Factors Affecting Marketing Channel Choice Decisions in Citrus Supply Chain

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Muhammad Imran Siddique

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DECLARATION

I, Muhammad Imran Siddique, declare that this thesis entitled *"Factors Affecting Marketing Channel Choice Decisions in Citrus Supply Chain"* submitted to the Massey University for the degree of Doctor of Philosophy is the outcome of my own research work. Acknowledgement is given where material from other resources was used. I also certify that the thesis has not been presented, in whole or partly, for any degrees or diplomas.

Signed……..….

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ABSTRACT

Fruits and vegetables are seasonal and perishable in nature and require efficient and effective marketing practices. Therefore, fruit and vegetable marketing channel choice decisions, being a part of efficient marketing practices, require more attention. In agribusiness, particularly for fruit and vegetables, the presence of a large number of intermediaries and the availability of different marketing channels make decision making more complex. The agricultural marketing system in Pakistan, particularly for fruit and vegetables, is very diverse. Nearly all citrus marketing channels are dominated by citrus growers, pre-harvest contractors and exporters of citrus fruit in the Pakistan's citrus supply chain. Along with price, a number of factors play a key role in the selection of a particular marketing channel for fruit and vegetables. This study aims to identify and evaluate the major factors affecting marketing channel choice decisions of citrus growers and pre-harvest contractors in Pakistan's citrus supply chain.

Using qualitative and quantitative techniques, this study took into account the various transaction costs, socioeconomic, demographic and psychological factors in citrus growers marketing channel choice selection and measured the actual impact of each factor on the overall decision. Along with citrus growers, factors affecting marketing channel choice decisions of pre-harvest contractors were also analysed using a multivariate technique of decision analysis i.e., conjoint analysis. Using a survey strategy and a convenient sampling technique, face to face interviews were conducted for the collection of data from citrus growers and contractors from Pakistan citrus supply chain.

It was concluded that all the three groups of citrus growers placed different preference and different utility values for the different factors when made selection out of the bundle of factors. Likewise, the percentage preference and utility values between any two factors is different for all the three groups of citrus growers, although, they had the same order of preferences for the same set of factors in order to make a certain marketing channel choice decision. The results also revealed that all the three groups of pre-harvest citrus contractors displayed diversity in preferences and different utility values for the different factors when made selection out of the bundle of factors in citrus marketing decision making. In addition, the percentage preference and utility values between any two factors is different for all the three groups of citrus pre-harvest

contractors. Contrary to the citrus growers, pre-harvest contractors placed different order of preference for the same set of factors in order to make a certain marketing channel choice decision. Apart from contributing into the body of literature on citrus industry of Pakistan this study also magnified the priority areas for future research and useful guidelines.

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Lastly, I would like to dedicate this dissertation to my 'precious' parents.

Muhammad Imran Siddique

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LIST OF ABBREVIATIONS

GDP	Gross Domestic Product
SPS	Sanitary and Phytosanitary Measures
WTO	World Trade Organization
PHDECo.	Pakistan Horticulture Development and Export Company
PKR	Pakistan Rupee
EUT	Expected Utility Theory
SEUT	Subjective Expected Utility Theory
OLS	Ordinary Least Square
SPSS	Statistical Product and Service Solutions
PASW	Predictive Analytics Software
AMIS	Agricultural Marketing Information System

Chapter 1

1. INTRODUCTION

1.1 Introduction

The purpose of this chapter is to introduce the theme and nature of the research being carried out. This chapter is divided into three parts: the importance of agriculture sector, particularly, fruit and vegetables to Pakistan; agricultural marketing and importance of decision making in agricultural marketing; and the objectives of the research. The first part highlights the importance and contribution of agriculture sector in the economic growth of Pakistan. The importance and significance of agricultural marketing and decisions making in agriculture marketing is discussed in second part. The final part provides the objectives of the research and introduces a research question to achieve research objectives.

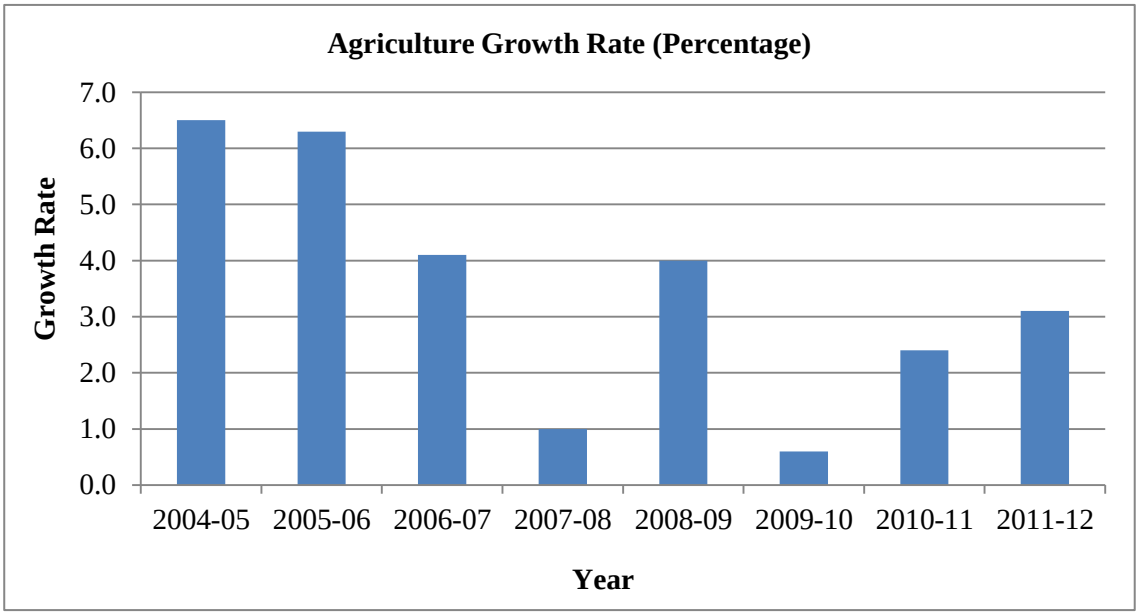
1.2 Importance of Agriculture Sector

Various agro-ecological and climatic zones provide Pakistan with rich and enormous natural resources, hence, there lies a great potential for producing a vast variety of agricultural commodities. The agriculture sector is the backbone of Pakistan's economy contributing 21.04 percent share of GDP of the country and also providing employment to 43.7 percent of the population (Ministry of Finance, 2014). It also contributes towards economic growth and development of the country in three different ways: by providing food to consumers and raw material (cotton, sugarcane, wheat, and jute) to industry, marketplace for industrial goods (fertilizers, pesticides, farm machinery) and a source of export earnings (Ali, 2004; Ministry of Finance, 2014).

Although, growth of the agriculture sector has lost its pace in the decade of 2000s to 2.7 percent as against 4.4 percent in 1990s and 5.4 percent in the 1980s, however, it regained its momentum in 2004-05 and 2005-06 to 6.5 and 6.3 percent, respectively, as shown in figure 1.1. The reasons of declining growth in early 2000's include the structural problems and lack of mechanisation (Ministry of Finance, 2011). In the following years, growth rate slows down to 4.1 percent in 2006-07 and reached to a minimum level of 1 percent in 2007-08. The reason of this further decline in growth rate was War on Terror which put the Pakistan economy under pressure, particularly, the agriculture sector. In 2010, the unprecedented floods ruined nearly all agricultural land

and caused growth rate to decline from 4.0 percent in 2008-09 to 0.6 percent in 2009-10. However, this low growth rate boosted up to 2.4 percent in 2010-11 and to 3.1 percent in 2011-12 because of the government's supportive policies, increased production of rice, cotton and sugarcane crops and significant growth in the livestock sector (Ministry of Finance, 2012). A critical analysis of Pakistan growth rate shows that in reality it is showing increasing trend, however, uncertain and unexpected situations arising in the country making it fluctuate heavily.

Figure 1.1 Pakistan Agriculture Growth Rate



Source: (Ministry of Finance, 2012)

There are two main crop seasons in Pakistan, Kharif and Rabi. The Kharif season stands for winter crops and in Rabi season summer crops are cultivated. The sowing season of Kharif crops (rice, sugarcane, and cotton, maize) start in April-June and crops are harvested in October-December. The Rabi crops (wheat, gram, tobacco, barley) are sown in October-December and harvested in April-May. Different Rabi and Kharif crops constitute major and minor crops of Pakistan's agriculture sector. Major crops include wheat, rice, cotton and sugarcane and account for 90 percent of the value added in major crops, 25.6 percent of the value added in overall agriculture and 5.4 percent to GDP (Ministry of Finance, 2011, 2014). Minor crops include different oilseeds and account for 10.9 percent of the value in overall agriculture. Similarly different Rabi and Kharif fruits are produced in the country. Mango, apple, pomegranate and dates constitute Kharif while citrus fruits (Kinnow), guava and ber make up Rabi fruits. A

detailed critical analysis of past ten year's production of different crops and fruits reflects a mix trend (Bureau of Statistics Punjab, 2014; Government of Pakistan, 2009).

Pakistan is producing more than thirty types of different Kharif and Rabi fruits of which citrus, mango, apples, dates, guava and banana are of great importance. Total exports of fruits from Pakistan were 669,000 tonnes which account for $294 million in 2010-11(Ministry of Finance, 2014). Among all fruits, citrus fruit exports were 332,000 tonnes which constitute 49.6% of total fruit exports and account for a value of $124 million (FAOSTAT, 2014a; Ministry of Finance, 2014). The citrus export has been increased from 8.29% in 2008-09 to 16.9% in 2009-10 and 16.7% in 2010-2011 respectively which is the highest citrus exports in the history of Pakistan. The major exports markets are developing countries and less than 2% of total citrus is exported to developed countries (FAOSTAT, 2014b) The reason of this low export of citrus from Pakistan to developed countries is the high demand for seedless Kinnow (hybrid mandarin) in these countries which, unfortunately, is not produced in Pakistan. In addition, marketing practices are not carried out on a scientific basis in Pakistan, hence, lead to failure in fulfilling the requirement of agreement on application of Sanitary and Phytosanitary (SPS) measure of World Trade organization (WTO) (Government of Punjab, 2006).

1.3 Agricultural Marketing and Decision Making

Agricultural marketing is a sequence of business actions instead of simple buying and selling that provides value added agricultural commodities to end consumers. It starts as soon as commodities leave the farm gate and ends as the final product reaches the ultimate consumers. The idea of agricultural marketing is to provide the desired product to consumers and satisfy their arising needs (Ali, 2004). Agricultural products, particularly, fruit and vegetables are seasonal and perishable in nature and require efficient and effective marketing practises. This involves the rational decision making while marketing agricultural products by the stakeholders in order to sell their products in good condition, with better price and to combat the competition in the market (Khushk & Sheikh, 2004).

Citrus fruit is leading among all fruits produced in Pakistan and constitutes about 30% of total fruit production (Pakistan Bureau of Statistics, 2014). More than 90% of citrus fruit is produced and marketed in Punjab province. In Punjab, fresh Citrus fruit

marketing has three broad scopes i.e., domestic marketing, marketing for processing and juice extraction and export marketing (Ali, 2000). This involves fairly complex decision making on the part of functionaries of citrus supply chain in the country. According to Sharif et al. (2005), the citrus marketing channels choice decisions have composite nature and depend upon price and non-price factors. Therefore, this study identifies key players in the citrus supply chain and also investigates and evaluates the decision making of these players in the selection of citrus marketing channel. The overall aim of this study is to find out how decisions are made and to investigate the major factors affecting key player's citrus marketing channel choice decisions.

The research problem identified is the existence of complex decisions making in citrus supply chain in Pakistan citrus industry. Therefore, this study will investigate this problem by identifying and analysing the factors affecting citrus growers and pre-harvest contractors marketing channel choice decisions in citrus supply chain in Pakistan.

In order to answer the research problem, this study identified the key players who are responsible for citrus marketing channel choice decisions and also identified and analysed the factors affecting marketing channel choice decisions in the Pakistan citrus supply chain. The research question is:

> What are the important factors involved in citrus marketing channel choice decision and how these factors can be analysed?

Following are the research objectives set out to answer this research question in detail.

1.4 Research Objectives

The objectives of this research are:

1. To overview and discuss the citrus industry in Pakistan in context to its relevance to global citrus economy
2. To study functions of key players in citrus (Kinnow) supply chains in Pakistan
3. To identify and evaluate major factors affecting marketing channel choice decisions of citrus growers and contractors in citrus (Kinnow) supply chain in Pakistan

4. To identify major constraints faced by citrus growers and contractors in Citrus (Kinnow) supply chain in Pakistan

1.5 Thesis Format

Chapter one commences with the introduction of research topic and highlights the importance of the evaluation of citrus marketing channel choice decisions in Pakistan citrus supply chain.

Chapter two describes the history of citrus fruit and throws light on world citrus industry. A detailed critical overview of world's as well as Pakistan's citrus production, consumption and exports is presented in this chapter. In addition, agricultural marketing system, particularly, citrus marketing system and key players involved and their working mechanisms are also discussed.

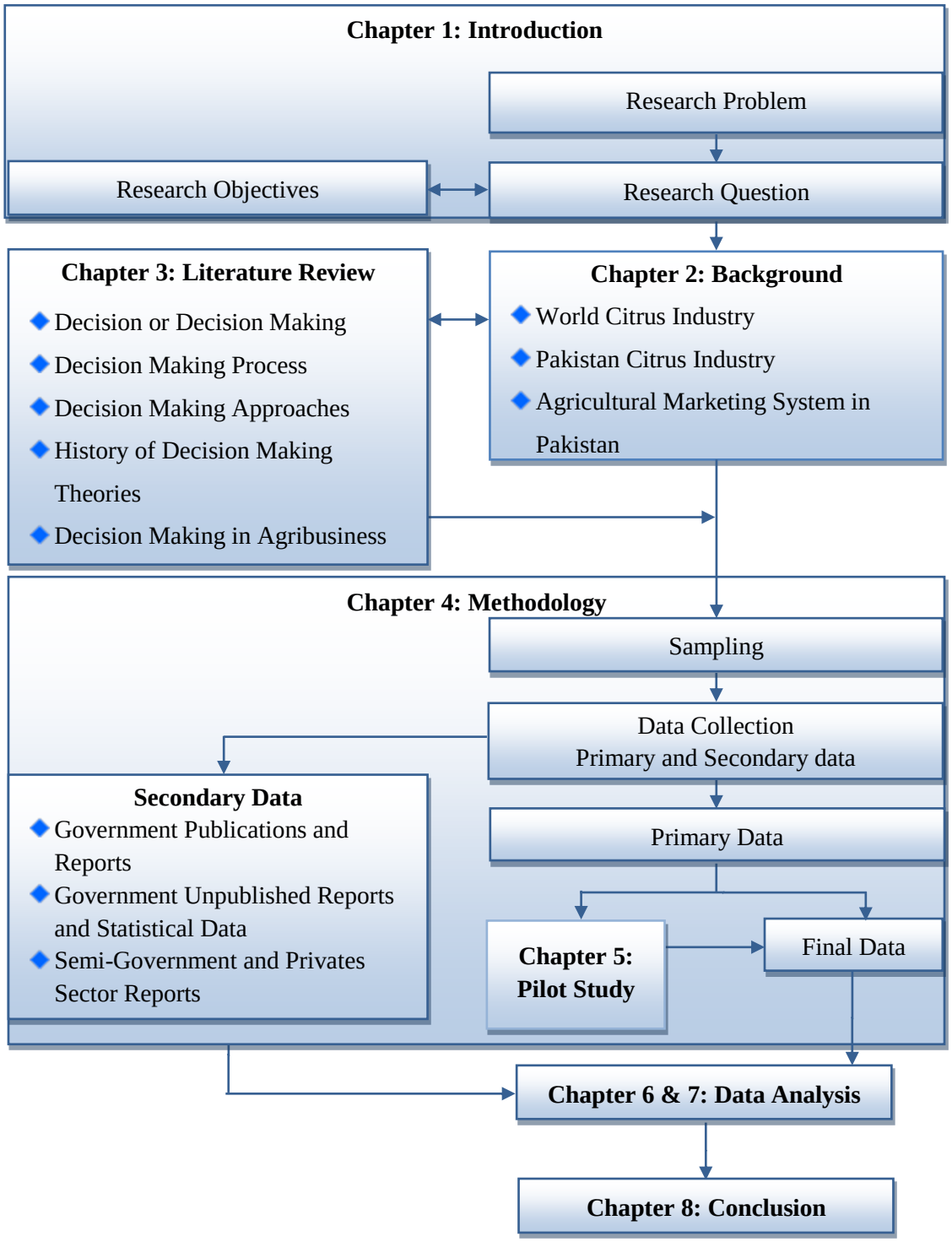
Chapter three reviews and analyses the available literature on decision making, in general, and for agribusiness, in particular. Different existing decision making approaches are discussed in detail keeping in view the advantages and disadvantages of each approach. Among the three mathematical approaches, prescriptive decision making approach is considered to be the best for analysing decision making process. However, in agribusiness these mathematical models are used only for total farm planning or for specific production decisions. A number of socioeconomic, demographic and psychological factors affect farmer's decision making and behaviour in reality. Therefore, a multi-attribute decision analysis technique is found to be the most appropriate for analysing factors affecting citrus growers and pre-harvest contractors marketing channel choice decisions.

Chapter four is the research methodology and presents an outline of the existing research methodologies and research design. Face to face interviews of citrus growers and pre-harvest contractors using survey strategy are conducted for the collection of primary information. Conjoint analysis, a multivariate decision analysis technique, is used to assess the factors affecting marketing channel choice decisions of citrus growers and pre-harvest contractors in Pakistan citrus supply chain.

Chapter five deals with the pilot study results of primary data collected from Pakistan citrus supply chain. A number of socioeconomic, demographic and psychological factors are found to be involved in citrus growers and pre-harvest marketing channel

choice decisions. This chapter also highlights some of the difficulties and complications faced by the researcher during data collection. Figure 1.2 represents the format of the thesis.

Figure 1.2 Format of the Thesis



Chapter six is the analysis of the final data for growers and ends with the results and discussions about the main findings of this study. A comparison of the main findings of

all the three groups of citrus growers is also presented at the end of the chapter. Likewise, Chapter seven is the analysis of the final data for citrus pre-harvest contractors and ends with the results and discussion about the main findings. A comparison of the main findings of all the three groups of citrus pre-harvest contractors is also presented at the end of this chapter.

Finally, Chapter eight is the conclusion of this study and links the research objectives one by one with the results of the study. This chapter also highlights the limitations and contribution of this study. It also suggests the scope and future research areas.

Chapter 2

2. BACKGROUND

2.1 Introduction

This chapter presents a detailed description of citrus fruit and its history. An overview of production, consumption, exports and trends of citrus fruit in the world, as well as, in Asia is presented in the chapter. As this study focuses on Pakistan (South East Asian country), all aspects related to production, consumption, exports and trend of citrus fruit in Pakistan are also discussed in detail. The purpose of this chapter is to provide better understanding of the world's, as well as, Pakistan's Citrus industry.

2.2 Citrus Fruit

Citrus fruit is one of the most important tree fruit crop in the world. It can be consumed directly as a fruit as well as juice (fresh & concentrates with other fruit). Oranges, mandarins (Kinnow), grapefruit, lemons, limes and some minor varieties like citron are included in the family of citrus fruit. Because of high juice contents, big size and delicious taste, mandarins (Kinnow), has a prominent position among all citrus fruit. "Kinnow is a cross between 'King' & 'Willow-leaf' species of Citrus Fruit, successfully experimented at the Citrus Research Centre, University of California, USA in 1951" (Ali, 2004; Pakistan Horticulture Development & Export Company (PHDECo.), 2005).

Brazil and United States of America are the leading citrus producing countries in the world. The other major citrus producing countries include China, Spain, Iran, Italy, India, Mexico, Pakistan, Indonesia and Egypt. In Brazil, the State of Sao Paulo, is the major producer of citrus while United States of America stands second in the world after Brazil because of Florida's citrus production (Ladaniya, 2008). Pakistan is ranked thirteenth (13^{th}) in citrus production (FAOSTAT, 2014d) and produces world's good quality citrus (Mandarin). For commercial purposes, only two varieties of mandarin, Kinnow and Feutrell's Early, are grown in Pakistan (Qureshi et al., 1993).

2.3 History of Citrus Fruit

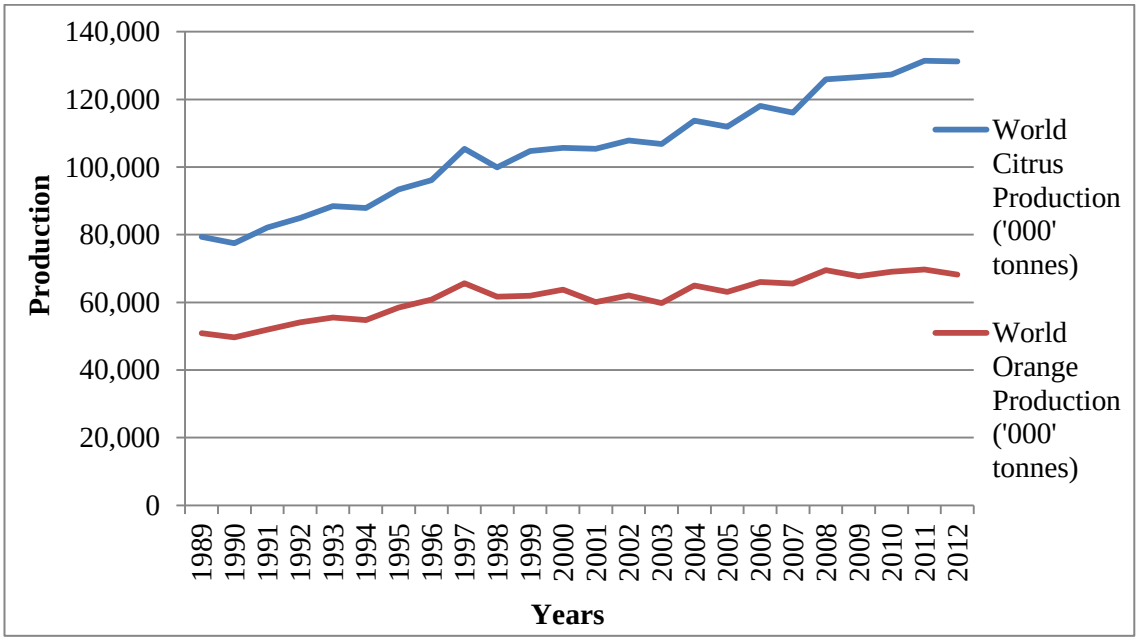
Despite a great deal of research, the origin of citrus fruit and its ancestral types is still largely unknown. It is believed that origin of citrus fruit is South East Asia (Spiegel-Roy & Goldschmidt, 1996) and it continued to spread during the middle Ages and now

it is present in many countries of the world. Because of evergreen crop, peculiar structure and long shelf life, citrus is considered important crop in world's trade. Most of the major citrus producing countries export citrus both in fresh and processed form (United Nations Conference on Trade and Development (UNCTD), 2014).

2.4 World Citrus Production

World citrus production growth has been continuously increasing during the last two decades (1990-2012). Total annual citrus production has increased from 113 million tonnes in 2004 to 131 million tonnes in 2012 (FAOSTAT, 2014d). More than half of citrus production constitutes oranges, the most common citrus type, in 2004 (Government of South Australia, 2011b; Yusuf & Salau, 2007) and the same situation prevails in 2012 (FAOSTAT, 2014d). The increase in cultivation areas and change in consumer preferences towards more health and convenience food consumption and the rising incomes are the main reasons for this rise in citrus production. Citrus fruit is produced all around the world and according to FAO (2011) and UNCTD (2014) 142 countries produced citrus fruit in 2009. The overall trend in world citrus production is ever increasing with almost 3-5% increase per year as shown in Figure 2.1.

Figure 2.1 World Citrus and Oranges Production ('000' tonnes)



Source: (FAOSTAT, 2014d)

Although citrus fruit is cosmopolitan in its cultivation, most production is concentrated in certain areas of the world. Main citrus fruit producing countries are Brazil, China and

United States of America. In Florida (United States of America), nearly all citrus fruit produced is processed and this state is renowned for orange juice production. Citrus fruit grown in California, Arizona and Texas states is mainly consumed as fresh fruit. It has been estimated that these three countries (Brazil, China and United States of America) constitute about 48.06% of global citrus fruit production in 2012 (FAOSTAT, 2014d; United Nations Conference on Trade and Development (UNCTD), 2014). The main citrus producing countries of the world are indicated in table 2.1.

Table 2.1 World Leading Citrus Producing Countries

	Production (million tonnes)								
Country	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Brazil	20.53	20.18	20.40	20.98	20.65	19.68	20.72	22.02	20.26
China	15.51	16.40	18.46	18.25	23.89	25.76	26.57	30.00	32.22
USA	14.80	10.44	10.55	9.49	11.65	10.74	9.98	10.70	10.62
Mexico	6.82	6.76	6.82	7.08	7.47	7.16	6.91	7.18	6.75
Spain	6.08	5.32	6.85	5.29	6.37	5.29	6.09	5.74	5.50
India	5.02	4.62	6.14	7.15	8.02	8.62	9.64	7.46	8.00
Iran	3.57	3.70	3.82	3.92	4.13	3.51	3.08	2.89	2.83
Italy	3.34	3.52	3.65	3.89	3.48	3.83	3.76	3.85	2.90
Egypt	2.86	3.00	3.17	3.14	3.23	4.00	3.52	3.73	3.98
Argentina	2.72	3.05	3.14	2.77	2.96	2.96	2.56	2.70	2.82
Turkey	2.71	2.91	3.22	2.99	3.03	3.51	3.57	3.61	3.56
South Africa	1.85	1.94	2.11	2.14	2.24	2.14	2.12	2.33	2.31
Pakistan	1.94	2.46	2.46	1.47	2.29	2.13	2.15	1.98	2.03
Indonesia	2.07	2.21	2.57	2.63	2.47	2.13	2.03	1.82	1.61
Morocco	1.15	1.34	1.28	1.11	1.11	1.11	1.36	1.64	1.89
World Total	0.87	1.15	1.10	1.03	0.99	1.04	1.08	1.10	0.98

Source: (FAOSTAT, 2014d)

Brazil citrus production was 20.5 million tonnes in 2004 which reduced to 19.7 million tonnes in 2009 but regained its production to 20.2 million tonnes in 2012. Similarly China and United States produced 15.5 and 14.8 million tonnes citrus in 2004 and 32 and 10.6 million tonnes in 2012 respectively. The reason for the gradual decreased citrus production since 2004 in United States was the devastating hurricanes that passed through the major citrus producing areas in 2004 as shown in table 2.1 (Albrigo et al., 2005). These hurricanes not only blew fruit off the trees but also destroyed the trees. China emerged as a second largest producer of citrus after Brazil since 2004 and finally in 2012 became the largest citrus producing country in the world. China produced more than 16 million tons of citrus fruit since 2005 representing about 16.5% of the world's

production for citrus fruit and it produced 32.2 million tonnes of citrus in 2012 which represented 28.33% of world's citrus production (FAOSTAT, 2014d; United Nations Economic and Social Commission for Asia and the Pacific, 2007).

The unusual increase in citrus as well as orange production in 1997 as shown in figure 2.1 respectively was the result of overall production of citrus fruit particularly in Brazil, China, Indonesia, Israel, Italy, Lebanon, Mexico, Pakistan and Turkey. Oranges, which constitute major portion of citrus fruit, are mainly grown in Brazil, United States of America, China and India. Two countries, Brazil and Unites States of America, are the two big producers of oranges. Brazil oranges production was 18.3 million tonnes in 2004 and recorded 18.01 million tonnes in 2012. However, these two countries are producing more than one third (38.37%) of world's oranges production in 2012. The trend in world oranges production is shown in figure 2.2 that reflects almost 3-5% per year increase in oranges production.

The high peak in 1997 refers to high orange production in Brazil, USA, India, Spain, Pakistan and Iran. Orange's production increased from 20.8 million tonnes to 23.0 million tonnes in Brazil, from 10 million tonnes to 11.5 million tonnes in USA and from 2.0 million tonnes to 2.56 million tonnes in India from the previous year.

In Asia, citrus production has also increased from 37.9 million tonnes (35.9% of world citrus) in 2004 to 57.25 million tonnes (43.6% of world citrus) in 2012. This increase has been a result of high production of citrus especially in China, India, Iran, Nepal, Pakistan and to some extent Syria and Turkey. Similarly, oranges production in Asia increased from 14.8 million tonnes (22.8% of world oranges) in 2004 to 19.9 million tonnes (29.3% of world oranges) in 2012. Bangladesh, China, India, Pakistan and Nepal played a major role in this increased production of oranges in Asia. Sri Lanka, Syria, Turkey, Vietnam and Yemen had also impacted this increased production but not significantly. In short, an increased trend in production has been observed for citrus fruit particularly for oranges in Asian countries since year 2000 (FAOSTAT, 2014d).

2.5 World Citrus Consumption

Although, the consumption of fresh citrus fruit is much more in developed countries than developing countries yet it is increasing in developing countries with the rise of income level. In Brazil, the annual per capita consumption of citrus fruit was 30.3 kg in 2003 which increased to 62.6 kg in 2011. Per capita consumption of citrus fruit in

Mexico, followed by Brazil, was 49.9 kg in 2003 that reduced to 41.4 kg in 2011 as shown in table 2.2.

Table 2.2 Citrus Fruit Consumption in Major Citrus Producing Countries

Annual Per Capita Consumption (kg/capita/year)									
Year / Country	2003	2004	2005	2006	2007	2008	2009	2010	2011
Brazil	30.3	37.8	32.2	36.3	35.5	41.9	46.1	56.1	62.6
Mexico	49.9	50.9	47.0	46.9	47.7	51.0	47.9	42.3	41.4
USA	47.8	49.0	39.9	40.0	39.0	41.5	39.2	36.2	37.6
Spain	43.7	32.4	40.5	53.1	23.2	53.4	22.2	39.2	34.1
Morocco	26.6	23.6	23.6	23.4	18.0	13.4	19.0	23.3	31.6
Argentina	39.4	37.9	36.1	40.5	32.8	37.6	38.6	32.7	30.6
Turkey	26.3	28.0	27.6	29.3	28.9	28.9	30.0	29.2	26.4
China	10.4	11.4	12.0	13.3	12.8	16.3	17.4	18.1	20.2
China	10.1	11.1	11.7	13.1	12.7	16.1	17.3	18.0	20.1
Lebanon	50.8	55.5	45.8	50.3	37.3	38.3	27.2	17.0	16.6
South Africa	17.0	12.1	9.1	11.1	9.9	13.1	11.3	8.1	13.7
Pakistan	10.4	11.1	14.3	13.5	7.8	12.0	11.1	10.0	8.9

Source: (FAOSTAT, 2014c)

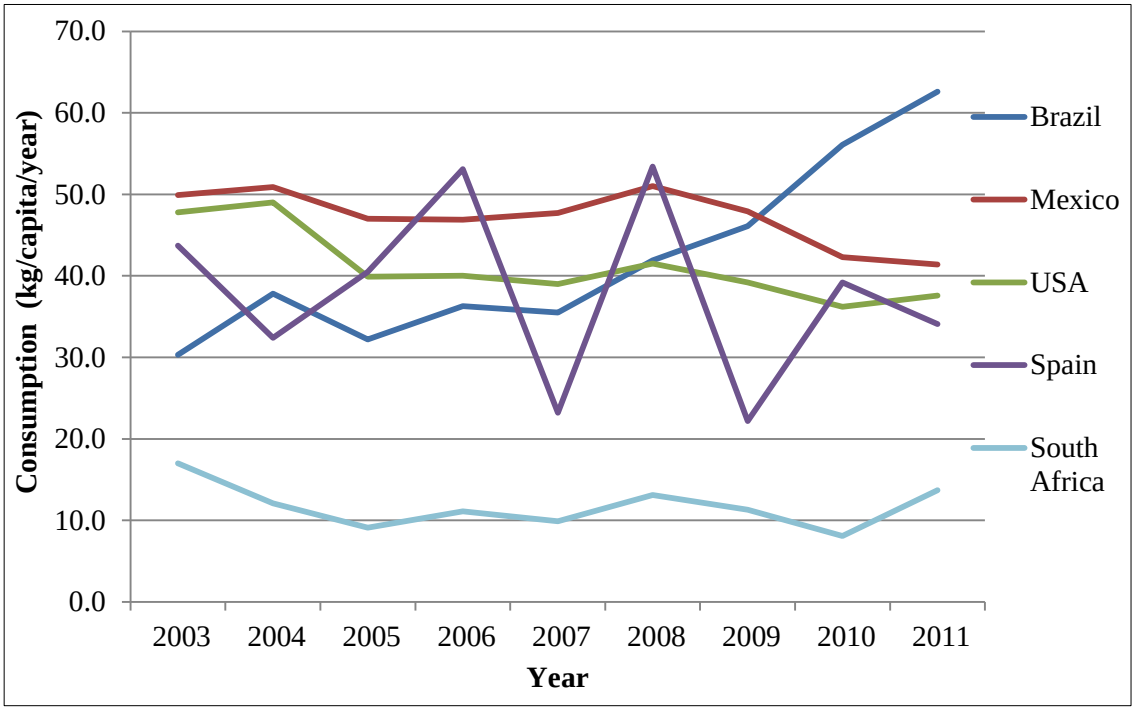
United States of America falls next to Brazil and Mexico in per capita consumption of fresh citrus fruit with 47.8 kg in 2003 that reduced to 37.6 kg in 2011. In Spain, per capita citrus fruit consumption was 43.7 in 2003 which decreased to 34.1 in 2011. The high domestic demand of fresh citrus fruit in these countries is the cause of this high per capita consumption resulting in decreased exports from the country. The countries with low per capita consumption of fresh citrus fruit having high production are expanding their exports, for example, China and South Africa.

The overall trend of annual per capita consumption (kg) of fresh citrus fruit in leading countries is shown in figure 2.2. Initially, there was an increase in per capita consumption in Brazil with slight decrease in 2005 and then it gradually started increasing and was the highest in 2011.

In 2002, the total production of citrus fruit in Brazil slightly jumped up from 19 million tonnes to 20.5 million tonnes and its exports also decreased to 82 thousand tonnes from 172 thousand tonnes in 2001 (FAOSTAT, 2014b, 2014d). Per capita income was US $3,050 in 2002 and it increased to US $3,310 in 2004 (The World Bank, 2015). In the following year, it further increased to US $3,960, thereby, increasing the purchasing

power of people in the country. These factors result into more availability of fresh citrus fruit in the domestic market resulting into high per capita consumption in the country.

Figure 2.2 World Citrus Fruit Consumption Trend



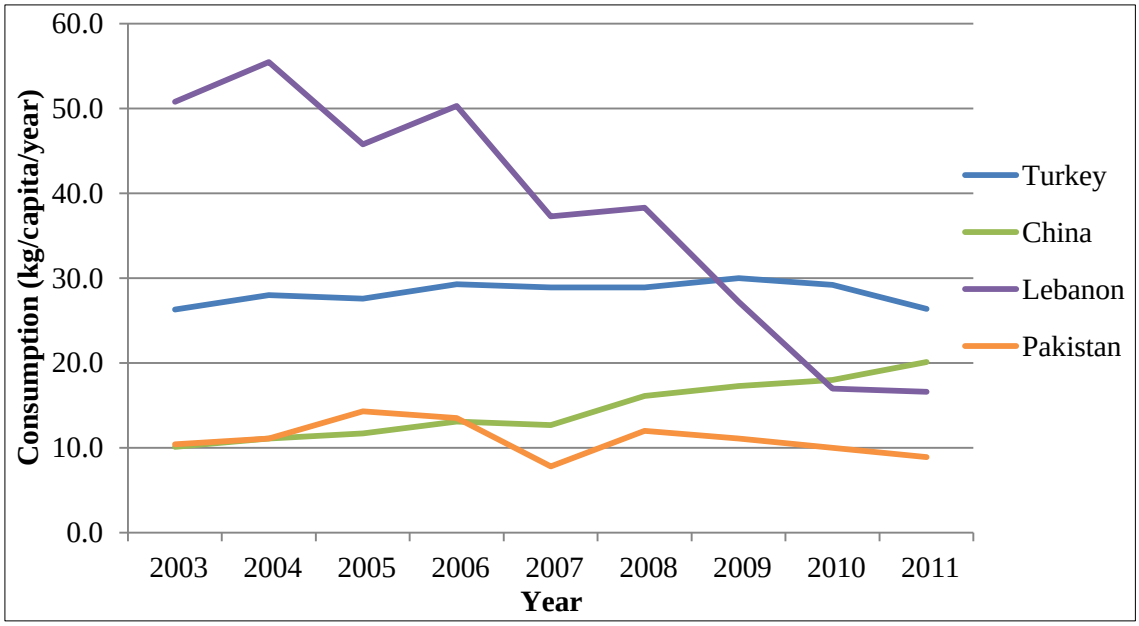
Source: (FAOSTAT, 2014c)

The main reason for decline in citrus per capita consumption in United States of America since 2004 includes decrease in production and reduction of domestic supply of fresh citrus fruit in the country (FAOSTAT, 2014d). However, the increase of imports from 383 thousand tonnes in 1999 to 671 thousand tonnes in 2011 (FAOSTAT, 2014a) reflects high demand for citrus fruit in the country thus stabilized the per capita citrus consumption in the following years.

A great variation in annual per capita consumption of fresh citrus fruit can be viewed for Spain. The sharp decline in per capita consumption in 2004, 2007 and 2009 was the result of decreased production of fresh citrus fruit, more exports and increase in total population of the country. The production of citrus fruit declined from 6.2 million tonnes in 2003 to 6.0 million tonnes in 2004, from 6.8 million tonnes in 2006 to 5.2 million tonnes in 2007 and 6.3 million tonnes in 2008 to 5.2 million tonnes in 2009. Similarly the increase in exports during these years was also the possible reason to fluctuate the per capita consumption of citrus. Similarly increase in per capita consumption in 2006 and 2008 was the result of high production of citrus fruit and decreased exports from the country (FAOSTAT, 2014b).

Per capita consumption of citrus in Lebanon is gradually decreasing primarily due to decrease in production of citrus fruit and increase in citrus exports from the country as shown in figure 2.3.

Figure 2.3 Citrus Fruit Consumption Trend in Asia



Source: (FAOSTAT, 2014c)

The citrus production of Lebanon decreased from 364.2 thousand tonnes to 228.5 thousand tonnes in 2012. However, Lebanon is one of the four highest citrus exporting countries of Asia (FAOSTAT, 2014b). The lowest per capita consumption of citrus fruit in 2011 was a result of the lowest production of citrus fruit in the country.

In Turkey, annual per capita consumption of citrus fruit shows a constant trend since 2003.however, it dropped from 30.0 in 2009 to 26.4 in 2011 due to increased exports from 1.1 million tonnes in 2009 to 1.4 million tonnes in 2011 thus decreased the availability of citrus fruit in the country (FAOSTAT, 2014b).

Per capita consumption of citrus fruit in Pakistan is almost stagnant since 1999 except in 2007 when it dropped to 7.8 kg from the preceding value of 13.5 kg as shown in figure 2.4. The major factor keeping the consumption level nearly stagnant is the rapid increase in population of the country. The production of citrus fruit has increased from 1.8 million tonnes in 1999 to 2.1 million tonnes in 2009 and per capita income has increased from US $450 in 1999 to US $917 in 2009 (The World Bank, 2015). However, the sharp decline in per capita consumption in 2007 was a result of lowest production of 1.4 million tonnes from 2.4 million tonnes in 2006. This declined the

domestic supply and availability of citrus fruit in the country. The high peak of 2005 in figure 2.4 reflects the highest per capita consumption of citrus fruit. During this year the exports of the citrus fruit decreased to its lowest value of 79.2 thousand tonnes from 151.3 thousand tonnes in 2004.

2.6 World Citrus Exports

Today, almost all the countries in the world are engaged in international trade in one form or the other. These countries are trading machinery and equipment, raw material, agriculture, manufactured consumer goods and even transferring technology under the umbrella of World Trade. Mostly, developed and industrial countries are engaged in the trading of modern machinery and equipment and technology while developing countries exports figures are dominated by agricultural products (fresh and processed) (Ali, 2004). Among the agricultural products, considerable quantity of fruit has also been traded internationally. Citrus is considered to be highly traded among fruit due to its increasing demand, production and consumption in the world. Spain, United States of America, South Africa, Netherlands, Turkey, Argentina, China, Morocco, and Mexico are generating considerable revenue through exports of citrus fruit every year (FAOSTAT, 2014a) as shown in table 2.3.

Table 2.3 World Leading Citrus Exporting Countries Value

Country	Major Citrus Exporting Countries Value (million US$)							
	2004	2005	2006	2007	2008	2009	2010	2011
Spain	2886	2648	2670	3220	3447	3445	3387	3544
USA	690	648	702	722	838	767	942	1040
South Africa	448	483	500	604	665	635	893	948
Netherlands	321	385	367	576	630	579	707	599
Turkey	298	405	366	372	576	788	862	1065
Morocco	220	338	269	266	414	312	382	481
Argentina	212	248	234	326	553	303	365	328
Mexico	176	179	227	263	263	206	255	290
China	134	166	194	296	483	658	697	819

Source: (FAOSTAT, 2014a)

Nearly all the major citrus exporting countries are showing increasing trend in their exports value and quantity from the previous years. More than six times increase in

China's export value is because of its increase exports from 411 thousand tonnes in 2004 to 1,012 thousand tonnes in 2011. Similarly, there has been increasing trend in export earnings of USA (one and an half times), South Africa (nearly double), Netherlands (nearly double), Turkey (more than double), Morocco (nearly double) from previous years due to increase in export quantity from these countries.

The international trade in citrus fruit has been rising in successive years as shown in table 2.4. In 1999, total citrus exports were recorded 9.241 million tonnes which accounted for a value of $4.5 billion and reached up to 15.1 million tonnes which accounted for a value of $12.0 billion in 2011. There has been an increase of nearly 4% per year on an average in the world's citrus export quantity. However, the total citrus exports of the world comprise nearly 10% of the total citrus production. It is clear from the table 2.4 that citrus exports have increased more than 40% in quantity and more than 100% in value since the year 2002 (FAOSTAT, 2014a). The highest increase of 20.7% in exports value was observed in 2007 from the preceding year.

Table 2.4 World Citrus Exports

Year	World Citrus Export ('000' tonnes)	World Citrus Export Value (1000 $)
1999	9,241	4,547,270
2000	9,709	4,304,111
2001	9,905	4,347,905
2002	10,099	4,823,885
2003	10,766	5,930,843
2004	11,108	6,639,166
2005	11,461	6,934,271
2006	12,027	6,969,004
2007	12,480	8,414,629
2008	12,985	10,115,828
2009	13,942	10,203,061
2010	14,612	11,298,656
2011	15,166	12,005,125

Source: (FAOSTAT, 2014a)

Table 2.4 shows the ever increasing trend of citrus exports in the world. There is a rapid increase in citrus exports from 2001 which is a result of the increased production of citrus fruit in the world which increased from 105 million tonnes in 2001 to 131 million tonnes in 2012.

In 2004, the total exports of three leading countries accounted for 60.6% of world exports value which decreased to 46.0% in 2011 showing decreasing trend. The reason is more than 100% increase in exports value from the other countries including South Africa, Netherland, Turkey, China, and Morocco in the successive years.

The leading citrus fruit exporting countries are Spain, South Africa, United States of America, China, Turkey, Argentina, Morocco, Mexico and Netherlands as shown in table 2.5. Among these countries, only three countries, Spain, South Africa, and United States of America account for 41.26% of world's total exports in 2011. However, the exports from United States of America showed decreasing trend from the year 2004. The reason was the unfavourable climatic conditions and natural disasters (hurricanes in 2003) that reduced the production and ultimately the exports from the country. Exports of citrus fruit from United States of America started increasing in 2010 and it increased from 889 thousand tonnes in 2009 to 1,061 thousand tonnes in 2010 and to 1,144 thousand tonnes in 2011 as shown in table 2.5 (FAOSTAT, 2014a).

Table 2.5 World Leading Citrus Exporting Countries

Country	World Leading Citrus Exporting Countries ('000' tonnes)									
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Spain	3,275	3,413	3,486	3,021	3,344	3,560	3,118	3,429	3,269	3,652
South Africa	971	1,078	1,123	1,356	1,458	1,476	1,408	1,364	1,540	1,463
USA	1,102	1,186	1,102	936	962	891	1,042	889	1,061	1,144
China	291	365	411	500	496	610	934	1,202	1,030	1,012
Turkey	655	624	684	894	1,024	847	815	1,180	1,245	1,482
Argentina	421	487	549	644	593	676	687	518	556	507
Morocco	418	463	379	559	487	501	605	453	560	525
Mexico	289	350	403	414	460	508	529	504	495	506
Netherlands	377	439	420	460	417	486	520	536	613	521
Pakistan	123	95	151	79	193	123	215	178	363	332

Source: (FAOSTAT, 2014a)

For many years, exports of citrus fruit from Spain has been leading in the world and contributes more than 25% (except 2010 when it exported 22%) of the world citrus exports (FAOSTAT, 2014a). Among all the citrus fruit, Spain mainly exports tangerines, mandarins and clementine (47%), oranges (42%) and lemons and limes

(10%). Different European countries like Germany, France, United Kingdom, Belgium, the Netherlands and Denmark are the major export markets for Spanish citrus fruit especially tangerines and mandarins (Ali, 2004; FAOSTAT, 2014b). Some variations have also been observed in the exports of citrus fruit from Spain as shown in the table 2.6.

Table 2.6 Citrus Production and Exports from Spain

	Production and Export from Spain							
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Production ('000' tonnes)	6,077	5,324	6,846	5,288	6,375	5,292	6,092	5,736
Citrus Export ('000' tonnes)	3,486	3,021	3,344	3,560	3,118	3,429	3,269	3,652
Citrus Export Value (million US $)	2,886	2,648	2,670	3,220	3,447	3,445	3,387	3,544

Source: (FAOSTAT, 2014a)

There could be many explanations to these variations but the very apparent seems to be the quality/standard of the fruit as consumer preferences have been changing rapidly across the globe (Government of South Australia, 2011). The demand for good quality seedless mandarins and oranges has been increasing during the last two decades.

United States of America exports of citrus fruit in 2011 were 1.14 million tonnes which account for 10.6% of total citrus production in United States of America and 8% of total world citrus exports as shown in Table 2.7.

Table 2.7 Citrus Production and Exports from United States of America

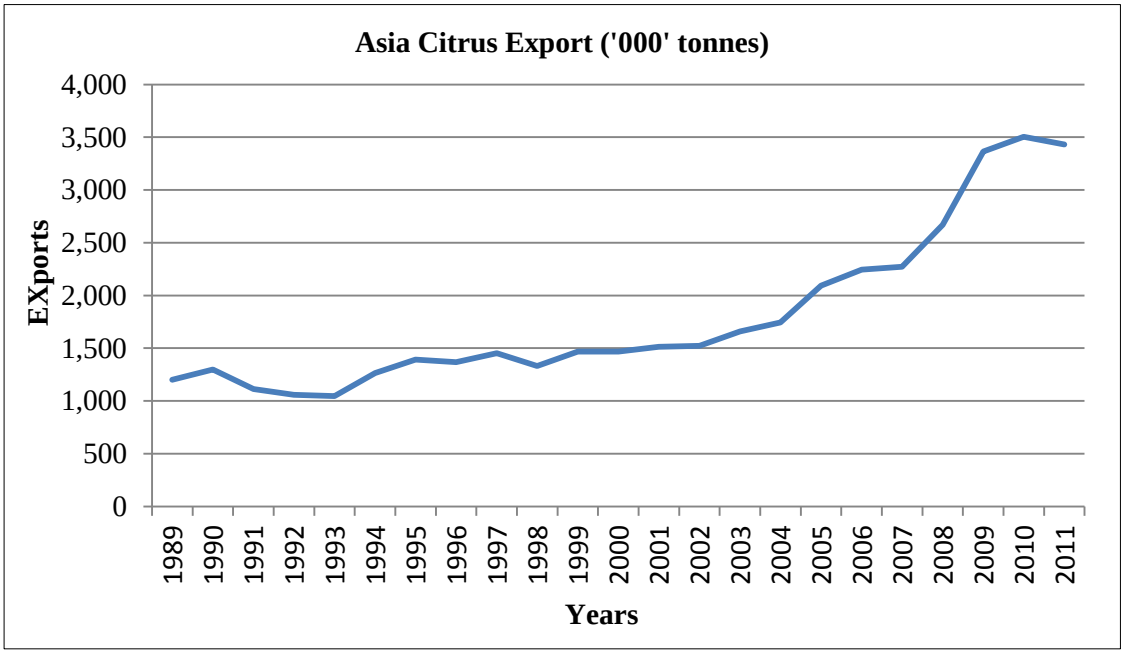
	Production and Export from United States of America							
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Production ('000' tonnes)	14,801	10,436	10,546	9,494	11,646	10,740	9,979	10,703
Citrus Export ('000' tonnes)	1,102	936	962	891	1,042	889	1,061	1,144
Citrus Export Value (million US$)	690	648	702	722	838	767	942	1,040

Source: (FAOSTAT, 2014a)

Canada, Netherlands and South Africa are the major export markets of US citrus fruit. The small volume of exports reflects that there is high domestic demand and consumption of citrus fruit in US. However, a large portion of citrus produced in the country is processed and exported in the form of juice as well (United States Department of Agriculture (USDA), 2014).

The total citrus exports from Asia were 1.0 million tonnes in 1993 which increased to 3.4 million tonnes in 2011. The unusual fluctuation in total exports, particularly in 2007, from Asian countries is due to low production (seasonal effect) and increased domestic consumption of the citrus fruit in these countries (United Nations Economic and Social Commission for Asia and the Pacific, 2007). However, a continuous increasing trend, with slight fluctuations, in citrus exports from Asian countries is evident during 1989 to 2011 as shown in figure 2.4.

Figure 2.4 Asia Citrus Exports (‘000’ tonnes)



Source: (FAOSTAT, 2014a)

In Asia, leading exporters of citrus include Turkey, China, Pakistan and Lebanon. Asian citrus exports are constantly showing increasing trends due to high demands for Asian citrus in foreign markets. After Turkey, the big Asian citrus exporters are China and Pakistan with 0.9 and 0.3 million tonnes of exports as shown in table 2.8. Greece, Lebanon, Saudi Arabia, Spain, Lebanon, Russian Federation, United Arab Emirates, United Kingdom, and Ukraine are the major export markets of Asian Citrus fruit (Ali,

2004; Chaudry, 2004; United Nations Economic and Social Commission for Asia and the Pacific, 2007).

