Limited govt. support	34 (56.7)	25 (41.7)	1 (1.7)

Source: Field survey, 2019

The above table 23 illustrates the problems of contract farming. According to 65% of respondents, lack of monitoring is a problem of contract farming whereas 28.3% and 6.7% think it as the worst problem and no problem at all respectively. Lack of incentives is thought to be the worst problem of contract farming by 88.3% and problem by 11.7% of respondents. 75%; 20% and 5% of respondents agreed on poor infrastructural facilities as the worst problem; problem and no problem at all respectively of contract farming. According to 86.7% of respondents, lack of commitment is the problem of contract farming whereas 13.3% think it as a problem. 20%; 70% and 10% of respondents mentioned price risk as to the worst problem; problem and no problem at all respectively of contract farming. Less bargaining power of farmers is thought to be the worst problem of contract farming by 45% whereas 51.7% a problem and 3.3% as no problem at all. The majority of the respondents (55%) mentioned weak law enforcement as the worst problem followed by 41.7% as a problem and 3.3% as no problem at all. According to 56.7% of respondents, limited govt. support is the worst problem of contract

farming followed by 41.7% and 1.7% of respondents who thought it as a problem and no problem at all respectively of contract farming.

4.10. Consequences of contract farming

Table 24: Consequences of contract farming

Variables	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Increase income	44 (73.3)	16 (26.7)			
Increase productivity	32 (53.3)	25 (41.7)	3 (5)		
Improve product quality	37 (61.7)	22 (36.7)	1 (1.7)		
Increase the adoption of new technologies	3 (5)	23 (38.3)	23 (38.3)	11 (18.3)	
Improve living standards	36 (60)	23 (38.3)	1 (1.7)		
Smooth production flow	26 (43.3)	23 (38.3)	11 (18.3)		
Improve timeliness in delivery	23 (38.3)	33 (55)	4 (6.7)		
Increase producer prices	17 (28.3)	24 (40)	18 (30)	1 (1.7)	
Reduce production choices: techniques and products	18 (30)	17 (28.3)	24 (40)	1 (1.7)	
Reduce price risk	12 (20)	24 (40)	22 (36.7)	2 (3.3)	

Source: Field survey, 2019

The above table 24 shows that the majority of the contract farmers (73.3%) strongly agreed that contract farming increased their income followed by 26.7% who agreed about the statement. 53.3% of contract farmers strongly agreed about the consequences of contract farming increasing productivity followed by 41.7% agreed and 5% neutral. The majority of the contract farmers

(61.7%) strongly agreed that contract farming improves product quality followed by 36.7% agreed and 1.7% neutral about this statement. 38.3% of contract farmers were both agreed and neutral about the consequences of contract farming using increased adoption of new technologies followed by 18.3% contract farmers who disagreed and 5% who were strongly agreed. The majority of the contract farmers (60%) strongly agreed that contract farming improved their living standard followed by 38.3% agreed and 1.7% neutral about this statement. 38.3% agreed; 43.3% strongly agreed, and 18.3% were neutral about the consequences of contract farming smoothing the flow of production. The majority of the contract farmers (55%) agreed; 38.3% strongly agreed and 6.7% were neutral that contract farming improved timeliness of delivery. The majority of the contract farmers (40%) agreed that contract farming increased producer prices followed by 30% neutral; 28.3% strongly agreed and 1.7% disagreed. Consequences of contract farming use reduced production choices, techniques and products strongly agreed by 30%; agreed by 28.3%; neutral were 40% and disagreed by 1.7% about this statement. 20%; 40%; 36.7% and 3.3% contract farmers were strongly agreed; agreed; neutral and disagree about the consequences of contract farming use reducing their price risk.