Table 2.8 Asian Leading Citrus Exporting Countries

Country	Asian Leading Citrus exporting countries ('000' tonnes)							
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Turkey	684	894	1024	847	815	1180	1245	1482
China	348	448	424	559	857	1110	932	900
Pakistan	151	79	193	123	215	178	363	332
Lebanon	110	133	97	162	147	154	123	127

Source: (FAOSTAT, 2014a)

Although, China is a big producer of citrus after Brazil and produces more than 29 million tonnes annually its export is only 3.37% of its total production in 2011 as shown in table 2.9. The reason is the high demand of fresh fruit in the country. The domestic citrus consumption of China is about 93 % as fresh fruit and about 4% is used in processing (juices and canned) (United States Department of Agriculture (USDA), 2014).

Table 2.9 Citrus Production and Exports from China

	Production and Export from China							
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Production ('000' tonnes)	15,515	16,400	18,459	18,247	23,887	25,762	26,568	29,997
Citrus Export ('000' tonnes)	411	500	496	610	934	1,202	1,030	1,012
Citrus Export Value (million US$)	134	166	194	296	483	658	697	819

Source: (FAOSTAT, 2014a)

The leading importers of citrus fruit include Russia, Germany, Netherlands, France and United Kingdom, Japan, Canada and China as shown in table 2.10 (FAOSTAT, 2014b). China is an important developing market for United States and U.S. exports of citrus fruit to China constitute a major share of the country's imports (FAOSTAT, 2014b; United States Department of Agriculture (USDA), 2014).

Table 2.10 World Leading Citrus Importing Countries

Country	World Leading Citrus Importing Countries ('000' tonnes)							
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Russian Federation	853	952	1186	1258	1287	1277	1487	1657
Germany	1140	1080	968	1050	1075	1105	1075	1079
Netherlands	628	713	886	1009	967	988	1139	991
France	1028	939	944	1001	958	981	1018	944
United Kingdom	826	784	791	770	716	672	669	694
United States of America	478	522	550	678	600	633	652	671
Saudi Arabia	375	425	447	419	415	376	492	523
Canada	418	435	428	406	437	415	437	457
Poland	357	365	358	405	397	430	410	425
Ukraine	141	234	329	365	344	342	192	413
Italy	367	303	300	320	306	422	293	363
Japan	498	411	378	366	351	336	350	350
United Arab Emirates	119	55	177	218	280	294	251	286

Source: (FAOSTAT, 2014b)

2.7 Pakistan Citrus Industry

A number of agricultural resources, fertile land, well irrigated plains and variety of seasons make Pakistan an agricultural country. The agriculture sector plays a pivotal role in Pakistan's economy and it holds the key to prosperity. Despite the decline in the share of agriculture in GDP, nearly two-thirds of the population still depends on this sector for its livelihood (Ministry of Finance, 2014). Agriculture is considered as one of the major drivers of growth in the economy of Pakistan. According to an estimate, the total production of agriculture crops is estimated to 107 million tonnes in 2010-11. Pakistan annually produces about 13.5 million tons (approximately) of fruit and vegetables. In 2010-11, all fruit production was recorded at 6.9 million tonnes which accounted for 51.11% of total fruit and vegetables production as shown in table 2.11 (Pakistan Bureau of Statistics, 2014).

Citrus fruit is leading in terms of production followed by mango, dates and guava. Total citrus production in 2010-11 was 1.9 million tonnes (27.5% of total fruit production). Citrus fruit include oranges, mandarins (Kinnow), grapefruit, lemons and limes, of which mandarin (Kinnow) is of significant importance to Pakistan.

Pakistan produces approximately 2.0 million metric tonnes of citrus fruit (mainly Kinnow) annually. Production of citrus fruit has been increasing but with a very slow

pace while the area under citrus cultivation is almost static (sometimes it decreases) as shown in table 2.11. In 1991-92, Pakistan produced 1.62 million tonnes citrus which increased to 2.1 million tonnes in 2008-09 and to 1.9 million tonnes in 2010-11. Although there is no remarkable increase in area under citrus production but production has been increased up to 30.8% since 1991-92.

Table 2.11 Area and Production of all Fruit in Pakistan

	Area '000' hectares	Production '000' tonnes
1991-92	463.8	3989.4
1992-93	476.4	4112.2
1993-94	539.8	4850.1
1994-95	566.4	5153.7
1995-96	622.3	6091.4
1996-97	629.1	6187.3
1997-98	640.0	6280.2
1998-99	646.1	6162.1
1999-00	657.5	5846.3
2000-01	672.4	5891.7
2001-02	663.8	5901.6
2002-03	651.7	5741.7
2003-04	734.6	5691.7
2004-05	795.4	6633.2
2005-06	814.5	7147.6
2006-07	832.9	6011.3
2007-08	853.4	7178.8
2008-09	857.1	7051.5
2009-10	852.5	6941.3
2010-11	836.0	6926.7

Source: (Agriculture Marketing Information Service, 2014b; FAOSTAT, 2014d; Pakistan Bureau of Statistics, 2014)

The overall trend for all fruit production in Pakistan is increasing except for the year 2006-07, when a great decrease of production of all fruit as well as citrus fruit was observed. The main cause of this decrease in all fruit, as well as, citrus fruit in the country was unfavourable weather (hailstorm) and water shortage due to less precipitation in winter season. The area under all fruit has been increasing gradually so as the production is increasing.

Since 1993-94, there has been an increase in the production of citrus fruit which started to decrease in 1999. As this crop needs a critical low temperature to ripen which if not

reached, directly affect the production of citrus fruit (Spiegel-Roy & Goldschmidt, 1996). There is a great variation in temperature in the citrus growing area of Pakistan and may be one of the reasons of variation in production. The effect of this temperature variation can be seen greatly during 2006-07 when production drops from 2.4 million tonnes to 1.4 million tonnes while the area under cultivation was the same.

In Pakistan, citrus fruit has been cultivated in all the four provinces. Punjab is considered to be the centre of citrus producing among all the four provinces. The major citrus growing areas in four districts of Pakistan are shown in the table 2.12.

Table 2.12 Major Citrus Growing Areas in Pakistan

Province	Major Districts
Punjab	Sargodha, Toba Tek Singh, Mandi Bahauddin, Sahiwal, Khanewal, Vehari, Bahawalpur, Multan, Okara, Layyah, Jhang, Kasur, Bahawalnagar, Faisalabad
Khyber Pakhtoon Khaw	Malakand, Swat, Noshera, Dir Lower, D.I.Khan, Mardan, Haripur
Sindh	N. Feroze, Khairpur, Nawabshah, Sukkur, Sanghar
Baluchistan	Nasirabad, Dolan, Lasbela, Gwadar, Sibi,

Source: (Agriculture Marketing Information Service, 2014d; Pakistan Horticulture Development & Export Company (PHDECo.), 2005)

According to PHDECo., (2005) total production of Kinnow among all citrus fruit is nearly all confined in Punjab (above 90%) while oranges are mainly grown in Khyber Pakhtoon Khaw (KPK). In Punjab, three districts Sargodha, Toba Tek Singh and Mandi Bahauddin are known for their citrus fruit production. However, a small proportion of different varieties of citrus fruit are also grown in other three provinces of Pakistan as well.

Among all the varieties grown in Pakistan, Mandarins (Feutrell's Early and Kinnow) and Sweet Orange (Mausami or Musumbi and Red Blood) are of primary importance. Different varieties of citrus in Pakistan are shown in table 2.13. Among the four provinces of Pakistan, Citrus fruit (Kinnow) is produced largely in Punjab province and produces more than 90% Citrus fruit (Kinnow). In 2010-11, 96.4% of Citrus fruit (Kinnow) was produced in this province (Pakistan Bureau of Statistics, 2014).

Table 2.13 Varieties of Citrus Fruit in Pakistan

Sweet Orange	Succri, Musumbi, Washington Navel, Jaffa, Red Blood, Ruby Red and Valencia Late.
Mandarins	Feutrell's Early and Kinnow
Grape Fruit	Mash Seedless, Duncan, Foster and Shamber
Lemon	Eureka, Lisbon Lemon and rough Lemon
Lime	Kaghzi Lime and Sweet Lime

Source: (Pakistan Horticulture Development & Export Company (PHDECo.), 2005)

2.8 Citrus Production in Punjab

In Punjab, three districts Sargodha, Toba Tek Singh and Mandi Bahauddin constitute around 55 percent of the total area under citrus cultivation and produce nearly 61.7 percent of citrus fruit (Agriculture Marketing Information Service, 2014b). In Sargodha (main citrus production district), Bhalwal has been considered the centre of Kinnow (mandarin) production which is producing 650,000 metric tonnes annually (Pakistan Horticulture Development & Export Company (PHDECo.), 2005). Table 2.14 reflects production of citrus fruit in all the four provinces of Pakistan.

Table 2.14 Province-wise Production of Citrus Fruit in Pakistan

Year	CITRUS				
	Punjab	**Sindh**	**KPK**	**Baluchistan**	**Pakistan**
	Production '000' tonnes				
1991-92	1554.2	35.3	32.7	7.6	1629.8
1992-93	1585.9	35.8	33.3	10.3	1665.3
1993-94	1766.7	35.3	34.3	13.1	1849.4
1994-95	1847.3	35.2	34.6	15.7	1932.8
1995-96	1872.3	35.1	35.8	16.3	1959.5
1996-97	1913.1	35.0	37.4	17.1	2002.6
1997-98	1946.5	35.1	38.3	17.1	2037.0
1998-99	1769.2	35.2	39.4	17.7	1861.5
1999-00	1859.2	32.7	39.7	11.6	1943.2
2000-01	1813.0	30.9	40.2	13.6	1897.7
2001-02	1751.0	28.1	37.5	13.7	1830.3
2002-03	1623.5	27.7	38.0	13.1	1702.3
2003-04	1688.7	28.5	37.2	5.9	1760.3
2004-05	1872.3	28.6	36.8	6.0	1943.7
2005-06	2385.1	29.5	37.7	6.1	2458.4
2006-07	1400.7	31.5	34.4	5.8	1472.4
2007-08	2219.3	30.9	35.9	8.4	2294.5
2008-09	2059.5	30.5	33.8	8.4	2132.2
2009-10	2077.5	30.5	35.1	6.9	2150.0
2010-11	1912.0	30.9	32.3	7.0	1982.2

Source: (Agriculture Marketing Information Service, 2014b; Pakistan Bureau of Statistics, 2014)

In 2010-11, KPK (Khyber Pakhtoon Khaw) province produced 1.62%, Sindh province produced 1.55% and Baluchistan province produced 0.42% of total citrus production in Pakistan. In late nineties, the production of citrus fruit in Baluchistan province increased and it was due the increase in the area under citrus cultivation (Agriculture Marketing Information Service, 2014b; Pakistan Bureau of Statistics, 2014).

Among different varieties of citrus, the production of Kinnow was 1.80 million tonnes in 2009-10 in Punjab followed by oranges which was 94 thousand tonnes. Kinnow constitutes 87.1 percent of total citrus production and 80.3 percent of total area under citrus cultivation in Punjab. Oranges followed Kinnow in production and area under cultivation and constitutes 4.5 percent of total citrus production and 6 percent of total area under citrus cultivation in Punjab. The production of Grape fruit is the lowest in the Punjab province and it was only 3 thousand tonnes. The detail description of different types of citrus grown in Punjab in 2009-10 is shown in Table 2.15.

Table 2.15 Production of Different Types of Citrus Fruit in Punjab

Production and Area of Different Types of Citrus Fruit in Punjab			
Type of Citrus	**2011-12**		**Percent of Total Citrus Production**
	Area ('000' Hectares)	**Production ('000' tonnes)**	
Kinnow	154.6	1876.0	89.43
Oranges	9.4	80.0	3.81
Musumbi	7.2	61.5	2.93
Mandarin	1.2	9.3	0.44
Sweet Lime	3.9	29.5	1.41
Sour Orange	0.1	1.0	0.05
Lemon	4.6	26.0	1.2
Sour Lime	0.8	3.8	0.2
Grape fruit	0.3	2.3	0.1
Other	1.2	8.4	0.4
Total	183.2	2097.7	100.00

(Government of Punjab, 2013)

2.9 Citrus Harvest Season in Pakistan

In Pakistan, harvest season for citrus fruit starts from November with the harvesting of Feutrell's Early and lasts up to March ending with Kinnow (mandarin); sometime it is extended in to April. The harvest calendar of main citrus fruit producing countries which offer direct competition to Pakistan is presented in Table 2.16.

Table 2.16 Harvest Calendar for Major Citrus Fruit Producing Countries

Country	Months											
	J	F	M	A	M	J	J	A	S	O	N	D
Pakistan	√	√	√								√	√
Australia	√	√						√	√	√	√	√
Cyprus	√	√	√	√							√	√
China	√	√	√	√						√	√	√
Egypt	√	√	√								√	√
India	√	√	√									
Israel	√	√	√									
Morocco	√	√										
Spain	√	√	√	√	√	√						
Tunisia	√	√	√	√	√	√						
Turkey	√	√	√	√	√	√						

Source: (Pakistan Horticulture Development & Export Company (PHDECo.), 2005)

2.10 Citrus Growers / Producers in Pakistan

In Pakistan, farmers possess small agricultural land and its size has been reducing in successive generations when it is distributed among the heirs. Nearly all agricultural land (agricultural farms) is owned and cultivated by private individuals. According to Chaudry (2004), average farm size for citrus in Punjab was estimated at 12.3 Hectares which is quite big as compared to other crops in the area. However, the size of citrus orchard ranges from 0.4 ha to more than 64.7 ha in different citrus producing areas of Pakistan. Small and medium size farmers dominate citrus production in the area, although, some big farmers are also producing citrus (Ali, 2004).

2.11 Agricultural Marketing System in Pakistan

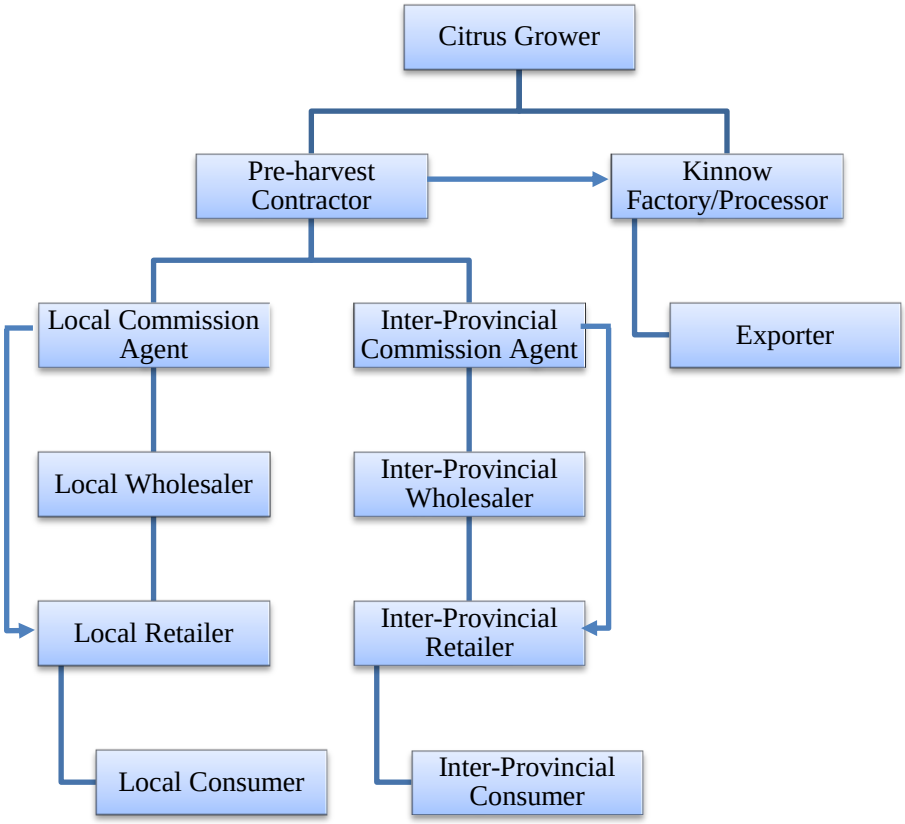
The agricultural marketing system in Pakistan is fairly diverse. Both the private and public sectors are involved in the marketing of farm produce. Private sector enterprises operate freely in buying and selling of many agricultural commodities. Farmers bring their produce in the markets themselves or through market intermediaries where buying and selling of these commodities take place on the basis of demand and supply. Private sector has full command to determine prices of course grains, fruit, vegetables, milk, eggs, etc. Local market administration regulates support prices for major agricultural commodities like wheat and rice on annual basis. Marketing of some food grains and

cash crops (for example, wheat, rice, maize, sugarcane and cotton) is managed and controlled by the public sector. Government intervenes in the marketing system through fixation of floor prices, procurement quotas and prices, export quotas, regulation and control of markets (Agriculture Marketing Information Service, 2014c).

2.12 Citrus Marketing Channels in Pakistan

Like other fruit, citrus fruit trade is mainly dominated by the private sector. However, Government facilitates the system by providing physical infrastructure especially the wholesale markets & communication, market intelligence, market promotion and regulatory measures for smooth business operations. It is generally perceived that marketing agents exploit producers and consumers by charging a fixed and high margin on their investment (Ali, 2004). Marketing of citrus fruit starts with the involvement of pre-harvest contractor in the marketing chain. According to Chaudry (2004), the following are the typical marketing channels which exist in Pakistan as shown in figure 2.5.

Figure 2.5 Marketing Channels of Citrus in Pakistan



Source: (Chaudry, 2004)

The pre-harvest contractor purchases an orchard at the flowering stage, hence called pre-harvest contractor, on annual basis after estimating the possible returns from the orchard. About 95% citrus producers undertake these kind of contracts and only 5% sell their citrus directly in order to fetch high prices (Chaudry, 2004).

The other citrus marketing channel members include commission agents, wholesalers, and retailers and exporters. These channel members except exporters are not familiar with the modern marketing techniques and most of them are not well educated (Ali, 2004; Chaudry, 2004). In addition, the rapid increase in number of different intermediaries in the marketing chain of citrus fruit in Pakistan not only decreases the profit of the citrus grower but also makes marketing decisions difficult as shown in figure 2.8. Therefore, the citrus growers consider a number of factors while deciding whom to sell in the market.

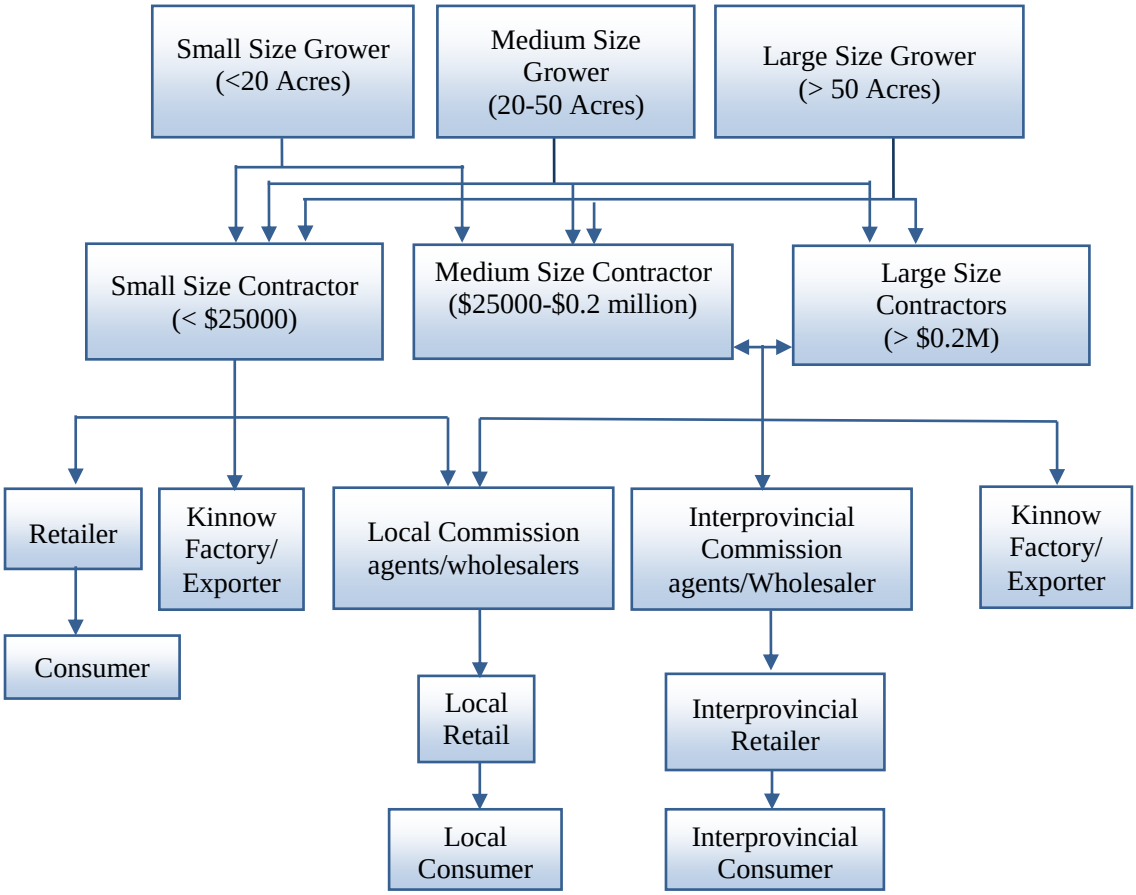
The detailed description of different intermediaries involved in the citrus marketing is as follows;

2.12.1 Contractors or Pre-harvest Contractors

The pre-dominant member of citrus marketing channel of citrus in Pakistan is the 'Contractor' or 'Pre-harvest Contractor'. Nearly, 95% of citrus fruit is marketed by these contractors in the country (Chaudry, 2004). A few citrus growers bypass these contractors and sell their produce directly in the market. Selling directly requires more marketing effort, time, and labour than the traditional one which involves contractors. A flow diagram showing different types of citrus growers and pre-harvest citrus contractors in existing marketing channels of citrus in Pakistan is shown in figure 2.6.

Citrus growers sell their orchards in advance to these contractors for different reasons. Firstly, citrus growers in Pakistan are not financially sound enough to market their produce, therefore, sell their orchards in advance. Secondly, by selling in advance the whole responsibility of orchard supervision rests upon the shoulder of contractor, though, farmers remain responsible for providing the necessary inputs e.g., irrigation, fertilizers, and pesticides. On the other hand, by making a pre-harvest contract of the orchard, contractor gains control over the produce and bargaining power in the market.

Figure 2.6 Flow Diagram of Marketing Channels of Citrus (Kinnow in Pakistan)



Source: Adopted from (Chaudry, 2004)

Types of Contractors

There are different types of citrus orchard contractors operating in the country. They can be divided into three broad categories on the basis of their purchasing power of citrus fruit for trading purposes as shown in Figure 2.6.

(i) Small Size Contractors

Small size contractors with purchasing power less than US $25000 (1 US dollar = 85 PKR) are called “Den Daar” and usually operate in the local markets only. These contractors have small finances with them so they work in groups in order to contract with the farmers like two to five contractors contract with one farmer. They sell citrus fruit on daily basis in the local market where they are called ‘Phariwala’ in the local language or sometimes to a wholesaler or commission agent.

(ii) Medium Size Contractors

Medium Size Contractors with purchasing power ranges from US $25000 to US $0.2 million are large in number in the area. They usually work with commission agents (sometimes perform the function of wholesaler at the same time), wholesaler (local and inter-provincial), processors (juice factories) and exporters. They act on the behalf of commission agents/wholesalers/exporters and don't invest their own finances normally. Sometimes, they purchase the orchard solely but due to lack of finances they don't pull this activity throughout the whole season. On one hand, they contract with the citrus grower by estimating the expected yield, transportation cost and future demand and supply in the market and on the other hand, they contract with the commission agents/wholesaler/exporter, sometimes with one or two, and agreed to provide them with the fixed quantity of citrus fruit. Commission agents/wholesalers/exporters are liable through contract to pay all the money to the contractor in the form of partial payments. Initially, the contractor receives 25% of the total orchard or fruit value under the contract from the commission agent/wholesaler/exporter who advances it to the citrus grower. After agreement (though mostly not documented), the contractor is liable for loss to commission agent/wholesaler/exporter for any loss in the yield or damage to the orchard e.g., due to weather uncertainty, pest attack. As the possession of the orchard is still in the hands of citrus grower and he may back out his contract is one of the major disadvantages of the undocumented agreement. At the end of contract, the difference in yield (actual and expected) is the profit or loss of the contractor.

(iii) Large Size Contractors

They are few in number and usually contract with the medium and large size citrus growers for the purchase of citrus fruit. They usually invest their own finances which have purchasing power greater than US $0.2M. Sometimes, they contract on behalf of commission agents/wholesalers/exporters. As they are present in the market with their own finances, they usually sell in different markets according to demand and supply in order to fetch higher prices. In case of low prices in the market, they store citrus fruit in the cold storages (privately owned) for some time and sell in the market when demand rises.

2.12.2 Commission Agents

The commission agent is known as 'Arhti' in local language, purchases citrus fruit from producer/contractor or occasionally from both of them. Then he sells it to wholesalers (local or interprovincial) or retailers or exporter in the local as well as in established big markets. Sometimes the commission agents may act as a wholesaler and sell directly to retailers or exporters. In some cases, commission agents act as a selling agent on behalf of producer or contractor. Like other agricultural commodities (with few exceptions), commission agents do not take the title of the commodity (citrus fruit) and act as a bridge between buyer and seller.

Nearly all the commission agents extend credit to citrus growers and contractors with the condition that they would bring the produce (citrus fruit) to the same commission agent later on. This affects the prices later in the marketing channel of citrus fruit. Usually contractor does not receive any payments until the end of contracting period except the instalments which he has to pay to the citrus grower in advance for the produce. At the end of contracting season, his account is settled on the basis of agreement between the parties.

2.12.3 Wholesalers

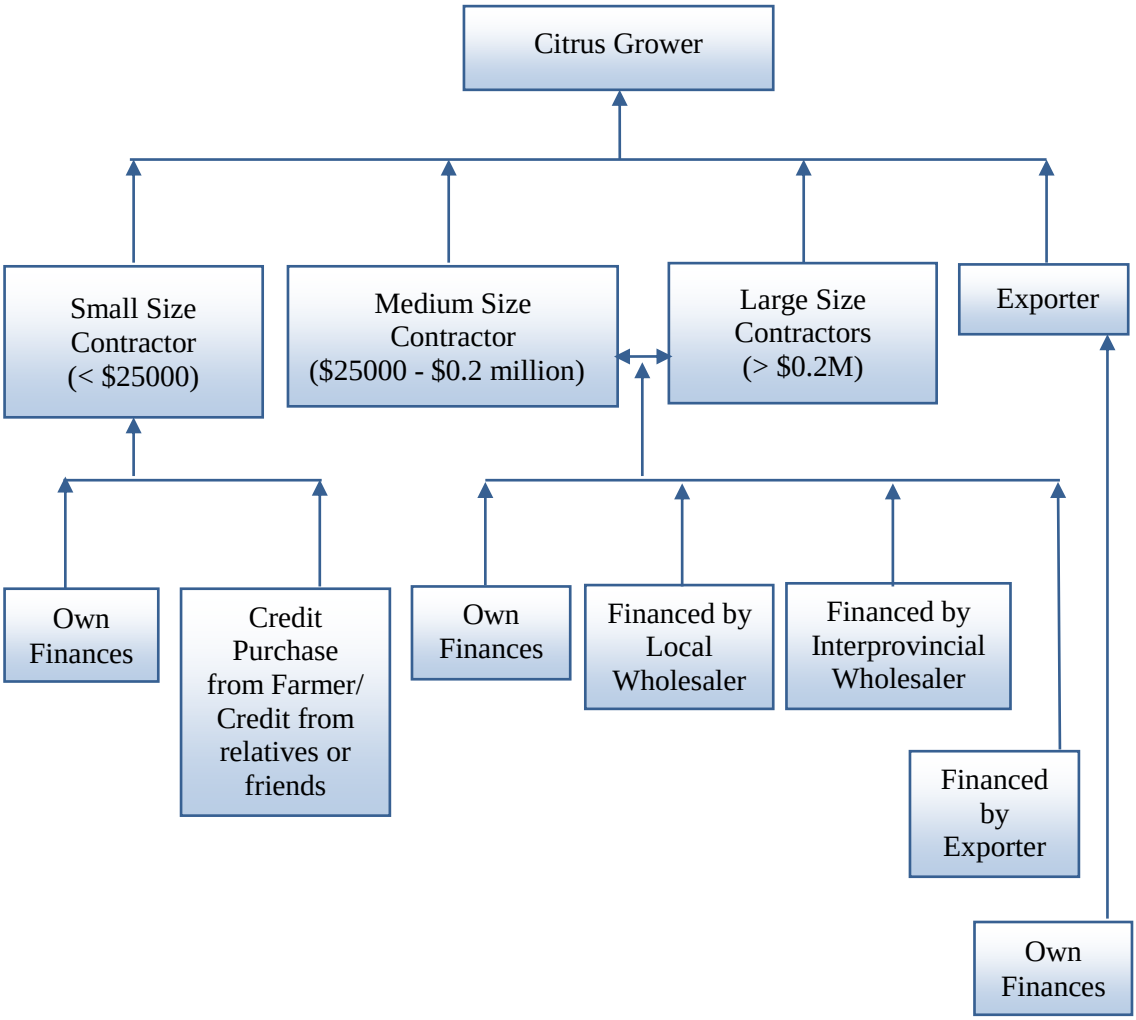
Wholesalers purchase citrus fruit in bulk quantity from commission agents and pre-harvest contractors or sometimes directly from the citrus growers. After purchasing, wholesalers perform different value added functions like grading, sorting, washing, cleaning before selling to inter-provincial wholesalers, retailers and consumers (Sharif et al., 2005). Sometimes, commission agents also perform the functions of wholesalers. Most of them extend credit to contractors who purchase fruit on the behalf of these wholesalers from the citrus growers. In that case the contractor acts like a commission agent for the particular wholesaler.

2.12.4 Retailers

In Pakistan, citrus fruit is consumed fresh and is mainly sold by fruit shops, stallholders and hawkers (use animal driven carts). The fruit shops are located mostly in consumer markets, near residential areas, along roadsides. People feel it is convenient to buy from these shops at affordable prices (Ali, 2004; Sharif, et al., 2005). However, a large quantity of citrus fruit is sold by hawkers on bicycles or animal driven carts in the cities

and country side. Although, they carry small amount of fruit with them but they are numerous in number and effectively serve the purpose in the market. Small size contractors usually sell their fruit as retailers (Phariwala) in the local market. Pre-harvest contractors have multiple sources of finances with them in order to operate in the market as shown in figure 2.7.

Figure 2.7 Finances Flow Diagram in Marketing Channels of Citrus (Kinnow in Pakistan)

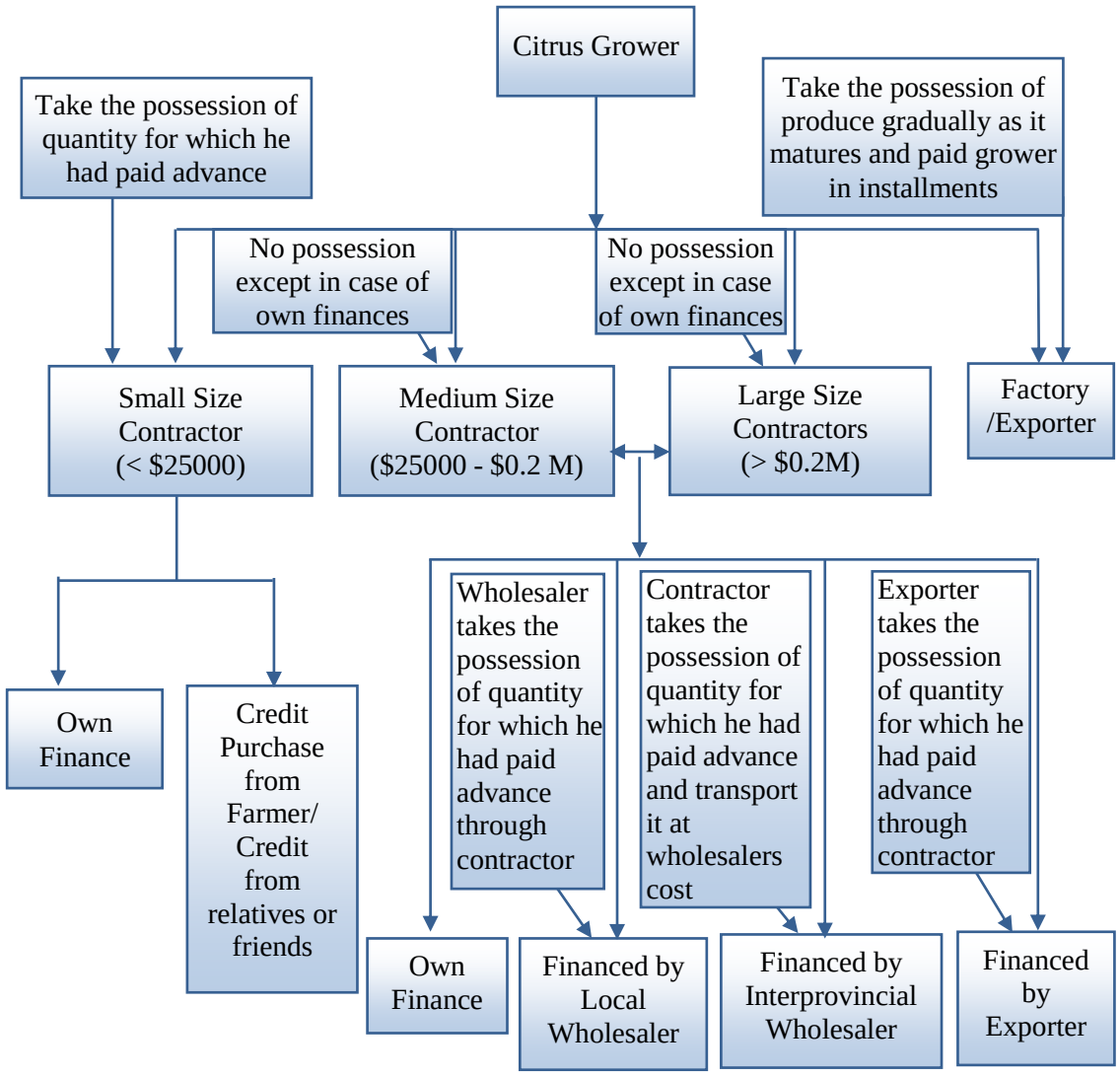


Small size contractors due to lack of finances usually borrow money from the relatives or friends or purchase citrus fruit from the citrus growers on credit. Medium size contractors are numerous in number and operate partly with their own finances in the market. If they borrow money from the wholesalers or exporters, they perform the functions of commission agent for them. Large size contractors enjoy greater freedom to market their produce due to their own finances. They sell in different local and inter-provincial markets and constantly observe market prices on daily basis.

Figure 2.8 shows the physical possession flow diagram of citrus fruit in Pakistan. It has been evident that all the citrus fruit is not picked from trees at once. The pre-harvest contractor or any other middleman is liable to take the possession of that much quantity of produce for which he has paid in advance to the citrus grower. It is the norm of contract in the market.

However, in some cases contractors or wholesalers or exporters promised to settle the account in near future and picked all the fruit from the orchard. This is clear violation of the contract and exploitation of the citrus grower. Therefore, citrus growers consider the security of the payment, reputation and trust level with the contractor, important factors while making selling decisions.

Figure 2.8 Possession Flow Diagram in Marketing Channels of Citrus (Kinnow in Pakistan)



2.13 Pakistan Citrus Exports

With the changing consumer preferences towards consumption of fresh and convenience food particularly fresh fruit, the global demand for fresh fruit is increasing (Government of South Australia, 2011a; Pakistan Horticulture Development & Export Company (PHDECo.), 2005). Therefore, it has direct impact on the exports of fresh fruit particularly citrus fruit from all over the world including Pakistan. Pakistan is one of the largest citrus producing countries and ranked 13th in the production of citrus fruit (FAOSTAT, 2014d). It has been observed that fresh citrus exports from Pakistan have been showing increasing trend since 2000-01 as shown in table 2.17.

Table 2.17 Pakistan Citrus Area, Production and Exports

Year	Area ('000' hectares)	Production ('000' tonnes)	Export Quantity ('000' tonnes)	Exports Value (1000 $)
1991-92	176.2	1629.8	31.2	4,236
1992-93	176.2	1665.3	34.7	4,136
1993-94	185.0	1849.4	29.4	4,387
1994-95	190.7	1932.8	38.5	5,020
1995-96	193.6	1959.5	41.2	6,067
1996-97	194.4	2002.6	89.7	14,299
1997-98	196.1	2037.0	58.3	7,639
1998-99	197.0	1861.5	56.9	11,099
1999-00	197.7	1943.2	81.2	13,935
2000-01	198.7	1897.7	107.7	16,932
2001-02	194.2	1830.3	123.3	21,711
2002-03	181.6	1702.3	98.1	22,406
2003-04	176.5	1760.3	151.3	30,716
2004-05	183.8	1943.7	79.2	21,782
2005-06	192.3	2458.4	194.1	39,608
2006-07	193.2	1472.4	124.2	33,235
2007-08	199.4	2294.5	215.1	47,916
2008-09	199.9	2132.2	178.0	44,331
2009-10	198.4	2150	363.4	99,433
2010-11	194.5	1982.2	331.9	124,109

Source: (Agriculture Marketing Information Service, 2014b; Ali, 2004; Chaudry, 2004; FAOSTAT, 2014a)

Among all citrus fruit, Kinnow mandarin constitutes about 97 percent in the total exports of citrus fruit from the country (FAOSTAT, 2014a; Pakistan Horticulture Development & Export Company (PHDECo.), 2005). In 2010-11, the total exports of citrus fruit from Pakistan were 331 thousand tonnes which account for a value of $124 million that represents about 16.7 percent of total citrus production as shown in table

2.17. As compared to 2000-01, the total exports of citrus were exactly threefold in 2009-10 which accounted for $99.4 million of foreign revenue.

The prime reasons for the fluctuation in the total exports of citrus fruit from Pakistan is the improper and careless handling during and after harvesting of citrus fruit, insufficient and inappropriate storage, transportation and inadequate packaging of the fruit (Ali, 2004; Pakistan Horticulture Development & Export Company (PHDECo.), 2005). The prominent export markets for Kinnow mandarin include Afghanistan, Bahrain, Bangladesh, Canada, Hong Kong, Iran, Qatar, Russian Federation, Saudi Arabia, Sri Lanka, and Unites Arab Emirates. In Europe, Kinnow mandarin is exported to Netherlands, Ukraine and United Kingdom though not in large quantities (Government of Pakistan, 2009). Following table 2.17 portrays the detail of total citrus area, production and exports of Pakistan.

A complete list of countries is attached in the Appendix A. In 2008-09, the major exports of Kinnow mandarin were to Russian Federation (36 thousand tonnes), Afghanistan (34 thousand tonnes), Iran (33 thousand tonnes) and United Arab Emirates (25 thousand tonnes). According to PHDECo., (2005) 31 percent of total Kinnow mandarin is exported to Far East countries from Pakistan followed by Middle East or Gulf countries (30%), Europe (16%), Afghanistan (17%) and other countries (6%). Due to high demand in Europe and Afghanistan, Kinnow mandarin exports increased to 28.7% and 19.3% in 2008-09, respectively.

2.14 Summary

A detailed description about citrus fruit, its history, production, consumption and exports in the world in general and in Asia and Pakistan, in particular, is presented in this chapter. Citrus fruit is believed to originate from South East Asian Countries and now it is present in many countries of the world. Brazil and China are the leading citrus producing countries in the world. The other major citrus producing countries include United States of America, Mexico, Spain, India, Iran, Italy, Egypt, Pakistan and Indonesia. Pakistan is ranked 13th in citrus production.

The consumption of citrus fruit in developed countries is far more than in developing countries. Brazil and Mexico are leading citrus fruit consuming countries having annual per capita consumption of 62.6 kg and 41.4 kg in 2011 respectively. In Pakistan, annual

per capita consumption of citrus fruit in 2006 was 13.4 kg which reduced to 7.8 kg in 2007 due to very low production of citrus fruit in the country.

The export of citrus fruit in the world is showing increasing trend. Spain is ranked 1st in citrus fruit export with 3.6 million tonnes in 2011 which account for a value of $3.5 billion. In Asia, Turkey is leading exporter with exports of 1.4 million tonnes of citrus fruit. Pakistan is ranked 3rd in citrus exports in Asia with exports of 0.332 million tonnes.

Pakistan is producing about 2.0 million tonnes of citrus fruit annually and exhibiting increasing trend in total citrus production. Among the four provinces, Punjab is the hub of citrus production and about 90% citrus fruit is produced in this province. In Punjab three districts namely Sargodha, Toba Tek Singh and Mandi Bahauddin constitute around 55 percent of the total area under citrus cultivation and produce about 61.7 percent of citrus fruit.

Agricultural marketing system in Pakistan is very diverse and both, private and public, sectors freely operate in the marketing of farm produce. However, price of course grains, fruit, vegetables, milk and eggs is determined by the market forces (demand and supply) by private sector. Local Government administration announces support prices for only major agricultural commodities like wheat, rice, maize, sugarcane and cotton. Nearly all citrus marketing channels are dominated by pre-harvest contractors and exporters of citrus fruit and decide the course of action of citrus fruit supply chain.

Pakistan is not a big exporter of citrus fruit in the world and exports only 8-10% of its total citrus production. In Asia, Pakistan ranked 3rd with 0.332 million tonnes of citrus fruit exports. The major export markets of Pakistan's citrus fruit are Russian Federation, Afghanistan, Iran and United Arab Emirates.

Chapter 3

3. LITERATURE REVIEW

3.1 Introduction

The main focus of this chapter is to investigate and analyse the available literature on decision making in general and for agriculture in particular. It is divided into three major sections. The first section provides details on terms and definitions of decision and decision making process, types of decisions and different approaches involved in decision making. The second section explains the decision making in agribusiness sector and its impact. The main focus of this section is to elaborate on decision making in supply chain management of perishable commodities, for example, fresh fruit. Third section establishes a link of available literature with the objectives of this study.

3.2 Decision Making Definitions

A decision is a consciously controlled action with a clear intent or purpose to achieve a goal. For a decision to be made there should be two or more alternative choices (Schiffman & Kanuk, 1983).

"Decision making is the making of rational choices on the basis of expectations about the consequences of action for prior objectives, and organizational forms as instruments for making those choices" (March & Weissinger-Baylon, 1986, p. 11).

According to Smidts (1990, p. 23) "Decision making is choosing one alternative from a set of alternatives".

According to Chiclana et al. (1998), decision making is the study of identifying and choosing alternatives based on the values and preferences of the decision maker. Decision making involves alternative choices to be considered, and in such a case the only need is to identify as many of these alternatives as possible but to choose the one that best fits with the goals, objectives, desires, values.

Decision making, as explained by (Fülöp, 2005, p. 1), is the identification of the "decision maker(s)" and "stakeholder(s)" involved in the decision, minimizing the possible disparity about problem definition, requirements, goals and criteria.

"Decision making can be considered as a succession of events which fall one after the other and help to solve the problem" (Beach & Connolly, 2005, p. 2). These events are;

Diagnosis → Action Selection → Implementation

Diagnosis is the identification of the problem situation by the decision maker and after analysing the situation, the best action (option) is selected among the set of potential plans of actions and finally this process ends with the implementation of the selected action plan. Decision making may be referred as choosing the best action from a set of available potential plans of actions (Beach & Connolly, 2005).

"A decision is a choice of action of what to do or not do and is directed to achieve goal(s)" (Baron, 2008, p. 6).

According to Keast & Towler (2009), a decision making process basically involves the identification of the situation, alternatives, outcomes, distinguishing between the resulted outcomes and if necessary (for optimal results) choosing the alternative.

"Decision is choice amongst available acts, and this choice is aimed at securing a preferred combination of experiences" (Shackle, 2010, p. 13).

According to Griffin et al. (2010, p. 192), "Decision making is choosing one alternative from among several."

"A decision, in scientific terms, is a response in a situation that is composed of three parts: there is more than one possible course of action under consideration in the choice set, the situation can be described in terms of degree of belief or probabilities and the consequences associated with the possible outcomes can be evaluated" (Hastie & Dawes, 2010, p. 24).

"A decision is conventionally defined as a choice between two or more options, or acts, based on reasoning about the desirability of their consequences" (Cohen & Lipshitz, 2011, p. 1).

The focus of all above mentioned definitions of decision or decision making is on a few most important elements in order to make a rational decision. These include identification of the decision situation, identification of two or more alternatives, choosing the best possible alternatives, making a rational choice and distinguishing between the resulted outcomes.

Types of Decisions

Decisions can be classified into programmed or non-programmed on the basis of their repetition frequency (Griffin & Moorhead, 2010).

Programmed Decisions

According to Griffin & Moorhead (2010), programmed decisions recur more frequently, are highly structured having clear goals and are well known. These decisions follow the pre-established decision making procedure with defined sources and channels of information.

Non-programmed Decisions

"Decisions that recur infrequently and for which there is no previously established decision rule (Griffin & Moorhead, 2010, p. 194)." These decisions are poorly structured and are new and unusual in nature.

A decision rule is a statement that tells a decision maker which alternative to choose based on the characteristics of the decision situation (Griffin & Moorhead, 2010).

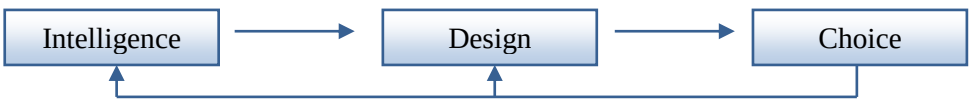
3.3 Decision Making Process

Decision making is present in every aspect of human life and people are guided by the decisions they make. Therefore, it becomes necessary to understand the whole process of decision making in order to identify various factors that influence decision making. According to Simon (1960, 1977), the decision making process is comprised of the following steps:

1. Identifying problems and opportunities
2. Assessing the situation
3. The design of suitable actions or plans
4. Comparison and selection of options, or choice
5. Adjustment, learning, and innovation that occur after plans are adopted

Simon (1960, 1977) explained decision making process as a three phased process as shown in figure 3.1.

Figure 3.1 Simon's Model of the Decision Process



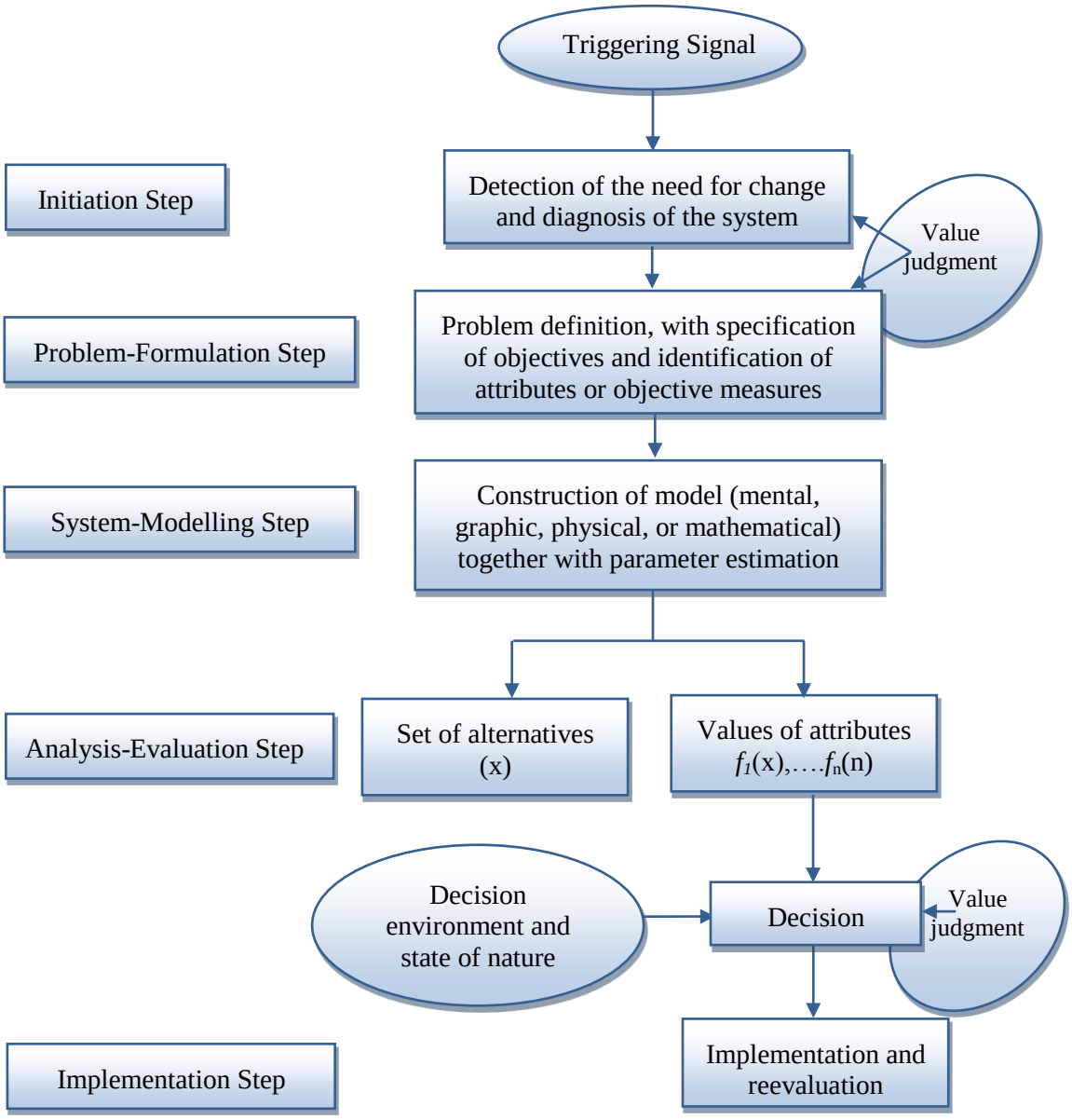
Source: (Dillon, 1998; Simon, 1960)

Intelligence refers (Dillon, 1998; Simon, 1960) to identifying the need for a decision and in words of Simon it is "searching the environment". Design is the finding of alternatives through the screening of the environment while choice is the adoption of

most suitable alternatives. This model is not simple and straightforward as shown in figure 3.1. It is a complicated cyclic process. During design and choice phases, there may appear new problems which require further intelligence, hence, restarting the decision process.