4.11. Farmers' suggestions to solve the problems of contract farming

Table 25: Farmers' suggestions to solve the problems of contract farming

Ranking of suggestions	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Adequate infrastructural facilities	43 **(71.7)**	10 (16.7)	3 (5)	2 (3.3)	2 (3.3)			
Strong law enforcement	6 (10.0)	13 (21.7)	17 **(28.3)**	12 (20)	6 (10)	2 (3.3)	3 (5)	1 (1.7)
Reduction of price risk	3 (5.0)	6 (10)	10 (16.7)	7 (11.7)	16 **(26.7)**	7 (11.7)	5 (8.3)	5 (8.3)
Familiarize contract farming among businessmen and farmers	3 (5.0)	6 (10)	10 (16.7)	16 **(26.7)**	8 (13.3)	6 (10)	7 (11.7)	2 (3.3)
Adequate govt. support	4 (6.7)	20 **(33.3)**	14 (23.3)	9 (15)	6 (10)	2 (3.3)	1 (1.7)	4 (6.7)
Establishment of standard cold storage	2 (3.3)	1 (1.7)	4 (6.7)	7 (11.7)	16 **(26.7)**	14 **(23.3)**	9 (15)	7 (11.7)
Solve the problem of transportation	1 (1.7)	2 (3.3)	1 (1.7)	4 (6.7)	5 (8.3)	8 (13.3)	12 (20)	17 **(28.3)**
Proper scaling facilities	1 (1.7)	1 (1.7)	3 (5)	8 (13.3)	4 (6.7)	13 (21.7)	30 **(50)**	

Source: Field survey, 2019

The table shows some suggestions which were suggested and ranked by the contract farmers to solve the problems of contract farming.

In the 1st ranking, it is seen that 71.7% of the respondents (43 out of 60) thought that ‘adequate infrastructure’ is required badly. In the 2nd ranking farmers chose ‘adequate government support’ (33.3%). In the 3rd ranking, ‘strong law enforcement’ was required and the percentage was 28.3% of the respondents. ‘Familiarize contract farming among businessmen and farmers’ (26.7%) is in the 4th ranking. In the 5th ranking, both ‘reduction of price risk’ and ‘establishment of standard cold storage’ were 26.7%. As 23.3% of the respondents ranked the establishment of standard cold storage in 6th ranking too, it should be in 6th ranking rather than 5th. Reason behind keeping ‘reduction of price risk’ in the 5th place was secured price is necessary before the establishing cold storages. In the 7th and 8th places, respondents recommended ‘proper scaling facilities’ (50%) and ‘solve the problem of transportation’ (28.3%) respectively.

CHAPTER V

KEY FINDINGS AND CONCLUSIONS

5.1. Key research findings

a) All the contract farmers used organic fertilizers whereas, in the case of non-contract farmers, 2% used chemical fertilizers; 8% used organic fertilizers, and 90% used both organic and chemical fertilizers on their land. Therefore, product quality is better in the case of contract farming.

b) In the case of contract farmers, 96.7% of respondents managed pests and diseases by biological and organic control followed by 1% of respondents who used chemical pesticides, and 1% used IPM. In the case of non-contract farmers, 68% of respondents used chemical pesticides whereas 1% used IPM and 31% used both chemical pesticides and IPM.

c) There is a significant difference between the total cost of production of contract farmers (Tk. 83346.66 /hectare) and non-contract farmers (Tk. 108070.5 /hectare). As in the case of contract farming, organic fertilizers are mostly used, pest and disease controlled method is biological and organic, and most of the time seeds and pest control equipment are provided by the contractor therefore costs are lower than non-contract farmers.

d) Contract farmers have no transportation cost, labor cost, and packaging cost. Therefore, total marketing costs are lower for contract farmers in comparison to non-contract farmers.

e) The total production of bean is higher for contract farmers (18897.5 kg/ha) than that of non-contract farmers (12893 kg/ha), total post-harvest loss/hectare of contract farmers (189.86 kg/ha) is less than that of non-contract farmers (392.19 kg/ha), and the total volume of sales/hectare is higher for contract farmers (18707.63 kg/ha) than that of non-contract farmers (12600.81 kg/ha). The contract farmers get more price (Tk. 17.26 /kg) for their products than that of non-contract farmers (Tk. 16.56 per kg). Therefore, profit is undoubtedly more in the case of contract farmers than non-contract farmers.