According to Chankong & Haimes (1983), a multi-objective decision making process is essentially the problem solving process and consists of five steps namely; Initiation, problem-formulation, system-modelling, analysis-evaluation and implementation steps. The whole process starts with the identification of need for change and ends with the implementation of the highest rank alternative as shown in figure 3.2.

Figure 3.2 A Multi-Objective Decision Making Process



Source: (Chankong & Haimes, 1983)

A decision making process is often divided into a number of distinguished stages (Boehlje & Eidman, 1984; Engel et al., 1986; Keeney & Raiffa, 1976; Smidts, 1990). These stages are;

1. Problem definition
2. The search for information about alternatives
3. Evaluation of the alternatives
4. Choice of one alternative
5. Evaluation of the results or outcomes of the final choice

With the advancement of more in depth research, the decision making process can be divided into the following steps (Fülöp, 2005):

1. Define the problem
2. Determine requirements
3. Establish goals
4. Identify alternatives
5. Define criteria
6. Select a decision making tool
7. Evaluate alternatives against criteria
8. Validate solutions against problem statement

3.4 Decision Making Approaches

A number of researchers and social scientists (Bell et al., 1988; Keast & Towler, 2009; Suhonen, 2007) try to explore the behaviour of individuals. How they react in different situations? What are their possible reactions while making a choice among different available alternatives (decision making)? There are different theories and models to describe the individual decision making under risk and uncertainty (Bell et al., 1988; Edwards, 1954; Keast & Towler, 2009; Shapira, 1990; Simon, 1959, 1997; Suhonen, 2007).

"Risk can be defined as imperfect knowledge where the probabilities of the possible outcomes are known and uncertainty exists when these probabilities are not known" (Hardaker et al., 2004, p. 5).

It is very interesting to know about how people make decisions in real life. Most of the early researchers (Bernoulli, 1954; Edwards, 1954; Fishburn, 1970; Luce & Raiffa, 1957; Simon, 1972) have explained theoretically the pattern how people make decisions and how they should make decisions under risk and uncertainty. Thereby, a diversified and broad range of theoretical knowledge developed with the passage of time (Dillon, 1998; Edwards, 1954). From the theory, a group of decision making theories or approaches or models have appeared in literature. These theories/approaches/models can be classified as normative, prescriptive (closely related to normative approaches or sometimes used synonymously) and descriptive theories/approaches/models based on methodological foundation and are collectively known as Decision theory (Bell & Raiffa, 1988; Dillon, 1998; Grant & Van Zandt, 2009; Simon, 1959, 1997; Vroom & Jago, 1974).

3.4.1 Normative Decision Making Theories

These theories focus logical consistent decision procedures emphasizing on what people should or ought to do in a situation of risky decision making, in theory, and is evaluated mainly by economists, statisticians, philosophers and mathematical psychologists (Beach, 1993; Beach & Connolly, 2005; Bell & Raiffa, 1988; Cohen & Lipshitz, 2011; Edwards, 1954; Fishburn, 1967, 1970, 1981; Keeney & Raiffa, 1976; Pratt, 1964; Simon, 1959; Smidts, 1990; Suhonen, 2007). Decision taker/maker is rational in his choice is the basic assumption of these theories (Bernoulli, 1954; Fishburn, 1968; Luce & Raiffa, 1957; Simon, 1972). According to Brown & Vari (1992), normative decision making is characterized by statistical decision theory which describes ideal conclusion or decision processes without considering that the ideal conditions are met by the humans who must implement them. Normative theories are based on Expected utility maximization principle and stress the rationality of the decisions irrespective of the fact that how people behave in real life or in empirical experiments (Suhonen, 2007). In other words, normative decision theories convert any decision situation into a mathematical optimization problem in order to reach an accurate solution and are purely an economic approach (Johnson & Busemeyer, 2010; Kamper, 2000).

3.4.2 Descriptive Decision Making Theories or Behavioural Decision Theory

After empirical and experimental evaluation of normative decision theory, it has been proved that people do not behave according to some value maximization decision rule

that take into consideration value trade-offs among their different goals (Edwards, 1954; Lau & Levy, 1998; Luce & Raiffa, 1957; Simon, 1978). This led to the development of descriptive decision theories or behavioural decision theory based on "bounded rationality" which studies how people actually make decisions in real life (Edwards, 1954; Kamper, 2000; Lau & Levy, 1998; Luce & Raiffa, 1957; Simon, 1957, 1978). These Theories analyse how people make decisions and establish optimal choices in real life and establish the fact that people are "cognitively limited information processors" (Beach, 1993; Beach & Connolly, 2005; Bell & Raiffa, 1988; Cohen & Lipshitz, 2011; Lau & Levy, 1998; Suhonen, 2007). These approaches appeared in the framework of decision making when normative decision making approaches failed to explain people's behaviour under rational choice (Machina, 1982; Tversky, 1975; Tversky & Kahneman, 1986).

3.4.3 Prescriptive Decision Making Theories or Decision Analysis

Prescriptive decision theory or decision analysis, in contrast to normative and descriptive decision approaches, emphasizes the development of decision model in which humans can participate effectively by providing their inputs and use the resulted output regarding a particular decision (Brown & Vari, 1992; Keeney & Raiffa, 1976, 1993; Suhonen, 2007). The basic philosophy of prescriptive decision theory is, thus, the union of normative theory after tailoring it according to human behaviour with the descriptive theory (Eisenfuhr et al., 2010). According to Beach & Connolly (2005), the purpose of prescriptive decision making approach is to better understand the decision process and to help the decision maker in the process of decision making. The prescriptive decision making approach is an extension of normative decision theories (Keast & Towler, 2009) and the purpose of these theories is to help people to make good decisions (Bell & Raiffa, 1988; Keast & Towler, 2009; Suhonen, 2007). In the words of Stanovich (2010, p. 133), "prescriptive decision making models are usually viewed as specifying how processes of belief formation and decision making should be carried out, given the limitations of human cognitive apparatus and the situational constraints (e.g., time pressure) with which the decision maker must deal". Operation research and management science use these theories or approaches in decision making process (Suhonen, 2007).

3.5 History of Decision Making Theories

One of the most important theories which explain Normative Decision Making is Expected Utility Theory (EUT) or Utility Theory, a strong axiomatic expression, based on normative decision rule called the expected utility rule (Smidts, 1990; Tversky, 1975). It can be further divided into two sub theories namely "decision making under risk" and "decision making under uncertainty" (Bell & Raiffa, 1988; Smidts, 1990; Tversky, 1975) collectively known as "decision making under risk and uncertainty" (Bell & Raiffa, 1988; Riabacke, 2006).

According to Tversky (1975), the Expected Utility Theory (EUT) principle was first put forward by Daniel Bernouli (1738) while encountering a gambling situation and emphasized that people (decision makers) should maximize expected utility by preferring risk averse options. Neumann and Morgenstern (1944) further developed the EUT and added a set of assumptions or axioms (transitivity, substitutability, independence and continuity) about preference ordering (Bell & Raiffa, 1988). Expected utility theory was basically formulated on the assumption that people behave rationally and have well defined preferences while making a certain decision (Bell & Raiffa, 1988; Tversky & Kahneman, 1986).

According to Tversky (1975), Neumann and Morgenstern proved that it was possible to select the alternative with highest expected utility under the given set of assumptions or axioms. In Expected Utility Theory the decision maker selects between the risky or uncertain situations by comparing their expected utility values (i.e., "the weighted sums obtained by adding the utility values of outcomes multiplied by their respective probabilities") while making a certain decision (Mongin, 1988; Tversky, 1975; Tversky & Kahneman, 1986).

Mathematically, if $U(x) = (u(x_1), u(x_2), \ldots, u(x_n))$ is a set of utility values of outcomes and these mutually exclusive outcomes are associated with the probability distribution $p = (p_1, p_2, \ldots, p_n)$, then the highest expected utility (EU) of outcome X would be (Mongin, 1988; Smidts, 1990);

$$EU(x) = \sum_{i=1}^{n} p_i U(x_i)$$

Where $\sum$ stands for summation.

The basic philosophy of Bernouli and Neumann and Morgenstern theories was to study risky decision making and considered a dominant model in the analysis of decision making under risk (Bell & Raiffa, 1988; Fishburn, 1970). Neumann and Morgenstern (1944) axiomatized the Bernoulli (1738) concept of expected utility maximization assuming that probabilities are measured objectively and ignored the individual behaviour in decision making (Fishburn, 1981; Larichev, 1999).

The expected utility theory, soon after its emergence, received a lot of criticism based on experiments (Gärdenfors & Sahlin, 1988; Larichev, 1999; Lau & Levy, 1998; Suhonen, 2007). The most famous criticisms that decision maker's decisions systematically violated the axioms proposed by Neumann and Morgenstern were known as Allais (1952) and Ellsberg (1961) paradoxes (Camerer, 2000; Gärdenfors & Sahlin, 1988; Larichev, 1999; Lau & Levy, 1998; Quiggin, 1993; Suhonen, 2007; Tversky, 1975; Tversky & Kahneman, 1992). Both of these paradoxes attacked the famous independence axioms that states that if 'a' is preferred to 'b', then for all options 'c' and probabilities 'p', lottery or gamble (a, c; p, 1-p) would be preferred to the lottery or gamble (b, c; p, 1-p) (Camerer, 2000; Larichev, 1999; Lau & Levy, 1998; Okasha, 2011; Suhonen, 2007; Tversky, 1975; Tversky & Kahneman, 1992). This contradiction along with other inconsistencies (violations of other axioms) led to the development of alternatives theories to expected utility theory (Camerer, 2000; Gärdenfors & Sahlin, 1988; Larichev, 1999; Lau & Levy, 1998; Okasha, 2011; Stanovich, 2010; Suhonen, 2007; Tversky, 1975; Tversky & Kahneman, 1992).

Savage (1954) added the concept of subjective probability into expected utility theory and developed a new theory "Subjective Expected Utility Theory" (SEUT) or Bayesian decision theory by the addition of many alternative axioms (mathematical or formal explanation of the theory) into Neumann and Morgenstern theory (Bell & Raiffa, 1988; Fishburn, 1967, 1968, 1981; Suhonen, 2007). Subjective probability may be referred as probability derived from an individual's personal judgment about whether a specific outcome is likely to occur (Bell & Raiffa, 1988).

The expression for Savage subjective expected utility theory would be as follows;

$$\mathrm{SEU(x)} = \sum_{i=1}^{n} \pi_i \mathrm{U(x_i)}$$

π_i represents the subjective probabilities of the events.

Followed by Savage, many early researchers (Fishburn, 1967, 1968, 1970, 1981, 1984; Luce & Raiffa, 1957; Schoemaker, 1980; Sinn, 1989; Winterfeldt & Edwards, 1986) developed and modified the subjective expected utility theory in both, formal and informal way. SEUT may be treated as both a normative (Howard, 1988) and as a descriptive theory (Smidts, 1990) for decision making. If a decision maker follows and agrees with the axioms, his choices definitely would accord with the expected utility model (Howard, 1988) and vice versa. In order to remove the disparity between choices under expected utility theory and actual behaviour alternative normative theories have been proposed, for example, generalized expected utility model (Machina, 1982; Quiggin, 1993; Smidts, 1990). A brief summary of normative (expected utility theories) and descriptive (non-expected utilities) is portrayed in table 3.1.

Table 3.1 A Brief Summary of Normative and Descriptive Decision Theories

Theory	Proposed by	Focus	Critiques
Expected Utility Theory 1944	Neumann-Morgenstern	Expected utility maximization, Objective utility, rationality of the decision maker	Allais (1953), Kahneman & Tversky (1979), Machina (1982)
Subjective Expected Utility Theory 1954	Savage	Subjective utility, individual personal judgment in decision making	Allais (1979), Kahneman & Tversky (1979), Schoemaker (1980), Machina (1982), Robinson (1982), Simon (1990)
Generalized Expected Utility Model 1982	Machina	Boundedness of utility	Kahneman & Tversky (1986), Ford (1987), Bell & Raiffa (1988)
Prospect Theory 1979	Kahneman & Tversky	More human centred view of decision making, focus on irrational behaviour of decision maker	Hershey and Schoemaker (1980), Martinex-Vazquex, Harwood and Larkings (1992), Brockner (1992), Casey (1994)
Regret Theory 1982	Bell, Fishburn, Loomes & Sugden	Individual's feeling of regret and rejoice, comparisons of what results are and what might be	Starmer & Sugden (1993) Niko Suhonen (2007)

Normative decision theory assumes that there is an ideal decision maker (economic man) who is well informed, rational and able to analyse the situation with perfect accuracy through its axioms (Bell & Raiffa, 1988; Tversky, 1975). Since people usually do not behave in ways consistent with axiomatic rules, hence leading to violation of the theory (Bell & Raiffa, 1988; Tversky & Kahneman, 1986).

The expected utility theory failed on the grounds that it was too complicated for the human brain to accept it. One of the axioms, behavioural assumption, proved false when this theory put into empirical analysis (Ford, 1987). Similarly SEUT faced a criticism on the grounds that in real situation, decision makers could not use this approach due to limited facts and reasoning power that was required to apply its principles (Simon, 1990). According to Edwards (1954), Simon (1978) and Kahneman & Tversky (1979), it is usually impractical for people to obey the principles of statistical theory (like normative decision theory) in responding to uncertainties and probabilities and make optimal use of on hand information for decision making. The other problem is the correct estimation of the probabilities associated with different outcomes by the decision maker (Baron, 2008; Hastie & Dawes, 2010; Simon, 1972, 1990, 1997; Stanovich, 2010; Tversky, 1975; Tversky & Kahneman, 1986, 1992). Similarly, empirical experiments proved that adoption of value maximization rules and rational trade-offs among conflicting values are difficult for people to follow in real life (Kahneman & Tversky, 1979; Simon, 1978). This inconsistent behaviour of people with the normative theories led to the formation of descriptive decision theories which fall under the category of behavioural decision theory based on bounded rationality (Kahneman et al., 1982; Kamper, 2000; Simon, 1978; Smidts, 1990).

According to Smidts (Smidts, 1990), a number of descriptive decision theories or non-expected utility theories, as an alternative of SEU and EUT (normative theories), have been proposed which include: Prospect theory of Kahneman and Tversky (1979), Cumulative Prospect Theory proposed by Tversky & Kahneman (1992), The Regret Theory of Bell (1982) and Loomes and Sugden (1982), the Generalized Expected Utility Theory of Machina (1982), the Optimism/Pessimism Approach by Hey (1984) and The Lottery Dependent Utility Model of Becker and Sarin (1987). Most of the proposed theories are continuity or variants of SEU theory though some theories are clear divergence from SEU concept, for example, Prospect and Regret Theories (Smidts, 1990).

The factual basis for the formulation of Prospect Theory rested upon three main aspects (among several) of making choices under risky situations that were not consistent with the axioms/principles of EU theory (Kahneman & Tversky, 1979). These three aspects include; certainty effect, isolation effect and reflection effect. According to Edwards (1996, p. 20), certainty effect refers that "individual underweight probable outcomes in comparison with outcomes that are certain" or "people are inclined to sure gain". Isolation effect is "ignoring all the common components of different prospects under consideration by individuals making a choice" and reflection effect is that "choices among negative prospects are a mirror image of choices among positive prospects".

The difference between utility theory and prospect theory is that under utility theory "decisions in risky situations are made based on final wealth and probabilities" whereas in prospect theory "these decisions are made based on values assigned to gains and losses with respect to reference point and decision weight" (Edwards, 1996, p. 20).

Prospect theory is a two phased model viz., editing phase and computational or evaluation phase and is based on a number of experimental observations (Edwards, 1996; Kahneman & Tversky, 1979; Smidts, 1990). In the editing phase options or prospects are analysed so as to simplify these options or prospects and in the evaluation phase the edited options or prospects are evaluated and the prospect with the highest value is chosen (Edwards, 1996; Kahneman & Tversky, 1979; Smidts, 1990).

Although prospect theory posed a serious threat to EU and SEU theories as an alternative model, it has some shortcomings at the same time (Currim & Sarin, 1989; Smidts, 1990). Determination of reference point, its definition, value function calculation, estimation of decision weight function and above all its complexity make it unfit for empirical considerations (Edwards, 1996; Schoemaker, 1980; Smidts, 1990).

Regret theory is another descriptive decision theory as an alternative of normative decision theory which considers individual's feelings of regret and rejoice in decision making (Bell, 1982; Kahneman et al., 1982; Loomes & Sugden, 1982). Individuals/decision makers consider not only the results that they may get as a result of a particular action but also consider those results which they would experience while selecting another action under the same state of world, constitute the basic idea of regret theory (Bell, 1982; Kahneman et al., 1982; Loomes & Sugden, 1982; Suhonen, 2007). In other words, a comparison of 'what is' and 'what might have been' establish the nature of regret theory (Bell, 1982; Connolly & Zeelenberg, 2002; Kahneman et al.,

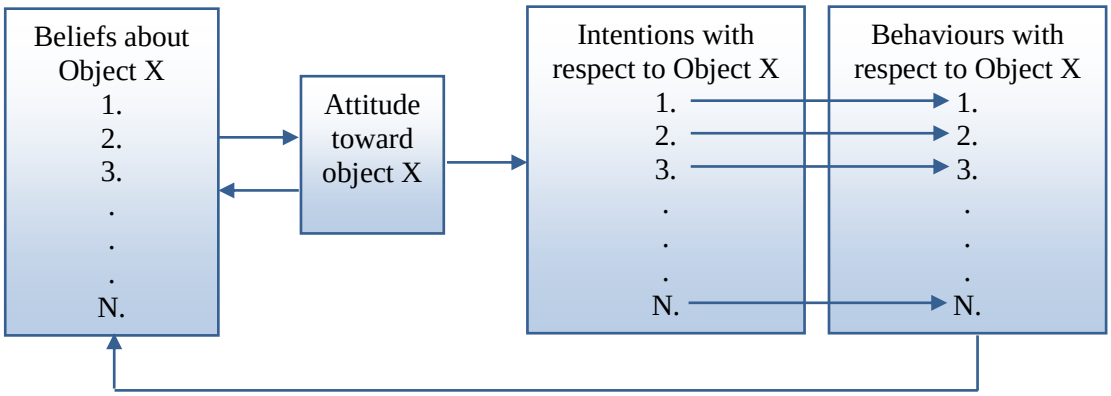
1982; Loomes & Sugden, 1982; Suhonen, 2007). The decision maker rejoices when he comes to know that the consequences would have been bad if he had chosen differently and feels regret if he comes to know that the outcome would have been better if he had chosen differently (Baron, 2008).

The descriptive decision making approach rejects the previous classical rationality concept that people are driven in their economic actions by pure rationality only and replaces it with "Bounded Rationality Concept" (Dillon, 1998; Ivanova & Gibcus, 2003; Kamper, 2000; Simon, 1957, 1972). Since it is impossible to identify all the alternatives under a rapidly changing environment, descriptive decision making emphasizes the concept of "Bounded Rationality" or "Limited Rationality" (Dillon, 1998; Ivanova & Gibcus, 2003). "Bounded rationality is rationality as exhibited by decision makers of limited abilities" (Ivanova & Gibcus, 2003, p. 8). It is impossible for people to visualize all the possible alternatives and their outcomes before the actual decision takes place because people have limited problem solving capability and is termed as "Simon's Satisficing Principle" (Dillon, 1998; Ivanova & Gibcus, 2003; Kamper, 2000). According to 'Simons Satisficing Principle', people or decision makers do not look for the best or optimal decision outcome but for a 'Satisficing' outcome of a decision (Dillon, 1998; Ivanova & Gibcus, 2003; Simon, 1990). 'Satisficing' outcome refers (Kamper, 2000; Smidts, 1990) to the outcome which yields satisfactory consequences at first place among different available alternatives.

Descriptive decision theory and research usually focuses entirely on choice of best option from available set of options but does not speak about how these options are arrived? What is the underlying basis of having these options in the first place and not the others? (Beach & Mitchell, 1987). Beach (1993) critically analysed the theoretical models of choice and found the importance of prochoice screening of options (Image theory) in decision making. Image theory is a descriptive theory of decision making in which decision makers characterize information as images (Beach & Mitchell, 1987). He also found that screening always came out with something being too unacceptable and limit choice to only those possibilities (options) that met with the minimal standards of the decision maker. Image theory explains behavioural aspects of decision making instead of normative viewpoint (Beach & Mitchell, 1987). Image theory in contrast to other choice (theoretical) theories completely elaborates prochoice screening decisions, choice decisions and post choice implementation and progress decisions. Another

theory, contrary to pure economic theory, proposed by Fishbein & Ajzen (1975) considers people's beliefs and attitudes while making decisions. According to Fishbein & Ajzen (1975) individual's behaviour with respect to an object can be predicted by one's attitude towards that object as shown in figure 3.3. Fishbein & Ajzen (1975) theory establishes the theoretical framework that attitudes influence the individual's behaviour indirectly through intentions and is further reinforced by the individual's beliefs. Despite the excessive use of theory in decision making, a number of researchers (Bentler & Speckart, 1981; Fazio, 1990; Oliver & Bearden, 1985; Vallerand et al., 1992; Willock et al., 1999) criticize the theory. The common criticism is that it is not necessary that attitudes indirectly affect behaviour; some attitudes may have direct influence on individual's behaviour. As suggested by Fishbein & Ajzen, the interaction between attitudes and intentions is not as independent as shown in figure 3.3.

Figure 3.3 Fishbein & Ajzen Model of Decision Making



Source: (Fishbein & Ajzen, 1975)

The individual's behaviour is also influenced by other factors such as moral values, habits, personality and environmental variables; therefore, these should be included in the model (Fazio, 1990; Vallerand et al., 1992).

Descriptive theory only deals with the decision event and not the whole process of decision making and thus has limited scope (Beach & Mitchell, 1987). Normative decision theory focuses on what people should do (in theory) (Dillon, 1998) and is more like a hypothetical and imaginary concept (Grant & Van Zandt, 2009). It is argued that despite the fact that normative theory seems to be an imaginary concept it provides key basics for the other two theories (Grant & Van Zandt, 2009). Earlier Payne et al. (1993) are of the view to use normative techniques after making this theory more "humanised"

by adding human concepts (human behaviour and limitations) in it. Decision theory describes how decisions are made by decision makers (descriptive theory), how decisions should be made by decision makers in theory and in reality (normative theory) (Dillon, 1998; Keast & Towler, 2009), therefore, a combination of both descriptive and normative theories can result in a rational (though not completely rational) decision (Grant & Van Zandt, 2009; Suhonen, 2007). According to Larichev (1999) and Suhonen (2007), normative (utility theories) and descriptive theories (non-expected utility theories) depend upon axiomatic expressions in decision making. In real life, people do not behave and validate axiomatic expressions of these theories, thus, making them inappropriate for use in decision making process (Baron, 2008; Keeney & Raiffa, 1976, 1993; Larichev, 1999; Suhonen, 2007).

The prescriptive decision theory or decision analysis emerged as an alternative to normative and descriptive decision theory for measuring utility and making complex decisions (Keeney & Raiffa, 1976, 1993). The underlying concept of this theory is to disintegrate utility into number of attributes or factors each correspond to a goal or value, hence, known as multi-attribute utility theory or multi-attribute decision theory or multi-attribute analysis (Baron, 2008; Hastie & Dawes, 2010; Johnson & Busemeyer, 2010; Keeney & Raiffa, 1976, 1993; Suhonen, 2007). It is more practical and comprehensive theory for analysing complex decisions involving multiple and competitive objectives through the use of value trade-offs among different objectives (Hastie & Dawes, 2010; Johnson & Busemeyer, 2010). According to Baron (2008), among multivariate theories or techniques, conjoint analysis is effective mathematical tool to assess the utility attached to different attributes under consideration.

3.6 Decision Making in Agribusiness

The need for decision making arises from the situation of uncertainty and risk. As agribusiness is comparatively more risky in nature and therefore needed to be addressed effectively. There are various types of risks involved in agribusiness, for example, production risk, market risk, institutional risk, human or personal risk and financial risk (Hardaker et al., 2004). Alternatively, farmers respond to these types of risk by making effective decisions. This section is further divided into two sub-sections. In the first sub-section, the primary focus is on how farmers and other channel members make decisions under uncertainty while selecting a particular marketing channel. The second sub-section focuses on the factors affecting decision making in agribusiness.

3.6.1 Use of Decision Making Approaches in Agribusiness

Collins et al. (1991) employed prospect theory to estimate risk attitudes of Oregon grass seed producers in the Willamette Valley of Oregon using production decision from 1973 and 1974 crop years. Earlier they found this analysis was consistent with Kahneman and Taversky's (1979) prospect theory and concluded that for farmers whose income declined, the change in income from specified crop years is significantly related to the farmers' estimated risk attitude level (risk preferrers). They also extended support for prospect theory and emphasized its application in farm management and finance.

Fairweather & Keating (1994) argued that the basis of farmer's decisions to run their businesses largely rested on the goals set by them. They conducted a study on 50 New Zealand farmers to deal with how farmers themselves describe their goals and how they combine them into management styles. Among several goals, Fairweather & Keating identified two predominant types of goals i.e., goals with economic orientation and goals with social and lifestyle concern. However, they developed an inventory of goals from external experts (researchers, theorists and extension practitioners) and from farmers themselves to be used in the study. From the rankings of the goals, using Q method of factor analysis, three management styles that included dedicated producers, flexible strategists and environmentalists were identified and included in the analysis. They found that dedicated producers valued producing top-quality products and made use of planning and financial management to attain production goals. Flexible strategists searched for some balance between on- and off-farm activities and maximized their returns by marketing their produce in a better way. Similarly environmentalists put importance to nature and tried to conserve environment by reducing chemical use. They also enjoyed working with the family on farms.

Ziggers (1994) conducted research on thirty nine pot-plant nursery managers and their firms in order to understand the interrelationship between the level of management (decision making) and relevant factors in Dutch horticulture. He identified two types of environmental factors, internal and external, that played an important role in the Dutch horticulture production decision making. According to him, the external factors, for example, government legislation, energy prices, market development, were difficult to assess in a decision making process and thus excluded from the research. The internal factors, for example, decision maker's behaviour, farm size, equipment, number of

workers and product, played a significant role in the process of decision making. Ziggers employed regression technique (univariate and multivariate regression) in order to analyse the effect of socio-economic and psychological variables on decision making and found the effect of these variables significant on decision making process.

In an industry or the services sector, as compared to agribusiness, decisions are non-programmed although these decisions are supported by research, well developed action plans in advance and vast knowledge base (Aubry et al., 1998; Cyert & March, 1992; Simon, 1997). In agribusiness sector decisions are mostly programmed i.e., cyclical and recurrent in nature and thus these decisions become a routine for farmers (Aubry et al., 1998) and thus follow descriptive decision making approach. In addition, in industry the decisional process is more precise and involves the whole management as compared to agribusiness sector where farmers are solely responsible for their decisions (Aubry et al., 1998).

Earlier researchers (Klein, 1993; Orasanu & Connolly, 1993) and literature have emphasized the event of decision making instead of whole process involved. There have been a few studies which explain how farmers make decisions about farm management (Castle, 1962; Johnson, 1976, 1986; Kay & Edwards, 1994; Ohlmer et al., 1998). Ohlmer et al. (1998) modified the previous traditional farm and nonfarm decision making process (comprised of eight functions or elements: values and goals, problem detection, problem definition, observation, analysis, development of intention, implementation, and responsibility bearing) to a revised conceptual model. They employed a series of case studies of Swedish farmer's decision making regarding unique (contrasted with the repetitive) decision making processes i.e., non-programmed decisions. Instead of eight functions, this revised model has four phases and four sub processes in the form of a matrix which ruled out the possibility that the decision process follow a series of linear steps (Witte, 1972). The four phases include: problem detection, problem definition, analysis and choice, and implementation while the sub processes are searching and paying attention; planning; evaluating and choosing; and bearing responsibility.

Chambers and Quiggin (1998) successfully employed contingent utility models derived from the generalizations of the expected utility theory to explore implications for agricultural production under risk.

According to Willock et al. (1999), a number of models have been proposed to study the process and consequences of decision making among farmers for a variety of specific situations within the subject matter of agricultural economics. Early researchers (Grant, 1989; Herath et al., 1982; Polson & Spencer, 1991; Wise & Brannen, 1983) identified some particular situations, for example, crop variety selection, adoption of technology, adoption of credit and adoption of environmental schemes/practices for which farmer's behaviour was studied and modelled. These models, based on normative theory of decision making, assumed that all farmers are profit maximizers and ignored the behaviour of individuals (farmers) in decision making. In addition, farmer's decision making regarding choice of marketing strategy (marketing channel) was ignored altogether (Smidts, 1990). Along with profit maximization, a number of socio-economic and psychological factors drive farmer's behaviour while making a decision (Carr & Tait, 1991; Fairweather & Keating, 1994; Gasson & Potter, 1988; Herrmann & Uttitz, 1990; Willock et al., 1999).

Holt and Chavas (2002) found that a number of approaches to modelling the effects of risk in agriculture production decisions centred on expected utility (EU), despite the fact that EU models did not always prove to be an exact representation of behaviour under risk. In addition, normative approaches dominated research in agriculture (production) risk and focused on making suggestions to manage risk. Early researchers (Chavas & Holt, 1996; Machina, 1987; Saha et al., 1994) focused only on the measurement of the role of risk in production decisions and did not pay attention on the nature of behavioural risk (Aubry et al., 1998; Holt & Chavas, 2002).

Hardaker et al. (2004) comprehensively discussed different models for decision making in agriculture based on expected and subjective utility theories for farm planning. Hardaker emphasized different models for decision making, for example, stochastic simulation optimization, mathematical programming and dynamic programming. These models use powerful computer software to calculate expected and subjective utilities in a decision making process. Hardaker also confirmed less application of these models in agriculture decision making. The most important factors which limit the application of these models include lack of time, information, access to computer facilities and software and limited access to decision maker (Hardaker et al., 2004). Hardaker also employed multi-attribute utility analysis in decision making under uncertainty but it

might not be realistic when applied to real world problems and human decision makers (Haimes, 2009).

Laciana et al. (2006) examined the nature and magnitude of differences in the agricultural production decisions that are optimal under different objective functions in the Pampas of central eastern Argentina. They found that psychological plausible deviations from EU maximization matter and decision maker's socioeconomic / demographic or psychological differences could be one of the reasons of this inconsistency with EU maximization theory.

In a study to examine the role of individual risk attitudes in the decision to adopt a new form of agricultural biotechnology in China, Liu (2008) surveyed 320 Chinese farmers. These farmers were facing the decision of adopting genetically modified Bt cotton seed in place of traditional cotton seed. In a field experiment, Liu adopted prospect theory to explain farmer's decision making process on the ground that it has more predictive power than expected utility theory under some conditions.

Gandorfer et al. (2011) used expected utility approach in order to analyse the effect of risk aversion on tillage and nitrogen fertilizer intensity. The main objective of the study was to find out the management option that farmers might use to earn positive expected net income (highest expected utility). They found that the best tillage and nitrogen strategy is to use conventional tillage and standard nitrogen rates followed by reduced tillage and shallow tillage with increased nitrogen rates. This strategy is applicable for, risk neutral and risk- averse, type of farmers in managing their crops.

In an attempt to test expected utility theory against prospect theory (particularly cumulative prospect theory), Bocqueho et al. (2010) conducted a field experiment to find risk preferences of French farmers. A sample of 107 French farmers was interviewed face to face to understand the relationship between the adoption of agricultural innovation, production practices and risk management. They found that cumulative prospect theory explained the farmer's behaviour better than expected utility theory and concluded that, on an average, farmers are risk averse and loss averse. They also found a correlation of preference with individual socio-demographic characteristics. It was concluded that age, education, household size and level of secure income tend to lower farmer's loss aversion. Similarly high tendency to adopt agricultural innovation and increased level of education make farmers less risk averse.

Most of the models, based on normative theory of decision making, assume that all farmers are profit maximizers and ignored the behaviour of farmers in decision making. A number of socioeconomic, demographic and psychological factors affect farmer's decision making process (Carr & Tait, 1991; Fairweather & Keating, 1994; Gasson & Potter, 1988; Herrmann & Uttitz, 1990; Willock et al., 1999), therefore, these factors should be considered while making a decision (Camerer, 2000; Laciana et al., 2006; McFadden, 1999). In addition, little attention and focus is paid on farmer's decision making regarding choice of marketing strategy (marketing channel) if not ignored altogether (Chalwe, 2011; Panda & Sreekumar, 2012; Smidts, 1990) and particular focus is on farmer's decision regarding total farm planning including crop production planning or to specific production decision like fertilizer input decisions, pest management, crop variety selection, technology adoption, crop insurance and using credit facility (Akankwasa et al., 2013; Aubry et al., 1998; Fadare et al., 2014; Herath et al., 1982; Holt & Chavas, 2002; Maart-Noelck & Musshoff, 2013; Mariano et al., 2012; Mumford & Norton, 1984; Polson & Spencer, 1991; Sherrick et al., 2004; Zhou et al., 2010).

Despite the strength of EU maximization theory, there is both experimental and real world evidence that individuals/decision makers behave differently than EU theory and hence this theory is incapable of explaining the individual's decision making behaviour (Camerer, 2000; Laciana et al., 2006; McFadden, 1999). Similarly Prospect theory, as an alternative to EU theory, failed to get adequate attention in the agricultural economics or agricultural decision making literature (Laciana et al., 2006). When dealing with uncertainty, the use of predefined decision paradigms is supportive for the decision maker, but this may lead to undesirable solutions due to its excessive prescriptive nature. These research paradigms make it difficult for decision maker to express his preferences and behaviour (Matos, 2007). In short, farmers decision making process is difficult to be analysed using mathematical models based on utility theory rather a model or method should be devised that consider farmers behaviour in decision making process (Matos, 2007; Willock et al., 1999).

3.6.2 Factors Affecting Decision Making in Agribusiness

In literature, a very few studies satisfactorily or empirically deal with the different transaction costs, socio-economic and psychological and demographic factors affecting the selection of marketing channels by farmers (Hobbs, 1997; Mabuza et al., 2014;

Ouma et al., 2010). Early researchers (Bailey et al., 1991; Bullen, 1984; Cowell & Todd, 1980) identified price differentials, the socio economic characteristic of producers, the distance from the sales point and transaction costs as the important factors in explaining farmers marketing decisions in general and for livestock marketing decisions in particular.

Shapiro & Brorsen (1988) found that the factors including years of experience, formal education, farm management ability, farm leverage (debt position), farm size and off farm income of the farmers significantly affected the forward pricing or hedging decisions. However, results from this study cannot be generalized because of the small sample size (n=42) which may not be a true representation of the population. They also found that in order to reduce risk farmers who were in high debt condition used hedging. Similarly McLeay & Zwart (1998) found that use of forward contracts is considered to be the best marketing decision where products are perishable and prices are highly variable. It was also found that use of forward contract might act as a mechanism that reduced the risk of spoilage for both producers and agents and protect producers against downward movements in crop prices (McLeay & Zwart, 1998).

Earlier Hobbs (1996) examined the beef processor's supply channel choice using conjoint analysis. He hypothesized that beef processor's supply channel choice was influenced by the attributes that described a particular channel. Using the postal survey method, data was collected from 93 United Kingdom beef processing firms through questionnaires in which respondents rated a number of hypothetical scenarios. The attributes included in the analysis were continuity of supply, the degree to which animals were handled while transporting from the farm to the abattoir, the method of payment (live-weight or dead-weight) and the degree of traceability. Each attribute was assigned two levels. The part-worth evaluations of each attribute level were estimated using ordinary least square (OLS) analysis and the total worth of the channel was sum of the part-worth values of each attribute level. Hobbs found that beef processors considered, traceability of cattle, the most important factor for the selection of supply channel in the United Kingdom.

Hobbs (1997) tested the hypothesis that a producer's (beef producer) choice of selection of marketing channel between live-ring auctions (live weight sales) and direct-to-packer (deadweight) sales is influenced by transaction cost and producer/farm characteristic variables. This study was conducted across northeast Scotland using data collected from

a survey of 100 cattle producers. Hobbs analysed a number of transaction costs and socioeconomic and farm characteristics variables in order to find the effect of these factors on farmer's channel choice decision. Hobbs found that grade uncertainty, effectiveness of packing plant buyers, risk of non-sale, and time spent at the auction (transaction cost variables) and lot size, producing bulls for slaughtering, and membership of Farm Assured Scotch Livestock scheme (producer's characteristic variables) were statistically significant in influencing the producer's choice of marketing channel.

Sartwelle et al. (1998) conducted survey of agricultural producers and agribusiness in Kansas, Texas and Iowa states of America to examine the factors affecting their grain and marketing practices. The factors represented individual characteristics that included years of experience, enterprise specialization, attitudes towards risk, management decisions, local market conditions and preferences for alternative types of market related information. The grain and livestock marketing practices or strategies (agricultural producers and agribusiness) comprised of cash market, forward contract, futures and options oriented marketing practices. They applied qualitative choice models (multinomial and binomial logit) to determine the statistical significance of these factors upon decision maker's choice of marketing practices. They found that producers with more experience, having risk averse attitude and increased use of on-farm storage used cash and forward contracts while local market conditions had no effect on the type of grain marketing strategies. The individual's characteristics except supply/demand information (market conditions) had no effect on using cash and direct marketing practices.

Poole et al. (1998) conducted a study to identify the important factors affecting citrus producer's marketing decisions in Spain. Poole et al. (1998) found that certainty of payment, good price, previous experience of the firm, certainty of price, prompt payment, previous experience of the agent, advance payment and family relationship were important factors while considering sale through two marketing channels: sale through cooperatives and sale through private sector. They concluded that except certainty of payment, which was most important reason for selling through cooperatives, all other factors were more important for private sector sale. Regarding producer's satisfaction or dissatisfaction level with the transaction, Poole et al. found that nearly fifty percent of the producers showed dissatisfaction. The main reasons for

dissatisfaction were the behaviour of the harvesting team (fruit left on the ground and un-harvested on the tree) and some aspects of the payment. There was much more tendency to change the buyer in private sector than in the cooperative sector because of dissatisfaction about price and uncertainty of payment. Inadequate price, uncertain payment, lack of confidence, sold to first buyer, harvesting problems, no offers/one offer only, convenience, service, entered/left cooperative, no reason, social reasons and already sold were identified as the most important reasons which hinder farmers to sell to a particular buyer (Poole et al., 1998).

Pennings & Leuthold (2000) found that in addition to factors that include farmer's market orientation, perceived risk reduction and market performance, farmer's entrepreneurial behaviour and perceived risk exposure, farmers were also influenced by his family members opinion to use future contract (future markets). Other socioeconomic, demographic and psychological factors which affect the use of future contract usage include experience, education, farm size, off-farm income, expected income change from hedging, age, farm organization meetings, leverage, risk management, and marketing seminar participation (Asplund et al., 1989; Goodwin & Schroeder, 1994; Makus et al., 1990; Shapiro & Brorsen, 1988; Turvey & Baker, 1990).

Fert & Szabo (2002) investigated the choice of farmer's choice among various supply channels in Hungarian fruit and vegetable sector. Among eight existing marketing channels they found four channels which differ in the costs of using them: wholesale markets, wholesalers, marketing cooperatives and producer organizations. A number of variables were included in the analysis but only five were identified that satisfied theoretical expectations and yielded reasonable significant results: age of farmer, past investment in the business, own mobile phone, bargaining power, and possibility of monitoring. These variables are not altogether significant for the choice of wholesalers but the probability of the choice of marketing cooperative is significantly and positively influenced by the age of farmer and having mobile phone and negatively by the bargaining power and the possibility of monitoring (monitoring costs). However, physical asset specificity (investment in past) does not have a significant influence on the farmers' decision in respect to wholesalers. Similarly, the probability of choosing to sell to a producer organization is positively influenced by the farmer's age and negatively by the bargaining power and the possibility of monitoring. But, the influence

on the physical asset specificity and information costs was not significant on the farmers' decision in choosing of a producer organization.

Tano et al. (2003) successfully used conjoint analysis to estimate farmer's preference for cattle traits in a less developed country in West Africa. They quantified the farmer's preferences for cattle traits using survey based approach on a sample of 299 cattle owning households. After identifying seven traits, both for bulls and cows, they developed two survey designs. For the construction of profiles for bulls in the first design, four highest ranked traits like fitness to traction, weight gain, disease resistance and feeding ease were included. While in the second design, fertility, temperament and size along with disease resistance traits were included for the construction of profiles. Similarly, in the first design for cows, traits of reproductive performance, milk yield, weight gain and disease resistance while in the second design, traits like feeding ease, temperament, size and disease resistance were included for the construction of profiles. Data were collected through personal interviews in which respondents rated these profiles from 1 (least desirable) to 5 (most desirable). Finally, the interaction affect between three farming systems (mixed-crop farming, beef and milk and subsistence farming) and the level of traits was analysed to find out the producers' preferences homo- or heterogeneity.

McDermott, Lovatt, & Koslow (2004) conducted a study to investigate the performance measures that were important to New Zealand beef producers and processors in their selling and buying decisions. Seven key factors in two different contexts, spot market and contracted supply, were selected to analyse the producer's selling decision namely: price level; payment security; quality assurance branding; space allocation lead time; sharing of processing company direction and market positioning; comfort with the buyer; and quality and effort reward. Similarly, in order to analyse processor decisions to buy and sell beef cattle, seven key performance measures were identified and selected namely: livestock price; livestock lead time; quality variability; traceability; supply relationship; grade; and meat quality. McDermott et al. (2004) found that out of seven key factors five were significant and showed that producers placed high value for higher prices and security; short lead time; a purchasing meat company that shared its direction and market position information; and where they earned a reward for high quality. Similarly, processors favoured scenarios with low price, low variability in quality, traceability to farm; contractual supply relationship and high quality. They found the

significance of the key factors and clustered the respondents with similar preferences into same groups.

Gong et al. (2006) found that farmer's cattle marketing channel choice was not influenced by transaction costs only but socioeconomic characteristics of the farmer/farm also played important role in channel selection. Transaction costs variables include payment delay after selling cattle, bargaining power, farm specialization, grade uncertainty and farm services received. Among the socioeconomic variables, level of investment in cattle, number of cattle sold, education level, feed conversion ratio, the age of farmer and ownership structure were considered to be most important that influenced farmers to choose forward contract sales.

Edwards-Jones (2006) presented a review on adoption of new technologies and policies by the farmers and found that both financial and non-financial (psychological, socio-demographical) factors influenced farmers decisions.

Musemwa et al. (2007) explored the factors affecting the farmer's choice of cattle marketing channels and assessed whether these factors have an effect on the choice of marketing channels by small scale farmers. Auctions, private sales, speculators and abattoirs were the major marketing channels. Musemwa et al. identified different socioeconomic, demographic and psychological factors that affected the farmer's choice of marketing channels. These include age, level of education, availability of infrastructure, transactions costs, herd size, farmer's experience in cattle rearing and product marketing. In addition, accessibility and reliability to the market channel, mode of payment, payment uncertainty and grading system also affected the farmer's channel choice decision.

Monson et al. (2008) analysed the farm, demographic and socio-economic factors which affected the grower's probability of selling his/her produce through direct market channel. Using ordered logit regression analysis, they found that farm size, high value crop production, non-certified organic production methods and household size were the determinant factors which influenced grower's decision to sell a portion or whole of his/her produce through direct market channels.

Tsourgiannis (2008) identified the marketing channels and the factors which affected the utilization of each marketing channel by the sheep and goat farmers in the region of East Macedonia and Thrace in Greece in their milk distribution channel choice. Using a

stratified random sample technique, a total of 343 sheep and goat farmers were interviewed. Data were analysed using principal component analysis (PCA) and factor analysis (multivariate statistical analysis). They identified four marketing channels that the sheep and goat farmers used for selling their milk which included; (a) to local private milk processing plants, (b) co-operative milk processing plants, (c) big national dairy firms and (d) private use of milk. They also found that size of the flock, volume of milk production, farm income and debt were the farm and farmers characteristics which affected the marketing channel choice. Similarly, sale price, speed of payment and loyalty were the factors which had significant effect on the selection of marketing channel.

Blandon et al. (2009) explored the marketing preferences of small scale producers of fresh fruits and vegetables in Honduras. They identified a number of attributes, both economic and socioeconomic, that emerged as determinants of the marketing preference of farmers between supermarket supply chain and traditional spot market channel choices. These attributes were price, quantity, payment, frequency of delivery, selling place, organization (selling individually), entry cost, age, distance to local market and number of cattle heads. Blandon et al. (2009) also concluded that fixing the price, fixing the quantity, cash sales, unbounded delivery schedule, selling at farm gate, selling individually rather than through a farmer organization and no upfront investment positively and significantly affected the farmers towards supplying the supermarket supply chains.

Stringer et al. (2009) identified and evaluated the relative importance of four alternative supply chain characteristics of vegetable processors in China. A total of 52 vegetable processing firms ranked the different scenarios based on the combination of the four supply chain characteristics that included; the size of the producer's production base, the distance between the producer and the processing plant, the level of detail specified in the contract between processor and grower and whether the producer had food safety certification from the most preferred to least preferred combinations. Using conjoint analysis, part-worth utilities were calculated for all the four characteristics and they found that vegetable processors preferred the size of production units the most followed by distance to producer, type of contract and food safety certification.

Jari & Fraser (2009) identified and assessed the technical and institutional factors that influenced marketing channel choices among smallholder and emerging farmers in the

Kat River Valley of the Eastern Cape province in South Africa. Using multinomial regression model, they found that marketing information, expertise on grades and standards, contractual agreements, social capital (personal social networks), market infrastructure, group participation and tradition were the statistically significant variables which influenced marketing channel choice decisions among smallholder farmers.

LeRoux et al. (2010) developed an analytical framework and ranking system to examine the primary factors affecting marketing channel performance and to suggest decision making tool to improve decision making for small-scale fruit and vegetable producers. They rejected economic theory on the grounds that it failed to consider perishability of the crops and factors like risk averse nature of producer and his life style preferences. Data were collected using case study approach from four successful small-scale fruit and vegetable farms in central New York. The performance of wholesale (restaurants, retail/grocery, and distributor) and direct marketing (community supported agriculture, farmer's market, farm stand and u-pick) channel were analysed with respect to sales volume, profit, labour requirements and risk preferences. They found that due to ranked factors of volume, unit profits, labour requirements and risk preferences, performance of community supported agriculture (CSA) was on the top. They further concluded that combination of direct channel CSA and wholesale outlets was preferred.

Umberger et al. (2010) evaluated the determinants of market channel choice for Indonesian potato farmers. They used Best-Worst scaling method and Latent Class Cluster Analysis to explore the relative importance of various buyers' characteristics to small potato farmers and heterogeneous nature of producer's utilities for marketing channels. They found that for potato producers three most important attributes related to buyer included immediate cash payments, a price premium and always following through on their commitment to buy their potato. They also found four unique classes or clusters or segments of potato producers each with different utilities for buyer characteristics and interesting different socio-demographic characteristics. The largest cluster (44%) of producers placed high importance on cash payments, price and willingness to negotiate. Cluster 2 (24%) and cluster 4 (16%) of producers placed a relatively high importance on the buyer providing access to certified potato seed or finance for purchasing inputs. Cluster 3 (16%) of producers placed the highest

importance on having a long term relationship with the buyers than any other segment/cluster.

Ouma et al. (2010) evaluated the smallholder farmer's banana market participation decisions of buying and selling in Rwanda and Burundi. Data were collected from a total of 1405 household farmers from each of the communes and districts of Rwanda and Burundi using simple random sampling technique and structured questionnaire. They used LIMDEP econometric software package, version 8 for data analysis and found that both transaction costs and non-price related factors significantly influenced the farmer's decisions in banana markets in Central Africa. The transaction costs related factors included geographical location of household, market information sources and travel time to the nearest urban centre. Security of land tenure, labour availability, off-farm income, gender of the household head and years of experience were the non-price related factors which influenced the banana farmer's market channel choice decisions.

Woldie & Nuppenau (2011) investigated factors affecting the farmer's selection of marketing channels in Ethiopian banana markets and found that farmer's choice between cooperative and regional traders was influenced by a number of transaction costs and farm characteristics variables. Transaction cost factors included time spent searching market price information, time spent while trading with wholesalers, difficulty of assessing price information, availability of contractual agreement and trust in wholesale traders while access to credit and area cultivated for banana were the socioeconomic factors.

Chalwe (2011) investigated the general characteristics of Zambian smallholder bean producers and the factors that affect the selection of marketing channel. Chalwe employed the probit model to analyse the data and found that the price of beans, scale of operation (amount of beans harvested, amount sold), distance to the market, farming mechanization used and livestock ownership were the determinant factors which directly influenced the bean producer's choice of marketing channel. Chalwe also found that price, farming mechanization and farmer's age were the factors which significantly affected the farmer's decision to sell.

Otieno (2012) evaluated the market and non-market factors that affected the farmer's choice of improved beef cattle in the arid and semi-arid areas of Kenya. Data were collected by using non-probability multi-stage cluster sampling technique from the four districts and a total of 313 farmers were interviewed. Using binomial (binary) logit

model, they found that operation of agro-pastoral and ranch production systems, direct sale of cattle in abattoirs as opposed to open air markets, location in a peri-urban area, possession of a large farm and experience in cattle production had significant influence on the adoption of improved beef cattle. The results also showed that there were no effect of practice of nomadic production system, possession of experience in cattle production and larger farms on adoption of improved beef cattle.

Xaba & Masuku (2012) analysed the vegetable farmer's decisions to participate in NAMBoard (National Agricultural Marketing Board) market, non-wholesale market or participate in other wholesale market channels and the factors that influenced these choices in Swaziland. Using descriptive cross-sectional research design, data were collected from a sample of 100 farmers drawn through purposive and stratified random sampling techniques from the total population of 433 vegetable farmers. With the help of structured questionnaire, consisted of both open and closed ended questions, face to face interviews were conducted. Data were analysed using SPSS (version 17.0) software and multinomial logistic regression model. They found that age of the farmer, quantity of baby corn produced and level of education were important predictors of the choice to sell vegetables to NAMBoard market channel instead of selling to other-wholesale market channels. Similarly, the age of the farmer, distance from production area to market, membership in market organization, and marketing agreements were the factors which influenced the choice to sell to non-wholesale market channel over other wholesale market channels.

Shiimi et al. (2012) analysed different transaction costs and socio-economic variables to determine factors that affect cattle marketing decision of cattle producers in the Northern Communal Areas (NCAs) of Namibia. Using random sampling technique, a total of 121 respondents were interviewed face-to-face from the four regions. Data were analysed using probit and truncated model supported by Craggs double hurdle model and found that transportation to MeatCo, marketing experience and the age of cattle producers were the factors which significantly affected the decision whether or not to sell through the formal markets. The decision to sell a proportional number of cattle to formal market was governed by the accessibility of marketing related information, accessibility of new information technology, the age of the respondents and a lack of improved productivity.