f) The majority of the non-contract farmers (86%) were interested in engaging in contract farming, and the remaining 14% of the non-contract farmers weren't interested in engaging in contract farming.
g) Farmers perform contract farming underwritten documents were 46.47% and verbal agreements were 53.33%.
h) 98.33 % of contract farmers' contract period was between 1-5 years and the remaining 1.67% of contract farmers' contract period was between 6-10years.
i) Forward pricing is most popular among contract farmers that's why this pricing secures the highest percentage i.e. 85% rather than spot pricing which is 15%.
j) Most of the contract farmers were engaged in the production contract (70%).
k) A noticeable thing is that 100% of respondents were contract with private firms, the payment method was cash for all of the contract farmers and 100% of the respondents' payment was at the time of delivery.
l) The majority of the respondents (96.7%) attitude about contract farming was positive.
m) Farmers find several problems while engaged in contract farming. According to 65% of respondents, lack of monitoring is a problem of contract farming, lack of incentives is thought to be the worst problem of contract farming by 88.3%,75% of respondents agreed on poor infrastructural facilities as the worst problem of contract farming, 86.7% of respondents, lack of commitment is the problem of contract farming, 70% of respondents mentioned price risk as a problem of contract farming, less bargaining power of farmers is thought to be the worst problem of contract farming by 45% whereas 51.7% thought it as a problem, the majority of the respondents (55%) mentioned weak law enforcement as the worst problem followed by 41.7% as a problem and according to 56.7% of respondents, limited govt. support is the worst problem of contract farming.
n) The consequences of contract farming were positive and beneficial to farmers. The majority of the contract farmers (73.3%) strongly agreed that contract farming increased their income,53.3% of contract farmers strongly agreed that contract farming increased productivity followed by 41.7% agreed, the majority of the contract farmers (61.7%) strongly agreed that contract farming improves product quality followed by 36.7% agreed about this statement, the majority of the contract

farmers (60%) strongly agreed that contract farming improved their living standard followed by 38.3% agreed about this statement. Therefore, contract farming helps to reduce poverty through increased income.

o) Through contract farming, farmers get quality inputs such as seed, fertilizer, and crop protection products to improve their yields, cultivation techniques, cropping practice, and also get cash support and fair price.

p) In case of contract farming middlemen eliminated as contractors or exporters directly makes an agreement with the farmers, therefore market access for farmers become wider, marketing costs reduce and farmers get financial support along with better price than the market price.

5.2. Conclusions

Inclusive market development (IMD) has been promoted by various international organizations and development partners and this approach goes beyond traditional 'business as usual' models to make poor people more integrated into the market so that they can attain sustainable economic development. The approach is mainly based on the notion of making markets work for the poor. The total cost of production for contract farmers was Tk. 83346.66 per hectare and non-contract farmers was Tk. 108070.50 per hectare. The contract farmers get various supports as seeds, fertilizers, training, and information from exporters, agribusiness companies, or contractors. Besides, in case of contract farming, organic fertilizers were mostly used, pest and disease controlled method was biological and organic, and most of the time seeds and pest control equipment were provided by the contractor. Thus the production cost becomes lower and the farmer gets a higher price for output as they directly connected to customer or wholesaler through contractors. Additionally, in the case of contract farming, the contractors directly collect produce from the farmers, therefore marketing costs are reduced. The total production of bean was higher for contract farmers (18897.5 kg) than that of non-contract farmers (12893 kg), total post-harvest loss of contract farmers (189.86 kg/ha) was less than that of non-contract farmers (392.19 kg/ha), and the total volume of sales was higher for contract farmers (18707.63 kg/ha) than that of non-contract farmers (12600.81 kg/ha). The contract farmers get more price (Tk. 17.26 /kg) for their products than that of non-contract farmers (Tk. 16.56 /kg). Therefore, contract farming

undoubtedly increases income, improve the living standard of poor farmers, reduces risk, lowers the production and marketing cost.