Higuchi et al. (2012) investigated the socio-economic characteristics that influenced the coffee farmers to join the formal organization or to sell through intermediaries. Primary data was collected from 60 coffee producers through structured questionnaire. A bivariate logistic regression estimation technique was used to analyse the data. They found that older, married respondents and who require technical assistance preferred to join and sell through formal organizations and the respondents with more household members to help in farm tasks sell through intermediaries. Panda & Sreekumar (2012) identified and analysed different institutional and technical factors that affected marketing channel choice decisions of vegetable farmers in Orissa, India using multinomial logistic regression model.

Mabuza et al. (2014) used the cross-sectional data from mushroom producers in Swaziland to investigate the effects of transaction costs variables on producer's choice of marketing channels and the quantity of mushrooms supplied. They analysed producer's marketing decisions using 'Cragg's model' also known as the 'double hurdle model'. A total of 91 respondents from different farmer's groups and individuals using survey strategy and fully structured questionnaire were interviewed. They found that household labour endowment, production capacity, access to cooling facilities and market information, and producers' bargaining position were the major factors which affect the producer's decisions of where to sell their mushrooms. Similarly, the difficulty in accessing reliable transport and producers' level of uncertainty in meeting buyers' quality requirements were the major determinant factors which affected the quantities of mushrooms sold.

Arinloye et al. (2014) examined and evaluated the effect of smallholder pineapple farmers characteristics (age and education level), their production systems (farm size and varieties), product quality (quality requirement and rejection rates), and marketing context (distance from market) and the formality (written contract or not) and the duration of the buyer–seller relation on the market channels choice decisions. Using Pearson's chi square and multivariate probit approach, they found that age of the farmer, farm size, number of varieties of pineapple, product quality, bargaining power and physical distance from the market were the determinant factors which affected the market channel selection.

Mostly qualitative models (multinomial and binomial logit models) have been used for analysing factors affecting decision making in agribusinesses that only measured the

significance of these factors on decision maker's choice of marketing channel (Sartwelle et al., 1998). The recent literature also shows the similar trend of measuring the significance of different transactions costs, socio-economic, demographic factors on farmers, particularly smallholder farmers, market channel choice decisions (Arinloye et al., 2014; Higuchi et al., 2012; Mabuza et al., 2014; Otieno, 2012; Shiimi et al., 2012; Xaba & Masuku, 2012). However, a few studies measured the actual impact of various transaction cost, socio-economic and demographic factors on the final selection of marketing channel in agribusiness (Hobbs, 1996; Tano et al., 2003). One of the most important studies was conducted by Hobbs (1996) that focused processors decision making regarding the choice of beef channels using conjoint analysis, an application of multivariate techniques in prescriptive decision models.

3.7 Summary

This chapter explains the concept of decision or decision making and brings this fact into limelight that identification of the decision situation; search for the maximum number of available alternatives and selection of best possible alternative constitute a good and rational decision. Decisions may be classified into programmed (planned) and non-programmed (unplanned) types. A rational decision making process can be divided into a number of distinguished stages that include; problem definition, requirements determination, goal establishment, identification of alternatives, criteria definition, selection of decision making tool, evaluation of alternatives and confirmation of the solution against problem defined.

In literature, three predominant approaches/theories have been identified that describe the behaviour of individuals under risk and uncertainty. These include normative, descriptive and prescriptive decision making approaches. Normative decision making approach is more philosophical approach and emphasizes on what decision maker should or ought to do in a risky situation. Descriptive decisions making approach is based on reality and studies how people actually make decisions in real life. Prescriptive decision making approach or decision analysis is more comprehensive in its essence. Besides studying decision process, it also suggests or helps the decision maker in the process of decision making for complicated situations. A comprehensive outlook about history of these three types of decision making theories is also presented in the chapter.

The most dominant theory is utility theory proposed by Neumann and Morgenstern in 1944 and is based on rationality of the decision maker.

In agribusiness, utility theory and its variants have been applied to study the behaviour of decision maker(s) in complex situations but it is limited to only total farm planning or to specific production decisions. In addition, experimental and real world evidences show that it is incapable of explaining the individual decision making behaviour. Farmer's decision making process and behaviour is hard to be evaluated using mathematical models based on utility theory. A number of socioeconomic, demographic and psychological factors affect farmer's decision making and behaviour in reality. Most of the studies use qualitative models (multinomial and binomial logit models) for measuring the significance of the various factors on farmer's choice of marketing channels. Using qualitative and quantitative techniques, this study takes into account the various socioeconomic, demographic and psychological factors in farmers marketing channel choice selection and measure the actual impact of each factor on its overall decision. Along with citrus growers marketing channel decision analysis in citrus supply chain in Pakistan, factors affecting marketing channel choice decisions of pre-harvest contractors are also analysed using multivariate technique of decision analysis i.e., conjoint analysis. This would help answering the research questions of identifying and analysing the factors affecting citrus growers and pre-harvest contractors marketing channel choice decisions in citrus supply chain in Pakistan.

Chapter 4

4. METHODOLOGY

4.1 Introduction

The purpose of this chapter is to discuss the research process of this study. It examines what are the methods used in this study keeping in view the aims and objective of the research. It investigates the research questions in more detail. Different methods of data collection, data analysis and their advantages and disadvantages are discussed. It also focuses on the reasons for choosing particular methods for this study. A detailed description of the selected methodology is also provided in this chapter. The last section summarises the chapter.

4.2 Research Objectives

Decision making in the citrus industry of Pakistan entails a lot of complications. It is not the farmer/grower who is solely responsible for making selling decisions of his produce (citrus fruit particularly Kinnow) in the market. There are other players (citrus contractors, wholesalers) who are responsible for the management of the citrus fruit supply chain in the country and influence citrus growers selling/marketing decisions. Therefore, the basic aim of this research is to study the supply chain of citrus fruit (Kinnow) in Pakistan, identify the key players and discuss their functions, identify and analyse the factors involved in decision making of citrus fruit marketing. The aim of this study is achieved by the following objectives:

1. To overview and discuss the citrus industry in Pakistan in context to its relevance to global citrus economy
2. To study functions of key players in citrus (Kinnow) supply chains in Pakistan
3. To identify and evaluate major factors affecting marketing channel choice decisions of citrus growers and contractors in citrus (Kinnow) supply chain in Pakistan
4. To identify major constraints faced by citrus growers and contractors in Citrus (Kinnow) supply chain in Pakistan

4.3 Research Paradigms

Paradigms may be defined as "the world view or belief system that guide researcher" (Guba & Lincoln, 1994, p. 105). It can also be defined as "Paradigm is a way of examining social phenomena from which particular understandings of these phenomena can be gained and explanations attempted" (Saunders et al., 2012, p. 140)

There are three prevailing paradigms in research viz. Positivism; Post-positivism or interpretivism; and Pragmatic paradigms having their own methodology and terminology (Johnson & Onwuegbuzie, 2004; Onwuegbuzie, 2002).

Positivism

Positivism also known as logical positivism is based on scientific method and underlines its origin from physical sciences (Anderson, 1998; Johnson & Onwuegbuzie, 2004; Stern, 2004). Positivists believe that like physical sciences, social sciences follow the scientific method which involves hypothesis testing and objective data collection (deductive logic) (Anderson, 1998; Ary et al., 2009). This quantitative approach is based on the belief that phenomena are only significant and meaningful if they are observable and measureable i.e., objectivism of the phenomena (Anderson, 1998; Stern, 2004). Only mathematical and statistical tools are employed to explain any phenomena irrespective of its subjectivity thus eliminating the biases, emotions and experiences of the social scientists conducting research (Onwuegbuzie, 2002). According to Bryman (2008, p. 13), "Positivism is an epistemological position that advocates the application of the methods of the natural sciences to the study of the social reality and beyond".

According to Wiersma & Jurs (2009), Positivists believe that there is one reality about a phenomenon and the job of researcher is to find this reality. They also believe that research is "value free'" and this shows the cause and effect relationship of events (Wiersma & Jurs, 2009). The researcher, according to positivists, is an independent entity and does not affect the subject of research in neither any way nor it is affected by it (Saunders et al., 2012). In order to reduce the impact of researcher and to produce repetitive results, positivists stress on the use of highly structured methodology (quantitative research) (Gill & Johnson, 2002; Saunders et al., 2012).

Interpretivism

Although positivism has been considered to be the dominant paradigm in research, it has received a lot of criticism (Anderson, 1998; Onwuegbuzie, 2002). One of the reasons of rejection of positivism is that observations are not value free and are affected by the observer. In addition, some things that are related to human behaviour are not measureable, for example, intention, feelings, emotions (Anderson, 1998). The major difference between the two paradigms is the basic difference of subject matter. One is related to non-living (inert, inanimate) objects and believes on "atomism" (independent events) while the other deals with the human beings (Livings) (Amaratunga et al., 2002; Bryman, 2008; Onwuegbuzie, 2002). These criticisms led to the formation of new paradigm, Interpretivism (may be referred as post-positivism), based on the fact that "values and perspective are important considerations in the search of knowledge" (Anderson, 1998, p. 5). Based on qualitative research, this approach uses 'subjectivity' and is influenced by the values, experiences and perceptions of the investigator (inductive logic) (Anderson, 1998; Bryman, 2008; Onwuegbuzie, 2002; Stern, 2004). Qualitative research considers that individual/observer is interconnected with external world and no one has independent existence (Ary et al., 2009) and insists that time and context free generalizations are not possible in social sciences (Onwuegbuzie, 2002). According to Bryman (2008), interpretivism clearly distinguishes between the people and objects of natural science and emphasizes that social scientist should grasp the subjective meaning of social action. Interpretivists emphasize that social phenomena are strongly correlated with human beings and their interaction in society play a vital role in explaining these phenomena (Walter, 2009). They also stress that the researcher should understand the role of humans as social actors and interpret the meaning what people assign to different social actions (Gill & Johnson, 2002; Saunders et al., 2012). Moreover, interpretivists also believe that research is affected by the values and feelings of the researcher and is not value free (Bryman, 2008; Onwuegbuzie, 2002). The job of the researcher is to understand and interpret the thinking of people and analyse the human behaviour as how they interpret the world (Bryman, 2008)

Pragmatism

Early researchers (Guba & Lincoln, 1994; Howe, 1988; Reichardt & Rallis, 1994) proposed a compatibility thesis based on the fact that both quantitative and qualitative methods are compatible. Hence there appeared a pragmatism paradigm or mixed

method research paradigm using both quantitative and qualitative methods within different stages of the research process (Ary et al., 2009; Onwuegbuzie, 2002).

"Mixed methods research is formally defined here as the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study" (Johnson & Onwuegbuzie, 2004, p. 17).

A detailed comparison of three research paradigms based on ontology, epistemology, axiology and data collection techniques is shown in table 4.1.

Table 4.1 Comparison of Research Paradigms

	Positivism	**Interpretivism**	**Pragmatism**
Ontology: the researcher's view of the nature of reality or being	External, objective and independence of social actors or researchers or investigators	Socially constructed, subjective, may change, multiple	External, multiple, examine situation in order to answer the research question in a best way
Epistemology: the researcher's way of knowing about reality	Only observable phenomena can provide credible data, facts. Focus on cause and effect relationship, reducing phenomena to simplest elements	Subjective meanings and social phenomena. Focus on the details of situation, Knowledge is derived from everyday concepts and meanings	Use of either or both observable phenomena and subjective meanings can provide knowledge about reality,
Axiology: the researcher's view of the role of values in research	Research is conducted in value free way, researcher is independent of the data and maintains objectivity of research	Research is value bound, influenced by researcher's values, researcher is part of what is being researched, subjective	Values affect the research results, researcher adopt both objective and subjective point of view
Data collection techniques employed	Highly structured, large samples, predetermined approaches, numeric data, measurement, quantitative	Small samples, in depth interviews, investigation, text or image data, qualitative	Mixed or multiple methods, employs the use of both qualitative and quantitative in research

Source: (Creswell, 2009; Saunders et al., 2012)

According to Onwuegbuzie (2002), pragmatists use both inductive and deductive logic for the interpretation of the results and believe in the existence of both subjective and objective point of view. The world has external reality and is objective in nature and values, perceptions and experiences play a vital role in the explanation of results, formed the basis of pragmatism (Ary et al., 2009; Onwuegbuzie, 2002; Teddlie & Tashakkori, 2009). It is claimed that by using mixed method approach (Pragmatism)

results can be explained more comprehensively than by using either method (qualitative or quantitative) (Ary et al., 2009). It has been claimed that Pragmatists have ended the war between quantitative and qualitative research paradigms and concluded that researcher should use both the paradigms to make research more effective and meaningful (Ary et al., 2009; Creswell, 2009; Johnson & Onwuegbuzie, 2004; Teddlie & Tashakkori, 2009). although, the use of both types of research methods make pragmatism an expensive, laborious, time consuming method but at the same time also turn it into a creative form of research which yields best results for research question or a combinations of questions (Johnson & Onwuegbuzie, 2004; Saunders et al., 2009).

Keeping in view the basic aim of this research, mixed method approach was adopted in this study. The reasons of selecting pragmatic approach include:

- the in-depth exploration of the Pakistan citrus industry, citrus supply chain (qualitative approach);
- identifying the key players of Pakistan citrus industry and discussing their functions (qualitative approach);
- identification of factors affecting citrus marketing decisions making (qualitative approach);
- analysing the key factors which affect the marketing channel choice decisions (quantitative approach); and
- finally the identification of major constraints faced by citrus growers and pre-harvest contractors in Pakistan citrus industry (qualitative approach)

4.3.1 Quantitative Research Methods

The foundations of quantitative research rest on the 'positivists' approach to social sciences and emphasize quantification in the collection and analysis of data (Bryman, 2008; Howe, 1988; Johnson & Onwuegbuzie, 2004; Onwuegbuzie, 2002). According to Bryman (2008), quantitative research is a strategy that:

- uses a deductive approach – and emphasizes on testing of theories
- uses the norms of natural scientific model
- considers a social phenomenon as an external and objective reality

Quantitative research permits collection and analysis of large set of numeric data that can be tested statistically as it relies heavily on statistical results to make context free

generalizations i.e., theory testing (Walter, 2009; Wiersma & Jurs, 2009). Quantitative research is directly related to explanatory research in which a research problem or situation is studied in order to explain the relationship between different variables involved (Saunders et al., 2009).

According to Remenyi et al. (1998), the major quantitative research methods include forecasting research, laboratory experiments, large-scale surveys and simulation and stochastic modelling. However, the methods such as case studies, field experiments, futures research, surveys and structured interview may be used as quantitative research methods (Remenyi et al., 1998; Walter, 2009). Burns & Burns (2008) include experimental studies, re-analysis of secondary data, structured questionnaires and structured interviews into quantitative research methods. The purposes of quantitative research methodology is to measure and count and examine the social issue using statistical techniques and find the answers to 'what?' and 'how many?' (Saunders et al., 2009).

The four important features strictly related to quantitative research methods are: control (causality), operational definitions (measureable variables), replication and hypothesis testing (generalization) (Bryman, 2008; Burns & Burns, 2008). At the same time, there are some limitations that are associated with the use of these quantitative research methods in social sciences (Bryman, 2008; Burns & Burns, 2008; Wiersma & Jurs, 2009). Firstly, these methods failed to distinguish between people (can think) and the objects of natural sciences. Secondly, social scientists operate in a more complex environment than physical scientists who have greater control over conditions in strict laboratory environment. Thirdly, it is a matter of ethical considerations that do not allow treating human beings as they have less important than objects of nature. Fourthly, objectivism of research presents a sense of a static world around that is independent of human's life (Bryman, 2008; Burns & Burns, 2008; Creswell, 2009; Wiersma & Jurs, 2009).

4.3.2 Qualitative Research Methods

The foundations of qualitative or phenomenological research rest on the 'interpretive' approach to social sciences and emphasise words rather than quantification in the collection and analysis of data (Amaratunga et al., 2002; Bryman, 2008; Howe, 1988; Johnson & Onwuegbuzie, 2004; Onwuegbuzie, 2002). The basic purpose of the

qualitative research is to express reality and explain people in natural situations by the use of words (Amaratunga et al., 2002).

According to Bryman (2008), qualitative research is a strategy that:

- uses a inductive approach – and emphasizes the generation of theories
- rejects the norms of natural scientific model and emphasizes on individual's/ researcher's interpretations about the social phenomenon
- considers a social phenomenon as a subjective reality and rejects concept of objective social reality

In qualitative research, the focus is on extracting valuable information from the content and there is no need for statistical tools or large scale data set to infer outcomes from social phenomenon (Walter, 2009; Wiersma & Jurs, 2009). Qualitative research is more flexible than quantitative research in using multiple methods, research procedures and designs (Wiersma & Jurs, 2009).

Qualitative research employs descriptive analysis to investigate social issues using small group of people, focuses on individual's experiences and is context-specific in nature i.e., narrative in description (Walter, 2009; Wiersma & Jurs, 2009). Qualitative research is directly related with exploratory research which focuses on understanding the social phenomenon instead of quantifying it (Saunders et al., 2009).

Some of the strengths of qualitative research are: awareness of complexity, preliminary to a quantitative study, carry in-depth study, see through the eyes of individuals being researched, descriptive in nature and focuses on context, emphasis on process by using unstructured interviews, flexibility and theory building from data (theory grounded in data) (Bryman, 2008; Burns & Burns, 2008). There are some limitations that are associated with the use of these qualitative research methods in social sciences (Bryman, 2008; Burns & Burns, 2008; Wiersma & Jurs, 2009). Firstly, these methods are too subjective and general that carry the sense of doubt to scientifically inclined researchers. Secondly, qualitative studies are difficult to replicate because these studies heavily rely on researchers involvement. Thirdly, findings of qualitative research have limited scope and cannot be generalized. Fourthly, one of the major limitations of qualitative research methods is that they require a lot of time in their execution (Bryman, 2008; Burns & Burns, 2008; Creswell, 2009; Wiersma & Jurs, 2009).

The major qualitative research methods include action research, ethnography, focus groups, in depth surveys, participant-observer approach and scenario research (Burns & Burns, 2008; Remenyi et al., 1998). However, the methods such as case studies, field experiments and futures research may be used as qualitative research methods (Remenyi et al., 1998; Walter, 2009).

The purposes of qualitative research methodology is to analyse information (in natural settings) taking into consideration the individual's perceptions, values, needs, feeling, emotions and motivations and find the answer to 'what meaning?' (Saunders et al., 2009; Walter, 2009)

Different researchers (Ary et al., 2009; Bryman, 2008; Cooper & Schindler, 2008; Saunders et al., 2009; Zikmund et al., 2010) reported a number of qualitative research methods that are used to analyse (to understand meanings) complex qualitative data. The main qualitative research methods include Ethnography or participant observation, qualitative interviewing, focus group, language based approaches and analysis of texts and documents (content analysis) (Bryman, 2008). Cooper & Schindler (2008) identified several approaches for qualitative data analysis that include: Individual in-depth interviews, participant observation, films,, photographs and videotape, projective techniques and psychological testing, case studies, street ethnography, elite or expert interviewing, document analysis and proxemics and kinesics. A detailed comparison between qualitative and quantitative research is shown in table 4.2.

Ary et al. (2009), Saunders et al. (2009) and Walter (2009) considered case studies, content analysis, ethnography, grounded theory, historical research, narrative inquiry and phenomenological studies important qualitative research methods. Zikmund et al. (2010) emphasized the use of phenomenology, ethnography, grounded theory, case studies, focus group interviews, depth interviews, conversations, semi-structured interviews, word association/sentence completion, observation, collage and thematic apperception/ cartoon tests as qualitative research methods. Both quantitative and qualitative research methods have their pros and cons in their application, hence it is not the question which method or technique is better, more suitable and scientific in its application. In some situations qualitative research methods are used while in some circumstances quantitative research methods are preferred.

Table 4.2 Qualitative and Quantitative Research

	Qualitative	**Quantitative**
Focus of research	Understand and interpret	Describe, explain and predict
Researcher involvement	High	Limited
Research purpose	In depth understanding; theory building	Describe or predict; built and test theory
Sample design	Non probability; purposive	Probability
Sample size	Small	Large
Research design	May evolve or adjust during the course of the project; often uses multiple methods sequentially or simultaneously; consistency is not expected	Determined before starting the project; uses single method or mixed method; consistency is critical;
Participant preparation	Pre-Tasking is common	No preparation desired to avoid biasing the participant
Data type and preparation	Verbal or pictorial descriptions; reduced to verbal codes (may be with computer assistance)	Verbal descriptions; reduced to numerical codes for computerize analysis
Data analysis	Human analysis following computer or human coding; primarily non quantitative; forces researcher to see the contextual framework of the phenomenon being observed; less clear difference between facts and judgements; always on-going during the project	Computerized analysis-statistical and mathematical methods dominate; analysis may be on-going during the project; maintains clear distinction between facts and judgements
Insights and meaning	Deeper level of understanding is the norm; determined by type and quality of free-response questions ; researcher's participation in data collection allows insights to form and be tested during the process	Limited by the opportunity to probe respondents and the quality of the original data collection instrument; insights follow data collection and data entry, with limited ability to re-interview participants

Source: (Cooper & Schindler, 2008, p. 165)

4.3.3 Research Criteria

Different researchers (Ary et al., 2009; Bryman, 2008; Burns & Burns, 2008; Cooper & Schindler, 2008; Leedy & Ormrod, 2009; Remenyi et al., 1998; Saunders et al., 2009; Walter, 2009; Wiersma & Jurs, 2009; Zikmund et al., 2010) stress the importance of credibility of research and research findings in any field of study. Generally, there are four criteria that are used for the evaluation of research namely: validity, reliability and generalizability and practicality (Ary et al., 2009; Burns & Burns, 2008; Cooper & Schindler, 2008; Remenyi et al., 1998; Saunders et al., 2009; Zikmund et al., 2010),

although some researchers (Leedy & Ormrod, 2009; Neuman, 2006; Wiersma & Jurs, 2009) place importance only for validity and reliability and consider generalizability an important element of validity (known as external validity).

Validity refers (Cooper & Schindler, 2008; Saunders et al., 2009; Zikmund et al., 2010) to whether the research findings are, in reality, consistent with the research objectives and measures exactly what a researcher wants to measure. There are two major types of validity; internal validity and external validity (Bryman, 2008; Cooper & Schindler, 2008; Zikmund et al., 2010). Internal validity may be classified into content validity, criterion-related (concurrent and predictive) validity and construct validity (Bryman, 2008; Cooper & Schindler, 2008).

Generalizability, also called external validity (Saunders et al., 2009) is concerned with the generalization of the research results from one situation (specific) to other situation (general) (Remenyi et al., 1998; Wiersma & Jurs, 2009). A summary of different types of internal validity and their estimation methods is shown in table 4.3.

Table 4.3 Summary of Validity Estimation Methods

Types	What is Measured	Estimation Method
Content	Degree to which the content of the items adequately represents the universe of all relevant items under study	• Judgemental • Panel evaluation with content validity ratio
Criterion-related	Degree to which the predictor is adequate in capturing the relevant aspects of the criterion	• Correlation
Concurrent	Description of the present; criterion data are available at the same time as predictor scores	• Correlation
Predictive	Prediction of the future; criterion data are measured after the passage of time	• Correlation
Construct	Answers the question, "what account for the variance in the measure?"; attempts to identify the underlying constructs being measured and determine how well the test represents it	• Judgemental • Correlation of proposed test with established one • Convergent-discriminant technique • Factor analysis • Multitrait-multimethod analysis

Source: (Cooper & Schindler, 2008, p. 290)

Practicality is related with operational aspect (data collection and interpretation of results) of research and can be measured in terms of economy (time and cost of data collection), convenience (easy to understandable research instrument) and interpretability (any one can interpret the results) (Cooper & Schindler, 2008).

Reliability is concerned with the accuracy and precision of research methods (data collection and analysis techniques) and measures the consistency and replication of the research (Bryman, 2008; Cooper & Schindler, 2008; Saunders et al., 2009; Wiersma & Jurs, 2009). Reliability can be further divided into stability reliability, internal consistency reliability and equivalence reliability (Burns & Burns, 2008; Cooper & Schindler, 2008; Leedy & Ormrod, 2009; Neuman, 2006). A summary of different types of reliability and their estimation methods is shown in table 4.4.

Table 4.4 Summary of Reliability Estimation Methods

Types	Reliability coefficient	What is measured	Estimation Method
Stability	Test-retest	Reliability of a test or instrument inferred from examinee scores; same test is run twice to same objects over an interval of less than six months	• Correlation
Equivalence	Parallel forms	Degree to which alternative forms of the same measure produce same or similar results; administered simultaneously or with a delay; Interrater estimates of the similarity of judge's observations or scores	• Correlation
Internal consistency	Split-Half, KR20, Cronbach's Alpha	Degree to which instrument items are homogenous and reflect the same underlying constructs	• Specialized correlational formulas

Source: (Cooper & Schindler, 2008, p. 293)

4.3.4 Research Ethics

Ethics may be defined as " the moral principles governing the conduct of an individual, a group or an organization" (Quinlan, 2011, p. 70). Research ethics is the application of ethical values and principles towards research mainly focusing that no one is affected, harmed or face adverse consequences from the research activities (Cooper & Schindler, 2014; Quinlan, 2011). Therefore, primary obligation of a researcher is to make sure to

set up all the prerequisites that can make his/her research a 'safe' and healthy activity. Research ethics is equally important for primary (direct involvement of respondents) or secondary data, however, it has the greatest importance in the situations where the direct participation of humans is involved (Cooper & Schindler, 2014; Quinlan, 2011; Saunders et al., 2012). In order to safeguard and protect the respondents from potential physical harm, distress, discomfort, pain, embarrassment or loss of privacy, research should generally follow three guidelines namely; explain study benefits to the participants, explain participant rights and protections and obtain informed consent from the participants (Cooper & Schindler, 2014). In recent times, universities and research organizations have established ethical scrutiny and approval process for the facilitation of the researchers in the field prior to conduct the actual research (Saunders et al., 2012).

Different techniques and strategies were adopted to ensure or increase the validity and reliability of this research. The content and construct related internal validity was ensured by conducting in depth exploration of the Pakistan citrus industry through the pilot study and using the values of Pearson's R and Kendall's tau coefficients of correlation. Apart from the selection of reasonable large sample size; correction of the questionnaires through pilot testing; and data collection through face-to-face interviews also helped increasing the validity and reliability of this research. In this research, direct participation of humans (respondents) was involved; therefore, a prior approval from the Massey University Human Ethics Committees was obtained before conducting this research (Appendix L).

4.4 Research Design

The research design is the overall strategy and plan of action for the research and is developed to relate the research problem and practicable empirical research (Cooper & Schindler, 2008; Ghauri & Grønhaug, 2005).

"A research design is a master plan that specifies the methods and procedures for collecting and analysing the needed information" (Zikmund et al., 2010, p. 66).

4.4.1 Sampling

The philosophy of sampling is to use a portion or some of the elements (sample) of a population to draw some conclusions (to estimate an unknown characteristic of a

population) about the whole population (Bryman, 2008; Cooper & Schindler, 2008; Saunders et al., 2009; Zikmund et al., 2010).

"A Population (universe) is any complete group, for example, of people, sales territories, stores or college students, that shares some common set of characteristics" (Zikmund et al., 2010, p. 387). The sampling frame is the total number of individual elements in the population from which the sample will be drawn (Ary et al., 2009; Bryman, 2008; Saunders et al., 2009; Zikmund et al., 2010).

A sample is a subset, or some part or segment of a larger population that is chosen for research/study (Ary et al., 2009; Bryman, 2008; Saunders et al., 2009; Zikmund et al., 2010).

A number of researchers (Ary et al., 2009; Cooper & Schindler, 2008; Saunders et al., 2009; Wiersma & Jurs, 2009; Zikmund et al., 2010) highlight different reasons for sampling. These include lower cost (budget constraint), greater accuracy of results, greater speed of data collection (time constraint), and availability of population elements. A good sample represents the characteristics of the entire population and is also unbiased (accurate and precise) (Cooper & Schindler, 2008; Wiersma & Jurs, 2009; Zikmund et al., 2010).

There are several alternative ways to take a sample but researchers (Cooper & Schindler, 2008; Remenyi et al., 1998; Saunders et al., 2009; Wiersma & Jurs, 2009; Zikmund et al., 2010) divide these sampling techniques into two categories: probability and non-probability sampling techniques. In probability sampling, "every element in the population has a known, nonzero probability of selection" (Zikmund et al., 2010, p. 395) while in non-probability sampling, "the probability of any particular member of the population being chosen is unknown" (Zikmund et al., 2010, p. 395).

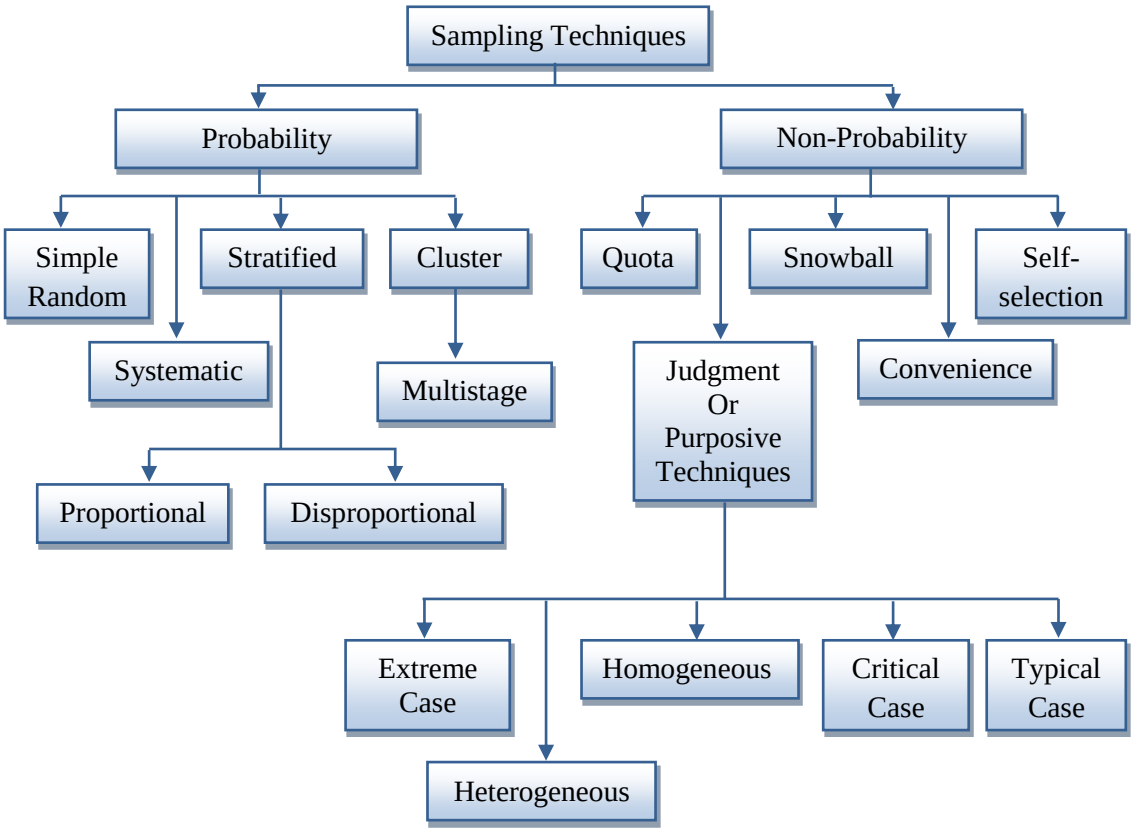
Probability sampling or representative sampling technique is commonly used to make inferences from the sample about a population (Saunders et al., 2009). The availability of sampling frame is, therefore, very important and a basic requirement in probability sampling (Ary et al., 2009; Cooper & Schindler, 2008; Saunders et al., 2009; Wiersma & Jurs, 2009; Zikmund et al., 2010). According to Saunders et al. (2009), four stages are involved in the selection of probability sampling:

1. Identification of a suitable sampling frame

2. Decision about a suitable sample size
3. Selection of most appropriate sampling technique and selection of the sample
4. Verification that the sample is true representative of the population

Simple random sampling, systematic sampling, stratified random sampling and cluster sampling are different types of probability sampling (Ary et al., 2009; Cooper & Schindler, 2008; Saunders et al., 2009; Wiersma & Jurs, 2009; Zikmund et al., 2010). Different types of probability and non-probability sampling techniques are shown in figure 4.1:

Figure 4.1 Sampling Techniques



Source: (Saunders et al., 2009; Zikmund et al., 2010)

In most research cases, the availability of the complete detail and listing of the population elements is difficult or sometime impossible (Ary et al., 2009). In such situations, non-probability sampling technique is used for the selection of the members of the sample through non-random procedures (Ary et al., 2009). Convenience and economy are the two main benefits which are obtained through the use of non-probability sampling technique (Ary et al., 2009; Saunders et al., 2009). Different types of non-probability sampling technique include quota sampling, judgement or purposive

sampling, snowball sampling, convenience sampling and self-selection sampling (Ary et al., 2009; Cooper & Schindler, 2008; Saunders et al., 2009; Wiersma & Jurs, 2009; Zikmund et al., 2010).

The selection of sample size is very complex phenomena and it largely depends upon the type of sample, variability in the population, time, cost, accuracy of estimates required, and its representativeness of the population from which it is selected (Ary et al., 2009; Cooper & Schindler, 2008; Remenyi et al., 1998). Sartwelle et al. (1998) select a sample size of 350 producers of crop and livestock in a survey for examining the factors affecting grain and livestock marketing practices in Kansas, Texas and Iowa states. Tano et al. (2003) employ a sample size of 299 cattle owning households in a survey for quantifying farmer's preferences for cattle traits in the sub humid zone of West Africa. McDermott et al. (2004) use a sample size of 98 producers and 5 processors for measuring attributes that New Zealand beef producers and processors consider important in their selling and buying decisions. Woldie &Nuppenau (2011) conduct a survey using a sample size of 203 banana growers to determine the factors affecting channel choice decisions of these growers in Southern Ethiopia. Convenience sampling is commonly used in social research to avoid heavy cost and complexity involved (Bryman, 2008).

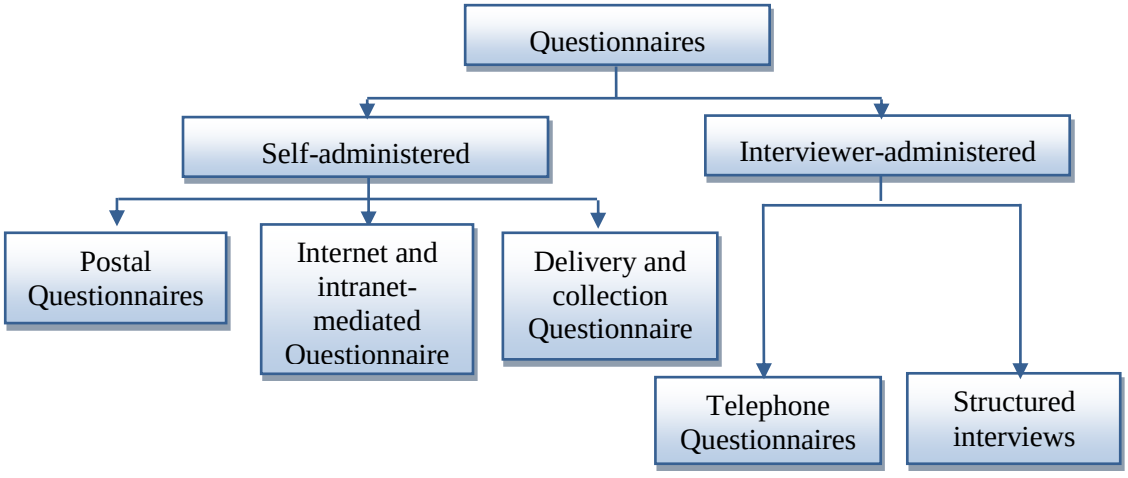
The population under study was comprised of citrus growers and pre-harvest contractors of Pakistan citrus supply chain. Due to the non-availability of the sampling frame (population size), non-probability sampling techniques was used to collect the data. The population of citrus growers and pre-harvest contractors is highly fragmented; therefore, convenience sampling type of non-probability sampling technique was adopted for the selection of the members of the sample. In this way, the chances of including the true representatives of the fragmented population of the citrus growers and pre-harvest contractors increased to great extent. The survey of the citrus growers and pre-harvest contractors for both the pilot and the main data collection made the study highly extensive and time consuming. Therefore, the selection of the total number of respondents (sample size) was determined by the time, cost, and available financial resources. However, this research activity helped a great deal in in-depth exploration of the Pakistan citrus supply chain and different players involved.

4.4.2 Data Collection

There are two approaches that can be used to collect primary data: observation and communication approach (Cooper & Schindler, 2008). Observation is less frequently used method in social research and involves the direct observation and recording of the behaviour of individuals according to well-designed rules and regulations (Bryman, 2008). Different types of observational research include unstructured and structured or systematic observations (Bryman, 2008). In communication approach, interviews are conducted to communicate with people (respondents) about various issues that include people behaviour, attitudes, motivations, intentions and their feelings (Cooper & Schindler, 2008). An interview, on the basis of level of formality and structure, may be divided into three types: structured, semi-structured and unstructured or in-depth interviews (Cooper & Schindler, 2008; Saunders et al., 2009).

In structured or standardized interviews, a predetermined and standardized or identical set of questions are included in the development of questionnaires also known as interviewer-administered questionnaires (Bryman, 2008). These types of interviews are conducted for the collection of quantitative data also called as quantitative research interviews (Bryman, 2008). Semi-structured and unstructured or in depth interviews are also known as qualitative research interviews and usually conducted to investigate and explore the details about a particular area of interest (exploratory research) (Bryman, 2008). Questionnaires may be classified into two types based on their administration and the amount of contact with the respondents: self-administered and interviewer administered as shown in figure 4.2.

Figure 4.2 Types of Questionnaires



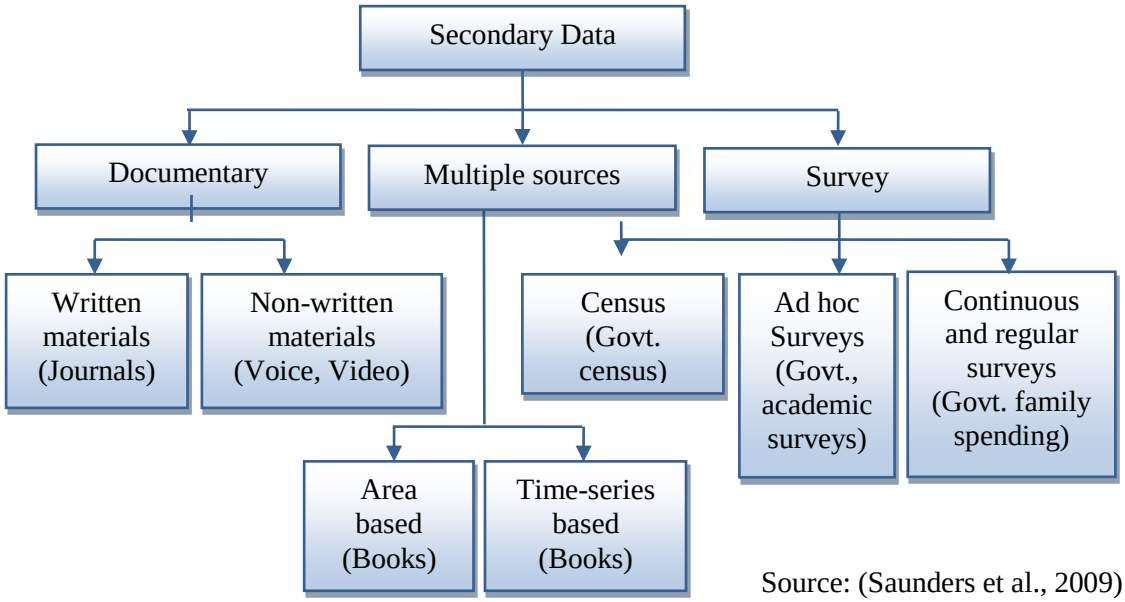
Source: (Saunders et al., 2009)

The selection of appropriate questionnaires largely depends upon a number of factors (Ary et al., 2009; Cooper & Schindler, 2008; Remenyi et al., 1998). These include:

1. Respondents characteristics
2. Importance of reaching a particular person as respondent
3. Importance of respondents answers not being contaminated or distorted
4. Size of sample
5. Types of questions
6. Number of questions

Secondary data may be referred as raw data (with little or no processing) or compiled data (processed) collected already for some other reasons than the actual research (Ary et al., 2009; Cooper & Schindler, 2008; Remenyi et al., 1998; Saunders et al., 2009). Secondary data, both in quantitative and qualitative form, can be obtained through a number of sources as shown in figure 4.3 (Saunders et al., 2009).

Figure 4.3 Types of Secondary Data



Source: (Saunders et al., 2009)

This study used both types of the data i.e., primary and secondary data. The secondary data was used from a number of different sources that include: different government survey, census, reports, round-ups and periodicals, journals, official websites and data base. The primary data was collected through communication approach, using semi-structured and in-depth interviews for pilot data collection using semi-structured and open-ended questions and structured interviews for main data collection using profiles or decision cards (structured questions). Keeping in view the characteristics of the respondents (particularly the language and education) the questionnaires were designed accordingly for both the pilot and main data collection. For

pilot study, the questions were asked in local language with the help of an educated local interpreter in order to reduce the researcher biasedness (although the researcher was also familiar with the local language). For main data collection, profiles or decision cards (structured questionnaire) were designed based on the information collected during pilot study. Again, these profiles or decision cards were translated into local language and aided with pictures to make them easily understandable to the respondents.

4.4.3 Data Analysis Technique

Statistical techniques are used to analyse the quantitative data and these techniques can be broadly divided into two types based on their applications (Ary et al., 2009; Leedy & Ormrod, 2009; Saunders et al., 2009; Walter, 2009; Wiersma & Jurs, 2009). Descriptive quantitative data analysis techniques (descriptive statistics) as the name applies are used to explore, present and describe data while inferential quantitative data analysis techniques (inferential statistics) are used to make inferences about large population by using small sample data (Leedy & Ormrod, 2009; Saunders et al., 2009).

In descriptive statistics, data is summarized and displayed in tabular, graphical or numerical forms to make it easy to understand (Anderson et al., 2003). Tabular and graphical methods include frequency table, cross-tabulation or contingency tables, quadrant analysis, bar charts, pie charts, histograms, dot plot, Ogive, stem-and-leaf display, pareto diagrams, boxplots, scatter diagrams, correlation and mapping in order to describe and show the relationship between different variables in the data set (Anderson et al., 2003, 2010; Ary et al., 2009; Cooper & Schindler, 2008; Saunders et al., 2009). Cross tabulation or contingency tables, correlation and scatter diagrams are frequently used to describe the relationship between two variables while all other methods are used to represent data for one variable at a time (Anderson et al., 2003, 2010; Saunders et al., 2009). Numerical methods of data analysis deal with the frequency distribution, measure of central tendency, measure of variability and measure of relative position, exploratory data analysis, weighted mean and measure of association (Anderson et al., 2003, 2010; Ary et al., 2009; Cooper & Schindler, 2008; Saunders et al., 2009).

In inferential statistics, inferences are made about large populations based on observations of a small sample representing that population (Leedy & Ormrod, 2009; Zikmund et al., 2010). According to Leedy & Ormrod (2009, p. 275), inferential statistics have two core functions:

1. To estimate a population parameter from a random sample
2. To test statistically based hypothesis

Estimation of population parameter from sample statistics involves two types of estimates, a point estimate and an interval estimate (confidence interval) (Leedy & Ormrod, 2009; Wiersma & Jurs, 2009). A point estimate is a single value estimate that represent reasonable estimate of the corresponding population parameter while in interval estimation an interval (confidence interval) is defined on the scale of measurement that contains acceptable estimates of the parameter (Leedy & Ormrod, 2009; Wiersma & Jurs, 2009). According to Cooper & Schindler (2008), Leedy & Ormrod (2009) and Wiersma & Jurs (2009), interval estimation is more accurate, frequently used and preferred over point estimation.

A hypothesis may be defined as "formal statement of explanations stated in a testable form" (Zikmund et al., 2010, p. 509). Hypothesis testing or significance testing is the second major function of inferential statistics and can be categorized on the basis of number of variables involved in hypothesis testing i.e., univariate, bivariate and multivariate hypothesis testing (Saunders et al., 2009; Zikmund et al., 2010). There are two statistical techniques which are employed for hypothesis or significance testing: parametric statistics and non-parametric statistics (Leedy & Ormrod, 2009; Saunders et al., 2009; Zikmund et al., 2010).

Parametric statistics are used when data involved is numerical, having known and continuous distribution (normal sampling distribution with bell shape), interval or ratio scaled and having large sample size. Contrary, non-parametric statistics are employed when data is not normally distributed (without known distribution) and may be termed as 'distribution free' (Leedy & Ormrod, 2009; Saunders et al., 2009). Parametric tests include analysis of variance (ANOVA), analysis of covariance (ANCOVA), regression, factor analysis and structural equation modelling (SEM) while non-parametric tests include sign test, Mann-Whitney U, Kruskal-Wallis test, Wilcoxon matched-pair signed rank test, chi-square goodness-of-fit test, odds ratio and Fisher's exact test (Leedy & Ormrod, 2009).

The chi square distribution or chi square test for significance or chi square for the independence of categorical variables is the most appropriate, common and simple non-parametric test used for the nominal data such as counts or frequencies within categories

(cross tables or contingency tables) in research (Burns & Burns, 2008; Cooper & Schindler, 2014; Saunders et al., 2012). However, the two essentials assumptions that must be fulfilled in using chi square test include (Burns & Burns, 2008; Cooper & Schindler, 2014; Saunders et al., 2012);

1. The categories used in analysis must be mutually exclusive
2. In 2x2 chi square analysis the expected frequency in all cells should at least equal or greater than 5. However, with more than 2x2 tables, the expected cell count should be equal to or greater than 5 in at least 80% of the cells. In case, if this condition is not fulfilled for 2x2 contingency, it is necessary to use grouping of low frequency categories or use Fisher's exact test. There is one disadvantage of grouping categories together that it reduces the available information. For more than 2x2 contingency tables this assumption is fulfilled by increasing the sample size only.

However, if any one of the two essential assumptions of chi square statistics are not fulfilled or the number of observations obtained for analysis is small, the test may produce misleading results. Therefore, in this situation a more appropriate and robust test, Fisher's exact test, is recommended and used for assessing the difference between two variables (Bower, 2003; Cooper & Schindler, 2014; Saunders et al., 2012).

As already explained, this study used both types of data analysis techniques i.e., qualitative and quantitative. The qualitative data analysis technique (in-depth interviews) was used to explore the Pakistan citrus supply chain, key players involved in it and their functions and most importantly how different players, particularly citrus growers and pre-harvest contractors, make decisions regarding the choice of citrus marketing channel. Both descriptive and inferential quantitative data analysis techniques (Fisher exact test and conjoint analysis) were used for the analysis of the main data of this study. Using descriptive data analysis techniques, results were presented in tabular and graphical forms to make logical conclusions. Depending upon the nature of data (nominal or categorical) Fisher's exact test was used which is the most suitable non-parametric test for this type of data.

Methods or techniques being quantitative in nature and produce results in numbers should not be preferred over qualitative research (Ghauri & Grønhaug, 2005). It is the research question, problem and its purpose which help to decide the suitable research methods (Ary et al., 2009; Ghauri & Grønhaug, 2005). Moreover, the suitability of a

research method largely depends upon the credibility of research findings (Bryman, 2008; Cooper & Schindler, 2008; Saunders et al., 2009; Walter, 2009; Wiersma & Jurs, 2009; Zikmund et al., 2010). Reliability, replication and validity are the prominent tools for the evaluation and credibility of the selected research instrument (Ary et al., 2009; Bryman, 2008).

The aim of this study is to identify and analyse the factors that affect citrus growers and contractors selling decisions in the supply chain of citrus (Kinnow) fruit. It has already been identified that farmers do not consider only monetary value (profit maximization) while making selling decisions of their produce. They are also influenced by a number of transactional cost, socioeconomic, psychological and demographic factors (Carr & Tait, 1991; Fairweather & Keating, 1994; Gasson & Potter, 1988; Herrmann & Uttitz, 1990; Willock et al., 1999). To capture the effect of psychological factors in decision making various personal variable models have been proposed, for example, Fishbein's model (1963) (Brascamp, 1996). Personal variable models take account of beliefs, attitudes and intentions as psychological factors in the process of decision making (Brascamp, 1996; Fishbein & Ajzen, 1975). Fishbein (1975) replaced the previous subjective expected utility (SEU) model of Edwards (1954) of behaviour decision theory in which the decision maker had to choose the alternative with the highest expected utility.

The subjective expected utility of a given alternative can be expressed as:

$$SEU = {}^{n}\sum_{i=1} SP_i U_i$$

Where

SEU is the subjective expected utility linked with a given alternative

SP_i is the subjective probability that the choice of this alternative will lead to some outcome *i*

U_i is the subjective value or utility of outcome *i*

n is the number of relative outcomes

Fishbein (1975) reinterpreted the subjective utility model and proposed a model based on individual's attitudes and beliefs that can be expressed mathematically as;

$$A_B = {}^{n}\sum_{i=1} b_i e_i$$

Where

A_B ~ SEU represents individual's attitude toward the behaviour

b_i ~ SP*i* and represents beliefs about the consequences of performing a given behaviour

e_i ~ U_i represents the evaluations associated with the different outcomes

These models are relatively simple in their execution and measure only a few variables and cannot be used to analyse complex decision making process involving various variables of different nature (Brascamp, 1996).

Poole et al. (1998) identified important factors affecting producers marketing decision in a survey of 300 orange and mandarin producers in Spain. They analysed the data by using both descriptive/exploratory and explanatory statistics. In descriptive statistics, data analysis was conducted using SPSS and measured the central tendency, dispersion and skewness of the data. It helped to eliminate any outliers or incorrect data entries from the data set. By using explanatory statistics, Poole et al. analysed producer's marketing characteristics using chi-square test for independence of variables. Finally, a multivariate technique (cluster analysis) was used for statistically significant variables to group and confirm the attributes of the respondents that affect the marketing decision.

This multivariate technique is used for clustering or developing meaningful groups of individuals and only used to identify mutually exclusive groups based on some similarities (Hair et al., 2010).

Fert & Szabo (2002) used multinomial logit model (a multivariate technique) to identify and explain the choice of farmers among various supply channels in the Hungarian fruit and vegetable sector. In a postal survey with sample size of 66, they only identified and pointed out the significant demographic and socioeconomic variables that could affect the choice among four marketing channel (Wholesale markets, wholesalers, marketing cooperatives and producer organizations).

Tano et al. (2003) used conjoint analysis (a multivariate technique) to quantify farmer's preferences for cattle traits in the sub-humid zone of South Africa. Data were collected from a sample of 299 cattle-owning households through survey. In order to demonstrate each cattle profile to survey respondents, they presented cards with pictorial representations of the difference in the levels of traits. The respondents were asked to rate each cattle profile on a preference scale from 1 (least desirable) to 5(most

desirable). From these ratings, part worth values for all the factors were estimated. By using conjoint analysis, both significance and utility (part worth value) of factors affecting the farmer's preferences for cattle traits were analysed successfully.

McDermott, Lovatt, & Koslow (2004) conducted a study to investigate the performance measures that were important to New Zealand beef producers and processors in their selling and buying decisions using conjoint analysis methodology. Seven key factors in two different contexts, spot market and contracted supply, were selected to analyse the producer's selling decision namely: price level; payment security; quality assurance branding; space allocation lead time; sharing of processing company direction and market positioning; comfort with the buyer; and quality and effort reward. After assigning levels to each factor, eight different scenarios (cards) using fractional factorial design were created and producers were asked to rank and rate these scenarios. Similarly, in order to analyse processor decisions to buy and sell beef cattle, seven key performance measures were identified and selected namely: livestock price; livestock lead time; quality variability; traceability; supply relationship; grade; and meat quality.

4.5 Methodology of This Study

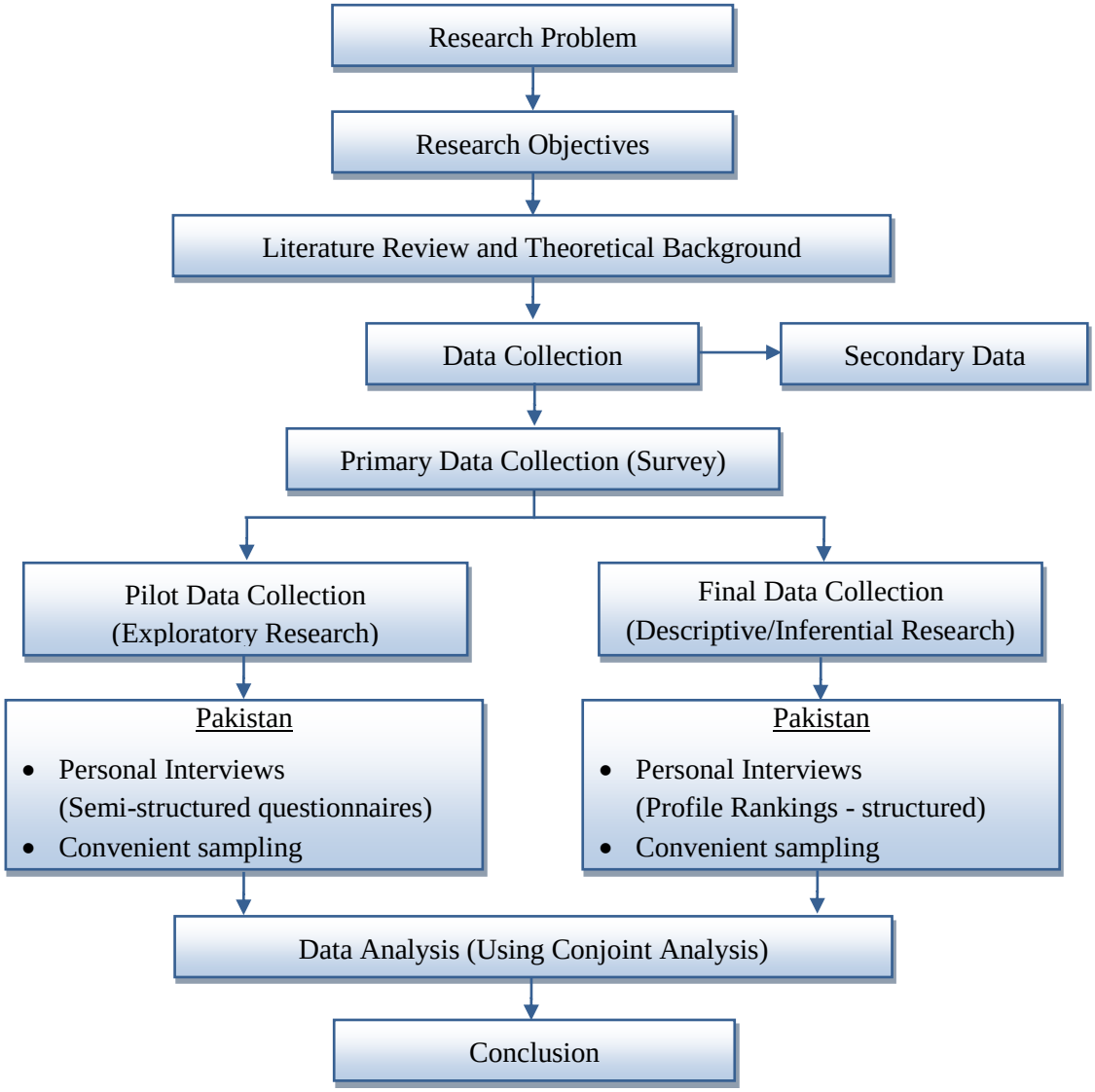
The survey strategy, deductive approach, is commonly used in business and management for exploratory and descriptive research (Cooper & Schindler, 2008; Remenyi et al., 1998; Saunders et al., 2009). In addition, it allows collecting cross-sectional primary data that can be analysed using descriptive and inferential statistics (Cooper & Schindler, 2008; Saunders et al., 2009, 2012).

Depending upon the research question and nature of study, both qualitative (exploratory) and quantitative (descriptive and inferential) research methods were used for this study. It has already been described that it is the research question, problem and its purpose which help to decide the suitable research methods (Ary et al., 2009; Ghauri & Grønhaug, 2005).

Primary data was collected through surveys using semi-structured questionnaires (Appendix C-1 & C-2) for pilot study (exploratory research) and structured questionnaires (Profiles) for final data collection (descriptive and inferential research). Secondary data was obtained from published documents, reports, journals and government publications that provides basis for the development of research instrument

for the present study. Figure 4.4 explains the complete methodological framework of the study in detail.

Figure 4.4 Methodological Framework



The population under study was comprised of citrus growers and pre-harvest citrus contractors involved in the overall supply chain of citrus fruit in Pakistan. The citrus industry in Pakistan is very fragmented and a lot of diversity exists between citrus growers and pre-harvest contractors. This diversity is usually characterized by different demographics, size of the citrus orchards and size and volume of the business. Therefore, this study focused on different fragments of citrus growers and pre-harvest contractors by dividing them into different groups. The citrus growers were divided into different groups (small, medium and large) according to the size of their orchards, whereas, citrus pre-harvest contractors were divided into different groups (small,

medium and large) according to the volume or size of their business. In addition, the first of its kind, this research concentrated on the detailed analysis of Pakistan citrus industry, particularly, the marketing channel choice decision making of different groups of citrus growers and pre-harvest contractors. In the citrus marketing supply chain, the selling decisions of these two actors play a pivotal role in the selection of ultimate supply channel. Therefore, the present study identified and analysed the factors (variables) that affect the selling decisions of both, citrus growers and contractors.

Convenience sampling technique was employed for the selection of sample size for both citrus growers and contractors in this study. The reasons of choosing convenience sampling techniques included unavailability of population size (sampling frame) and secondary information showing the total number of citrus growers and contractors, time and budget constraints.

A survey of citrus growers and pre-harvest citrus contractors using semi-structured interviews was designed for pilot study to identify and understand the relationship among the factors identified from the descriptive study and actually used or considered relevant by the citrus growers and pre-harvest citrus contractors in marketing decision making process. For final data collection, a structured questionnaire (profiles/decision cards) was developed on the basis of exploratory/secondary data and pilot study results.

Profiles or Decision Cards

"Profiles or decision cards are the different combinations of all the factors and their levels displayed on a hard sheet of paper"

As already described, conjoint analysis, a survey based system, has successfully been used to identify and quantify transaction cost, socioeconomic and psychological factors affecting decision making in agribusiness (Ferto & Szabo, 2002; Hobbs, 1996; McDermott et al., 2004; Smidts, 1990; Tano et al., 2003). However, these studies only measured the significance of various factors which affect the farmers marketing channel choice decisions except Hobbs who actually measured the impact of various factors on the selection of marketing channel by beef processors. There is a dearth of using conjoint analysis (a multivariate decision analysis technique) in marketing channel choice decision making by all members of any supply chain in agribusiness sector. This multivariate decision analysis technique has an advantage that it measures the value of all factors good or bad, tangible or intangible considered relevant in decision making

process. Therefore, Conjoint analysis was used in this study for the identification and assessing the factors that affect citrus growers and contractors selling decision in the supply chain of citrus (Kinnow).

Depending upon the size of the sample and number of categories of factors (2x2 or more than 2x2 cross tables) used in the analysis, the most appropriate test, Fisher's exact test, was used to test the significance among different demographic (age, education, experience) and other qualitative and quantitative variables used in this research. The other reason of using Fisher's exact test for this study was the small expected cell count (less than 5 in more than 20% of the cells) which is the violation of the one of the two essential assumptions of chi square statistics. Apart from the selection of larger sample size; correction of the questionnaires through pilot testing; and data collection through face-to-face interviews, both qualitative and quantitative research methods were used to increase the reliability and validity of the data as well as the whole research.

4.6 Conjoint Analysis

The conceptual and axiomatic framework for conjoint measurement (analysis) was first put forward by the psychologist Luce and the statistician Tukey (1964). They explained that the joint effect of two or more independent variables on overall affect or response can be measured simultaneously. A number of researchers (Brascamp, 1996; Cattin & Wittink, 1982; Green & Rao, 1971; Green & Srinivasan, 1978; Gustafsson et al., 2007; McDermott et al., 2004; Mohn, 1990; Smidts, 1990; Wittink & Cattin, 1989) unanimously agreed with the use of conjoint analysis in different fields of study including new product planning or improving existing achievements, industrial marketing, pricing, advertising, distribution, market segmentation, purchasing and selling decisions.

Conjoint analysis is a multivariate technique which is used to explain and predict preferences for any type of object (product, services or ideas) and is based on the fact that the individual assesses the total value of an object by summing up different amount of values associated with different attributes of the object (Allenby et al., 1995; Earl & Kemp, 1999, 2002; Gustafsson et al., 2007; Hair et al., 2010). In conjoint analysis, value is measured in terms of utility that include all features of the object (both tangible and intangible) (Hair et al., 2010) in contrast to expected utility models where only

monetary utility is the focus (Edwards, 1996). To be more specific, overall utility of an object depends upon all the attributes (factors) associated with the object and their values (levels) and is calculated by adding up the utilities associated with every factor (Hair et al., 2010). The success of conjoint analysis depends upon the identification of all the factors that can affect the utility of any product or service (Green et al., 2001; Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007; Hair et al., 2010).

Following are the different steps and methods that are followed in the execution of conjoint decision analysis (Green et al., 2001; Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007; Hair et al., 2010).

1. Determination of factors affecting decision making
2. Assigning appropriate levels to corresponding factors
3. Selection of the preference model
4. Conjoint methodology selection
5. Designing Combination of Factors (Stimuli)
6. Data Collection in conjoint analysis
7. Selecting an estimation technique
8. Evaluation of Reliability and accuracy of the Model
9. Interpreting the results
10. Validating the results
11. Applying the conjoint results

4.6.1 Determination of Factors and Assigning Levels

One of the objectives of conjoint analysis is to determine the contributions of variables/attributes/factors and their levels in the determination of preference (decision making) (Brascamp, 1996; Green & Srinivasan, 1978, 1990; Hair et al., 2010). Therefore, it is very critical to identify and include all the factors that are actually used in decision making. Both, positive and negative factors that potentially affect the total utility of the product/service/decision should be included in the decision analysis (Brascamp, 1996; Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007; Hair et al., 2010). Among several means, preliminary data collection and direct questioning

methods are considered to be the most suitable for identifying the relevant factors to be included in the analysis (Green & Srinivasan, 1978, 1990; Hair et al., 2010). In case of a large number of factors, the total number of factors may be reduced to a set of key determinant factors that affect the decision making process (Brascamp, 1996; Gustafsson et al., 2007; Hair et al., 2010). Reliability and accuracy of results depend upon the determination of actual factors and assigning levels to every factor and it is prerequisite of data collection stage (Brascamp, 1996; Hair et al., 2010).

It has already been identified that farmers consider various transaction cost, socio-economic and demographic variables while making marketing channel choice decision. Transaction cost variables include price, mode of payment, advance payment, payment security, payment delay, certainty of payment, prompt payment, transportation cost, bargaining power, farm leverage (debt position), risk of non sale, lot size, previous experience of the buyer, family relationship, comfort with the buyer, availability of contractual agreement, trust, frequency of delivery, selling place, distance to local market. Socio-economic and demographic factors include age of farmer, size of family, education level, experience, farm size, quantity sold, ownership structure and extent of investment. As described earlier, in order to come up with the representative factors and their levels which are used in marketing channel choice decision making by the citrus growers and pre-harvest citrus contractors, a preliminary data collection (pilot study) using semi-structured interviews was conducted for this study.

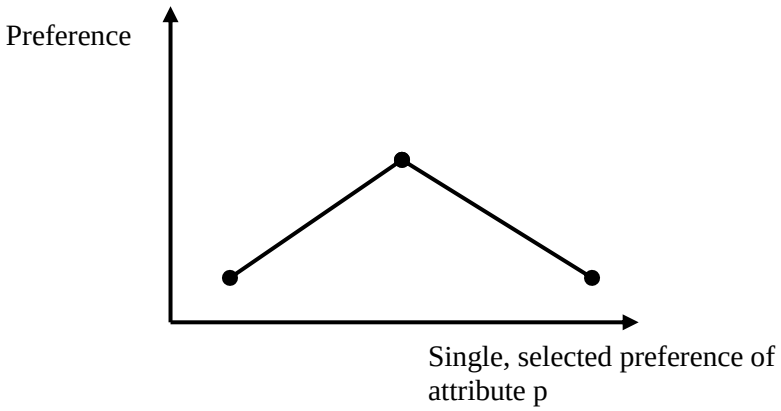
4.6.2 Preference Model

One of the main goals for every empirical research is to identify and utilize the method or combination of methods that can explain the research objectives efficiently and effectively and make good use of researcher's time and the research budget (Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007). The selection of a suitable method largely depends upon the type of product or market, the number of relative attributes (factors), the type of respondents and research objectives (Green & Srinivasan, 1978, 1990; Hair et al., 2010). There are three models that are prevalent and used frequently in conjoint studies: the vector model, the ideal point model, the partial benefit model (part-worth function model) (Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007; Hair et al., 2010).

In the ideal point model, the assumption of strict linearity is relaxed (simple curvilinear relationship) and existence of an ideal point preference is assumed to be present somewhere (Brascamp, 1996; Green & Srinivasan, 1990; Gustafsson et al., 2007; Hair et al., 2010).

The most dominant and preferred model for conjoint analysis is the partial benefit or part-worth model (Brascamp, 1996; Cattin & Wittink, 1982; Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007; Hair et al., 2010) that makes it possible to estimate part-worth separately for each and every level of attributes (Gustafsson et al., 2007; Hair et al., 2010). Among all the three models, the partial benefit or the part-worth model (piecewise linear) as shown in figure 4.5, is considered to be the most accepted and attractive model due to its flexible nature that allows different shapes for the preference function (Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007; Hair et al., 2010).

Figure 4.5 Part-worth Model



In summary, the vector model estimates the fewest attributes (factors) by assuming the restriction of linear functional form, whereas the part-worth model estimates the largest number of attributes because it allows the most general functional form (no assumptions are necessary and having piecewise linear or separate part-worth function) (Brascamp, 1996; Dawes & Corrigan, 1974; Green & Srinivasan, 1978, 1990; Hair et al., 2010; Teddlie & Tashakkori, 2009). The ideal point model is between these two models (Green & Srinivasan, 1990; Hair et al., 2010; Teddlie & Tashakkori, 2009). With the help of partial benefit or part-worth model, it is possible to estimate different utilities for the different levels of each attribute and comes up with the summation of major effects of attributes thus making conjoint analysis a commonly used model commercially (Brascamp, 1996; Wittink & Cattin, 1989). In addition, the part-worth model can also be used to measure the interactions effect between the attributes (the other two models

cannot take interaction effect into account) that may distort the attribute utilities (Brascamp, 1996; Hair et al., 2010; Teddlie & Tashakkori, 2009). Therefore, partial benefit or part-worth model was selected for the application in conjoint analysis methodology for this study.

4.6.3 Selection of Conjoint Methodology

According to Hair et al. (2010), the selection of conjoint methodology depends upon the number of factors used in research, level of analysis, model form, choice task and data collection method as shown in table 4.5.

Table 4.5 A comparison of Conjoint Methodologies

Characteristics	Conjoint Methodology		
	Traditional Conjoint	**Adaptive/Hybrid Conjoint**	**Choice based Conjoint**
Maximum number of attributes	9	30	6
Level of analysis	Individual	Individual	Aggregate or individual
Model form	Additive	Additive	Additive and interaction
Choice task	Evaluating full-profile stimuli one at a time	Rating stimuli containing subsets of attributes	Choice based sets of stimuli
Data collection format	Any format	Generally computer based	Any format

Source: (Hair et al., 2010)

Among the three methods, traditional conjoint analysis is considered to be the foundation of conjoint analysis which uses simple additive model with maximum of 9 factors (Green & Srinivasan, 1990; Gustafsson et al., 2007; Hair et al., 2010). A full profile containing different levels of all factors is presented to respondent for evaluation. The adaptive conjoint method is an improved form of full profile conjoint and deals with up to 30 factors using a computer process that is not practicable with traditional conjoint analysis (Gustafsson et al., 2007; Hair et al., 2010). The choice based conjoint is more complicated analysis which uses maximum 6 factors in analysis (Hair et al., 2010). Instead of ranking all profiles, only one profile is selected from a set of profiles in the choice based conjoint (Green & Srinivasan, 1990; Hair et al., 2010). It has one advantage that it can measure the interaction effect among different factors and can be used for both, individual and aggregate levels (Green & Srinivasan, 1990; Hair et

al., 2010). Keeping in view the number of factors and level of analysis, model form, choice task and data collection method a traditional conjoint method was selected for this study.

4.6.4 Designing Combination of Factors (Stimulus)

It has already been discussed that the selection of factors and their appropriate levels is crucial in conjoint analysis and can affect the accuracy of the results. The factors and levels, selected for conjoint study, should be communicable (easy to explain) and actionable (exist in reality) for a realistic evaluation (Hair et al., 2010). According to Hair et al. (2010), the minimum number of combination of factors (stimuli) that are presented to respondents must be;

Minimum number of stimuli = Total number of levels across all factors – Number of factors +1

In designing combination of factors (stimuli), there may arise an issue of multi-collinearity (presence of correlation among factors) also known as inter-attribute or environmental correlation (Brascamp, 1996; Gustafsson et al., 2007; Hair et al., 2010). The most frequently observed impacts of inter-attribute include lack of uniqueness for the factors, unrealistic combinations of two or more factors and loss of predictive validity (Blomkvist et al., 2007; Hair et al., 2010). It is necessary to deal with these issues of multi-collinearity which otherwise can distort and affect reliability of the results (Bisgaard, 1992; Blomkvist et al., 2007; Gustafsson et al., 2007; Hair et al., 2010). According to Hair et al. (2010), interaction effect can be removed or at least minimized by the use of these three remedies;

a) combining correlated factors under a new factor label called as super attribute
b) removing unrealistic combination of factors by creating orthogonal stimuli
c) limit the estimation of part-worth to match to a pre-specified relationship

In order to create a super attribute with new levels, closely correlated factors are combined into one. However, if it is not possible to combine factors together, one of the original factors may be eliminated from the analysis to generate realistic profiles (Gustafsson et al., 2007; Hair et al., 2010). The creation of orthogonal design/stimuli by refining the experimental design removes the unrealistic profiles and produces believable profiles. Orthogonal design creation is very well supported and executed by

computer softwares, for example, SPSS (Hair et al. 2010). In this method, researcher can specify and eliminate any combination of levels or even profiles from the conjoint design but there is a fear that it may affect the part-worth estimates for all the factors (Gustafsson et al., 2007; Hair et al., 2010). In limiting the estimation of part-worth, the researcher is again putting restriction on the estimation process thus may generate poor estimates (Hair et al. 2010). Among all the three remedies, the creation of super attribute is the conceptually superior and direct approach. However, in many instances combining two factors or variables is virtually impossible. In that case any of the other two remedies may be adopted (Gustafsson et al., 2007; Hair et al., 2010).

4.6.5 Data Collection in Conjoint Analysis

Choosing a Stimuli Presentation Method

In order to get reliable and accurate data, it is necessary to present the combination of factors (stimuli) to respondents in the natural and realistic way through verbal or visual methods (Brascamp, 1996; Green & Srinivasan, 1990; Gustafsson et al., 2007; Hair et al., 2010). Although, a few researchers (Brascamp, 1996; Green & Srinivasan, 1978, 1990) have mentioned two methods for the presentation of stimuli but according to Hair et al. (2010), the three methods include two factors-at-a-time or trade off, the full profile and the pair-wise comparison methods.

The two factor-at-a-time also called trade-off method (Johnson, 1974) is simple method in which respondents rank all combinations of each pair of factor levels at one time (Brascamp, 1996; Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007; Hair et al., 2010). It is easy to apply and reduces information overload on the part of respondents and frequently used for mail questionnaire form of data collection procedure (Brascamp, 1996; Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007). The major disadvantages with this method are the loss of realism by using only two factors at a time, large number of evaluations required and only employ verbal descriptions of factor's combination rather than pictorial or non-writing forms (Brascamp, 1996; Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007).

The full-profile method or concept evaluation method or multiple factor evaluation method makes use of the complete set of factors including all levels in the form of a profile card (Brascamp, 1996; Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007; Hair et al., 2010). It gives more realistic picture of the preference and allows to make

decision as occurs in reality by considering all determinant factors together on one profile card, therefore, commonly used on large scales (Brascamp, 1996; Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007; Hair et al., 2010; Wittink & Cattin, 1989). The major disadvantage includes information overload on the part of respondents that makes the decision/preference task difficult (Brascamp, 1996; Cattin & Wittink, 1982; Green & Srinivasan, 1990; Hair et al., 2010; Payne et al., 1992; Wittink & Cattin, 1989).

The pair-wise comparison method is a combination of trade-off and full profile methods and used in specialized and modern conjoint techniques for a large number of factors, such as adaptive conjoint analysis (ACA) (Gustafsson et al., 2007; Hair et al., 2010). Contrary to the full profile method, it includes only few factors in the construction of profiles and respondents have to rate two profiles according to their preference at a time (Hair et al., 2010). Similarly, in pair-wise comparison method profiles are rated whereas in trade-off method pairs of factors are evaluated (Hair et al., 2010).

After identification and selection of determinant factors and deciding presentation method, the next important task is the creation of combination of factors (stimuli) (Brascamp, 1996; Green & Devita, 1974; Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007; Hair et al., 2010). It is worth considering keeping the number of stimuli to minimum in order to avoid information overload at the end of respondent and to increase the validity of the results (Brascamp, 1996; Green & Devita, 1974; Green & Srinivasan, 1978, 1990; Gustafsson et al., 2007; Hair et al., 2010). According to Hair et al. (2010), the number of stimuli depends upon the number of factors in trade-off method and can be calculated as:

$$\text{Number of trade-off stimuli} = \frac{N(N-1)}{2}$$

Where N is the number of factors.

In case of small number of factors (6 or few), all possible combinations of factors can be used for evaluation for the full profile and pair-wise comparison methods, hence, called factorial or complete design (Green & Devita, 1974; Green & Srinivasan, 1990; Gustafsson et al., 2007; Hair et al., 2010). For large number of factors (7 to 10), a reduced design is preferred to avoid inconsistency in the evaluation and overload of information at the end of respondents (Green & Devita, 1974; Green & Srinivasan,

1990; Gustafsson et al., 2007; Hair et al., 2010). There are two procedures in conjoint analysis to reduce (fractionate) the number of combination of factors namely: simple random sampling of complete set of stimuli and fractional factorial design (Green & Srinivasan, 1978; Gustafsson et al., 2007; Hair et al., 2010). Simple random sampling is the quickest and easiest way to reduce the complete set of stimuli to desired number by randomly selecting stimuli but this approach is not common for marketing research (Green & Devita, 1974; Green & Srinivasan, 1978; Hair et al., 2010). A number of researchers (Assmus & Key, 1994; Green & Devita, 1974; Green & Srinivasan, 1978; Gustafsson et al., 2007; Hair et al., 2010) advocate that fractional factorial design is a systematic and frequently used procedure to reduce the number of combinations of factors and achieve two goals at the same time:

a) reduce the number of stimuli to desired level

b) maintain the orthogonality (independence of the factors)

In designing combination of factors with realistic combination of factors for this study, an orthogonal stimulus was created through fractional factorial procedure using the computer software, SPSS. This orthogonal design helped creating the orthogonal main-effects design (combination of factors without inter-attribute correlation) that allowed the statistical testing of several factors without testing every combination of factor levels.

In conjoint analysis, data is usually collected on a non-metric scale (ranking) (Brascamp, 1996) but a number of researchers (Brascamp, 1996; Green & Devita, 1974; Green & Srinivasan, 1978; Gustafsson et al., 2007; Hair et al., 2010) point out that both non-metric and metric (rating) scale can be used in conjoint analysis. To be more specific, trade-off method uses non-metric (ranking) scale while full-profile and pair-wise comparison employ both type of non-metric and metric scales (Gustafsson et al., 2007; Hair et al., 2010). For this study with full-profile combination of factors, a ranking scale from most preferred to least preferred was used for data collection. According to Hair et al., (2010), profiles can be presented in written description, physical or pictorial models to be effectively used in data collection procedure. In order to make profiles attractive, understandable and easy to evaluate, respondents were presented with cards showing factor levels with appropriate signs and pictures. For example, different levels of factor ‘price’ were supported with different sizes of the sign ‘Rs’ (which is commonly used for price in Pakistan) in this study. In addition,

considering the target audience these cards were also presented in local language (Urdu), where necessary. All profiles or decision cards for citrus growers and pre-harvest citrus contractors used for data collection are attached in appendix (Appendix D-1, D-2, E-1 & E-2).

Survey Administration

There are three common procedures that are followed for data collection in conjoint analysis namely; phone surveys, mail (with pencil and paper questionnaire or computer-based surveys) and personal interviews (Akaah, 1991; Bisgaard, 1992; Cattin & Wittink, 1982; Green & Srinivasan, 1990; Gustafsson et al., 2007; Hair et al., 2010; Witt & Bernstein, 1992; Wittink & Cattin, 1989). Phone and mail surveys are not used frequently and are usually conducted to ensure geographical representation, reduce the cost of conducting survey and increase the return rate of questionnaires (Brascamp, 1996; Gustafsson et al., 2007; Vriens, 1995; Wittink & Cattin, 1989). However, a number of limitations are associated with phone and mail surveys that include respondents training, advance call for cooperation, efficient delivery of questionnaires, giving call back number and follow up calls (Gustafsson et al., 2007). A personal interview is best suited in complex and difficult situations or when respondents need some assistance to complete the questionnaires (Gustafsson et al., 2007). This method is common with the marketing research on a large scale (Brascamp, 1996; Gustafsson et al., 2007). Therefore, personal interview method was adopted for the collection of data from citrus growers and contractors from Pakistan. During personal interviews, respondents were presented with cards or profiles with complete set of relevant factors including different levels of each factor and were asked to rank order these cards or profiles on a 1-10 preference scale.

4.6.6 Selection of an Estimation Technique in Conjoint Analysis

From rankings, the part-worth or utility of different levels of each factor is estimated and the overall worth or utility of the decision is the sum of all part-worths of different levels of all the factors. Generally, this conjoint model can be stated mathematically as:

$$(\text{Total worth of the decision})_{ij}...n_{ij} = \text{Part-worth of level } i \text{ for factor 1} + \text{Part-worth of level } j \text{ for factor 2} + ... + \text{Part-worth of level } n \text{ for factor } m$$

where the decision has *m* factors or variables, each having *n* levels. The decision consist of level *i* of factor 1, level *j* of factor 2 and so forth, up to level *n* for factor *m*.

4.6.7 Evaluating Model Goodness-of-Fit

Different methods are used for the estimation of validity and reliability of conjoint analysis (Brascamp, 1996). However, reliability and accuracy of conjoint analysis results are usually assessed through Spearman's rho (τ) or Kendall's tau (ρ) rank correlation coefficient in case of rank-order data. τ or ρ ranges from +1 (agreement between the two rankings is perfect i.e., the two rankings are the same) to -1 (disagreement between the two rankings is perfect i.e., one ranking is the reverse of the other) and 0 value shows that two rankings are independent (Hair et al., 2010).

4.7 Questionnaire Design and Pilot Study

Before applying conjoint method for analysis, the most important step is to identify the factors and their appropriate levels. It has already been mentioned that the selection of factors and their appropriate levels is critical in conjoint analysis and can affect the accuracy of the results. Therefore, a pilot study was conducted with the view to identify the key players who are responsible for decision making in Pakistan's citrus supply chain and to discover the factors affecting their marketing channel choice decision making. In addition, pilot study also helped confirming the presence of different factors found in literature regarding decision making, for example, price, mode of payment, advance payment, payment security, payment delay, certainty of payment, prompt payment, transportation cost, bargaining power, farm leverage (debt position), risk of non-sale, lot size, previous experience of the buyer, family relationship, comfort with the buyer, availability of contractual agreement, trust, frequency of delivery, selling place and distance to the local market and increased the predictive power of conjoint measurement (Brascamp, 1996).

A pilot study is usually conducted to decide about the feasibility and value of the proposed study (Ary et al., 2009; Bryman, 2008). It also helps to check the ambiguity, confusion as well as the appropriateness of the research design and data collection method and to make corrections or changes if needed (Ary et al., 2009; Bryman, 2008; Wiersma & Jurs, 2009). A pilot study is usually executed with a limited number of respondents, five to ten, but in some cases more than twenty (Ary et al., 2009; Bryman,

2008; Saunders et al., 2009; Wiersma & Jurs, 2009). The respondents should not be the members of the sample that would be used in the final data collection, however, pilot study respondents consists of individuals similar to the intended respondents (Ary et al., 2009; Bryman, 2008; Saunders et al., 2009; Wiersma & Jurs, 2009). Depending upon the variability among the respondents, a sample size of 36 was selected for the pilot study. The proportion of different respondents was as follow:

- Citrus Growers 12
- Citrus Pre-harvest Contractors 20
- Exporters 4

4.8 Summary

In this chapter different types of research paradigms are discussed along with advantages and disadvantages of each paradigm. A difference between quantitative and qualitative research methods and techniques is also presented in the chapter which provides a logical ground for the selection of an appropriate research design and method. Research design is a master plan that includes research strategies, sampling design (population and sample size), questionnaire design, pilot study, data collection and data analysis technique or research model. Using survey strategy and convenient sampling technique, face to face interviews were conducted for the collection of data from citrus growers and contractors from Pakistan citrus supply chain.

Conjoint analysis was used for the identification and assessment of the factors that affect citrus growers and contractors channel choice decision in the supply chain of citrus fruit in Pakistan. Review of literature explored and identified, conjoint analysis, the most appropriate method for analysing different transaction cost, socio-economic and psychological factors affecting decision making in agribusiness. A chi square test for significance was also used for measuring the significant effect of different demographic (age, education, experience, farm size, family size) and transactional costs factors on the citrus growers and contractor's choice of marketing channels. A complete conceptual framework along with different steps and methods that are followed in the execution of conjoint model is also discussed in the chapter. A pilot study was carried out with the view to identify the key players who are responsible for decision making in Pakistan's citrus supply chain and to discover the relevant factors affecting their marketing channel choice decision making in Pakistan's citrus supply chain.

Chapter 5

5. PILOT STUDY

5.1 Introduction

The focus of the chapter is to analyse the data collected during pilot study from citrus growers, pre-harvest contractors and exporters from Pakistan. In order to analyse factors affecting citrus growers and pre-harvest contractors marketing channel choice decisions, the first step is to identify the key factors that influence the marketing channel choice decisions of these players. Therefore, the main objective of the pilot study is to better understand the citrus industry in Pakistan and find out the major contributing factors in citrus growers and pre-harvest marketing channel choice decisions. The other underlying objectives of the pilot study include the identification of key players, different marketing channels and activities involved in Pakistan citrus supply chain. Lastly, this chapter supports the methodological framework of the study by providing appropriate decision factors that can be analysed logically and statistically.

5.2 Visits to Public and Private Institutes

The visits were planned to obtain primary as well as secondary information regarding citrus supply chain from Pakistan. Personal interviews of citrus growers, pre-harvest contractors and exporters have been conducted in order to get primary information about citrus supply chain in three major citrus producing districts, namely Sargodha, Toba Tek Singh and Mandi Bahauddin based on the information provided by official statistics. For secondary and exploratory information regarding prevailing citrus marketing channels, key players, processes, activities, and citrus prices the following relevant public and private institutions and departments were visited:

1. University of Agriculture, Faisalabad – Pakistan
2. Districts Departments of Agriculture
3. District Market Committees
4. Planning & Evaluation Cell, Agriculture Department, Lahore.
5. Agricultural Marketing Information Service, Lahore – Pakistan
6. Crop Reporting Service, Lahore – Pakistan
7. Citrus Research Institute, Sargodha – Pakistan
8. Kinnow (Citrus) Grower Association, Sargodha – Pakistan

5.2.1 University of Agriculture, Faisalabad

The University of Agriculture has contributed a major part in the area of research, development and education. Foreign qualified faculty and researchers in different fields of Agriculture, for example, Agricultural Engineering and Technology, Agricultural Economics and Rural Sociology, Animal Husbandry, and Veterinary Science are striving hard to excel in their respective areas and contributing towards the national economy. The Institute of Horticultural Sciences and Institute of Business Management in university of Agriculture are focusing on the areas of production and marketing of horticultural crops (citrus, mango, date, guava, jujuba and grapes). A number of research projects have been in progress in the university in general and in these institutes on horticultural crops (Citrus fruit-Kinnow Mandarin, Mango), in particular.

5.2.2 Punjab Agriculture Department, Lahore

Since its establishment in 1967, Punjab Agriculture Department (Economics & Marketing) has controlled the agricultural marketing system, facilitating and regulating trade in agricultural produce markets and conducting research and surveys for resolution of different marketing problems in the province. The main objective of the Agriculture Department is to regulate the sale and purchase of agricultural commodities through the Market Committee and to safe guard the interest of the producers. The main functions of the market committee include the establishment of Agriculture Produce Markets, collection and dissemination of prices of agriculture produce and Coordination with District Administration for organizing Sunday/Friday/Ramadan/Sasta Bazaars (subsidized markets).

Under Agriculture Department, the Planning and Evaluation cell is mainly responsible for identification and prioritization of projects keeping in view the socio-economic scenario for the development of agriculture sector in the province. Currently, the cell is coordinating and monitoring the Fruits (Kinnow mandarin, mangoes) and Vegetable Development Project. Different agriculture officers under Fruits and Vegetable project are in close contact with the citrus growers in Sargodha, Toba Tek Singh and Mandi Bahauddin districts, hence, served as a useful link in approaching prospective respondents.

Agricultural Marketing Information Service (AMIS) aims at providing comprehensive market price information services under the umbrella of Agricultural Marketing. One of

the main objectives is to provide agricultural commodity intelligence to wider audiences on regular basis. Wholesale prices of all agricultural commodities on daily basis are maintained at AMIS. AMIS provided valuable information regarding wholesale prices of Kinnow in different markets of the Punjab. The price settlement mechanism for Kinnow and other agricultural crops and operations of the market committees were discussed in detail.

The crop Reporting Service is responsible for estimation of area, production and average yield of agricultural crops in the Punjab. The other main objectives of this service include:

1. acreage and yield estimation surveys of all major and important minor crops including citrus fruits and mango
2. surveys on harvest prices
3. agricultural machinery survey
4. growers' opinion surveys on important crops (acreage & yield)
5. preparation and submission of fortnightly crop situation report and weekly metrological reports
6. collection and maintenance of agricultural inputs data
7. supply of data to federal / provincial governments / semi government departments and private data users

The Statistical officer at crop reporting service provided information regarding major citrus producing districts, size of orchards, types and size of citrus growers in different districts. However, the statistics about the total number of citrus growers and pre-harvest citrus contractors (population size) was not available. The major citrus growing districts in Pakistan include Sargodha, Toba Tek Singh and Mandi Bahauddin. This information is valuable regarding sample selection for the final data collection. This also helped planning pilot study.

Citrus Research Institute, Sargodha is primarily focusing on production of citrus, disease control and post-harvest losses.

Kinnow (Citrus) Grower Association, Sargodha is a semi government organization primarily established for protecting, preserving, safeguarding and promoting the heritage of Sargodha Kinnow and Kinnow growers. Primarily, on one hand this association negotiate Kinnow prices with the Kinnow processing factories and exporters

on behalf of its members through an executive body. On the other hand, it deals with the fertilizers/pesticides companies to provide citrus growers required inputs timely and on subsidized rates.

The membership of the Kinnow grower association is open to all growers provided that he/she grows Kinnow in the Sargodha Kinnow growing areas and at least has an experience of five years of Kinnow growing. Currently, more than 400 citrus growers having different orchard sizes are members of the association.

Other objectives of the Association include:

1. To provide all possible assistance for promotion, development, production and marketing of Sargodha Kinnow and other horticultural crops
2. To safeguard the rights of Sargodha Kinnow and its growers in general and the members of the association in particular
3. To work for maintaining and improving the purity and quality of Sargodha Kinnow

5.3 Citrus (Kinnow) Supply Chain Systems

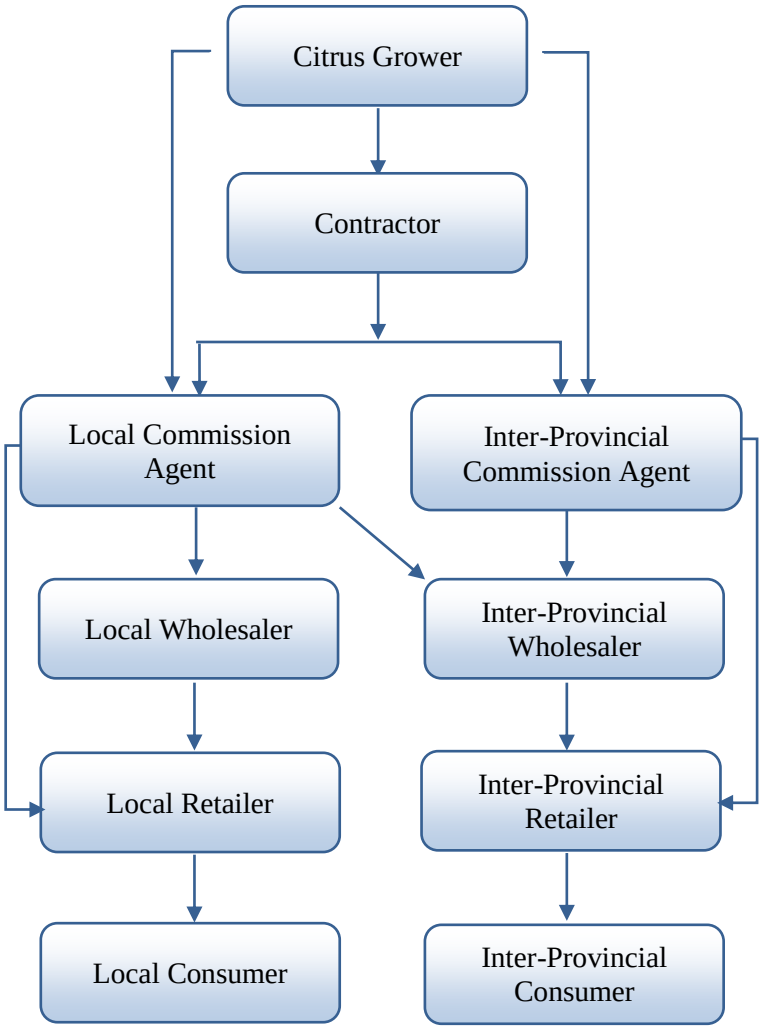
The visits and information obtained from different public and private institutions and departments constitute the exploratory and investigative basis of the study. The information reveals that citrus (Kinnow) supply chains can be classified into two major types. These include: Unprocessed Citrus (Kinnow) supply chain, Processed Kinnow supply chain. In order to understand marketing decisions of citrus grower and pre-harvest contractors, a total of 36 respondents were interviewed from three leading citrus producing districts namely, Sargodha, Toba Tek Singh and Mandi Bahauddin. Exporters/Processing Factories are also included in pilot study for better understanding the supply chain networks.

5.3.1 Unprocessed Citrus (Kinnow) Supply Chain for Local Market

Unprocessed Kinnow does not involve usual functions of washing and waxing but it still graded and packed before selling in local market. About 50-60% Kinnow is marketed in the country for domestic consumption while nearly 30% Kinnow is accounted for post-harvest losses (Pakistan Horticulture Development & Export Company (PHDECo.), 2005). Different players of unprocessed citrus (Kinnow) supply chain include citrus growers, pre-harvest contractors, local (provincial) commission

agents, inter-provincial commission agents, local wholesalers, inter-provincial wholesalers, local and inter-provincial retailers. Citrus growers and pre-harvest contractors are the major players of the unprocessed citrus (Kinnow) supply chain and their marketing decisions profoundly affect the citrus distribution chain in the country. Previously, more than 90% citrus (Kinnow) growers used to sell their orchard to pre-harvest contractors due to unavailability of finances, lack of market information, ease of the transaction, avoiding the future price fluctuations and norm of the business (Chaudry, 2004). With the increase in education level and advancement in technology, citrus growers are becoming more market oriented and adapting alternative marketing channels to fetch high price instead of selling exclusively to pre-harvest contractors. Figure 5.1 represents the flow diagram of unprocessed citrus (Kinnow) supply chain in the country.

Figure 5.1 Unprocessed Citrus (Kinnow) Supply Chain for Local Market



Citrus Growers

A total of 12 citrus growers were interviewed for this pilot study. About 42% of citrus growers have citrus orchard on less than 20 acres of land. The size of land holding, in general, and for citrus orchard, in particular, has been reducing in successive generations as it divides among heirs. Only 25% growers have more than 60 acres of land under citrus orchard and 33% growers have land between 20 to 60 acres as shown in table 5.1. It has already been explained that the citrus industry in Pakistan is very fragmented and diverse and is usually characterized by different demographics and size of the citrus orchards. The demographics are different for different size of citrus growers which affect their way of living, thinking and doing business. For example, it was explored during pilot study that small size citrus growers (having citrus orchards less than 20 acres) were less educated as compared to large size citrus growers (having citrus orchard area of more than 60 acres). Similarly, a difference in marketing channel choice decision making was found between young small size and large size citrus growers. Nearly all citrus orchards are located on or near metallic roads and local market is at a maximum distance of 25 km. The major citrus varieties grown are Kinnow Mandarin, Feutrell's early and Musumbi. Kinnow mandarin is the dominant fruit grown in citrus orchard and comprises about 98% of total citrus fruit cultivation. Intercropping is the usual practice of citrus growers in the orchard of age 1-4 years. As trees grow in size, agricultural practices (ploughing and hoeing) become difficult among the large size trees. Wheat, rice, fodder crops are cultivated as intercrops in citrus orchard.

Table 5.1 Growers General Information

Size of Grower	**Less than 20 Acres** 42% (5/12)	**20-60 Acres** 33% (4/12)	**More than 60 Acres** 25% (3/12)
Experience	**Less than 10 years** 17% (2/12)	**10 - 20 years** 33% (4/12)	**more than 20 years** 50% (6/12)
Education Status	All educated to minimum level of Schooling 12/12 (100%)		

Orchard farming is a family occupation and profession of most of the people in the Punjab, therefore, most of the citrus growers have an experience of more than 20 years. According to pilot study, 50% of the citrus growers have an experience of more than 20 years, 33% citrus growers have an experience between 10 to 20 years and only 17%

have an experience less than 10 years as shown in table 5.2. As a result of government policies in education sector and increasing awareness, the level of literacy rate is increasing gradually. All citrus growers were well educated and aware of market information.

As citrus growers are becoming more market oriented, they are equipping themselves with up to date market information and finding alternative marketing channels other than pre-harvest contractors. About 50% of the citrus growers are selling their orchard to pre-harvest contractors.

Table 5.2 Growers Marketing Channel Choices and Terms of Contract

Sell orchard to	**Pre-harvest contractor**	**Commission Agent/Wholesaler**	**Processing Factory/ Exporter**	**Different Buyers**
Proportion	50% (6/12)	17% (2/12)	17% (2/12)	17% (2/12)
Sale Price Settlement	Bargaining	Commission Basis (7-8% commission rate)	Bargaining/ Fixed rate	Bargaining/ Fixed rate/commission
Type and Terms of Contract	One year/season (80%) or more than one year/season (20%) written contract	No or 1 year/season written contract	No or 1 year/season written contract	No or 1 year/season or more than 1 year/season written contract
Sale Price	$7 to $13 per 40 kg			

Usually, pre-harvest contractors purchase the orchard at flowering stage or when the fruit is developing its size. Price is negotiable and decided before picking the fruit from the orchard. Terms of contract are usually written and set for one year or season but it may vary depending upon the previous yield of orchard and background of citrus grower and contractor.

Nearly 17% citrus growers in the sample sell their orchard to commission agents/wholesalers or exporters. Price is settled on commission basis at a rate of 7-8% with the commission agent or wholesaler and contract, if written, is for 1 year or season. While dealing with the exporters or processing factory, citrus growers get fix price per 40 kg announced by exporters association or sometimes it is negotiable in case of large citrus grower. There is no government control over prices of Kinnow rather determined by market forces (demand and supply). Exporters exploit citrus growers by paying them less price though it is higher than any other buyer in the industry. The only problem while selling to exporter is that it only purchases fruit best in quality which is exportable

and pay premium price for that much quantity. Exporters do not purchase low quality fruit. This is one of the reasons, citrus growers switch to alternative buyers who purchase and pay the price for whole produce. Nearly 17% citrus growers sell their produce to different buyers. A portion (alternatively big or small) of the produce is sold to pre-harvest contactor and the other to commission agent or exporter.

Fruit picking is the critical stage and is one of the important factors that affects citrus grower marketing channel choice decisions. Fruit is usually handpicked (by cutting the fruit with scissors from the branch) involving specialized labour. The total number of fruit pickings from the orchard ranges from 1 to 3 and depends upon the nature of the buyer. Citrus growers favour one picking as it minimizes the chances of damage to citrus trees as compared to two or three pickings. Pre-harvest contractors and commission agents who sell to local or interprovincial markets prefer to pick fruit from the orchard in two or three pickings. Pre-harvest contractors and commission agents/wholesalers who sell to exporters as well as exporters themselves prefer to pick fruit in one or two pickings. First picking is called "topping" and fruit that gets the desired size and colour for export is picked from trees. About 20-25% orchard is picked in first picking and remaining orchard is either picked in second or third picking depending upon the size and colour of the fruit.

Time of picking is another important determinant factor in citrus grower's marketing channel choice decisions. Usually, fruit is fully ripened and ready for picking at the end of January or in the first week of February. Citrus growers prefer to sell their orchard to the buyers who agree to pick fruit from mid-January to mid-February. Citrus trees start sprouting again at the end of February or early March and if fruit from previous season is still on the trees, it reduces the flowering rate for the next season. This results into low yield in next season.

Citrus growers have to pick and transport fruit themselves in case of sale to commission agent or wholesalers. The total cost of fruit picking and transportation is paid by the citrus growers. Pre-harvest contractors and exporters pick and transport fruit from the orchard at their own cost. This reduces the citrus growers hassle for fruit picking and its transportation, thus, may contribute towards one of the determinant factors in their decision making. Usually labour is hired seasonally and paid monthly. The wages are paid in kind (food, accommodation, clothes and fruit) as well as in monetary value.

Citrus growers transport fruit openly in trucks or in wooden crates in case of sale to commission agents or wholesalers. Pre-harvest contractors transport fruit openly in trucks, in wooden crates or in plastic baskets depending upon the type of buyer. Fruit is always transported to fruit processing factory in plastic baskets. When a question was asked if the citrus growers wanted to change their previous buyer(s), 75% of the citrus growers showed their positive consent towards changing the buyer(s) and 25% did not want to switch their previous buyer(s).

Among the citrus growers who wanted to change the buyer, about 34% were willing to switch their buyer from pre-harvest contractor to exporter as shown in table 5.3. Pre-harvest contractors pick fruit in two or three pickings and delay picking with the purpose of increase in fruit size. In contrast to pre-harvest contractor, exporter picks fruit with greater speed and in one or two pickings thus rendering less damage to trees and fruit. Pre-harvest contractors fix the price before picking the fruit from trees and it does not change with the market price. However, citrus growers prefer to sell pre-harvest contractors in order to minimize the market risk. Exporter changes the price with the market and pays the grower the current market price. Short measuring, dishonesty and price are the main reasons that drive citrus growers to switch among commission agents and wholesalers. About 45% of the Citrus growers wanted to change previous pre-harvest contractor due to price, convenience and poor and bad picking of fruit from the trees. Only 1 citrus grower out of 9 wanted to switch exporter due to price, payment delay and selective fruit purchasing (high quality only) behaviour.

Table 5.3 Proportion and Reason to Change Buyer

	Pre-harvest Contractor to Factory/exporter	**Among Commission Agents/Wholesalers**	**Among Pre-harvest contractors**	**Among Exporters**
Proportion	33.5% (3/9)	11% (1/9)	44.5% (4/9)	11% (1/9)
Reasons	• Speed of picking • Number of picking • Timely picking • Fruit loss reduction • changes price with the market	• Short measuring • Reliability • Price	• Price • Convenience • Bad Harvesting (bad handling of fruit and trees)	• Price • Payment delay • Selective fruit purchasing

Only 17% citrus growers showed their desire to increase orchard size because of their family business, occupation and export orientation. About 83% citrus growers do not

want to increase area under citrus orchard due to unavailability of finances and irrigation water.

In Pakistan, since 2002 vide Criminal Law (Amendment) Ordinance, 2002, dishonour of cheque has been made a criminal and immoral offence. As per the judgments of the superior courts of Pakistan, dishonour of cheque is a serious and an atrocious act or crime which has both economic as well as social implications. Further, it brings in uncertainty and insecurity into business transactions and hinders the growth of the national economy. Any person accused of the offence of dishonour of cheque may face imprisonment till the issue is settled between the parties. This government regulation helps improving the business transactions and thus citrus growers secure their payments by receiving post-dated cheques from the buyers. A complete list of factors affecting citrus growers marketing channel choice decision making is shown in table 5.4.