CHAPTER VI

RECOMMENDATIONS AND LIMITATIONS

6.1. Recommendations

a) In some cases of contract farming, farmers don't get enough inputs, and businessmen don't get high-quality products according to the commitment. Therefore, both businessmen and farmers face an awkward situation like inability or unwillingness to fulfill the commitment. There is no proper monitoring authority. The government needs to establish proper monitoring authority that will provide different infrastructural and extension services.

b) Most of the farmers and businessmen don't follow the written agreement of contract farming, as a result both parties face many problems. Therefore, a written agreement of contract farming should be followed.

c) Contract farming is not a well-known concept to all. Government can take different extension services to familiarize contract farming to among businessmen and farmers. And the government can encourage contract farming by Agro-companies, NGOs and Exporters through policy support.

d) The government can encourage private companies to establish standard cold storage and vegetable packaging industries at the local level by providing policy support and by developing incentives structure (i. e. easy land leasing system, one-stop service for all utility connections, guarantee for a loan, tax concession, etc.) for private companies. This will ultimately reduce the risk of long-distance transportation of vegetables. The poor producer would be benefited from local level cold storage facilities. This would protect the growers from the adverse impact of price fall immediately after harvest.

e) A separate policy document for the vegetable sector needs to be developed, which would cover all actors in the vegetable value chain. By encouraging contract farming in the vegetable sector, intermediaries will be reduced as a result the poor producer will be able to receive a better price for their product. In this new system, agro-companies or NGOs who have the capacity of transportation and sell the product to the consumer can buy the products from the farmers and sell those to the consumer.

6.2. Limitations

Generally, all research works have some limitations. The present study is not an exception to those. Some limitations were faced during conducting the research. They are enlisted below:

a) In Bangladesh most of the farmers are illiterate and they do not keep any record of their farming activity. As a result, the accuracy and reliability of data fully depend on their memory and sincerity.

b) Most of the respondents were not habituated with this type of research. So a huge amount of time had to spend to explain to them the purpose of the research. Additionally, the farmers had very little idea about research and assumed that the researcher might use the information against their interest. To earn the confidence of the farmers a great deal of time was spent.

c) The farmers were not available at their home because they often remained busy dealing with farm activities in the field, thus sometimes; two or three visits were made for a single interview which was very time-consuming and costly as well.

d) During the interview, it was difficult for the researcher to stop others from influencing the answers as interviews took place in the respondent's house or workplace.

e) The findings of the research are based on the data of Belabo Upazila of Narsingdi district. Due to the limitation of time and financial resources, all data and other necessary information were collected within the shortest possible time and could not cover all the Upazilas of Narsingdi district. So, the findings may not generalize for the Narsingdi district as a whole.

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APPENDICES

APPENDIX A. Questionnaire

Group of farmers: (a) Contract (b) Non-contract

1. Name: _____
2. Age: a) Below 20years b) Between 20-35years c) Between 36-50years d) Above 50years
3. Marital status: a) Single b) Married c) Divorcee
4. Education:
   Illiterate b) Illiterate but can sign c) Primary d) Secondary e) Diploma/Technical f) Graduation g) Post graduation h) Others
5. Type of family: a) Nuclear b) Joint
6. Land type: a) Own b) Rented/leased
7. Size of land holdings: Below 1 acres b) 1-3acres c) 3.01-5acres d) Above 5 acres

8. Annual income:
   a)Below 1 lakh b)Between 1-3 lakh c)Between 3-5 lakh d)Above 5 lakh
9. Annual savings:
   Below 20000 taka b) Between 20000-35000taka c) Between 35001-50000taka
   d) Above 50000 taka
10. How many years have you been engaged in farming?
    a) 1-2 years b) 3-4 years c) 5-6 Years d) 7-8 years e) 9-10 f) Above 10 years
11. Off-farm employment: a) Yes b) No
12. Labor use: a) Hired b) Owned c) Both hired and owned
13. Which kind of fertilizers do you use?
    a) Chemical fertilizers b) Organic fertilizers
14. How do you control pests and diseases?
    a) Biological and organic control method b) Chemical pesticides
    c) Integrated Pest Management (IPM) d) Chemical pesticides and IPM
15. Do you have a storage place for your crops? a) Yes b) No.
16. Cost of production:

Items	**BDT**
Land preparation	
Seed	
Fertilizer	
Irrigation	
Pesticides and Insecticides	
Labor cost	
Harvesting cost	
Other costs	

17. Marketing cost:

Items	BDT
Transportation cost	
Storage cost	
Labor cost	
Packaging cost	
Standardization and grading cost	
Cleaning and washing cost	
others	

18. Overall production and sells related information

Items	acre	Kg	Tk.
Area of land used to cultivate bean			
Total production of bean			
Total post-harvest loss			
Total volume of sales			
Sales price /kg			

19. To whom do you sell your produces-
a) Directly to consumers b) Retailers c)Wholesalers d) Processors e) Government corporation f) Exporters g) Farmers market h) Contract group/organization i) Others(specify)_____
20. Are you interested to engage with contract farming? a) Yes b) No
If contract farmer,
21. Forms of contract: a) Written agreements b) Verbal agreements
22. Type of contract:
a) Production contract b) Partial contract c) Total contract d) Production and Marketing contract
23. Contract duration:
Less than 1year b) Between 1-5years c) Between 6-10years d) Above 10years
24. Description of the contracting party:
a) Government b) Private firms c) Research institution d) Other parties
25. Payment method: a) Cash b) Cheque
26. Pricing methods: a) Spot price b) Forward price c)Others
27. Time of transaction:
a) Payment before delivery b) Payment at the time of delivery c) Payment after delivery
28. Attitudes of the farmers about contract farming: a) Positive b) Neutral c) Negative

29. Consequences of contract farming use

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Increase income					
Increase productivity					
Improve product quality					
Increase the adoption of new technologies					
Improve living standards					
Smooth production flow					
Improve timeliness in delivery					
Increase producer prices					
Reduce production choices: techniques and products					
Others (specify)					

30**. Problems of contract farming**

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Poor infrastructural facilities					
Lack of monitoring					
Lack of incentives					
Lack of commitment					
Less bargaining power of farmers					
Weak law enforcement					

Price risk					
Limited govt. support					
Others (specify)					

31. Suggestions of farmers to improve contract farming

Please rank the following suggestions of the table:

	1	2	3	4	5	6	7	8	9	10
Adequate infrastructural facilities										
Strong law enforcement										
Reduction of price risk										
Familiarize contract farming among businessmen and farmers										
Adequate government support										
Establishment of standard cold storage										
Establishment of standard vegetable packaging industries										
Solve the problem of transportation										
Proper scaling facilities										
Others (specify)										

APPENDIX B. Independent sample t-test

Marketing cost

Group Statistics					
	Farm type	N	Mean	Std. Deviation	Std.Error Mean
Transportation cost	contract	60	.0000	.00000	.00000
	Not contract	100	4660.0000	3003.26422	300.32642
Labor cost	contract	60	.0000	.00000	.00000
	Not contract	100	7620.0000	5084.20012	508.42001
Packaging cost	contract	60	.0000	.00000	.00000
	Not contract	100	7435.0000	4443.61703	444.36170
Standardization and grading cost	contract	60	7666.6667	4762.73197	614.86605
	Not contract	100	6820.0000	4211.88794	421.18879
Cleaning and washing cost	contract	60	7800.0000	4337.65538	559.98890
	Not contract	100	12355.0000	6701.15888	670.11589
Other cost	contract	60	3625.0000	2202.89678	284.39275
	Not contract	100	5574.0000	3090.89964	309.08996