Table 5.4 List of Factors affecting Citrus Growers Marketing Decisions Making

Factors	Levels
Sale Price Per 40 Kg	$7-$9, $9.1-$11, $11.1-$13
Urgent need of Money	Yes, No
Advance Payment	15%, 25%, 35%
Mode of Payment	Cash, Cash & cheque, Cheque
Certainty of Payment	Personal Guarantee, Post Dated Cheques
Price Certainty	Highly Certain, Certain, Uncertain
Delay in Payment	< 1 Week, 1-2 Weeks, ≥ 3 Weeks
Bargaining Power	Yes, No
Number of Fruit Pickings	One, Two, Three
Reputation	Highly Reputed, Reputed, Occasional Bad Reputed
Reliability	Highly Reliable, Reliable
Transportation Problem	Yes, No
Time of Complete Orchard Fruit Picking	January, February, March
Previous Experience of the Contractor	Experienced, New in Business
Lack of Time Due to Other Business Activities	Yes, No
To Avoid Market Mal Practices	Yes, No
Fruit Loss During Harvesting	Low, High
Bad Handling of Fruit	Yes, No
Selective Fruit Purchase	Yes, No
Government Control	Yes, No

Apart from price, urgent need of money, advance payment, mode of payment, certainty of payment, number of fruit pickings, time of orchard fruit picking and delay in payment are important among different factors.

Citrus Pre-harvest Contractors

A total of 20 pre-harvest contractors were contacted and interviewed for the pilot study. About 70% pre-harvest contractors have $0.5 to $1 million business volume and are considered medium size contractors. They are operating in the market either with their own finances or on behalf of commission agents or wholesaler or exporters. Pre-harvest contractors working with the capital of commission agents or wholesalers or exporters are bound to sell their produce to respective commission agents or wholesalers or exporters from whom they receive advance payment. With their own finances, pre-harvest contractors can sell to anyone in the market.

On the basis of pilot study, it has been observed that 45% of the pre-harvest contractors have an experience of 10-20 years while 35% have an experience of more than 20 years as shown in table 5.5. However, small pre-harvest contractors, having finances less than $0.5 work seasonally in the market.

About 65% pre-harvest contractors are well educated and have well established business. Only 35% pre-harvest contractors are illiterate but they work with either well educated business partners or their family members (brother, son).

Table 5.5 Citrus Pre-harvest Contractors General Information

Size of Contractors	**Less than $0.5 million** 20% (4/20)	**$0.5 to $1 million** 70% (14/20)	**More than 1 million** 10% (2/20)
Experience	**Less than 10 years** 20% (4/20)	**10 - 20 years** 45% (9/20)	**more than 20 years** 35% (7/20)
Education Status	Illiterate 7/20 (35%)	Educated to minimum level 13/20 (65%)	

About 50% pre-harvest contractors sell their fruit to commission agent or wholesalers as shown in table 5.6. Price is paid on commission basis at a rate of 7-8%. Pre-harvest contractors either do not contract or contract for one year with commission agents or wholesalers to provide them with that much quantity of fruit for which they receive advance payment. About 40% pre-harvest contractors sell their fruit to exporters. Usually price is fixed by exporter association; however, in some cases it is negotiable.

About 67% pre-harvest contractors showed their intention to change their previous buyer and 33% did not want to change previous buyers.

Table 5.6 Citrus Pre-harvest Contractors Marketing Channel Choices and Terms of Contract

Sell fruit to	**Commission Agent/Wholesaler** 50% (10/20)	**Exporter** 40% (8/20)	**Different Buyers** 10% (2/20)
Sale Price settlement	Commission Basis (7-8% commission rate)	Bargaining/Fixed rate	Commission Basis/ Bargaining/Fixed rate
Type and Terms of Contract	No or 1 year/season written contract	No or 1 year/season written contract	No or 1 year/season written contract
Sale Price	$12 to $16 per 40 kg		

Among the pre-harvest contractors who wanted to change their buyer, about 25% were willing to switch their business from commission agent/wholesalers to exporters as shown in table 5.7. The reasons include better price, ease of transaction and high advance payment.

Table 5.7 Proportion and Reason to Change Buyer

	Commission Agent to Exporter	**Among Commission Agents/Wholesalers**	**Among Exporters**
Proportion	25% 2/8	63% 5/8	12% 1/8
Reasons	• Easy transaction • Better price • High advance payment	• Short measuring • Reliability • Price • High advance payment	• Payment delay • Selective fruit purchasing • Comfortable dealing

Short measuring, dishonesty, price and advance payment are the reasons due to which pre-harvest contractors want to switch among different commission agents/wholesalers. Only 1 contractor wants to sell fruit to new exporter in the market due to payment delay, selective fruit purchase and method of dealing.

Pre-harvest contractors receive payment through cash or cheques or both from local commission agents/wholesalers and exporters. While making good use of technology and securing his payments he also accepts online payments from inter-provincial buyers. As a guaranty of their payment, pre-harvest contractors are also receiving post-dated cheques and personal guarantees for future payments. A complete list of factors

affecting citrus pre-harvest contractors marketing channel choice decisions is shown in table 5.8.

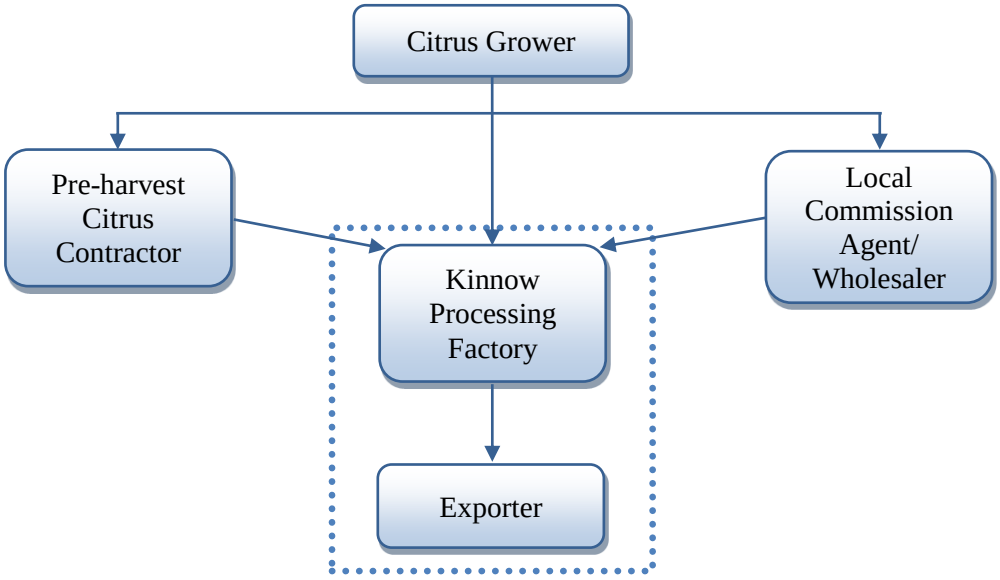
Table 5.8 List of Factors affecting Citrus Pre-harvest Contractor Marketing Channel Choice Decisions

Factors	Levels
Sale Price per 40 Kg	$12-$14, $14.1-$16
Urgent Need of Money	Yes, No
Price Certainty	Highly Certain, Certain, Uncertain
Delay in Payment	<1 Week, 1-2 Week , ≥ 3 Week
Bargaining Power	Yes, No
Advance Payment	25%, 35%, 45%
Mode of Payment	Cash, Cash & cheque, Cheque, Online
Certainty of Payment	Personal Guarantee, Post Dated Cheques
Previous Experience of Buyer	Experienced, New in Business
Convenience of Transaction	Easy, Difficult
Reliability	Yes, No
Selective Fruit Purchase	Yes, No
Government Control	Yes, No
Use of Technology (e-banking, Internet)	Yes, No

5.3.2 Processed Citrus (Kinnow) Supply Chain for Export

Kinnow processing is of two types: one involves washing, waxing, grading and packing and is for export purpose and the other Kinnow processing is for the juice extraction. Only 8-10% Kinnow is processed that is exported, later on, to different countries. Processed citrus (Kinnow) supply chain consists of citrus growers, pre-harvest contractors, local commission agents/wholesalers, Kinnow processing factories and exporters. The entire structure, functionaries, and the activities carried out in this type of supply chain are nearly identical as of unprocessed citrus supply chain except Kinnow processing factory and exporter. Processed citrus supply chain is different from the unprocessed citrus supply chain in a way that all the citrus fruit comes ultimately to Kinnow processing factory or exporter. A total of 4 Kinnow processing factories and exporters were interviewed; 2 Kinnow processing factories only and 2 Kinnow factories and exporters. Figure 5.2 portrays a representative supply chain of processed citrus (Kinnow) supply chain.

Figure 5.2 Processed Citrus (Kinnow) Supply Chain for Export



More than 150 Kinnow processing factories are working in district Sargodha of which only 25-30 is exporting citrus. A few processing factories are also being built in other districts, for example, District Mandi Bahauddin, District Toba Tek Singh and District Multan. The major export markets include Afghanistan, Iran, Russia, Italy, Germany, Middle East, Ukraine and Bangladesh.

Kinnow Processing Factories and Exporters

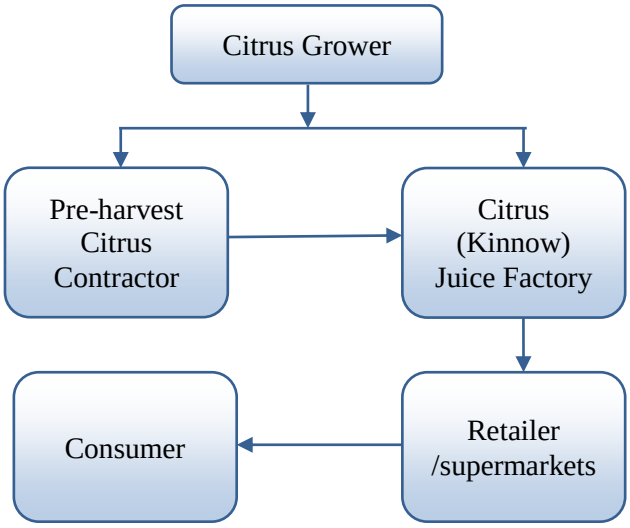
Kinnow processing factories perform the functions of washing, waxing, grading and packing of citrus (Kinnow) fruit. These factories sell processed fruit to exporters. Only a few Kinnow processing factories export citrus fruit and carry out functions of processors and exporter at the same time. About 8% of total citrus production is exported and the reasons of this low export from the country include poor market information, lack of finances and small operating capacity.

Kinnow processing factories and exporters purchase citrus fruit directly from citrus growers, pre-harvest contractors and commission agents. These Kinnow factories and exporters extend credit or advance payment to some of the contractors. The contractors, in turn, purchase citrus fruit for these processing factories. Kinnow processing factories and exporters prefer to contract with those sellers having a good family and financial background, market reputation and can maintain a constant supply of fruit in the season. Payment is made through cross cheque to sellers.

5.3.3 Processed Citrus (Kinnow) Supply Chain for Juice Extraction

A total of 52 fruit processing and juice extraction factories are working in Pakistan. (Agriculture Marketing Information Service, 2014a). Only 5 are processing citrus fruit for juice extraction. About 6% to the total citrus produced in the country is processed for juice extraction (Agriculture Marketing Information Service, 2014a). Majority of these factories are located in Sargodha, Bhalwal and Mateela cities. These juice factories purchase drop off, low quality and non-marketable citrus fruit from citrus growers, pre-harvest contractors, process it into juice concentrate and sell it to different retail shops and super markets in the country. The flow diagram showing different functionaries of processed citrus (Kinnow) supply chain is shown in figure 5.3.

Figure 5.3 Processed Citrus (Kinnow) Supply Chain for Juice Extraction



5.4 Pilot Study and Conjoint Analysis Framework

The main objective of the pilot study was to better understand the citrus industry and to elicit and find the factors/variables relevant in citrus growers and pre-harvest contractors marketing channel choice decisions in Pakistan's citrus supply chain. In addition, it also helped comparing the different decision factors in the literature and practised in reality. It has already been mentioned that determination of relevant factors and assigning appropriate levels to each factor are the two main objectives for conjoint analysis execution. Therefore, pilot study is used in identifying key players and relevant factors in citrus supply chain. A number of methods, for example, direct questioning, indirect questioning, detail discussion and observation were used to identify determinant factors.

Selecting part-worth function model as preference model and full profile method as conjoint methodology, there comes designing a combination of factors to be used in conjoint analysis. It involves selection of total number of factors and their levels to be included in constructing the stimuli (decision) in the form of card or profile, otherwise effect the statistical efficiency and reliability of the results. Twenty factors for citrus growers and fourteen factors for contractors have been identified that affect their citrus marketing channel choice decisions.

5.4.1 Profiles

In case of citrus growers, the total number of profiles created using fractional factorial design through SPSS (17) is 64. Three profiles out of 64 are shown in figure 5.4 for understanding the complexity of profiles.

Figure 5.4 Citrus Growers Profiles

Profile Number 1

Card ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment
1	$9.1-$11	Yes	15%	Cheque	Personal Guarantee

Price Certainty	Delay in Payment	Bargaining Power	NO. of Fruit Picking	Reputation	Reliability
Highly Certain	<1 Week	Yes	Two	Occasional Bad Reputed	Highly Reliable

Transportation Problem	Time of Complete Fruit Picking	Contractors Experience	Lack of Time	To Avoid Market Mal Practices	Harvesting Fruit Loss
No	January	Experienced	No	No	Low

Bad Fruit Handling	Selective Fruit Purchase	Government Control
Yes	Yes	No

Profile Number 2

Card ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment
2	$7-$9	Yes	25%	Cash	Post Dated Cheques

Price Certainty	Delay in Payment	Bargaining Power	NO. of Fruit Picking	Reputation	Reliability
Highly Certain	<1 Week	No	Two	Reputed	Highly Reliable

Transportation Problem	Time of Complete Fruit Picking	Contractors Experience	Lack of Time	To Avoid Market Mal Practices	Harvesting Fruit Loss
No	March	New in Business	Yes	No	Low

Bad Fruit Handling	Selective Fruit Purchase	Government Control
Yes	**Yes**	**No**

Profile Number 3

Card ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment
3	$9.1-$11	No	15%	Cash	Post Dated Cheques

Price Certainty	Delay in Payment	Bargaining Power	NO. of Fruit Picking	Reputation	Reliability
Highly Certain	≥ 3 Week	No	One	Occasional Bad Reputed	Highly Reliable

Transportation Problem	Time of Complete Fruit Picking	Contractors Experience	Lack of Time	To Avoid Market Mal Practices	Harvesting Fruit Loss
Yes	January	Experienced	Yes	No	Low

Bad Fruit Handling	Selective Fruit Purchase	Government Control
No	No	Yes

A bulk of information in one profile makes the respondents overload with information and the decision task difficult. In order to reduce the complexity of decision making,

these factors can be grouped into Financial Factors, Product Attribute Related Factors, Service Related Factors and Other Factors as shown in table 5.9.

Table 5.9 Group of Factors Affecting Citrus Growers Decision Making

a. Financial Factors

Finance Related Factors			
Sale Price/40Kg	$7-$9	$9.1-$11	$11.1-$13
Urgent Need of Money	Yes	No	
Advance Payment	15%	25%	35%
Mode of Payment	Cash	Cash & Cheque	Cheque
Certainty of Payment	Personal Guarantee	Post Dated Cheques	
Price Certainty	Highly Certain	Certain	Uncertain
Delay in Payment	< 1 Week	1-2 Week	≥ 3 Week
Bargaining Power	Yes	No	

b. Service Related Factors

Service Related Factors			
NO. of Fruit Picking	One	Two	Three
Reputation	Highly Reputed	Reputed	Occasional Bad Reputed
Reliability	Highly Reliable	Reliable	
Transportation Problem	Yes	No	
Time of Complete Fruit Picking	January	February	March

c. Product Related Factors

Product Related Factors		
Harvesting Fruit Loss	Low	High
Bad Fruit Handling	Yes	No
Selective Fruit Purchase	Yes	No

d. Other Factors

Other Factors		
Contractors Experience	Experienced	New in Business
Lack of Time	Yes	No
To Avoid Market Mal Practices	Yes	No
Government Control	Yes	No

Although, the different group of factors generate smaller number of profile but the total number of profiles remains the same. The selection of the most important factors on the

basis of citrus grower's response while conducting the pilot study is another way to reduce the information overload. The following table 5.10 shows the percentage response of twelve (12) citrus growers, when they were asked to rank most important factors in their decision making.

Table 5.10 Percentage Preference of Different Factors – Citrus Growers

S.NO.	Factors	Percentage Preference
1	Sale Price/40Kg	100.0
2	Advance Payment	100.0
3	Mode of Payment	90.0
4	Urgent Need of Money	83.3
5	NO. of Fruit Picking	83.3
6	Time of Complete Fruit Picking	83.3
7	Delay in Payment	75.0
8	Harvesting Fruit Loss	75.0
9	Certainty of Payment	58.3
10	Reputation	41.7
11	Reliability	41.7
12	Bad Fruit Handling	41.7
13	Selective Fruit Purchase	41.7
14	Government Control	33.3
15	Price Certainty	25.0
16	Bargaining Power	16.7
17	Lack of Time	16.7
18	Contractors Experience	10.0
19	Transportation Problem	8.3
20	To Avoid Market Mal Practices	8.3

Citrus growers placed more than 50% importance on nine factors (in shaded area) and considered these factors accountable for citrus marketing channel decisions. These nine factors produced twenty seven profiles or decision cards to be included in the final data collection from citrus growers. Figure 5.5 shows three profiles on the basis of important factors in citrus grower's decision making.

Figure 5.5 Three Profile Based on Important Factors for Citrus Growers

Profile Number 1

Card ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss
1	$11.1-$13	Yes	15%	Cash & Cheque	Personal Guarantee	> 3 Week	Two	February	High

Profile Number 2

Card ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss
2	$9.1-$11	No	35%	Cash & Cheque	Personal Guarantee	< 1 Week	Three	February	High

Profile Number 3

Card ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss
3	$7-$9	No	35%	Cheque	Personal Guarantee	≥ 3 Week	One	March	Low

Similarly, table 5.11 shows the percentage response of twenty (20) citrus pre-harvest contractors, when they were asked to rank the most important factors in their decision making. Pre-harvest citrus contractors placed more than 50% importance on nine factors (in shaded area) and considered these factors accountable for citrus marketing channel decisions. These nine factors produced sixteen (16) profiles or decision cards to be included in the final data collection from citrus pre-harvest contractors.

Table 5.11 Percentage Preference of Different Factors – Citrus Contractors

S.NO.	Factors	Percentage Preference
1	Sale Price/40Kg	100.0
2	Advance Payment	95.0
3	Urgent Need of Money	85.0
4	Delay in Payment	80.0
5	Reliability	80.0
6	Selective Fruit Purchase	75.0
7	Bargaining Power	70.0
8	Certainty of Payment	70.0
9	Mode of Payment	65.0
10	Price Certainty	45.0
11	Previous Experience of Buyer	40.0
12	Government Control	40.0
13	Convenience of Transaction	25.0
14	Use of Technology (e-banking, Internet)	20.0

Figure 5.6 shows three profiles on the basis of important factors in citrus grower's decision making.

Figure 5.6 Three Profile Based on Important Factors for Pre-harvest Contractors

Profile Number 1

Card ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
1	$14.1-$16	No	35%	Cash	Post Dated Cheques	1-2 Week	No	Highly Reliable	Yes

Profile Number 2

Card ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
2	$14.1-$16	No	25%	Cash & Cheque	Personal Guarantee	≥ 3 Week	No	Reliable	Yes

Profile Number 3

Card ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
3	$14.1-$16	Yes	35%	Cheque	Personal Guarantee	≥ 3 Week	Yes	Highly Reliable	No

5.5 Difficulties and Complications Faced in Pilot Data Collection

A number of problems and complications were faced during data collection through semi-structured interviews by the researcher such as:

- Respondents usually busy in their businesses all the daylong and find little time with them for interview. Therefore, a scheduled meeting with respondents will eliminate this difficulty.
- Respondents hesitate and feel uncomfortable and insecure while sharing information, particularly, about their incomes and business volume. They perceive the researcher as an official from Law or Tax department. This complication can be avoided through debriefing and informed consent.
- Respondents were visited through surprise visits. However, scheduled meetings were also arranged using personal references in order to minimize the time and cost involved.
- There is no officially maintained record of total number of citrus growers and pre-harvest contractors, in turn, researcher faced difficulty in identifying and reaching potential respondents. However, an official from Crop Reporting Service, Lahore informed about the census of citrus growers which would be available soon.
- Low level education of the respondents made it difficult to understand the purpose, importance and implications of the research. Researcher faced difficulty in order to encourage and motivate respondents for actively participating in the research process. This difficulty can be overcome by using simple and local language and creating friendly environment.

5.6 Limitation of the Research

The pilot study identifies some of the limits of the research. In the first place, there is no documented record of the total number of citrus growers and pre-harvest contractors

both at private and government level. Hence, the size of the population is unknown making it difficult to generalize the results thus obtained. However, one of the officials during pilot study reported that citrus grower's census is being accomplished in Punjab which may be available soon. This would help to eliminate the limitation related with the sampling frame of the citrus growers. But this limitation will remain in place for pre-harvest contractors. Time and cost constraints are other limitations in the collection of data from the respondents.

Chapter 6

6. RESULTS AND DISCUSSION-CITRUS GROWERS

6.1 Introduction

The purpose of this chapter is to explain and interpret the results obtained from the analysis of primary data. It explains the part-worth utility values of different levels of all factors used in the analysis, factor relationships, the highest and lowest part worth utility combinations of different levels of all factors (profiles) and the best combination (profile) in citrus marketing channel choice decision making for different sizes of citrus growers.

6.2 Analysis of the Data

The primary data was analysed using the statistical package PASW-21 (Predictive Analytics Software – version 21) previously known as SPSS (Statistical Product and Service Solutions). A total of 126 citrus growers were interviewed using convenience sampling method. Among all the citrus growers interviewed, 67 (53.1% of total respondents) growers owned a citrus orchard less than 20 acres (small size growers). This number was consistent with the data previously collected during pilot study interviews which showed that most of the citrus growers were of small size having orchards less than 20 acres. Citrus growers having orchard size 20-60 acres (medium size growers) were 38 (30.1% of total respondents). Rest of 21citrus growers owned a citrus orchard having an area of more than 60 acres (large size growers) and constitutes about 16.6% of total respondents. According to the number of factors and their corresponding levels, all the citrus grower were asked to rank 27 profile cards (decision card) from the most preferred one to the least preferred one.

The part-worth utilities of all the levels of different factors were calculated from the preference data obtained from citrus growers in the field. Moreover, all factors with their appropriate levels were discussed one by one for each type of grower. Fisher's exact test for significance was employed to measure the relationship between any two variables/factors followed by the explanation of all the significant relationships. Lastly, the percentage importance along with the part worth utility values of all levels of each factor is discussed. This section also threw light on the highest and lowest part worth

utility combinations of different levels of all factors (profiles) and concluded which was the best combination (profile) in citrus marketing channel choice decision making for different size of growers.

6.3 Citrus Growers

According to the size (area) of citrus orchards, citrus growers were classified into three groups; small size citrus growers (own citrus orchard of less than 20 acres of area), medium size citrus growers (own citrus orchard of 20-60 acres of area) and large size citrus growers (own citrus orchard of more than 60 acres of area).

6.3.1 Small Size Growers

(a) Part-worth Utility Values of All Levels and their Ranges

The overall results of the part-worth utilities values of the levels of all the factors along with the utility ranges calculated from the respondents preferences for each factor used are shown in table 6.1.

Table 6.1 Part-worth Utility Ranges

Factor	Factors Levels	Lowest Utility Value	Highest Utility Value	Range (Highest-Lowest)
Sale Price/40Kg	$7-$9	-8.3330	-1.0000	7.3330
	$9.1-$11	-1.0000	2.4440	3.4440
	$11.1-$13	2.0000	8.1110	6.1110
Urgent Need of Money	Yes	-1.0000	0.9170	1.9170
	No	-0.9170	1.0000	1.9170
Advance Payment	15%	-4.6670	0.7780	5.4450
	25%	-0.3330	2.4440	2.7770
	35%	-2.0000	3.4440	5.4440
Mode of Payment	Cash	-1.5560	4.6670	6.2230
	Cash & Cheque	-1.6670	0.4440	2.1110
	Cheque	-4.8890	1.4440	6.3330
Certainty of Payment	Personal Guarantee	-0.8330	1.4170	2.2500
	Post Dated Cheques	-1.4170	0.8330	2.2500
Delay in Payment	< 1 Week	-2.2220	1.4440	3.6660
	1-2 Week	-2.2220	1.6670	3.8890
	≥ 3 Week	-0.2220	2.1110	2.3330
NO. of Fruit Pickings	One	-5.7780	9.0000	14.7780
	Two	-1.2220	1.4440	2.6660
	Three	-8.4440	5.4440	13.8880
Time of Complete Fruit Picking	January	1.3330	8.1110	6.7780
	February	-0.8890	3.5560	4.4450
	March	-7.3330	-1.4440	5.8890
Harvesting Fruit Loss	Low	-1.1670	1.0000	2.1670
	High	-1.0000	1.1670	2.1670

Table 6.2 showed the percentage importance of each factor that was calculated on the basis of ranking of all the factors by the respondents. It showed that the higher the percentage preference of a factor, the more is its utility for the respondents and vice versa.

Table 6.2 Overall Percentage Importance of Factors

Rank	Factor	Percentage Importance
1	Sale Price/40Kg	34.50
2	Time of Complete Fruit Picking	27.10
3	NO. of Fruit Pickings	11.00
4	Mode of Payment	6.20
5	Advance Payment	6.10
6	Delay in Payment	5.80
7	Certainty of Payment	3.50
8	Harvesting Fruit Loss	3.40
9	Urgent Need of Money	2.50

The detailed description of the utilities of all the factors with their appropriate levels is discussed one by one for small size growers (less than 20 acres of citrus orchard).

(i) Sale Price per 40 Kg

The overall preference for factor "Price" was ranked the highest amongst all the factors. The percentage importance of price factor in all factors was 34.50%. However, a great variation of part worth utilities between different levels as well as within each level of all factors can be observed in table 6.1.

For the price level of $11.1-$13, the part-worth utility range was 6.1110 with minimum utility of 2.0 and maximum of 8.1110 as shown in table 6.3. This was the highest preferred level among all levels of price and other factors and confirmed the universal truth of seller's inclination to get high price of his produce. Both minimum and highest values were positive that indicated this level was highly important in citrus growers marketing choice decision making process. It was interesting to know that all the respondents preferred $11.1-$13 price level for making marketing channel choice decision.

"We, the citrus growers, look after our orchards the whole year only with the hope to get maximum price of our fruit in the market" one of the respondents commented.

(ii) Time of Complete Fruit Picking

The overall preference for factor "Time of Complete Fruit Picking" was ranked second highest amongst all the factors. The percentage importance of this factor in all factors was 27.10%. Similar to the price factor, a great variation of part worth utilities between different levels as well as within each level can be observed in table 6.1.

For January, the part-worth utility range for time of complete fruit picking factor was 6.7780 with minimum value of 1.3330 and maximum of 8.1110. The highest utility value of 8.1110 among all the three levels of this factor showed that it was highly preferred level for decision making. It was also observed that greater the range of a level for a particular factor, greater were the chances of its trade off with other levels. Both lowest and highest utility values were in positive figures indicating the importance of this level for respondents.

As the minimum utility of this level increased to its maximum value, the chances of trading off of this level with other levels as well as with other factors decreased. From these part-worth utilities, it can be concluded that respondents wanted to clear their orchards from fruit within this month of January and it was highly important for them. Nearly 94% of the total respondents of this group preferred to accept January for the complete fruit picking. The underlying reason was that trees in the orchard start flowering in the month of February and March. If fruit picking was delayed for one or the other reason, trees bore fewer flowers and hence produced less fruit in the following season. Therefore, respondents ranked this factor second in importance to price factor. However, some respondents did not compromise with the health/growth of orchard and accepted low price and ranked this factor to first place. From the percentage importance, it can also be stated that respondents traded off time of complete fruit picking with price and vice versa.

"I know that I can make more profit by selling my fruit in the months of February-March and at the same time I am also well aware of the fact that this will reduce my next year citrus fruit production. But I am driven by my needs at the time of contracting with the buyer", one of the respondents commented on time of fruit picking.

(iii) Number of Fruit Pickings

The overall percentage importance of this factor was ranked third according to the respondent's preference but it is very low as compared to the first two factors as discussed above.

"I want to get rid of my all fruit as soon as possible but on the highest price" one of the respondents threw light on the factors important for him.

This showed that only two factors, price and time of complete fruit picking, were the most important factors and thus highly ranked by all the respondents. However, the percentage importance of this factor in all factors was 11.00% which is 3rd highest amongst all the factors. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 6.1.

For one number of picking, the part-worth utility range was 14.778 with minimum value of -5.778 and maximum of 9.0. This was the highest part-worth utility value among all the three levels of this factor and clearly showed that it was highly preferred level and factor for decision making. In addition, this level had maximum utility range amongst all the other factors and their levels in the analysis showing its flexibility to trade off with other factors.

The highest utility value of 9.0 reflected that this level had maximum importance for the respondent than any other level. It also showed that overall importance of this factor was also very high in the mind of this particular respondent. As this utility gradually decreased towards zero the overall percentage importance of this factor as well as this level also decreased. Again for the lowest utility value of -5.7780, the overall percentage importance of this factor was still considerable (according to zero sum rules) but this level was not acceptable to the respondent. Instead respondents would trade off this level with other levels of this factor or with other factors. Most of these small size growers preferred to allow only one picking to completely clear out their orchards from fruit. As the number of pickings increased from two to three, the chances of fruit and tree damage increased which affected the health of the orchard.

"I don't want to hurt my small orchard by allowing more than one picking if I know that one picking is enough for my orchard" one of the small size citrus growers, who prefers one picking, replied.

For three pickings, the part-worth utility range was 13.888 with the lowest part-worth utility of -8.444 and the highest 5.444. The part-worth utility range was the second highest amongst all the factors and their levels indicated its importance in the decision making process. Some of the small scale citrus growers preferred three pickings due to the following reasons;

- During the first picking, also known as 'Topping', only mature and ripened fruit were picked from the trees. It lessened the burden of fruit trees and also permitted enough time for the remaining fruit to ripen. It was believed that remaining fruit on trees get good size and colour after topping.
- In second picking, again the ripened fruit was picked from the trees leaving behind the immature and unripe fruit.
- In third picking, all the remaining fruit which had now developed good size and colour was picked.

Some of the respondents preferred three numbers of pickings which was clearly evident by the maximum part-worth utility value of 5.444 for this level. However, most of the respondents preferred one or two pickings as the best level and was reflected from the minimum part-worth utility value of -8.444 for this level. The importance of this level was clearly evident from the large values of minimum and maximum part-worth utilities.

(iv) Mode of Payment

The overall percentage importance of this factor was ranked fourth amongst all the nine factors according to the respondent's preference and was 6.20%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 6.1.

For cash as a mode of payment, the part-worth utility range was 6.2230 with minimum value of -1.5560 and maximum of 4.6670. Although utility range of this level was second to the level 'cheque' but highest utility value for this level as compared to all other levels clearly showed that it was highly preferred level for decision making. It is also noticeable that some respondents have no positive utility for this level.

The highest utility value of 4.6670 reflected that this level had considerable importance to the respondent than any other levels. It also showed that overall importance of this level was also high in the mind of this particular respondent(s). As this utility gradually decreased towards zero the overall percentage importance of this level also decreased. At a minimum utility of -1.5560, the overall importance of this level was dropped to its minimal level and the respondents traded off this level with other levels of this factor. However, the highest utility value of 4.6670 for level 'cash' of the 'price' factor confirmed the importance of this factor in the mind of respondents.

"If I was given an option to accept low price but with cash payment instead of high price and any other mode of payment, I would go for cash payment. The money in hand today has more value for me as compared to future receipts of money", one of the respondents expressed his feelings about mode of payment".

For cheque as a mode of payment, the part-worth utility range was 6.330 (slightly more than the 'cash' level) with the lowest part-worth utility of -4.8890 and the highest 1.444. The highest part-worth utility of 1.444 indicated that this level was not as important as that of cash level but the range of this level showed that it was frequently traded off with other levels as well as with other factors. Nearly 59.7% of the total respondents of this group preferred to accept payment through cheque, 31.3% of the total respondents of this group preferred cash payment while only 9% of the total respondents of this group accepted both cash and cheque as mode of payment.

"I feel cheque is the best mode of payment for any transaction, no matter how big or small it is, considering the prevailing circumstances of law and order in the country. One cannot imagine few years ago that robbery and snatching would be so frequent and easy with the progressing society and better equipment of surveillance. In my view, to avoid any inconvenience, cheques are the best means of payments for any amount of transaction", one of the respondents commented.

(v) Advance Payment

The overall percentage importance of this factor was ranked fifth amongst all the nine factors according to the respondent's preference and was 6.10%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 6.1.

For advance payment of 25%, the part-worth utility range was 2.7770 with the lowest part-worth utility of -0.3330 and the highest 2.4440. The small utility range of this level showed that it was not frequently traded off with other levels of this factor and the highest part-worth utility of 2.444 indicated that it was more highly preferred than the preceding level. Nearly 71.6% of the total respondents of this group preferred to accept 25% advance payment which showed the importance and preference of this level in marketing decision making process.

"It is uncustomary in citrus fruit business to accept advance payment less than one fourth of the total payment. None of the citrus grower would hardly accept advance payment less than 25% except that he is badly in need of money at the time agreement", one of the experienced and prominent citrus growers of the area replied.

For 35% advance payment level, the part-worth utility range was 5.4440 with the lowest part-worth utility of -2.0 and the highest 3.444. The wide range and highest utility values for this level showed that this level had high preference for the respondents in their marketing decision making. However, only 17.9% of the total respondents of this group of small size citrus growers agreed to sign the contract with 35% of advance payment. The reasons of such a low number of respondents who accept the high advance payments included fear of fraud, uncustomary offer of more than one fourth advance payment and exploitation by the tycoons of industry who offer high advance payments.

"I am contented with the customary 25% of the advance payment against the harvest of my produce. It seems to be deceptive, at least for me, if someone offers me more than 25% advance payment. It is very unusual in the citrus marketing business to deal a contract with more than 25% advance payment", one of the respondents replied.

(vi) Delay in Payment

The overall percentage importance of this factor was ranked sixth amongst all the nine factors according to the respondent's preference and was 5.80%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 6.1.

For delay in payment for 1-2 week, the part-worth utility range was 3.8890 with the lowest part-worth utility of -2.222 and the highest 1.667. The range of the utility value

for this level was the highest among all the three levels and the small highest utility value of this level showed that it was also considered less preferable for decision making. It was surprising to note that respondents did not expect to receive their payments in short time as it was clearly evident from the results as shown in table 6.8.

"I know very well that citrus fruit market like that of other fruit and vegetables operates on the basis of credit and trust between the parties, therefore, there is no point of concern if payments are delayed for 1 to 2 weeks. It is usual and acceptable by all the players working in the citrus business in the area", one of the respondents commented on delay in payment.

For more than 3 weeks delay in payment, the part-worth utility range was 2.3330 with the lowest part-worth utility of -0.222 and the highest 2.1110. The smaller utility range indicated that this level was less frequently traded off with other levels of this factor and the highest part-worth utility value of 2.110 indicated that it was highly preferred level than the preceding levels. Once delay in payment is inevitable or agreed, it is customary to accept at least 3 or more than three weeks delay in payment. Nearly 56.7% of the respondents of this group accepted more than 3 weeks delay in payment while about 34.3% of the total respondents liked to accept delay in payment less than one week. Only 9% of the total respondents preferred to accept 1-2 week delay in payment.

"At first, I try to avoid buyers who might delay in payment, however, in some cases (with personal guarantee) where delay in payment is inevitable, I or any other grower can accept any duration from 1 to many week", one of the respondents explained the usual behaviour of the citrus growers about payment delay.

(vii) Certainty of Payment

The overall percentage importance of this factor was ranked third lowest amongst all the nine factors according to the respondent's preference and was 3.50%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 6.1.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for certainty of payment which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value for personal guarantee clearly showed that it

was highly preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with other factor's levels.

(viii) Harvesting Fruit Loss

The overall percentage importance of this factor is ranked second lowest amongst all the nine factors according to the respondent's preference and is 3.40%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 6.1.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for harvesting fruit loss which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value for high harvesting fruit loss clearly showed that it had high preference for decision making. It seemed irrational to select high level of harvesting fruit loss while making marketing decision. In reality this was not true and all the fruit lost or damaged during harvesting belonged to the buyer(s). Therefore, citrus growers did not pay prime importance to this factor while making a marketing decision.

"Not only I but also all the citrus growers do not take harvesting fruit loss into account while making a contract with the buyer. The sale agreement is usually executed prior to the fruit picking/harvesting of the orchard, therefore, on body thinks about the fruit loss at that time. In addition, harvesting fruit loss can be reduced/controlled by the use of skilled labour, latest picking equipments and techniques", a respondent commented on fruit loss.

(ix) Urgent Need of Money

The overall percentage importance of this factor was ranked lowest amongst all the nine factors according to the respondent's preference and was 2.50%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 6.1.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for urgent need of money which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value for 'No' urgent need of money clearly showed

that it had high preference for decision making. However, it seemed irrational because majority of the respondents needed money urgently for various activities like fertilizers, pesticides and urgent domestic needs etc.

"It is out of question to ask citrus growers about urgent need of money because of the size of the farms they own. Almost all the citrus growers in the area entirely depend upon the income generated through the sale of the orchards for the whole year expenses. This is the only source of income; therefore, citrus growers always ready to accept any payment during the year to fulfil their business (fertilizers, pesticides) and domestic needs", one of the respondents highlighted the issue of urgent need of money.

The result also showed that overall this factor was least importance in the process of decision making by the citrus growers as compared to other factors as indicated by its low overall percentage preference of 3.0%.

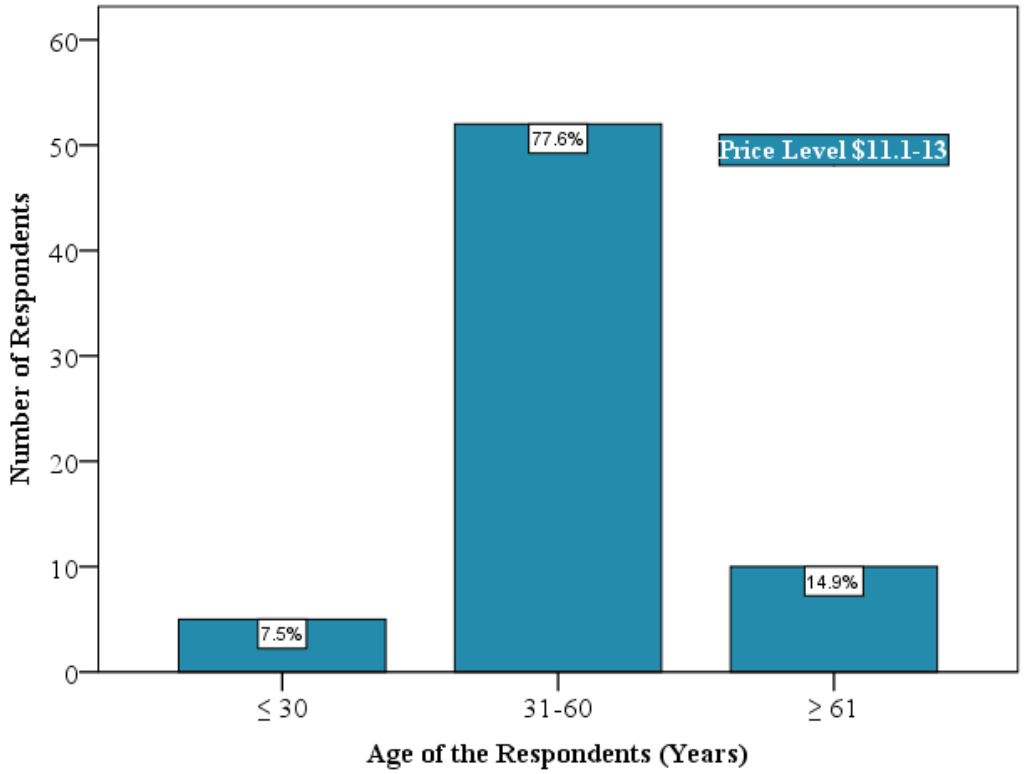
(b) Factors Relationship

A suitable statistical technique (Fisher's exact test for significance) was used to find out the relationship or interdependence between any two given qualitative or quantitative factors. These significance test results showed interesting significant and non-significant relationships between any two given factors (Appendix F-1 & F-2). This section provided the detailed and comprehensive discussion about the factors interdependence one by one.

(i) Sale Price per 40 Kg

It was very interesting to know that all the respondents from this group of small size citrus growers only preferred the highest price level of $11.1-13. As the variable 'Sale price per 40 Kg' was a constant, therefore, there existed no relationships of this variable with any other variable in the analysis. Despite the fact that there was no statistics relationship between age of the respondents and price, a clear trend can be observed from the results as shown in figure 6.1. None of the respondents from all age groups preferred the other two levels of lower price than price level $11.1-13 of price factor as shown in figure 6.1.

Figure 6.1 Relationship between Age of the Respondents and Price



However, the level $11.1-$13 was either traded off with the number of fruit picking or with the time of complete fruit picking factors according to their importance but only in rare cases. As the minimum utility of this level increased to its maximum value, the chances of trading off of this level with other levels as well as with other factors decreased. Nearly 31% of the total respondents of this group traded off this factor with either number of fruit picking or time of complete fruit picking factor.

All the respondents preferred the highest price level of $11.1-13 irrespective of their education, farm experience and size of the citrus orchard (Appendix F-3, F-4 & F-5).

(ii) Time of Complete Fruit Picking

There is strong evidence of a relationship between delay in payment and time of complete fruit picking (p value = 0.02). The results revealed that majority of the citrus growers; 56.7% of this group of respondents showed their intention to accept more than 3 weeks delay in payment as shown in table 6.3.

Table 6.3 Time of Complete Fruit Picking and Delay in Payment

Delay in Payment		Time of Complete Fruit Picking	
		January n=63	**February n=4**
< 1 Week n=23	Count	19	4
	% within Delay in Payment	82.6%	17.4%
	% within Time of Complete Fruit Picking	30.2%	100.0%
1-2 Week n=6	Count	6	0
	% within Delay in Payment	100.0%	0.0%
	% within Time of Complete Fruit Picking	9.5%	0.0%
≥ 3 Week n=38	Count	38	0
	% within Delay in Payment	100.0%	0.0%
	% within Time of Complete Fruit Picking	60.3%	0.0%

It was interesting to note that all of these respondents preferred this delay in payment only when complete fruit picking was in January. It seemed rational because the citrus fruit season lasted until the month of March-April and by accepting more than 3 weeks delay with January was the final time of orchard picking, citrus growers could recover their remaining amount during the season. Only 28.4% and 6% of total respondents of this group accepted less than one week delay in payment in January and February respectively, whereas, only 9% of the total respondents of this group accepted 1-2 week delay in payment in January as shown in table 6.3.

It was also interesting to note that none of the respondents liked the time of complete fruit picking in March. Again it was a rational decision as already discussed and was according to the nature of the fruit and orchard physiology. Overall, 63 respondents out of 67 (nearly 94%) of this group preferred to accept only January as the decisive month of fruit picking, whereas, 4 respondents (6% of the total respondents of this group) accepted February for the complete fruit picking from the orchard.

(iii) Number of Fruit Pickings

A significant relationship was found between number of fruit pickings with delay in payment (p value = 0.00), mode of payment (p value = 0.02) and certainty of payment (p = value 0.00). It was interesting to note that the number of pickings were directly associated with the factors related to payments (payment delay, payment mode and payment certainty). A cross-tabulation between delay in payment and number of fruit pickings showed that 43.3% of the respondents of this group preferred to allow three pickings if payment delay is equal to or greater than 3 weeks as shown in table 6.4.

Table 6.4 Delay in Payment and Number of Fruit Pickings

Delay in Payment		NO. of Fruit Picking		
		One n=16	**Two n=14**	**Three n=37**
< 1 Week n=23	Count	8	7	8
	% within Delay in Payment	34.8%	30.4%	34.8%
	% within NO. of Fruit Picking	50.0%	50.0%	21.6%
1-2 Week n=6	Count	0	6	0
	% within Delay in Payment	0.0%	100.0%	0.0%
	% within NO. of Fruit Picking	0.0%	42.9%	0.0%
≥ 3 Week n=38	Count	8	1	29
	% within Delay in Payment	21.1%	2.6%	76.3%
	% within NO. of Fruit Picking	50.0%	7.1%	78.4%

This clearly showed that citrus growers tried to keep their payment secure by using different marketing approaches. By knowing that delay in payment is almost 3 or more than 3 weeks, citrus growers did not allow one picking. Instead, three pickings were allowed to ensure the payment before or on the next picking. It was interesting to know that in case of three pickings, there was a time span of almost three or more than three weeks in each picking.

The results also revealed that a total of 37 respondents (55.2%) of this group preferred three pickings. Nearly 78.4% of the respondents who accepted three picking accepted more than three weeks delay in payment. None of the respondents preferred to accept 1-2 week delay in payment and only 21.6% of the respondents accepted less than one week delay in payment within this group of respondents who accepted three pickings.

Similarly, only 14 (20.8%) and 16 (23.8%) respondents of this group accepted two and one picking respectively. Majority of the respondents, nearly 93% of the respondents who accepted two pickings, preferred to accept overall less than two weeks delay in payment. Among the respondents with one picking, half of the respondents preferred less than one week delay in payment and half of the respondents accepted more than three weeks delay in payment as shown in table 6.4.

There was very strong evidence of a relationship between certainty of payment and number of fruit pickings ($p = 0.00$). The results showed that 91.9% of the respondents who preferred three pickings accepted personal guarantee while only 8.1% post-dated cheque to make the payments secure as shown in table 6.5.

Table 6.5 Certainty of Payment and Number of Fruit Pickings

Certainty of Payment		NO. of Fruit Picking		
		One n=16	**Two n=14**	**Three n=37**
Personal Guarantee n=49	Count	7	8	34
	% within Certainty of Payment	14.3%	16.3%	69.4%
	% within NO. of Fruit Picking	43.8%	57.1%	91.9%
Post Dated Cheques n=18	Count	9	6	3
	% within Certainty of Payment	50.0%	33.3%	16.7%
	% within NO. of Fruit Picking	56.3%	42.9%	8.1%

Similarly, 57.1% of the respondents who accepted two pickings preferred to accept personal guarantee and 42.9% of the respondents accepted post-dated cheque as a payment security. The results also showed that 43.8% of the respondents who preferred one picking accepted personal guarantee and 56.3% of the respondents accepted post-dated cheque. This trend showed that a total of 26.9% respondents liked to accept post-dated cheques against any number of pickings while 73.1% of the respondents felt secure while accepting personal guarantee of any public figure in the area as shown in table 6.5. Again this trend was according to the traditions and norms of that particular area where personal guarantee was considered the most powerful tool against recovery of payment.

There was very strong evidence of a relationship between mode of payment and number of fruit pickings ($p = 0.02$). A cross-tabulation between mode of payment and number of fruit picking showed the fact that payment through cheque was the most preferred mode of payment against any number of pickings. The results also showed that 59.7% of the total respondents of this group preferred cheques as mode of payment of which 60% of the respondents accepted cheques against three pickings while 25% and 15% of the respondents preferred cheques against one and two pickings respectively as shown in table 6.6.

The results revealed that 83.3% of the respondents who preferred both cash and cheque accepted two pickings while only 16.7% preferred three pickings. None of the respondents showed their interest for this mode of payment for one picking as shown in table 6.6. Though, cash was the most convenient and easy mode of payment in most of the businesses, however, only 31.3% of the total respondents preferred cash for their business transactions.

Table 6.6 Mode of Payment and Number of Fruit Picking

Mode of Payment		NO. of Fruit Picking		
		One n=16	**Two n=14**	**Three n=37**
Cash n=21	Count	6	3	12
	% within Mode of Payment	28.6%	14.3%	57.1%
	% within NO. of Fruit Picking	37.5%	21.4%	32.4%
Cash & Cheque n=6	Count	0	5	1
	% within Mode of Payment	0.0%	83.3%	16.7%
	% within NO. of Fruit Picking	0.0%	35.7%	2.7%
Cheque n=40	Count	10	6	24
	% within Mode of Payment	25.0%	15.0%	60.0%
	% within NO. of Fruit Picking	62.5%	42.9%	64.9%

"It is very unsafe and dangerous to carry cash payments during any part of the day, particularly, when I know this sum of money is my only earnings for the whole year" One of the respondents commented while asked about mode of payment.

A total of 21 respondents (31.3% of the total respondents of this group of small size citrus growers) accepted cash for any number of fruit pickings as shown in table 6.6. The majority of the respondents, 57.1% of the respondents accepted cash payments for three pickings, whereas, only 28.6% and 14.3% of the respondents preferred cash for one and two pickings respectively. In short, cheques were considered highly safe and preferred mode of payment for small size citrus growers in the area.

There was very strong evidence of a relationship between number of fruit pickings and harvesting fruit loss ($p = 0.00$). A cross-tabulation between number of fruit pickings and harvesting fruit loss showed the fact that more the number of pickings, higher would the harvesting fruit loss as shown in table 6.7.

The results also revealed that 55.2% of the total respondents of this group preferred three numbers of pickings of which 97.3% of the respondents accepted high harvesting fruit loss against three numbers of pickings while only 2.7% of the respondents preferred low harvesting fruit loss.

The results showed that 56.3% of the respondents who preferred one picking accepted the terms with high harvesting fruit loss while 43.8 % of the respondents preferred low harvesting fruit loss. Similarly, half of the respondents who preferred two pickings

accepted low harvesting fruit loss and the other half of the respondents accepted high fruit loss.

Table 6.7 Number of Fruit Picking and Harvesting Fruit Loss

NO. of Fruit Picking		Harvesting Fruit Loss	
		Low n=15	**High n=52**
One n=16	Count	7	9
	% within NO. of Fruit Picking	43.8%	56.3%
	% within Harvesting Fruit Loss	46.7%	17.3%
Two n=14	Count	7	7
	% within NO. of Fruit Picking	50.0%	50.0%
	% within Harvesting Fruit Loss	46.7%	13.5%
Three n=37	Count	1	36
	% within NO. of Fruit Picking	2.7%	97.3%
	% within Harvesting Fruit Loss	6.7%	69.2%

There also existed a significant relationship between experience of the respondents and number of fruit picking (p value = 0.01). The results showed that majority (67.6%) of the respondents who preferred three pickings had 11-25 years of experience in the citrus business. The results also showed that 21.6% of the respondents from this group had more than 25 years of business experience and only 10.8% of the respondents had less than 11 years of experience as shown in table 6.8.