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Transportation cost	Equal variances assumed	142.432	.000	-12.004	158	.000	-4660.00000	388.21022	-5426.75092	-3893.24908
	Equal variances not assumed			-15.516	99.000	.000	-4660.00000	300.32642	-5255.91278	-4064.08722
Labor cost	Equal variances assumed	161.252	.000	-11.595	158	.000	-7620.00000	657.19773	-8918.02603	-6321.97397
	Equal variances not assumed			-14.988	99.000	.000	-7620.00000	508.42001	-8628.81561	-6611.18439
Packaging cost	Equal variances assumed	168.606	.000	-12.944	158	.000	-7435.00000	574.39420	-8569.48142	-6300.51858
	Equal variances not assumed			-16.732	99.000	.000	-7435.00000	444.36170	-8316.71002	-6553.28998
Standardization and grading cost	Equal variances assumed	3.742	.055	1.172	158	.243	846.66667	722.69927	-580.73093	2274.06426
	Equal variances not assumed			1.136	112.587	.258	846.66667	745.29207	-629.94994	2323.28328
Cleaning and washing cost	Equal variances assumed	10.185	.002	-4.704	158	.000	-4555.00000	968.33822	-6467.55714	-2642.44286
	Equal variances not assumed			-5.216	157.043	.000	-4555.00000	873.29427	-6279.91773	-2830.08227
Other cost	Equal variances assumed	8.329	.004	-4.274	158	.000	-1949.00000	456.01926	-2849.68003	-1048.31997
	Equal variances not assumed			-4.640	153.263	.000	-1949.00000	420.01886	-2778.77385	-1119.22615

Group Statistics					
	Farm type	N	Mean	Std. Deviation	Std. Error Mean
Area of land used to cultivate bean	contract	60	1.6200	.90034	.11623
	Not contract	100	1.5680	.91418	.09142
Total production of bean	contract	60	18897.5000	10339.81188	1334.86397
	Not contract	100	12893.0000	6975.67570	697.56757
Total post harvest loss	contract	60	189.8667	103.64419	13.38041
	Not contract	100	392.1900	213.58322	21.35832
Total volume of sales	contract	60	18707.6333	10236.31869	1321.50306
	Not contract	100	12600.8100	6878.40185	687.84019
Sales price \ kg	contract	60	17.2667	1.40056	.18081
	Not contract	100	16.5600	1.88197	.18820

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Area of land used to cultivate bean	Equal variances assumed	.121	.729	.350	158	.727	.05200	.14845	-.24119	.34519
	Equal variances not assumed			.352	125.867	.726	.05200	.14788	-.24065	.34465
Total production of bean	Equal variances assumed	10.681	.001	4.382	158	.000	6004.50000	1370.27737	3298.07602	8710.92398
	Equal variances not assumed			3.987	91.555	.000	6004.50000	1506.14154	3012.97915	8996.02085
Total post harvest loss	Equal variances assumed	32.589	.000	-6.863	158	.000	-202.32333	29.48202	-260.55303	-144.09364
	Equal variances not assumed			-8.028	152.534	.000	-202.32333	25.20344	-252.11621	-152.53046
Total volume of sales	Equal variances assumed	10.826	.001	4.509	158	.000	6106.82333	1354.22949	3432.09540	8781.55127
	Equal variances not assumed			4.099	91.305	.000	6106.82333	1489.79678	3147.65820	9065.98847
Sales price \ kg	Equal variances assumed	10.460	.001	2.519	158	.013	.70667	.28056	.15254	1.26079
	Equal variances not assumed			2.708	150.685	.008	.70667	.26098	.19101	1.22232