Table 6.8 Citrus Grower's Experience and Number of Fruit Picking

Citrus Grower's Experience (Years)		NO. of Fruit Picking		
		One n=16	**Two n=14**	**Three n=37**
≤10 n=15	Count	7	4	4
	% within Citrus Grower's Experience (Years)	46.7%	26.7%	26.7%
	% within NO. of Fruit Picking	43.8%	28.6%	10.8%
11-25 n=35	Count	3	7	25
	% within Citrus Grower's Experience (Years)	8.6%	20.0%	71.4%
	% within NO. of Fruit Picking	18.8%	50.0%	67.6%
>26 n=17	Count	6	3	8
	% within Citrus Grower's Experience (Years)	35.3%	17.6%	47.1%
	% within NO. of Fruit Picking	37.5%	21.4%	21.6%

Similarly, majority (50%) of the respondents who preferred two pickings had 11-25 years of business experience and 28.6% of the respondents had less than 11 years of

experience. Only 21.4% of the respondents from this group had more than 25 years of citrus marketing experience. The results also suggested that the majority (43.8%) of the respondents who preferred one picking had less than 11 years of experience and 37.5% of the respondents from this group had more than 25 years of experience. Only 18.8% of the respondents who preferred one picking had 11-25 years of marketing experience.

(iv) Mode of Payment

A significant relationship had been found between the advance payment and mode of payment (p value= 0.00). A cross-tabulation between advance payment and mode of payment showed that nearly 72% of the total respondents of this group accepted 25% advance payment. Out of 48 respondents, 35 respondents (72.9%) preferred to accept cheque as payment mode while only 8 respondents (16.7%) and 5 respondents (10.4%) preferred cash and both cash and cheque as payment mode respectively as shown in table 6.9.

Table 6.9 Advance Payment and Mode of Payment

Advance Payment		Mode of Payment		
		Cash n=21	**Cash & Cheque n=6**	**Cheque n=40**
15% n=7	Count	6	1	0
	% within Advance Payment	85.7%	14.3%	0.0%
	% within Mode of Payment	28.6%	16.7%	0.0%
25% n=48	Count	8	5	35
	% within Advance Payment	16.7%	10.4%	72.9%
	% within Mode of Payment	38.1%	83.3%	87.5%
35% n=12	Count	7	0	5
	% within Advance Payment	58.3%	0.0%	41.7%
	% within Mode of Payment	33.3%	0.0%	12.5%

The results also revealed that only 18% and 10.5% of the total respondents of this group preferred to accept 35% and 15% advance payment respectively. It was also evident from the results that nearly 60% of the total respondents of this group preferred to accept advance payment in the form cheque while about 31% of the total respondents of this group accepted cash advance payment. Only 9% of the total respondents of this group preferred both cash and cheque as mode of payment.

Similarly, there also existed a significant relationship between delay in payment and mode of payment (p value = 0.00). The results revealed that nearly 31% of the total

respondents of this group of small size citrus growers accepted cash payment and only 9% of the total respondents preferred both cash & cheque as shown in table 6.10. It was interesting to know that contrary to accept payment in cash, nearly 60% of the total respondents preferred to accept payment through cheque.

Table 6.10 Mode of Payment and Delay in Payment

Mode of Payment		Delay in Payment		
		< 1 Week n=23	**1-2 Week n=6**	**> 3 Week n=38**
Cash n=21	Count	13	0	8
	% within Mode of Payment	61.9%	0.0%	38.1%
	% within Delay in Payment	56.5%	0.0%	21.1%
Cash & Cheque n=6	Count	0	5	1
	% within Mode of Payment	0.0%	83.3%	16.7%
	% within Delay in Payment	0.0%	83.3%	2.6%
Cheque n=40	Count	10	1	29
	% within Mode of Payment	25.0%	2.5%	72.5%
	% within Delay in Payment	43.5%	16.7%	76.3%

For cash mode of payment, 61.9% of the respondents accepted less than 1 week delay in payment whereas about 38.1% of the respondents from this group preferred more than 3 week delay in payment.

For cash & cheque mode of payment, 83.3% of the respondents accepted 1-2 week delay in payment whereas 16.7% of the respondents from this group preferred more than 3 weeks delay in payment.

For cheque mode of payment, 72.5% of the respondents preferred to accept more than three week delay in payment whereas only 25% of the respondents from this group preferred less than 1 week delay in payment. Only 2.5% of the respondents accepted 1-2 week delay in payment.

A significant relationship had been found between the certainty of payment and mode of payment (p value= 0.00). A cross-tabulation between certainty of payment and mode of payment showed that 73.1% of the total respondents of this group accepted personal guarantee while only 26.9% of the respondents accepted post-dated cheques as security of the payment as shown in table 6.11.

It was interesting to note that majority of the respondents (73.5%) accepted cheque with personal guarantee whereas only 24.5% of the respondents preferred personal guarantee with cash payments. On the contrary, with post-dated cheque as a certainty of payment 50% of the respondents accepted cash, 27.8% of the respondents accepted cash & cheque and only 22.2% of the respondents accepted cheque.

Table 6.11 Certainty of Payment and Mode of Payment

Certainty of Payment		Mode of Payment		
		Cash n=21	**Cash & Cheque n=6**	**Cheque n=40**
Personal Guarantee n=49	Count	12	1	36
	% within Certainty of Payment	24.5%	2.0%	73.5%
	% within Mode of Payment	57.1%	16.7%	90.0%
Post Dated Cheques n=18	Count	9	5	4
	% within Certainty of Payment	50.0%	27.8%	22.2%
	% within Mode of Payment	42.9%	83.3%	10.0%

A significant relationship had been found between the urgent need of money and mode of payment (p value= 0.00). A cross-tabulation between urgent need of money and mode of payment showed that nearly 75% of the total respondents of this group showed that they do not need money urgently whereas only 25% of the respondents showed that they require money on urgent basis as shown in table 6.12. However, this trend is against the existing scenario of the citrus growers where majority of the growers always are in urgent need of money for different purposes.

Table 6.12 Urgent Need of Money and Mode of Payment

Urgent Need of Money		Mode of Payment		
		Cash n=21	**Cash & Cheque n=6**	**Cheque n=40**
Yes n=17	Count	7	5	5
	% within Urgent Need of Money	41.2%	29.4%	29.4%
	% within Mode of Payment	33.3%	83.3%	12.5%
No n=50	Count	14	1	35
	% within Urgent Need of Money	28.0%	2.0%	70.0%
	% within Mode of Payment	66.7%	16.7%	87.5%

The results also revealed that the respondents who were in need of money accepted nearly all the three mode of payments but preferred cash payments more than the other

two modes as shown in table 6.12. However, the respondents who did not need money urgently preferred to accept payment through cheque followed by cash payments.

A significant relationship had been found between harvesting fruit loss and mode of payment (p value = 0.00). A cross-tabulation between harvesting fruit loss and mode of payment revealed that majority of the respondents, 77.6% of the total respondents of this group of small size citrus growers preferred high fruit loss while only 22.4% of the total respondents of this group accepted low fruit loss contracts as shown in table 6.13.

Table 6.13 Harvesting Fruit Loss and Mode of Payment

Harvesting Fruit Loss		**Mode of Payment**		
		Cash n=21	**Cash & Cheque n=6**	**Cheque n=40**
Low n=15	Count	6	5	4
	% within Harvesting Fruit Loss	40.0%	33.3%	26.7%
	% within Mode of Payment	28.6%	83.3%	10.0%
High n=52	Count	15	1	36
	% within Harvesting Fruit Loss	28.8%	1.9%	69.2%
	% within Mode of Payment	71.4%	16.7%	90.0%

It seemed to be irrational by selecting high level of harvesting fruit loss while making marketing decision. In reality this was not true and all the fruit lost or damaged during harvesting belonged to the buyer(s). Therefore, citrus growers did not pay prime importance to this factor while making a marketing decision.

"Not only I but also all the citrus growers do not take harvesting fruit loss into account while making a contract with the buyer. The sale agreement is usually executed prior to the fruit picking/harvesting of the orchard, therefore, on body thinks about the fruit loss at that time. In addition, harvesting fruit loss can be reduced/controlled by the use of skilled labour, latest picking equipment and techniques", a respondent commented on fruit loss.

The results also revealed that for low fruit loss cash mode of payment is preferred over other two modes of payment; however, for high fruit loss cheque mode of payment is highly preferred over cash. The results showed that 69.2% of the respondents preferred cheque whereas only 28.8% of the respondents accepted cash in case of high fruit loss.

(v) Advance Payment

A significant relationship has been found between advance payment and certainty of payment (p value = 0.00). The majority of the respondents, 71.6% of the total respondents of this group of small size citrus growers, preferred to accept 25% advance payment as shown in table 6.14.

Out of 48 respondents who accepted 25% advance payment, 37 respondents (77.1%) preferred to accept personal guarantee as the payment security. While only 11 respondents (22.9%) accepted post-dated cheques as a payment security.

The results also revealed that 73.1% of the total respondents preferred to accept personal guarantees as a security of their payment while only 26.9% of the total respondents accepted post-dated cheques as payment security.

Table 6.14 Advance Payment and Certainty of Payment

Advance Payment		**Certainty of Payment**	
		Personal Guarantee n=49	**Post Dated Cheques n=18**
15% n=7	Count	0	7
	% within Advance Payment	0.0%	100.0%
	% within Certainty of Payment	0.0%	38.9%
25% n=48	Count	37	11
	% within Advance Payment	77.1%	22.9%
	% within Certainty of Payment	75.5%	61.1%
35% n=12	Count	12	0
	% within Advance Payment	100.0%	0.0%
	% within Certainty of Payment	24.5%	0.0%

There also existed a significant relationship between Advance Payment and Harvesting Fruit Loss (p value = 0.00). The results revealed that majority of the respondents, 81.3% of the respondents who preferred 25% advance payment accepted high fruit loss and only 18.8% of the respondents accepted low fruit loss as shown in table 6.15.

It had already been described that harvesting fruit loss was not considered relevant or important while making marketing channel choice decision by the citrus growers. This fact was clearly established from the results where 77.6% of the total respondents of this group (52 out of 67 respondents) preferred to accept high fruit loss.

Table 6.15 Advance Payment and Harvesting Fruit Loss

Advance Payment		Harvesting Fruit Loss	
		Low n=15	**High n=52**
15% n=7	Count	5	2
	% within Advance Payment	71.4%	28.6%
	% within Harvesting Fruit Loss	33.3%	3.8%
25% n=48	Count	9	39
	% within Advance Payment	18.8%	81.3%
	% within Harvesting Fruit Loss	60.0%	75.0%
35% n=12	Count	1	11
	% within Advance Payment	8.3%	91.7%
	% within Harvesting Fruit Loss	6.7%	21.2%

(vi) Delay in Payment

There was a statistically significant relationship between delay in payment and urgent need of money (p value = 0.00). Usually citrus growers needed money for fertilizers, pesticides, for the wedding of their son/daughter and for the construction of their houses. It had been clear from the results that in case of the urgent need of money, the majority of the respondents accepted delay in payments only for 2 weeks. The results also revealed that 70.6% of the respondents who were in urgent need of money accepted maximum 2 weeks delay in payment whereas only 29.4% of the respondents accepted more than 3 weeks delay in payment as shown in table 6.16.

Table 6.16 Urgent Need of Money and Delay in Payment

Urgent Need of Money		Delay in Payment		
		< 1 Week n=23	**1-2 Week n=6**	**≥ 3 Week n=38**
Yes n=17	Count	6	6	5
	% within Urgent Need of Money	35.3%	35.3%	29.4%
	% within Delay in Payment	26.1%	100.0%	13.2%
No n=50	Count	17	0	33
	% within Urgent Need of Money	34.0%	0.0%	66.0%
	% within Delay in Payment	73.9%	0.0%	86.8%

On the contrary, if there was no urgent need of money, delay in payment was acceptable for more than 3 weeks and it seemed logical. Usually those citrus growers who did not need urgent money had enough financial sources to meet their agricultural (fertilizers, pesticides) and non-agricultural expenses. Therefore, these citrus growers offered more

relaxation in receiving payments from the buyers as compared to other growers who required urgent money to meet their expenses. The results showed that 66% of the respondents accepted more than 3 weeks delay in payment when there was no urgent need of money. It was interesting to know from the results that nearly 34% of the respondents yet preferred to accept less than one week delay in payment although there was no urgent need for the money.

A significant relationship was also found between delay in payment and certainty of payment (p value = 0.00). The results showed that 67.3% of the respondents who preferred personal guarantee as a measure to secure the payment accepted more than 3 weeks delay in payment whereas only 32.7% of the respondents accepted less than 1 week delay in payment as shown in table 6.17.

Table 6.17 Certainty of Payment and Delay in Payment

Certainty of Payment		**Delay in Payment**		
		< 1 Week n=23	**1-2 Week n=6**	**≥ 3 Week n=38**
Personal Guarantee n=49	Count	16	0	33
	% within Certainty of Payment	32.7%	0.0%	67.3%
	% within Delay in Payment	69.6%	0.0%	86.8%
Post Dated Cheques n=18	Count	7	6	5
	% within Certainty of Payment	38.9%	33.3%	27.8%
	% within Delay in Payment	30.4%	100.0%	13.2%

The results also revealed that 38.9% of the respondents who used post-dated cheques as a security against payment preferred less than 1 week delay in payment. On the other hand, 33.3% of the respondents accepted 1-2 weeks delay in payment with post-dated cheques as a payment security while only 27.8% of the respondents preferred more than 3 weeks delay in payment.

It was interesting to note this fact that with personal guarantee respondents frequently accepted more than three weeks delay in payment, whereas, majority of the respondents who preferred post-dated cheque preferred a maximum of 2 weeks delay in payment as shown in table 6.17.

There also existed significant relationship between delay in payment and harvesting fruit loss (p value = 0.00). The results revealed that 94.7% of the respondents accepted more than 3 weeks payment delay for high harvesting fruit loss as shown in table 6.18.

Only 5.3% of the respondents accepted more than 3 weeks delay in payment for low fruit loss.

Similarly the results also revealed that 69.6% of the respondents preferred to accept high harvesting fruit loss and 30.4% of the respondents preferred to accept low harvesting fruit when there as a payment delay of less than week.

Table 6.18 Delay in Payment and Harvesting Fruit Loss

Delay in Payment		Harvesting Fruit Loss	
		Low n=15	**High n=52**
< 1 Week n=23	Count	7	16
	% within Delay in Payment	30.4%	69.6%
	% within Harvesting Fruit Loss	46.7%	30.8%
1-2 Week n=6	Count	6	0
	% within Delay in Payment	100.0%	0.0%
	% within Harvesting Fruit Loss	40.0%	0.0%
≥ 3 Week n=38	Count	2	36
	% within Delay in Payment	5.3%	94.7%
	% within Harvesting Fruit Loss	13.3%	69.2%

"As per agreement, all the fruit dropped/lost on the ground during harvesting belong to the buyer; hence, it is not a point of concern for growers. However, in the case of high fruit drop, a delay of more than 3 weeks in payment is acceptable. This exception is given purely on the basis of humanity and friendly relationships with the buyer", one of the citrus growers commented on the high fruit drop issue.

There was a significant relationship between education of the respondents and delay in payment (p value = 0.00). The results revealed that 61% of the undergraduate respondents preferred to accept more than three weeks delay in payment and 32.2% of the respondents accepted less than one week delay in payment as shown in table 6.19. Only 6.8% of the undergraduate respondents preferred to accept 1-2 weeks delay in payment.

It was interesting to note that with the increased level of education, the preference for minimal delay in payment increased. The respondents with no education at all preferred to accept any delay in payment while the respondents with higher education level only accepted less than one week delay in payment.

Table 6.19 Education of the Respondents and Delay in Payment

Education of the Respondents (Education Years)		Delay in Payment		
		< 1 Week n=23	1-2 Week n=6	≥ 3 Week n=38
Illiterate n=3	Count	0	2	1
	% within Education of the Respondents	0.0%	66.7%	33.3%
	% within Delay in Payment	0.0%	33.3%	2.6%
Undergraduate n=59	Count	19	4	36
	% within Education of the Respondents	32.2%	6.8%	61.0%
	% within Delay in Payment	82.6%	66.7%	94.7%
Graduate n=3	Count	2	0	1
	% within Education of the Respondents	66.7%	0.0%	33.3%
	% within Delay in Payment	8.7%	0.0%	2.6%
Postgraduate n=2	Count	2	0	0
	% within Education of the Respondents	100.0%	0.0%	0.0%
	% within Delay in Payment	8.7%	0.0%	0.0%

There also existed a significant relationship between delay in payment and area under citrus (p value = 0.02). The results revealed that 59.7% of the total respondents of this group own 1-10 acres of citrus area and about 40.3% of the respondents possess 10.1-20 acres of citrus orchard as shown in table 6.20. The results revealed that both the groups of respondents (according to citrus orchard size) preferred to accept more than three weeks delay in payment. Nearly 45% of total respondents from first group and 74.1% of the respondents from second group preferred more than three weeks delay in payment.

Table 6.20 Area under Citrus and Delay in Payment

Area Under Citrus (Acres)		Delay in Payment		
		< 1 Week n=23	1-2 Week n=6	≥ 3 Week n=38
1-10 n=40	Count	16	6	18
	% within Area Under Citrus	40.0%	15.0%	45.0%
	% within Delay in Payment	69.6%	100.0%	47.4%
10.1-20 n=27	Count	7	0	20
	% within Area Under Citrus	25.9%	0.0%	74.1%
	% within Delay in Payment	30.4%	0.0%	52.6%

The results also revealed that 40% of the respondents having 1-10 acres of area under citrus preferred to accept less than one week delay in payment whereas only 15% of the respondents accepted 1-2 weeks delay in payment. Only 25.9% of the respondents with

10.1-20 acres of area under citrus preferred less than one week delay in payment as shown in table 6.20.

(vii) Certainty of Payment

There existed a significant relationship between certainty of payment and harvesting fruit loss (p value = 0.00). Although, harvesting fruit loss was purely the loss of buyer yet the seller (citrus grower) took it into account while making a pre-harvest sale contract. The results revealed that 95.9% of the respondents preferred to accept personal guarantee in case of high harvesting fruit loss and only 4.1% of the respondents preferred personal guarantee in case of low fruit loss as shown in table 6.21.

Table 6.21 Harvesting Fruit Loss and Certainty of Payment

Certainty of Payment		Harvesting Fruit Loss	
		Low n=15	**High n=52**
Personal Guarantee n=49	Count	2	47
	% within Certainty of Payment	4.1%	95.9%
	% within Harvesting Fruit Loss	13.3%	90.4%
Post Dated Cheques n=18	Count	13	5
	% within Certainty of Payment	72.2%	27.8%
	% within Harvesting Fruit Loss	86.7%	9.6%

On the other hand, nearly 72.2% of the respondents preferred to accept post-dated cheques in case of low harvesting fruit loss and only 27.8% of the respondents preferred post-dated cheques in case of high fruit loss. It was interesting to note that in case of low harvesting fruit loss, respondents preferred to accept post-dated cheque while in case of high fruit loss, respondents preferred personal guarantee as a security of the payments.

There also existed a significant relationship between certainty of payment and experience of the respondents (p value = 0.02). The results showed that 61.2% of the respondents who preferred personal guarantee as a security of their payment had 11-25 years of experience in the citrus business. The results also showed that 22.4% of the respondents accepted personal guarantees that had less than 11 years of experience and only 16.3% of the respondents from this group of respondents had more than 26 years of business experience as shown in table 6.22.

Table 6.22 Citrus Grower's Experience (Years) and Certainty of Payment

Citrus Grower's Experience (Years)		Certainty of Payment	
		Personal Guarantee n=49	**Post Dated Cheques n=18**
≤10 n=15	Count	11	4
	% within Citrus Grower's Experience	73.3%	26.7%
	% within Certainty of Payment	22.4%	22.2%
11-25 n=35	Count	30	5
	% within Citrus Grower's Experience	85.7%	14.3%
	% within Certainty of Payment	61.2%	27.8%
≥26 n=17	Count	8	9
	% within Citrus Grower's Experience	47.1%	52.9%
	% within Certainty of Payment	16.3%	50.0%

Similarly, 50% of the respondents who preferred post-dated cheque as a security of their payment had more than 25 years of business experience. The results showed that 27.8% of the respondents from this group of respondents had 11-25 years of experience and only 22.2% of the respondents had less than 11 years of experience.

The results also suggested that the majority of the respondents who accepted personal guarantee as a payment security had 11-25 years of experience while majority of the respondents who have accepted post-dated cheques had more than 25 years of citrus marketing experience.

"If someone has already decided to cheat or deceive, any form of security whether it is personal guarantee or post-dated cheques is useless. Therefore, I only sell to the person whom I, myself, know very well instead of asking about the different types of securities", one of the most experienced respondents commented.

The results also revealed a significant relationship between certainty of payment and area under citrus (p value = 0.00). The results revealed that nearly 60% of the respondents who preferred personal guarantee as a payment security owned 1-10 acres under citrus while 92.6% of the respondents who accepted personal guarantee possessed 10.1-20 acres of citrus area as shown in table 6.23. The results also showed that nearly 40% of the respondents who preferred post-dated cheque for certainty of payment owned 1-10 acres of citrus area while only 7.4% of the respondents who accepted post-dated cheques possessed 10.1-20 acres of citrus area.

Table 6.23 Area under Citrus and Certainty of Payment

Area Under Citrus (Acres)		Certainty of Payment	
		Personal Guarantee n=49	Post Dated Cheques n=18
1-10 n=40	Count	24	16
	% within Area Under Citrus	60.0%	40.0%
	% within Certainty of Payment	49.0%	88.9%
10.1-20 n=27	Count	25	2
	% within Area Under Citrus	92.6%	7.4%
	% within Certainty of Payment	51.0%	11.1%

It clearly reflected a trend that irrespective of the farm size, respondents preferred personal guarantee more than that of post-dated cheque as a security measure. However, this scenario was different for post-dated cheques where very small growers having citrus area less than 10 acres preferred post-dated cheques more than the growers having citrus area 10.1-20 acres. But within the group of respondents who owned an area of 1-10 acres, personal guarantee was still more preferred than the post-dated cheques. This was also true for respondents having 10.1-20 acres of citrus area where the majority of the respondents preferred personal guarantee as shown in table 6.23.

(viii) Harvesting Fruit Loss

There was a statistically significant relationship between harvesting fruit loss and age of the respondents (p value = 0.00), education of the respondents (p value = 0.03), experience of the respondents (p value = 0.02) and area under citrus orchard (p value = 0.00). It was very interesting to note from the results that regardless of the age, education, experience and area under citrus orchard, the overall trend exhibited by respondents was to prefer the high harvesting fruit loss situation as shown in table 6.24 (age), 6.25 (education), 6.26 (experience) & 6.27 (area).

A total of 77.6% of the respondents from all age groups preferred to accept the high harvesting fruit loss, whereas, 22.4% of the respondents accepted the contract terms with low harvesting fruit loss as shown in table 6.24.

Table 6.24 Age of Respondents and Harvesting Fruit Loss

Age of the Respondents (Years)		Harvesting Fruit Loss	
		Low n=15	**High n=52**
1-30 n=5	Count	0	5
	% within Age of the Respondents	0.0%	100.0%
	% within Harvesting Fruit Loss	0.0%	9.6%
31-60 n=52	Count	9	43
	% within Age of the Respondents	17.3%	82.7%
	% within Harvesting Fruit Loss	60.0%	82.7%
61-90 n=10	Count	6	4
	% within Age of the Respondents	60.0%	40.0%
	% within Harvesting Fruit Loss	40.0%	7.7%

It has already been described that harvesting fruit loss purely belonged to the buyer(s) of the produce. Therefore, citrus growers accepted those terms and conditions involved in the contract with the buyers more frequently and without fear of profit loss where high harvesting fruit loss is involved. The majority of the respondents (52 out of 67 respondents of this group) preferred to accept high harvesting fruit loss while only 15 respondents accepted low harvesting fruit loss as shown in table 6.25.

Table 6.25 Education of Respondents and Harvesting Fruit Loss

Education of the Respondents (Education Years)		Harvesting Fruit Loss	
		Low n=15	**High n=52**
Illiterate n=3	Count	3	0
	% within Education of the Respondents	100.0%	0.0%
	% within Harvesting Fruit Loss	20.0%	0.0%
Undergraduate n=59	Count	12	47
	% within Education of the Respondents	20.3%	79.7%
	% within Harvesting Fruit Loss	80.0%	90.4%
Graduate n=3	Count	0	3
	% within Education of the Respondents	0.0%	100.0%
	% within Harvesting Fruit Loss	0.0%	5.8%
Postgraduate n=2	Count	0	2
	% within Education of the Respondents	0.0%	100.0%
	% within Harvesting Fruit Loss	0.0%	3.8%

It was very interesting to know that all the illiterate respondents accepted low harvesting fruit loss whereas all the literate respondents, irrespective of the education level, preferred to accept high harvesting fruit loss.

It has already been described that the reason of this selection of high harvesting fruit loss by the respondents was the buyer's responsibility of bearing this loss. The results revealed that majority of the respondents, nearly 78%, had accepted the high fruit loss whereas only 22% of the respondents from this group preferred low fruit loss as shown in table 6.26. The results also showed that 59.6% of the respondents who accepted high fruit loss had 11-25 years of experience and 23.1% of the respondents had less than 11 years of experience. Only 17.3% of the respondents who accepted high fruit loss had more than 25 years of experience.

Table 6.26 Experience of Respondents and Harvesting Fruit Loss

Citrus Grower's Experience (Years)		**Harvesting Fruit Loss**	
		Low n=15	**High n=52**
≤10 n=15	Count	3	12
	% within Citrus Grower's Experience	20.0%	80.0%
	% within Harvesting Fruit Loss	20.0%	23.1%
11-25 n=35	Count	4	31
	% within Citrus Grower's Experience	11.4%	88.6%
	% within Harvesting Fruit Loss	26.7%	59.6%
≥26 n=17	Count	8	9
	% within Citrus Grower's Experience	47.1%	52.9%
	% within Harvesting Fruit Loss	53.3%	17.3%

Similarly 53.3% of the respondents who preferred to accept low harvesting fruit loss had more than 25 years of experience and 26.7% of the respondents from this group of respondents had 11-25 years of experience. Only 20% of the respondents from this group had less than 11 years of citrus marketing experience. The results also revealed that irrespective of the farm size, the majority of the respondents preferred to accept the high harvesting fruit loss.

Nearly 65% of the respondents who owned 1-10 acres of citrus orchard accepted high harvesting fruit loss whereas only 35% of the respondents accepted low fruit loss as shown in table 6.27.

Table 6.27 Area of Respondents and Harvesting Fruit Loss

Area Under Citrus (Acres)		Harvesting Fruit Loss	
		Low n=15	**High n=52**
1-10 n=40	Count	14	26
	% within Area Under Citrus	35.0%	65.0%
	% within Harvesting Fruit Loss	93.3%	50.0%
10.1-20 n=27	Count	1	26
	% within Area Under Citrus	3.7%	96.3%
	% within Harvesting Fruit Loss	6.7%	50.0%

Similarly, 96.3% of the respondents who owned 10.1-20 acres of citrus orchard accepted high harvesting fruit loss whereas only 3.7% of the respondents from this group preferred to accept low harvesting fruit loss.

(ix) Urgent Need of Money

There was a statistically significant relationship between education of the respondents and urgent need of money (p value = 0.00). The results revealed that the majority of the respondents, 74.6% of the total respondents of this group, accepted that there was no urgent need of money at the time of contract as shown in table 6.28.

Table 6.28 Education of the Respondents and Urgent Need of Money

Education of the Respondents (Education Years)		Urgent Need of Money	
		Yes n=17	**No n=50**
Illiterate n=3	Count	2	1
	% within Education of the Respondents	66.7%	33.3%
	% within Urgent Need of Money	11.8%	2.0%
Undergraduate n=59	Count	11	48
	% within Education of the Respondents	18.6%	81.4%
	% within Urgent Need of Money	64.7%	96.0%
Graduate n=3	Count	2	1
	% within Education of the Respondents	66.7%	33.3%
	% within Urgent Need of Money	11.8%	2.0%
Postgraduate n=2	Count	2	0
	% within Education of the Respondents	100.0%	0.0%
	% within Urgent Need of Money	11.8%	0.0%

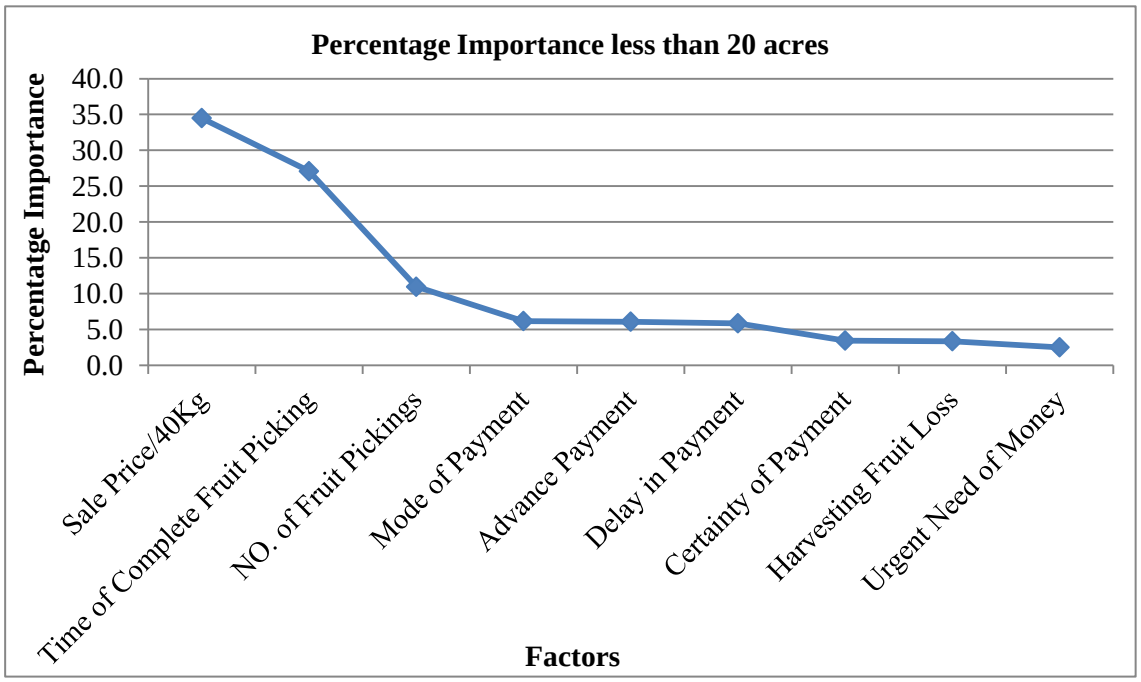
Only 25.4% of the respondents accepted that they were in urgent need of money. Hence, these respondents preferred to go with the marketing decision in which they expressed

the indication of urgent need of money for various activities. The results also revealed that illiterate, graduate and postgraduate respondents preferred to accept the pre-harvest contract terms which can satisfy their immediate emerging needs by providing them with urgent money, hence, these respondents preferred to accept 'Yes' level of this factor.

(c) Summary

The percentage importance of factor 'sales price per 40kg' showed that it had the highest influence in determining the overall preference as shown in figure 6.2. The results revealed that this factor alone had more than a one third contribution on the overall citrus marketing channel choice decision process. This means that there was a large difference in preference between decision profiles having the highest price and those having the lowest price (Soutar & Turner, 2002). The factor 'time of complete fruit picking' had the second highest influence on the overall preference and it contributed over one quarter of all the factors in the decision process. The results showed a decrease of almost 21% in the overall preference of this factor as compared to the preceding factor.

Figure 6.2 Factors Averaged Importance Values



A further decrease of almost 59% in the overall preference of decision process was observed in the factor 'No. of fruit picking' and this factor contributed only 11% in the citrus marketing channel choice decision process.

It can be observed from the results that first two factors influenced 61.6% in determining the overall preference in the final decision as shown in table 6.29. Therefore, it can be concluded that these two factors were considered relatively highly preferred factors as compared to the other factors in the final decision making by the small size citrus growers.

Table 6.29 Accumulated Percentages of All Factors

Factor	Percentage Importance	Accumulated Percentage
Sale Price/40Kg	34.5	34.5
Time of Complete Fruit Picking	27.1	61.6
NO. of Fruit Pickings	11.0	72.6
Mode of Payment	6.2	78.7
Advance Payment	6.1	84.8
Delay in Payment	5.8	90.7
Certainty of Payment	3.5	94.1
Harvesting Fruit Loss	3.4	97.5
Urgent Need of Money	2.5	100.0

The respondents showed almost equal preference for the 'mode of payment', 'advance payment' and 'delay in payment' and it was 6.2%, 6.1% and 5.8% respectively. A decrease of nearly 44%, 45% and 48% in the overall preference from the preceding factor can also be observed for 'mode of payment', 'advance payment' and 'delay in payment' respectively.

There was a decrease of nearly 41% in the percentage preference of 'certainty of payment' from the preceding factor showing that this factor and all the remaining factors were of lesser importance in the final decision process of marketing channel choice. However, the respondents put nearly equal preferences for 'certainty of payment' and 'harvesting fruit loss' as shown in table 6.40. The results also showed that 'urgent need of money' played the least important role in determining the overall preference and this factor only contributed 2.5% in overall preference.

In order to clearly understand the small citrus grower's factor preferences, all the nine factors can be divided into different groups/tiers on the basis of percentage importance of each factor as follows:

First group is comprised of two factors namely 'price' and 'time of complete fruit picking' which contributed 61.6% in the overall preference of decision process.

The second group is comprised of only one factor namely 'number of fruit pickings' which alone contributed 11% in the overall choice preference.

The third group is composed of three factors namely 'mode of payment', 'advance payment' and 'delay in payment' which contributed 18.1% in the overall preference. All these three groups together contributed nearly 90.7% in the overall preference of channel choice.

The fourth group is also comprised of three factors namely 'certainty of payment', 'harvesting fruit loss' and 'urgent need of money' which contributed only 9.3% in the overall preference as shown in table 6.29.

It can be inferred from the results that there would be little effect on percentage importance, hence, on the utility of the overall decision, in moving among the factors within multiple factors groups. However, this effect would be high when moving from one group of factors to another group as shown in table 6.29. For example, moving from one factor to another factor in the first group would cause decrease in percentage importance by only 21%. Whereas, if citrus growers move from first group of factors to second group this decrease in percentage importance would be 59%.

The part-worth utility estimates for all the levels of each factor along with the percentage importance of each factor in the overall percentage preference is exhibited in the table 6.30. The part-worth utilities were estimated using the ordinary least square (OLS) analysis by the conjoint procedure in SPSS. Generally, if any factor or level was preferred over another one, it had larger part-worth utility value. For example, for the factor sale price per 40 kg all the respondents preferred level '$11.1-$13' over other levels and factors, therefore, it had the highest part-worth utility estimate of 5.579 as shown in table 6.30.

Table 6.30 Part-worth Utility Estimates of Factors

Factors	Levels	Part-worth Utility	Percentage Importance of Factors
Sale Price/40Kg	$7-$9	-6.285	34.5
	$9.1-$11	.706	
	$11.1-$13	5.579	
Urgent Need of Money	Yes	-.200	2.5
	No	.200	
Advance Payment	15%	-.851	6.1
	25%	.708	
	35%	.143	
Mode of Payment	Cash	.237	6.2
	Cash & Cheque	-.511	
	Cheque	.274	
Certainty of Payment	Personal Guarantee	.271	3.5
	Post Dated Cheques	-.271	
Delay in Payment	< 1 Week	-.227	5.8
	1-2 Week	-.496	
	> 3 Week	.723	
NO. of Fruit Pickings	One	.285	11.0
	Two	.041	
	Three	-.327	
Time of Complete Fruit Picking	January	4.202	27.1
	February	.925	
	March	-5.128	
Harvesting Fruit Loss	Low	-.189	3.4
	High	.189	
(Constant)		14.039	

As described earlier, the overall worth or utility of the decision is the sum of all part-worth utility of different levels of all factors, therefore, this can be written as;

(Total worth of the decision) $_{ij}...n_{ij}$ = Part-worth of level i for factor 1 + Part-worth of level j for factor 2 + ...+ Part-worth of level n for factor m

The dependent variable in the above equation was the total worth of the respondents marketing decision. The independent variables were the levels of all the factors involved and were treated as dummy variables. The explanatory variables or levels of factors were defined as $P = 1$ if price was \$7-\$9, $P = 2$ if price was \$9.1-\$11 and $P = 3$ if price was \$11.1-\$13*;* $U = 1$ if respondents showed that they need money urgently and $U = 2$ if they did not need money for urgent purposes; $A = 1$ if respondents accepted 15% advance payment, $A = 2$ for 25% advance payment and $A = 3$ for 35% advance

payment; M = 1 for cash payments, M = 2 for cash & cheque payments and M = 3 for only cheque payments; S = 1 for personal guarantee as a security of payment and S = 2 for post-dated cheques; D = 1 for less than one week delay in payment, D = 2 for 1-2 week delay in payment and D = 3 for greater than three weeks delay in payment; N = 1 for one picking, N = 2 for two number of pickings and N = 3 for three number of pickings; T = 1 for the time of complete fruit picking in January, T = 2 for February and T = 3 for March picking; L = 1 for low harvesting fruit loss and L = 2 for high fruit loss.

The regression equation is, therefore,

$$TW = C + a_1P + a_2U + a_3A + a_4M + a_5S + a_6D + a_7N + a_8T + a_9L + \mu$$

Where TW = Total worth of the decision, C = Constant term, μ = *error term*

The part-worth utility estimates in table 6.30 can be summed up to give a total worth for any combination of factor levels. Therefore, profile or decision 1 would have a total worth of 20.205 as shown below which represents the sum of the factor level part-worths and the constant term;

Profile 1:

Sale Price/40Kg	**Urgent Need of Money**	**Advance Payment**	**Mode of Payment**	**Certainty of Payment**	**Delay in Payment**	**NO. of Fruit Picking**	**Time of Complete Fruit Picking**	**Harvesting Fruit Loss**
$11.1-$13	Yes	15%	Cash & Cheque	Personal Guarantee	≥ 3 Week	Two	February	High

$(TW)_1$ = (14.039) + (5.579) + (-0.200) + (-0.851) + (-0.511) + (0.271) + (0.723) + (0.041) + (0.925) + (0.189) = 20.205

In a similar fashion, the total worth of all the 27 profiles or decisions were estimated and subsequently transformed into predicted rankings from highest total worth to the lowest (Appendix F-6 & F-7). The result showed that the profile/decision 20 had the maximum utility of 24.027 among all the 27 profiles/decisions as follows;

Profile 20:

Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss
$11.1-$13	NO	35%	Cash	Personal Guarantee	1-2 Week	Two	January	Low

and

$(TW)_{20}$ = (14.039) + (5.579) + (0.200) + (0.143) + (0.237) + (0.271) + (-0.496) + (0.041) + (4.202) + (-0.189) = 24.027

The predicted total worth for each decision showed how small size citrus growers traded off between the factors and their levels while making the final decision for the selection of a marketing channel. For example, profile 20 and 1 had in common the price, certainty of payment, number of fruit pickings. They differ in urgent need of money, advance payment, mode of payment, delay in payment, time of complete fruit picking and harvesting fruit loss. The predicted total worth for profile 20 and 1 are 24.027 and 20.205 placing them first and seventh, respectively, in the rankings of profiles. This explained how small size citrus growers traded off different factors and their levels to come up with the highest utility. It implied that small size citrus growers were willing to give up high utility value of 0.723 for ≥ 3 Week delay in payment with the low utility value of -0.496 for 1-2 weeks delay in payment thus moving towards maximizing total worth of the decision.

As already described, the higher the percentage importance of the factor, the greater would be its impact towards total estimated worth of the profiles/decisions. If small size citrus growers select the first two groups of factors (only 3 factors), their decision would be 72.6% true and its utility increases as they select the other factors. In other words, if small size citrus growers focus on the third group (3 more factors) and make the right choice while making citrus marketing decision, they would be 90.7% accurate in their decision.

Table 6.31 shows two statistics, Pearson's R and Kendall's tau, which provide measures of the correlation between the observed and estimated preferences. According to Field (2009), statistics close to 1.0 display that the model is a good fit. The Pearson's R

correlation coefficient (0.977) which is close to 1.0 measures the positive correlation but not perfectly positive correlated between all observed and estimated preferences. The Kendall's tau (τ) correlation coefficient reports the extent of this correlation and confirms the validity of the model. Its value is in the range $-1 \leq \tau \leq 1$ showing the two extremes and it is very rare to get these values. However, models having tau value of ± 0.50 or more are considered good fit and models having τ value below ±0.50 are considered a fair fit (Burns & Burns, 2008; Field, 2009; Gustafsson et al., 2007).

Table 6.31 Correlations between Observed and Estimated Preferences

	Value	**Sig.**
Pearson's R	.977	.000
Kendall's tau (τ)	.850	.000

The value of Kendall's tau (0.850) also indicates the agreement between two rankings is not perfect (i.e., the two rankings are not the same), instead, the two rankings are nearly the same. However, it can be inferred from the values of Pearson's R and Kendall's tau that the model is a good fit.

6.3.2 Medium Size Growers

(a) Part-worth Utility Values of All Levels and their Ranges

The overall results of the part-worth utilities values of the levels of all the factors along with the utility ranges calculated from the respondents preferences for each factor used are shown in table 6.32.

Table 6.32 Part-worth Utility Ranges for Medium Size Citrus Growers

Factor	Factors Levels	Lowest Utility Value	Highest Utility Value	Range (Highest-Lowest)
Sale Price/40Kg	$7-$9	-8.3330	-3.8890	4.4440
	$9.1-$11	-0.7780	1.6670	2.4450
	$11.1-$13	3.3330	8.1110	4.7780
Urgent Need of Money	Yes	-1.0000	0.7500	1.7500
	No	-0.7500	1.0000	1.7500
Advance Payment	15%	-5.4440	0.4440	5.8880
	25%	-0.6670	3.2220	3.8890
	35%	-2.0000	2.2220	4.2220
Mode of Payment	Cash	-1.7780	5.0000	6.7780
	Cash & Cheque	-2.2220	1.3330	3.5550
	Cheque	-6.3330	1.6670	8.0000
Certainty of Payment	Personal Guarantee	-0.6670	1.3330	2.0000
	Post Dated Cheques	-1.3330	0.6670	2.0000
Delay in Payment	< 1 Week	-1.2220	1.5560	2.7780
	1-2 Week	-2.1110	0.5560	2.6670
	> 3 Week	-0.1110	1.3330	1.4440
NO. of Fruit Pickings	One	-3.2220	9.0000	12.2220
	Two	-3.2220	0.8890	4.1110
	Three	-5.7780	2.7780	8.5560
Time of Complete Fruit Picking	January	0.0000	5.8890	5.8890
	February	-0.4440	2.7780	3.2220
	March	-7.5560	-1.5560	6.0000
Harvesting Fruit Loss	Low	-1.5000	1.0000	2.5000
	High	-1.0000	1.5000	2.5000

Table 6.33 showed the percentage importance of each factor that was calculated on the basis of ranking of all the factors by the respondents. It showed that higher the percentage preference of a factor, the more is its utility for the respondents and vice versa.

Table 6.33 Overall Percentage Importance of Factors

Rank	Factor	Percentage Importance
1	Sale Price/40Kg	40.50
2	Time of Complete Fruit Picking	23.40
3	NO. of Fruit Pickings	8.60
4	Mode of Payment	6.70
5	Advance Payment	6.10
6	Delay in Payment	5.40
7	Certainty of Payment	3.60
8	Harvesting Fruit Loss	3.10
9	Urgent Need of Money	2.90

The detailed description of all the factors with their appropriate levels is discussed one by one for medium size growers (20-60 acres of citrus orchard).

(i) Sale Price per 40 Kg

The overall preference for factor "Price" was ranked the highest amongst all the factors. The percentage importance of price factor in all factors was 40.50%. However, a great variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 6.32.

For the price level of $11.1-$13, the part-worth utility range was 4.7780 with minimum utility of 3.3330 and maximum of 8.1110 as shown in table 6.32. This was the highest preferred level among all levels of price and other factors and confirmed the universal truth of seller's inclination to get high price of his produce. Both minimum and highest values were positive that indicated this level was highly important in citrus growers marketing choice decision making process. It was interesting to know that all the respondents preferred $11.1-$13 price level for making marketing channel choice decision.

"The only reason of bearing all the difficulties and troubles in the citrus orchard management business is to get the highest price" one of the respondents commented.

(ii) Time of Complete Fruit Picking

The overall preference for factor "Time of Complete Fruit Picking" was ranked second highest amongst all the factors. The percentage importance of this factor in all factors was 23.40%. Similar to the price factor, a great variation of part worth utilities between different levels as well as within each level can be observed in table 6.32.

For January, the part-worth utility range for time of complete fruit picking factor was 5.8890 with minimum value of 0.00 and maximum of 5.8890. The highest utility value of 5.8890 among all the three levels of this factor showed that it was highly preferred level for decision making. It was also observed that the greater the range of a level for a particular factor, greater was the chances of its trade off with other levels. Both lowest and highest utility values were in positive figures indicating the importance of this level for respondents.

As the minimum utility of this level increased to its maximum value, the chances of trading off of this level with other levels as well as with other factors decreased. From these part-worth utilities, it can be concluded that respondents wanted to clear their orchards from fruit within the month of January and was highly important for them. The results showed that 73.7% of the total respondents of this group preferred to accept January for the complete fruit picking.

(iii) Number of Fruit Pickings

The overall percentage importance of this factor was ranked third according to the respondent's preference but it was very low as compared to the first two factors as discussed above.

This showed that only two factors, price and time of complete fruit picking, were the most important factors and thus highly ranked by all the respondents. However, the percentage importance of this factor in all factors was 8.60% which is 3rd highest amongst all the factors. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 6.32.

For one picking, the part-worth utility range was 12.2220 with minimum value of -3.2220 and maximum of 9.0. This level had the highest part-worth utility range as well as highest utility value among all the three levels of this factor and clearly showed that it was highly preferred level and factor for decision making. In addition, this level had maximum utility range among all the other factors and their levels in the analysis showing its flexibility to trade off with other factors.

The highest utility value of 9.0 reflected that this level had maximum importance for the respondent than any other level. It also showed that overall importance of this factor

was also very high in the mind of this particular respondent. As this utility gradually decreased towards zero the overall percentage importance of this factor as well as this level also decreased. Again for the lowest utility value of -3.2220, the overall percentage importance of this factor was still considerable (according to zero sum rules) but this level was not acceptable by the respondent. Instead respondents would trade off this level with other levels of this factor or with other factors.

"I prefer one picking but if no buyer agrees on one picking, I would prefer to go for the maximum number of pickings which are three instead of two. In my opinion the loss to orchard is more in two pickings instead of three" one of the medium size citrus growers replied.

For three pickings, the part-worth utility range was 8.5560 with the lowest part-worth utility of -5.7780 and the highest 2.7780. The part-worth utility range was the second highest among all the factors and the highest part-worth utility of this levels indicated its importance in the decision making process.

Some of the respondents preferred three pickings which was clearly evident by the maximum part-worth utility value of 2.7780 for this level. Most of the respondents preferred one or three pickings as the best level and was reflected from the higher highest utility value for both of these levels as compared to two pickings. The importance of this level was clearly evident from the large values of minimum and maximum part-worth utilities.

(iv) Mode of Payment

The overall percentage importance of this factor was ranked fourth amongst all the nine factors according to the respondent's preference and was 6.70%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 6.32.

For cash as a mode of payment, the part-worth utility range was 6.7780 with minimum value of -1.7780 and maximum of 5.000. Although the utility range of this level was the second highest to the level 'cheque', the highest utility value for this level as compared to all other levels clearly showed that it was highly preferred level for decision making. It was also noticeable that some respondents have no positive utility for this level.

The highest utility value of 5.0 reflected that this level had considerable importance to the respondent than any other levels. It also showed that overall importance of this level was also high in the mind of this particular respondent(s). As this utility gradually decreased towards zero the overall percentage importance of this level also decreased. At a minimum utility of -1.7780, the overall importance of this level was dropped to its minimal level and the respondents traded off this level with other levels of this factor.

"There is no doubt that cash payment is the ideal payment not only for me but also for any other seller(s), however, cheque payments are considered relatively safe in present scenario", one of the respondent expressed his feelings about mode of payment.

For cheque as a mode of payment, the part-worth utility range was 8.0 (slightly more than the 'cash' level) with the lowest part-worth utility of -6.3330 and the highest 1.6670. The highest part-worth utility of 1.6670 indicated that this level was not as important as that of cash level and the range of this level also showed that it was frequently traded off with other levels as well as with other factors. The results showed that 86.8% of the total respondents of this group preferred to accept payment through cheque, 13.2% of the total respondents of this group preferred cash payment while none of the total respondents of this group accepted both cash and cheque as mode of payment.

"It is very convenient for me to accept cheque payments instead of cash payments from the buyers. It saves lot of my time and effort which I would have otherwise put in receiving the cash payments (cash counting, checking fake currency note)", one of the respondents advocated the cheque mode of payments.

(v) Advance Payment

The overall percentage importance of this factor was ranked fifth amongst all the nine factors according to the respondent's preference and was 6.10%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 6.32.

For advance payment of 25%, the part-worth utility range was 3.8890 with the lowest part-worth utility of -0.6670 and the highest 3.2220. The small utility range of this level showed that it was not frequently traded off with other levels of this factor and the highest part-worth utility of 3.2220 indicated that it was highly preferred than the

preceding level. The results showed that 31.6% of the total respondents of this group preferred to accept 25% advance payment which showed the importance and preference of this level in marketing decision making process. It is customary and norm of the citrus industry in Pakistan to offer and accept 25% advance payment irrespective of the size of the citrus growers and pre-harvest contractors.

For 35% advance payment level, the part-worth utility range was 4.2220 with the lowest part-worth utility of -2.0 and the highest 2.2220. The highest utility values for this level showed that this level had high preference for the respondents in their marketing decision making. The results showed that 65.8% of the total respondents of this group of medium size citrus growers agreed to sign the contracts with 35% of advance payment. This trend clearly showed the progressiveness nature of the citrus growers and of adapting their business towards new marketing approaches and away from the orthodox and conventional way of citrus marketing in the area.