Total cost of production

Group Statistics					
	Farm type	N	Mean	Std. Deviation	Std. Error Mean
Cost for land preparation	contract	60	4261.6667	2173.26527	280.56734
	Not contract	100	4645.0000	2428.84081	242.88408
Cost for seeds	contract	60	2635.0000	1205.15489	155.58483
	Not contract	100	3469.0000	2036.07341	203.60734
Cost for fertilizers	contract	60	12500.0000	5683.01066	733.67352
	Not contract	100	18925.0000	8575.97507	857.59751
Cost for irrigation	contract	60	2861.6667	1725.04892	222.70286
	Not contract	100	3029.0000	1748.60955	174.86095
Cost for pesticides and insecticides	contract	60	.0000	.00000	.00000
	Not contract	100	13737.0000	6884.45262	688.44526
Labor cost	contract	60	52975.0000	29167.31759	3765.48451
	Not contract	100	54745.0000	28372.29896	2837.22990
Harvesting cost	contract	60	4050.0000	1564.27272	201.94674
	Not contract	100	4028.5000	2616.90556	261.69056
Other cost of production	contract	60	4063.3333	2027.45701	261.74357
	Not contract	100	5492.0000	2424.85780	242.48578
Total cost of production	contract	60	83346.6667	40897.60660	5279.85831
	Not contract	100	108070.5000	52237.22167	5223.72217

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Cost for land preparation	Equal variances assumed	1.486	.225	-1.005	158	.317	-383.33333	381.57774	-1136.98451	370.31785
	Equal variances not assumed			-1.033	135.286	.303	-383.33333	371.09394	-1117.22891	350.56224
Cost for seeds	Equal variances assumed	21.204	.000	-2.882	158	.004	-834.00000	289.36287	-1405.51831	-262.48169
	Equal variances not assumed			-3.255	157.985	.001	-834.00000	256.24712	-1340.11204	-327.88796
Cost for fertilizers	Equal variances assumed	9.044	.003	-5.160	158	.000	-6425.00000	1245.18905	-8884.36303	-3965.63697
	Equal variances not assumed			-5.693	156.384	.000	-6425.00000	1128.60548	-8654.27753	-4195.72247
Cost for irrigation	Equal variances assumed	.016	.900	-.589	158	.557	-167.33333	284.11614	-728.48887	393.82220
	Equal variances not assumed			-.591	125.700	.556	-167.33333	283.14822	-727.68833	393.02167
Cost for pesticides and insecticides	Equal variances assumed	105.777	.000	-15.437	158	.000	-13737.00000	889.90334	-15494.64103	-11979.35897
	Equal variances not assumed			-19.954	99.000	.000	-13737.00000	688.44526	-15103.02476	-12370.97524
Labor cost	Equal variances assumed	.001	.982	-.378	158	.706	-1770.00000	4682.07751	-11017.53417	7477.53417

	Equal variances not assumed			-.375	121.643	.708	-1770.00000	4714.73722	-11103.56733	7563.56733
Harvesting cost	Equal variances assumed	6.011	.015	.058	158	.954	21.50000	372.54768	-714.31598	757.31598
	Equal variances not assumed			.065	158.000	.948	21.50000	330.55171	-631.37006	674.37006
Other cost of production	Equal variances assumed	1.822	.179	-3.830	158	.000	-1428.66667	373.06755	-2165.50943	-691.82390
	Equal variances not assumed			-4.004	141.582	.000	-1428.66667	356.80394	-2134.01852	-723.31481
Total cost of production	Equal variances assumed	5.975	.016	-3.134	158	.002	-24723.83333	7889.83478	-40306.98345	-9140.68321
	Equal variances not assumed			-3.329	147.061	.001	-24723.83333	7427.25905	-39401.77976	-10045.88690

Profit

Group Statistics					
	Farm type	N	Mean	Std. Deviation	Std. Error Mean
Profit	contract	60	219363.1167	124139.04643	16026.28198
	Not contract	100	53684.1600	41264.67442	4126.46744

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Profit	Equal variances assumed	83.60	.00	12.28	158	.000	165678.956	13487.26	139040.375	192317.538
	Equal variances not assumed			10.01	66.9	.000	165678.95	16549.00	132646.16	198711.74

APPENDIX C. Pictures during data collection