"That's very good, if I am offered with 35% instead of usual 25% advance payment for my citrus fruit. On one hand, this would increase my confidence and trustworthiness towards the buyer and on the other hand it would reduce my hassle for the outstanding amount of my produce", one of the respondents replied.

(vi) Delay in Payment

The overall percentage importance of this factor was ranked sixth amongst all the nine factors according to the respondent's preference and was 5.40%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 6.32.

For delay in payment for less than one week, the part-worth utility range was 2.7780 with minimum value of -1.2220 and maximum of 1.5560. The highest utility value of this level clearly showed that it was highly preferred level for decision making. However, this level was easily traded off with other levels of this factor or with other factors as clearly showed by wide utility range.

For more than 3 weeks delay in payment, the part-worth utility range was 1.4440 with the lowest part-worth utility of -0.1110 and the highest 1.3330. The small utility range indicated that this level was less frequently traded off with other levels of this factor and the highest part-worth utility value of 1.3330 also indicated that it was highly preferred

level than the preceding level. The results showed that 42.1% of the respondents of this group accepted more than 3 weeks delay in payment while 57.9% of the total respondents liked to accept delay in payment less than one week. None of the respondents from this group of medium size citrus growers preferred to accept 1-2 week delay in payment.

"Being a part of citrus business, I know that sometimes payments are delayed for one or the other reasons. Therefore, for me one week delay in payment is normal and bearable. Even if some buyer ask me to pay after three weeks later or longer than that, I allow them to do so but with the personal guarantee of any renowned person of the community", one of the respondents explained his behaviour and attitude towards payment delay.

(vii) Certainty of Payment

The overall percentage importance of this factor was ranked third lowest amongst all the nine factors according to the respondent's preference and was 3.60%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can also be found in table 6.32.

For payment security, both levels had similar ranges of utility value; however, there existed a difference in their highest utility value which reflected the importance of that particular level in the decision making. The highest utility value for personal guarantee as compared to post-dated cheque clearly showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with other factor's levels.

The small highest part-worth utility value (0.6670) for post-dated cheque as compared to personal guarantee reflected that it was less important in marketing decision making. The result also showed that overall this factor was less importance in the process of decision making by the citrus growers as compared to other factors as indicated by its low overall percentage preference of 3.60%.

(viii) Harvesting Fruit Loss

The overall percentage importance of this factor was ranked second lowest amongst all the nine factors according to the respondent's preference and was 3.10%. A

considerable variation of part worth utilities between different levels as well as within each level of this factor can also be found in table 6.32.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for harvesting fruit loss which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value for high harvesting fruit loss clearly showed that it had high preference for decision making. It seemed irrational to select high level of harvesting fruit loss while making marketing decision. In reality this was not true and all the fruit lost or damaged during harvesting belonged to the buyer(s). Therefore, citrus growers did not pay prime importance to this factor while making a marketing decision.

"Not only I but also all the citrus growers do not take harvesting fruit loss into account while making a contract with the buyer. The sale agreement is usually executed prior to the fruit picking/harvesting of the orchard, therefore, nobody thinks about the fruit loss at that time. In addition, harvesting fruit loss can be reduced/controlled by the use of skilled labour, latest picking equipment and techniques", a respondent commented on fruit loss.

(ix) Urgent Need of Money

The overall percentage importance of this factor was ranked lowest amongst all the nine factors according to the respondent's preference and was 2.90%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can also be found in table 6.32.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for urgent need of money which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the higher utility value for 'No' urgent need of money clearly showed that it had high preference for decision making. However, it seemed irrational because majority of the respondents needed money urgently for various activities like fertilizers, pesticides and urgent domestic needs and they negated the preference for 'No' urgent need of money by accepting high advance payments. This irrational behaviour may be explained on the grounds that the respondents who showed preference 'No' for urgent need of money had already accepted (any level of) advance payment.

The result also showed that overall this factor was least importance in the process of decision making by the citrus growers as compared to other factors as indicated by its low overall percentage preference of 2.90%.

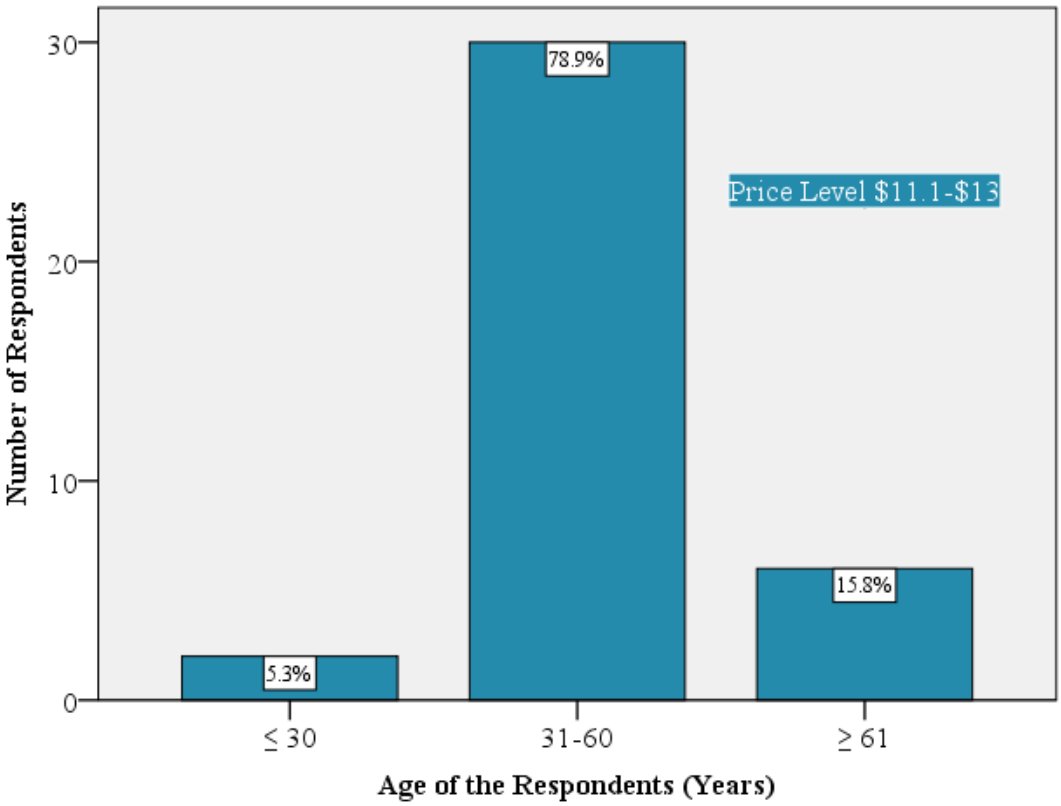
(b) Factors Relationship

A suitable statistical technique (Fisher's exact test for significance) was used to find out the relationship or interdependence between two given qualitative or quantitative factors. These significance test results showed interesting significant and non-significant relationships between any two given factors (Appendix G-1 & G-2). This section provided the detailed discussion about the factors interdependence one by one.

(i) Sale Price per 40 Kg

It was very interesting to know that all the respondents from this group of medium size citrus growers only preferred the highest price level of $11.1-13. As the variable 'Sale price per 40 Kg' was a constant, therefore, there existed no relationships of this variable with any other variable in the analysis. Despite the fact that there was no statistical relationship between age of the respondents and price, a clear trend can be observed from the results as shown in figure 6.3.

Figure 6.3 Relationship between Age of the Respondents and Price



None of the respondents from all age groups preferred the other two levels of lower price than price level $11.1-13 of price factor. However, the level $11.1-$13 was either traded off with the number of fruit picking or with the time of complete fruit picking factors according to their importance but only in rare cases. As the minimum utility of this level increased to its maximum value, the chances of trading off of this level with other levels as well as with other factors decreased. Nearly 8% of the total respondents of this group traded off this factor with either number of fruit picking or time of complete fruit picking factors.

All the respondents preferred the highest price level of $11.1-13 irrespective of their education level, farm experience and size of the citrus orchard (citrus area).(Appendix G-3, G-4 & G-5)

(ii) Time of Complete Fruit Picking

There was a strong evidence of relationship between time of complete fruit picking and advance payment (p value = 0.02). The results revealed that majority of the citrus growers; 65.7% of this group of respondents showed their intention to accept 35% advance payment which is uncustomary to the citrus business in the area as shown in table 6.34.

Table 6.34 Time of Complete Fruit Picking and Advance Payment

Advance Payment		Time of Complete Fruit Picking	
		January n=28	**February n=10**
15% n=1	Count	1	0
	% within Advance Payment	100.0%	0.0%
	% within Time of Complete Fruit Picking	3.6%	0.0%
25% n=12	Count	12	0
	% within Advance Payment	100.0%	0.0%
	% within Time of Complete Fruit Picking	42.9%	0.0%
35% n=25	Count	15	10
	% within Advance Payment	60.0%	40.0%
	% within Time of Complete Fruit Picking	53.6%	100.0%

It was also interesting to note that all the respondents who preferred February for the complete orchard picking accepted 35% advance payment. The citrus growers

considered accepting 35% advance payment a best way to deal with the uncertainty and insecurity of the future payments from the buyers.

"It would be great for me if any buyer offers me with 35% advance payment which is very unusual in the area. It would lessen my concerns about the outstanding amount on one hand, and on the other hand it would build a trust level between both the parties for future businesses", one of the progressive citrus growers expressed his feelings.

Only 3.6% of the total respondents of this group preferred to accept 15% advance payment whereas 42.9% of the respondents accepted 25% advance payment when the complete fruit picking was in January. The results also showed that 53.6% of the total respondents from this group preferred to accept 35% advance payment in January.

There was a strong evidence of a relationship between time of complete fruit picking and delay in payment (p value = 0.00). The results revealed that majority of the citrus growers; 57.8% of this group of respondents showed their intention to accept less than 3 weeks delay in payment as shown in table 6.35.

Table 6.35 Time of Complete Fruit Picking and Delay in Payment

Delay in Payment		**Time of Complete Fruit Picking**	
		January n=28	**February n=10**
< 1 Week n=22	Count	12	10
	% within Delay in Payment	54.5%	45.5%
	% within Time of Complete Fruit Picking	42.9%	100.0%
≥ 3 Week n=16	Count	16	0
	% within Delay in Payment	100.0%	0.0%
	% within Time of Complete Fruit Picking	57.1%	0.0%

It was interesting to note that none of the respondents preferred 1-2 weeks delay in payment. The results showed that 42.1% of respondents preferred to accept more than 3 weeks delay in payment. It was also evident from the results that 54.5% and 45.5% of total respondents of this group accepted less than one week delay in payment in January and February respectively, whereas, all the respondents of this group accepted more than three weeks delay in payment in January only.

It was also interesting to note that none of the respondents preferred March as the time of complete fruit picking. Again it was a rational decision as already discussed and was according to the nature of the fruit and orchard physiology. Overall, 28 respondents out of 38 (73.6%) of this group preferred to accept only January as the decisive month for fruit picking, whereas, only 10 respondents (26.3% of the total respondents of this group) accepted February for the complete fruit picking from the orchard as shown in table 6.35.

(iii) Mode of Payment

A significant relationship had been found between the advance payment and mode of payment (p value= 0.04). A cross-tabulation between advance payment and mode of payment showed that 65.7% of the total respondents of this group accepted 35% advance payment. Out of 25 respondents of this group, 24 respondents (96%) preferred to accept cheque as payment mode while only 1 respondent (4%) preferred cash payment. None of the respondents preferred both cash and cheque as payment mode as shown in table 6.36.

Table 6.36 Advance Payment and Mode of Payment

Advance Payment		Mode of Payment	
		Cash n=5	**Cheque n=33**
15% n=1	Count	0	1
	% within Advance Payment	0.0%	100.0%
	% within Mode of Payment	0.0%	3.0%
25% n=12	Count	4	8
	% within Advance Payment	33.3%	66.7%
	% within Mode of Payment	80.0%	24.2%
35% n=25	Count	1	24
	% within Advance Payment	4.0%	96.0%
	% within Mode of Payment	20.0%	72.7%

The results also revealed that only 31.5% and 2.6% of the total respondents of this group of medium size citrus growers preferred to accept 25% and 15% advance payment respectively. It was also evident from the results that nearly 86.9% of the total respondents of this group preferred to accept advance payment in the form cheque while about 13.1% of the total respondents of this group accepted cash advance payment.

(iv) Advance Payment

A significant relationship was found between advance payment and certainty of payment (p value = 0.03). Majority of the respondents, 65.7% of the total respondents of this group, preferred to accept 35% advance payment as shown in table 6.37.

It was very interesting to note that all the respondents who accepted 35% advance payment preferred to accept personal guarantee as the payment security. None of the respondents from this group accepted post-dated cheques as a payment security. This trend was a divergence from the norms of the citrus business in the area where majority of the respondents preferred to accept one fourth of the total payment (25%) as an advance payment.

Table 6.37 Advance Payment and Certainty of Payment

Advance Payment		**Certainty of Payment**	
		Personal Guarantee n=35	**Post Dated Cheques n=3**
15% n=1	Count	1	0
	% within Advance Payment	100.0%	0.0%
	% within Certainty of Payment	2.9%	0.0%
25% n=12	Count	9	3
	% within Advance Payment	75.0%	25.0%
	% within Certainty of Payment	25.7%	100.0%
35% n=25	Count	25	0
	% within Advance Payment	100.0%	0.0%
	% within Certainty of Payment	71.4%	0.0%

"The communities like this in which we are living largely rely on strong personal and family relationships where most of the disputes are settled down by mutual understanding. Therefore, involving a reputable person to ensure future payments is the best tool rather than involving a bank or any other third party", one of the respondents highlighted the issue of payment security under the prevailing norms of the society.

The results also revealed that only 31.6% of the total respondents of this group preferred 25% advance payment. Seventy five percent of the respondents who accepted 25% advance payment preferred personal guarantee as a payment security while only 25% of the respondents preferred post-dated cheques.

The results also revealed that 92.1% of the total respondent of this group preferred to accept personal guarantees as a security of their payment while only 7.9% of the total respondents accepted post-dated cheques as payment security.

A significant relationship had been found between advance payment and delay in payment (p value = 0.00). The results revealed that 57.9% of the total respondents of this group preferred to accept less than one week delay in payment while only 42.1% of the respondents accepted more than three weeks delay in payment as shown in table 6.38. None of the respondents preferred 1-2 weeks delay in payment. The results also revealed that 80% of the respondents who preferred 35% advance payment accepted 1 week delay in payment while only 20% of the respondents from this group accepted more than three weeks delay in payment.

Table 6.38 Advance Payment and Delay in Payment

Advance Payment		**Delay in Payment**	
		< 1 Week n=22	**≥ 3 Week n=16**
15% n=1	Count	1	0
	% within Advance Payment	100.0%	0.0%
	% within Delay in Payment	4.5%	0.0%
25% n=12	Count	1	11
	% within Advance Payment	8.3%	91.7%
	% within Delay in Payment	4.5%	68.8%
35% n=25	Count	20	5
	% within Advance Payment	80.0%	20.0%
	% within Delay in Payment	90.9%	31.3%

It was very interesting to note that 91.7% of the respondents who accepted 25% advance payment preferred to accept more than three weeks delay in payment while only 8.3% of the respondents from this group accepted less than one week delay in payment. Only 4.5% of the total respondents from this group of medium size growers preferred to accept 15% advance payment when delay in payment was less than one week.

There also existed a significant relationship between Advance Payment and Harvesting Fruit Loss (p value = 0.01). The results revealed that majority of the respondents of this group of medium size citrus growers preferred high harvesting fruit loss while making a marketing decision involving combination of different choices as shown in table 6.39. It had already been described that harvesting fruit loss was not considered relevant or

important while making marketing channel choice decision by the citrus growers. This fact was clearly established from the results where 84.2% of the total respondents of this group preferred to accept high fruit loss.

Table 6.39 Advance Payment and Harvesting Fruit Loss

Advance Payment		Harvesting Fruit Loss	
		Low n=6	**High n=32**
15% n=1	Count	0	1
	% within Advance Payment	0.0%	100.0%
	% within Harvesting Fruit Loss	0.0%	3.1%
25% n=12	Count	5	7
	% within Advance Payment	41.7%	58.3%
	% within Harvesting Fruit Loss	83.3%	21.9%
35% n=25	Count	1	24
	% within Advance Payment	4.0%	96.0%
	% within Harvesting Fruit Loss	16.7%	75.0%

Nearly 96% of the respondents who preferred 35% advance payment accepted high harvesting fruit loss while only 4% of the respondents from this group accepted low harvesting fruit loss. Similarly, 58.3% of the respondents who preferred 25% advance payment accepted high harvesting fruit loss while only 41.7% of the respondents from this group accepted low harvesting fruit loss. Only 3.1% of the respondents from this group preferred to accept 15% advance payment with high harvesting fruit loss.

There also existed a significant relationship between education and Advance Payment (p value = 0.00). The results revealed that 86.4% of the respondents having undergraduate education status preferred 35% advance payment and only 9.1% and 4.5% of the respondents from this group preferred 25% and 15% advance payment respectively as shown in table 6.40.

All the respondents who were illiterate only preferred 35% advance payment. On the contrary, the results also revealed that 66.7% of the graduate and postgraduate respondents from each category preferred to accept 25% advance payment and only 33.3% of the respondents from this group accepted 35% advance payment.

Table 6.40 Education of the Respondents and Advance Payment

Education of the Respondents (Years)		Advance Payment		
		15% n=1	25% n=12	35% n=25
Illiterate n=1	Count	0	0	1
	% within Education of the Respondents	0.0%	0.0%	100.0%
	% within Advance Payment	0.0%	0.0%	4.0%
Undergraduate n=22	Count	1	2	19
	% within Education of the Respondents	4.5%	9.1%	86.4%
	% within Advance Payment	100.0%	16.7%	76.0%
Graduate n=9	Count	0	6	3
	% within Education of the Respondents	0.0%	66.7%	33.3%
	% within Advance Payment	0.0%	50.0%	12.0%
Postgraduate n=6	Count	0	4	2
	% within Education of the Respondents	0.0%	66.7%	33.3%
	% within Advance Payment	0.0%	33.3%	8.0%

(v) Delay in Payment

There existed a significant relationship between delay in payment and harvesting fruit loss (p value = 0.00). The results revealed that nearly 62.5% of the respondents accepted more than 3 weeks payment delay for high harvesting fruit loss as shown in table 6.41. Thirty seven point five percent of the respondents accepted more than 3 weeks delay in payment for low fruit loss.

Table 6.41 Delay in Payment and Harvesting Fruit Loss

Delay in Payment		Harvesting Fruit Loss	
		Low n=6	High n=32
< 1 Week n=22	Count	0	22
	% within Delay in Payment	0.0%	100.0%
	% within Harvesting Fruit Loss	0.0%	68.8%
≥ 3 Week n=16	Count	6	10
	% within Delay in Payment	37.5%	62.5%
	% within Harvesting Fruit Loss	100.0%	31.3%

It was interesting to note that all the respondents preferred to accept less than one week delay in payment for high harvesting fruit loss and none of the respondents preferred to accept low harvesting fruit when there as a payment delay of less than one week.

"As per agreement, all the fruit dropped/lost on the ground during harvesting belong to the buyer; hence, it is not a point of concern for growers. However, in case of high fruit drop, a delay of more than 3 weeks in payment is acceptable by citrus growers. This exception is given purely on the basis of humanity and friendly relationships with the buyer", one of the citrus growers commented on the high fruit drop issue.

(vi) Certainty of Payment

There existed a significant relationship between urgent need of money and certainty of money (p value = 0.03). The results revealed that the majority of the respondents, 92.1%, preferred personal guarantee in order to make the payments certain as shown in table 6.42. The respondents who were in urgent need of money equally (50%) preferred personal guarantee and post-dated cheque in order to make the payments certain. On the contrary, 94.4% of the respondents who were not in urgent need of money preferred personal guarantee while only 5.6% of the respondents accepted post-dated cheques as a security of the payments.

Table 6.42 Urgent Need of Money and Certainty of Payment

Urgent Need of Money		Certainty of Payment	
		Personal Guarantee n=35	**Post Dated Cheques n=3**
Yes n=2	Count	1	1
	% within Urgent Need of Money	50.0%	50.0%
	% within Certainty of Payment	2.9%	33.3%
No n=36	Count	34	2
	% within Urgent Need of Money	94.4%	5.6%
	% within Certainty of Payment	97.1%	66.7%

"It is always been a tradition and safe way to go for a personal guarantee in order to secure the payments from the buyer", one of the respondents advocated personal guarantee.

There also existed a significant relationship between certainty of payment and harvesting fruit loss (p value = 0.00). The results showed that 91.4% of the respondents preferred to accept personal guarantee in case of high harvesting fruit loss and only 8.6% of the respondents preferred personal guarantee in case of low fruit loss as shown in table 6.43. On the other hand, all the respondents preferred to accept post-dated

cheques in case of low harvesting fruit loss and none of the respondents preferred post-dated cheques in case of high fruit loss.

Table 6.43 Harvesting Fruit Loss and Certainty of Payment

Certainty of Payment		Harvesting Fruit Loss	
		Low n=6	**High n=32**
Personal Guarantee n=35	Count	3	32
	% within Certainty of Payment	8.6%	91.4%
	% within Harvesting Fruit Loss	50.0%	50.0%
Post Dated Cheques n=3	Count	3	0
	% within Certainty of Payment	100%	0.0%
	% within Harvesting Fruit Loss	50.0%	0.0%

(vii) Harvesting Fruit Loss

There existed a significant relationship between harvesting fruit loss and urgent need of money (p value = 0.02). The results revealed that majority of the respondents, 94.7% of the total respondents of this group, accepted that there was no urgent need of money at the time of contract as shown in table 6.44. it was also evident from the results that 88.9% of the respondents who were not in urgent need of money preferred to accept high harvesting fruit loss and only 11.1% of the respondents from this group preferred low harvesting fruit loss.

Table 6.44 Harvesting Fruit Loss and Urgent Need of Money

Urgent Need of Money		Harvesting Fruit Loss	
		Low n=6	**High n=32**
Yes n=2	Count	2	0
	% within Urgent Need of Money	100.0%	0.0%
	% within Harvesting Fruit Loss	33.3%	0.0%
	% of Total	5.3%	0.0%
No n=36	Count	4	32
	% within Urgent Need of Money	11.1%	88.9%
	% within Harvesting Fruit Loss	66.7%	100.0%
	% of Total	10.5%	84.2%

All of the respondents who were in urgent need of money preferred to accept low harvesting fruit loss. Hence, these respondents preferred to go with the marketing decision in which they expressed the indication of urgent need of money for various

activities with low harvesting fruit loss. None of the respondents preferred high harvesting fruit loss from this group of respondents.

There also existed a significant relationship between experience of the respondents and harvesting fruit loss (p value = 0.04). The results revealed that 53.1% of the respondents who preferred to accept high harvesting fruit loss had more than 25 years of experience and 28.1% of the respondents had 11-25 years of experience as shown in table 6.45. Only 18.8% of respondents from this group had less than 11 years of citrus marketing experience.

Table 6.45 Citrus Grower's Experience and Harvesting Fruit Loss

Citrus Grower's Experience (Years)		Harvesting Fruit Loss	
		Low n=6	**High n=32**
≤10 n=9	Count	3	6
	% within Citrus Grower's Experience	33.3%	66.7%
	% within Harvesting Fruit Loss	50.0%	18.8%
11-25 n=12	Count	3	9
	% within Citrus Grower's Experience	25.0%	75.0%
	% within Harvesting Fruit Loss	50.0%	28.1%
≥26 n=17	Count	0	17
	% within Citrus Grower's Experience	0.0%	100.0%
	% within Harvesting Fruit Loss	0.0%	53.1%

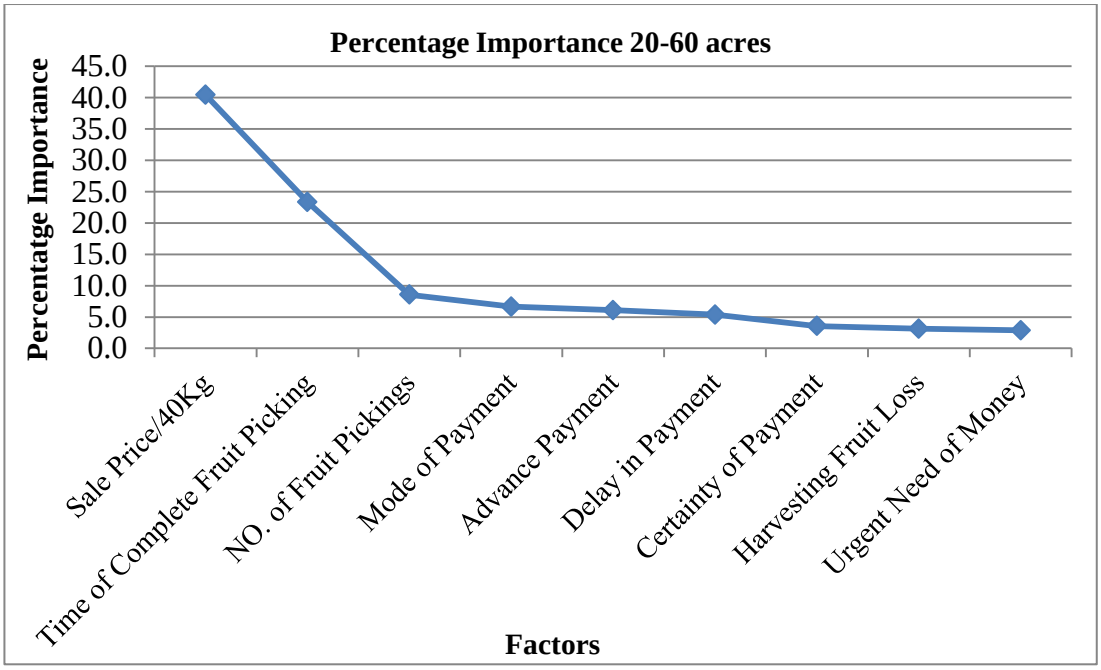
On the contrary, 50% of the respondents who preferred low harvesting fruit loss had less than 11 years of experience and 50% of the respondents had 11-25 years of citrus marketing business. It can be concluded from the results that more experienced citrus growers learnt that the pre-harvesting contract terms involving high harvesting loss did not affect the profitability of their business.

(c) Summary

The percentage importance of factor ‘sales price per 40kg’ showed that it had the highest influence in determining the overall preference as shown in figure 6.4. The results revealed that this factor alone had nearly 41% contribution on the overall citrus marketing channel choice decision process. This means that there was a large difference in preference between decision profiles having the highest price and those having the lowest price (Soutar & Turner, 2002). The factor ‘time of complete fruit picking’ had the second highest influence on the overall preference and it contributed almost a

quarter of all the factors in the decision process. The results showed a decrease of almost 42% in the overall preference of this factor as compared to the preceding factor. A further decrease of almost 63% in the overall preference of decision process was observed in the factor 'No. of fruit picking' and this factor contributed only 8.6% in the citrus marketing channel choice decision process.

Figure 6.4 Factors Averaged Importance Values



It can be easily observed from the results that the first two factors influenced almost 64% in determining the overall preference in the final decision as shown in table 6.46. Therefore, it can be concluded that these two factors were considered relatively highly preferred factors as compared to the other factors in the final decision making by the medium size citrus growers.

Table 6.46 Accumulated Percentages of All Factors

Factor	Percentage Importance	Accumulated Percentage
Sale Price/40Kg	40.5	40.5
Time of Complete Fruit Picking	23.3	63.8
NO. of Fruit Pickings	8.6	72.4
Mode of Payment	6.7	79.0
Advance Payment	6.1	85.1
Delay in Payment	5.4	90.5
Certainty of Payment	3.6	94.0
Harvesting Fruit Loss	3.1	97.1
Urgent Need of Money	2.9	100.0

The respondents showed almost equal preference for the ‘mode of payment’, ‘advance payment’ and ‘delay in payment’ and it was 6.7%, 6.1% and 5.4% respectively. A decrease of nearly 22%, 31% and 34% in the overall preference from the preceding factor can also be observed for ‘mode of payment’, ‘advance payment’ and ‘delay in payment’ respectively. There was a decrease of nearly 34% in the percentage preference of ‘certainty of payment’ from the preceding factor showing that this factor and all the remaining factors were of lesser importance in the final decision process of marketing channel choice. However, the respondents put nearly equal preferences for ‘certainty of payment’ and ‘harvesting fruit loss’ as shown in table 6.46. The results also showed that ‘urgent need of money’ played the least important role in determining the overall preference and this factor only contributed 2.9% in overall preference.

In order to clearly understand the medium citrus grower’s factor preferences, all the nine factors can be divided into different groups/tiers on the basis of percentage importance of each factor as follows:

First group is composed of only one factor namely ‘price’ which alone contributed 40.5% in the overall preference of decision process.

The second group is also composed of one factor namely ‘time of complete fruit picking’ which contributed almost 23.3% in the overall process of citrus marketing decision making.

The third group is again composed of only one factor namely ‘No. of fruit picking’ which contributed 8.6% in the overall preference of decision process.

The fourth group is comprised of three factors namely ‘mode of payment’, ‘advance payment’ and ‘delay in payment’ which contributed 18.1% in the overall preference.

The fifth group is also comprised of three factors namely ‘certainty of payment’, ‘harvesting fruit loss’ and ‘urgent need of money’ which contributed only 9.5% in the overall preference as shown in table 6.46.

It can be inferred from the results that there would be little effect on percentage importance, hence, on the utility of the overall decision, in moving among the factors within multiple factors groups. However, this effect would be high when moving from one group of factors to another group as shown in table 6.46. For example, moving from

one factor to another factor in the third group would cause decrease in percentage importance by only 9% (from mode of payment to advance payment). Whereas, if citrus growers move from first group of factors to second group this decrease in percentage importance would be 42% (from sale price per 40 kg to time of complete fruit picking).

The part-worth utility estimates for all the levels of each factor along with the percentage importance of each factor in the overall percentage preference is exhibited in the table 6.47. The part-worth utilities were estimated using the ordinary least square (OLS) analysis by the conjoint procedure in SPSS. Generally, if any factor or level was preferred over another one, it had larger part-worth utility value. For example, for the factor sale price per 40 kg all the respondents preferred level '$11.1-$13' over other levels and factors, therefore, it had the highest part-worth utility estimate of 6.921 as shown in table 6.47.

Table 6.47 Part-worth Utility Estimates of Factors

Factors	Levels	Part-worth Utility	Percentage Importance of Factors
Sale Price/40Kg	$7-$9	-7.257	40.5
	$9.1-$11	.336	
	$11.1-$13	6.921	
Urgent Need of Money	Yes	-.443	2.9
	No	.443	
Advance Payment	15%	-.871	6.1
	25%	.497	
	35%	.374	
Mode of Payment	Cash	-.243	6.7
	Cash & Cheque	-.409	
	Cheque	.652	
Certainty of Payment	Personal Guarantee	.588	3.6
	Post Dated Cheques	-.588	
Delay in Payment	< 1 Week	.404	5.4
	1-2 Week	-.851	
	> 3 Week	.447	
NO. of Fruit Pickings	One	-1.026	8.6
	Two	.085	
	Three	.942	
Time of Complete Fruit Picking	January	2.997	23.3
	February	1.626	
	March	-4.623	
Harvesting Fruit Loss	Low	-.454	3.1
	High	.454	
(Constant)		14.103	

As described earlier, the overall worth or utility of the decision is the sum of all part-worth utility of different levels of all factors, therefore, this can be written as;

(Total worth of the decision) $_{ij}...n_{ij}$ = Part-worth of level i for factor 1 + Part-worth of level j for factor 2 + ...+ Part-worth of level n for factor m

The dependent variable in the above equation was the total worth of the respondents marketing decision. The independent variables were the levels of all the factors involved and were treated as dummy variables. The explanatory variables or levels of factors were defined as P = 1 if price was \$7-\$9, P = 2 if price was \$9.1-\$11 and P = 3 if price was \$11.1-\$13*;* U = 1 if respondents showed that they need money urgently and U = 2 if they did not need money for urgent purposes; A = 1 if respondents accepted 15% advance payment, A = 2 for 25% advance payment and A = 3 for 35% advance payment; M = 1 for cash payments, M = 2 for cash & cheque payments and M = 3 for only cheque payments; S = 1 for personal guarantee as a security of payment and S = 2 for post-dated cheques; D = 1 for less than one week delay in payment, D = 2 for 1-2 week delay in payment and D = 3 for greater than three weeks delay in payment; N = 1 for one picking, N = 2 for two number of pickings and N = 3 for three number of pickings; T = 1 for the time of complete fruit picking in January, T = 2 for February and T = 3 for March picking; L = 1 for low harvesting fruit loss and L = 2 for high fruit loss.

The regression equation is, therefore,

$$TW = C + a_1P + a_2U + a_3A + a_4M + a_5S + a_6D + a_7N + a_8T + a_9L + \mu$$

Where TW = Total worth of the decision, C = Constant term, μ = *error term*

The part-worth utility estimates in table 6.47 can be summed up to give a total worth for any combination of factor levels. Therefore, profile or decision 1 would have a total worth of 22.501 as shown below which represents the sum of the factor level part-worths and the constant term;

Profile 1:

Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss
$11.1-$13	Yes	15%	Cash & Cheque	Personal Guarantee	≥ 3 Week	Two	February	High

$(TW)_1$ = (14.103) + (6.921) + (-0.443) + (-0.871) + (-0.409) + (0.588) + (0.447) + (0.085) + (1.626) + (0.454) = 22.501

In a similar fashion, the total worth of all the 27 profiles or decisions were estimated and subsequently transformed into predicted rankings from highest total worth to the lowest (Appendix G-6 & G-7). The result showed that the profile/decision 20 had the maximum utility of 23.963 amongst all the 27 profiles/decisions as follows;

Profile 20:

Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss
$11.1-$13	NO	35%	Cash	Personal Guarantee	1-2 Week	Two	January	Low

and

$(TW)_{20}$ = (14.103) + (6.921) + (0.443) + (0.374) + (-0.243) + (0.588) + (-0.851) + (0.085) + (2.997) + (-0.454) = 23.963

The predicted total worth for each decision showed how medium size citrus growers traded off between the factors and their levels while making the final decision for the selection of a marketing channel. For example, profile 20 and 1 had in common the price, certainty of payment, number of fruit pickings. They differ in urgent need of money, advance payment, mode of payment, delay in payment, time of complete fruit picking and harvesting fruit loss. The predicted total worth for profile 20 and 1 are 23.963 and 22.501 placing them first and fifth, respectively, in the rankings of profiles. This explained how medium size citrus growers traded off different factors and their levels to come up with the highest utility. It implied that medium size citrus growers

were willing to give up high utility value of 0.447 for ≥ 3 Week delay in payment with the low utility value of -0.851 for 1-2 weeks delay in payment thus moving towards maximizing total worth of the decision.

As already described, the higher the percentage importance of the factor, the greater would be its impact towards total estimated worth of the profiles/decisions. If medium size citrus growers select the first three groups of factors (only 3 factors), their decision would be 72.4% true and its utility increases as they rightly select the other factors. In other words, if medium size citrus growers focus on the fourth group (3 more factors) and make the right choice while making citrus marketing decision, they would be 90.5% accurate in their decision.

Table 6.48 shows two statistics, Pearson's R and Kendall's tau, which provide measures of the correlation between the observed and estimated preferences. According to Field (2009), statistics close to 1.0 display that the model is a good fit. The Pearson's R correlation coefficient (0.971) which is close to 1.0 measures the positive correlation but not perfectly positive correlated between all observed and estimated preferences. The Kendall's tau (τ) correlation coefficient reports the extent of this correlation and confirms the validity of the model. Its value is in the range $-1 \leq \tau \leq 1$ showing the two extremes and it is very rare to get these values. However, models having tau value of ± 0.50 or more are considered good fit and models having τ value below ±0.50 are considered a fair fit (Burns & Burns, 2008; Field, 2009; Gustafsson et al., 2007).

Table 6.48 Correlations between Observed and Estimated Preferences

	Value	**Sig.**
Pearson's R	.971	.000
Kendall's tau (τ)	.845	.000

The value of Kendall's tau (0.845) also indicates the agreement between two rankings is not perfect (i.e., the two rankings are not the same), instead, the two rankings are nearly the same. However, it can be inferred from the values of Pearson's R and Kendall's tau that the model is a good fit.

6.3.3 Large Size Growers

(a) Part-worth Utility Values of All Levels and their Ranges

The overall results of the part-worth utilities values of the levels of all the factors along with the utility ranges calculated from the respondents preferences for each factor used are shown in table 6.49.

Table 6.49 Part-worth Utility Ranges for Large Size Citrus Growers

Factor	Factors Levels	Lowest Utility Value	Highest Utility Value	Range (Highest-Lowest)
Sale Price/40Kg	$7-$9	-8.2220	-3.5560	4.6660
	$9.1-$11	-0.7780	1.6670	2.4450
	$11.1-$13	2.8890	8.1110	5.2220
Urgent Need of Money	Yes	-0.6670	1.4170	2.0840
	No	-1.4170	0.6670	2.0840
Advance Payment	15%	-6.3330	0.1110	6.4440
	25%	-0.5560	3.2220	3.7780
	35%	-0.6670	3.1110	3.7780
Mode of Payment	Cash	-1.5560	0.2220	1.7780
	Cash & Cheque	-2.1110	0.3330	2.4440
	Cheque	-0.3330	2.0000	2.3330
Certainty of Payment	Personal Guarantee	-0.1670	1.4170	1.5840
	Post Dated Cheques	-1.4170	0.1670	1.5840
Delay in Payment	< 1 Week	-1.0000	1.5560	2.5560
	1-2 Week	-1.5560	1.5560	3.1120
	≥ 3 Week	-0.5560	1.7780	2.3340
NO. of Fruit Pickings	One	-5.7780	0.2220	6.0000
	Two	-0.4440	0.8890	1.3330
	Three	-1.1110	5.4440	6.5550
Time of Complete Fruit Picking	January	0.0000	7.4440	7.4440
	February	-0.2220	2.7780	3.0000
	March	-7.2220	-2.7780	4.4440
Harvesting Fruit Loss	Low	-1.1670	0.5830	1.7500
	High	-0.5830	1.1670	1.7500

Table 6.50 showed the percentage importance of each factor that was calculated on the basis of ranking of all the factors by the respondents. It showed that the higher the percentage preference of a factor, the more was its utility for the respondents and vice versa.

Table 6.50 Overall Percentage Importance of Factors

Rank	Factor	Percentage Importance
1	Sale Price/40Kg	41.30
2	Time of Complete Fruit Picking	24.50
3	NO. of Fruit Pickings	7.60
4	Advance Payment	7.20
5	Mode of Payment	5.40
6	Delay in Payment	5.00
7	Certainty of Payment	3.40
8	Harvesting Fruit Loss	3.00
9	Urgent Need of Money	2.70

The detailed description of all the factors with their appropriate levels is discussed one by one for the large size growers (greater than 60 acres of citrus orchard).

(i) Sale Price per 40 Kg

The overall preference for factor "Price" was ranked the highest amongst all the factors. The percentage importance of price factor in all factors was 41.30%. However, a great variation of part worth utilities between different levels as well as within each level of all factors can be observed in table 6.49.

For the price level of $11.1-$13, the part-worth utility range was 5.2220 with minimum utility of 2.8890 and maximum of 8.1110 as shown in table 6.49. This was the highest preferred level among all the levels of price and other factors and confirmed the universal truth of seller's inclination to get high price of his produce. Although this level had very wide utility range among all the levels, both minimum and highest positive values indicated that this level was highly important in citrus growers marketing choice decision making process. It was interesting to know that all the respondents preferred $11.1-$13 price level for making marketing channel choice decision.

"If I am offered with the three different prices for my produce, I definitively would go for the highest price without taking anything else in consideration" one of the respondents commented.

(ii) Time of Complete Fruit Picking

The overall preference for factor "Time of Complete Fruit Picking" was ranked second highest amongst all the factors. The percentage importance of this factor in all factors

was 24.50%. Similar to the price factor, a great variation of part worth utilities between different levels as well as within each level can be observed in table 6.49.

For January, the part-worth utility range for time of complete fruit picking factor was 7.4440 with minimum value of 0.000 and maximum of 7.4440. The highest utility value among all the three levels of this factor showed that it was highly preferred level for decision making. However, the highest utility range also showed that this level was and could be frequently traded off with other levels of this factor or with other factors due to the fact that greater the range of a level for a particular factor was, greater were the chances of its trade off with other levels. Both lowest and highest utility values were in positive figures indicating the importance of this level for respondents in the citrus fruit marketing decision making.

As the minimum utility of this level increased to its maximum value, the chances of trading off of this level with other levels as well as with other factors decreased. From these part-worth utilities, it can be concluded that respondents wanted to clear their orchards from fruit within this month of January and it was highly important to them. Nearly 81% of the total respondents of this group preferred to accept January for the complete fruit picking. However, some respondents did not compromise with the health/growth of orchard and accepted low price and ranked this factor to first place. From the percentage importance, it can also be concluded that respondents traded off time of complete fruit picking with price and vice versa.

For February, the part-worth utility range was 3.000 with minimum value of -0.2220 and maximum of 2.7780. Although this level had very low utility range as compared to other two levels, the minimum part-worth utility of -0.2220 indicated that this level could be traded off with other relatively important levels. The maximum part-worth utility of 2.7780 reflected that this level was preferred to some extent for the decision making. Only 19% of the total respondents of this large size group of citrus growers accepted February for the complete fruit picking.

"Sometimes it really doesn't matter for me to choose between the month of January and February if price is really very good. I believe that it makes no difference whether you go for January or February for complete fruit picking from the orchard", one of the respondents shared his views about time of complete fruit picking.

(iii) Number of Fruit Pickings

The overall percentage importance of this factor was ranked third according to the respondent's preference but it was very low as compared to the first two factors as discussed above. This showed that only two factors, price and time of complete fruit picking, were the most important factors and thus highly ranked by all the respondents. However, the percentage importance of this factor in all factors was 7.60% which was third highest amongst all the factors. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 6.49.

For three picking, the part-worth utility range was 6.5550 with minimum value of -1.1110 and maximum of 5.4440. The maximum utility value of 5.4440 showed that it was a highly preferred level and factor for decision making. In addition, this level had maximum utility range among all the other factors and their levels in the analysis which showed its flexibility to trade off with other factors. However, most of the large size growers preferred to allow three pickings to completely clear out their orchards from fruit.

"It is true as the number of pickings increases, the chances of fruit and tree damage increases. However, in my opinion it is advisable for large citrus orchards to pick fruit from the trees in two or three pickings" one of the large size citrus growers replied.

For two pickings, the part-worth utility range was 1.3330 with the lowest part-worth utility of -0.4440 and the highest 0.8890. Although the utility range of this level was very small, the small highest utility value indicated that this level was not as important as the previous one and was easily traded off. A very low value of the highest utility (0.8890) as compared to preceding level of this factor also reflected that this level was weakly preferred by all respondents of this large size citrus growers group.

(iv) Advance Payment

The overall percentage importance of this factor was ranked fourth amongst all the nine factors according to the respondent's preference and was 7.20%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 6.49.

For 35% advance payment level, the part-worth utility range was 3.7780 with the lowest part-worth utility of -0.6670 and the highest 3.1110. The small utility range and highest utility values for this level showed that this level had high preference for the respondents in their marketing decision making. The results showed that 52.4% of the total respondents of this group of large size citrus growers agreed to sign the contract with 35% of advance payment. The reasons of such a high number of respondents who accept the high advance payments which is unusual in the citrus business included progressiveness nature of the citrus growers and to secure future payments.

"Exactly, it is uncustomary in the citrus business to offer or accept advance payments more than usual 25%, however, it does not rule out the option to deal with the 35% advance payment. I would definitely accept any advance payment unless it is over and above the usual 25% advance payment", one of the experienced and prominent citrus growers of the area replied.

For advance payment of 25%, the part-worth utility range was 3.7780 with the lowest part-worth utility of -0.5560 and the highest 3.2220. The small utility range of this level (similar to level '35% advance payment') showed that it was not frequently traded off with other levels of this factor and the highest part-worth utility of 3.2220 (slightly more than the level '35% advance payment') indicated that it was highly or equally preferred level than the preceding level. The results showed that 47.6% of the total respondents of this group preferred to accept 25% advance payment which once again highlighted the customary norm of the citrus business in the area.

(v) Mode of Payment

The overall percentage importance of this factor was ranked fifth amongst all the nine factors according to the respondent's preference and was 5.40%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 6.49.

For cheque as a mode of payment, the part-worth utility range was 2.330 with the lowest part-worth utility of -0.3330 and the highest 2.000. The highest utility value of 2.000 reflected that this level had some importance for the respondent than other two levels of this factor. It also showed that overall importance of this level was also high in the mind of this particular respondent(s). As this utility gradually decreased towards zero the overall percentage importance of this level also decreased. At a minimum

utility of -0.3330, the overall importance of this level was dropped to its minimal level and the respondents traded off this level with other levels of this factor. The small utility range value also indicated this level was not frequently traded off with other levels. It was evident from the results that 95.2% of the total respondents of this group preferred to accept payment through cheque while only 4.8% of the total respondents of this group accepted only cash.

"Banking system has become very friendly now-a-day as compared to the past. I feel very comfortable to deal in with the cheques for sending or receiving payments to or from the sellers or buyers", one of the respondents talked about the mode of payment.

(vi) Delay in Payment

The overall percentage importance of this factor was ranked sixth amongst all the nine factors according to the respondent's preference and was 5.0%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can also be found as shown in table 6.49.

For more than 3 weeks delay in payment, the part-worth utility range was 2.3340 with the lowest part-worth utility of -0.5560 and the highest 1.7780. The smaller utility range indicated that this level was less frequently traded off with other levels of this factor and the highest part-worth utility value of 1.7780 indicated that it was highly preferred level than the other levels. Once delay in payment is inevitable or agreed, it is customary to accept at least 3 or more than three weeks delay in payment. The results revealed that 42.9% of the respondents of this group accepted more than 3 weeks delay in payment while 52.4% of the total respondents liked to accept delay in payment less than one week. Only 4.8% of the total respondents preferred to accept 1-2 week delay in payment.

"Once payment is delayed, it is not unusual to expect more than three weeks delay in payment in the citrus business", one of the respondents explained the usual behaviour of the citrus growers about payment delay.

(vii) Certainty of Payment

The overall percentage importance of this factor was ranked third lowest amongst all the nine factors according to the respondent's preference and was 3.40%. A considerable

variation of part worth utilities between different levels as well as within each level of this factor can be found in table 6.49.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for certainty of payment which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value of 1.4170 for personal guarantee clearly showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with other factor's levels although it had the similar utility range as that of other level.

The small highest part-worth utility value (-1.4170) for post-dated cheque as compared to personal guarantee also reflected that it was less important in marketing decision making. The negative value also reflected the fact that for this particular level respondent's preference was split within or between the levels. The result also showed that overall this factor was considered less important in the process of decision making by the citrus growers as compared to other factors as indicated by its low overall percentage preference of 3.4%.

(viii) Harvesting Fruit Loss

The overall percentage importance of this factor is ranked second lowest amongst all the nine factors according to the respondent's preference and is 3.0%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can also be found as shown in table 6.49.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for harvesting fruit loss which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value of 1.1670 for high harvesting fruit loss clearly showed that it had high preference for decision making. However, it seemed irrational to select high level of harvesting fruit loss while making marketing decision. In reality this was not true and all the fruit lost or damaged during harvesting belonged to the buyer(s). Therefore, citrus growers did not pay prime importance to this factor while making a marketing decision.

"In reality I do not consider harvesting fruit loss while making a pre-harvest contract. It is customary that after signing a contract all fruit belongs to buyer(s). However, few buyers demand to reduce the price if fruit drops from the trees due to natural calamity or catastrophe" a respondent commented on harvesting fruit loss.

(ix) Urgent Need of Money

The overall percentage importance of this factor was ranked lowest amongst all the nine factors according to the respondent's preference and was 2.70%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can also be found as shown in table 6.49.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for urgent need of money which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value of 1.4170 for 'Yes' urgent need of money clearly showed that it had high preference for decision making. The result also showed that overall this factor was least importance in the process of decision making by the citrus growers as compared to other factors as indicated by its low overall percentage preference of 2.70%. However, the large size citrus growers negated the overall low percentage preference of this factor with the high percentage preference of advance payment (by accepting the high advance payments).

(b) Factors Relationship

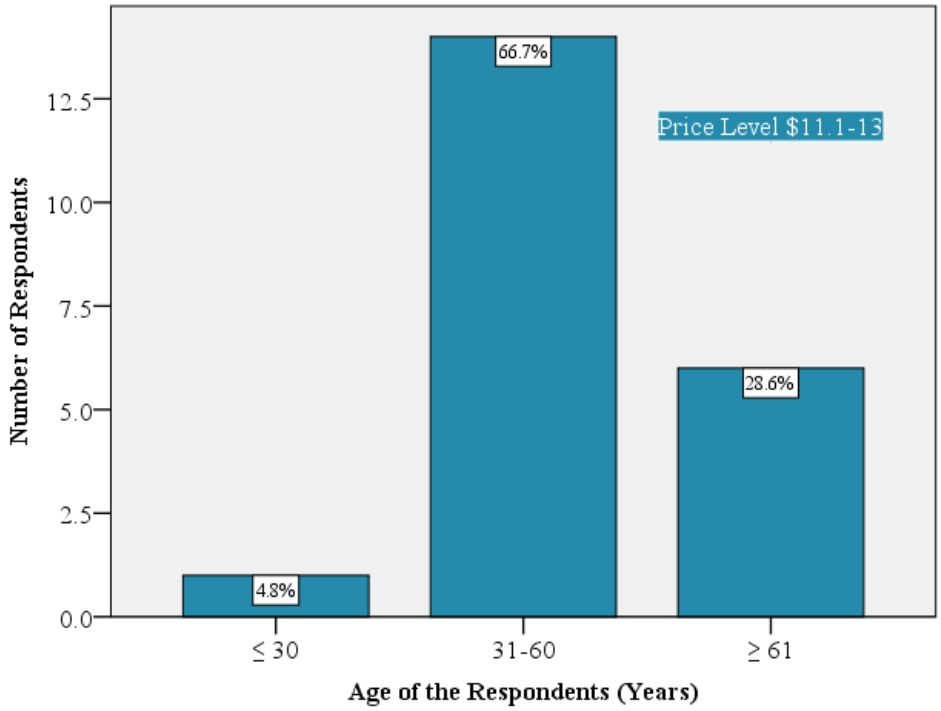
A suitable statistical technique (Fisher's exact test for significance) was used to find out the relationship or interdependence between two given qualitative or quantitative factors. These significance test results showed interesting significant and non-significant relationships between any two given factors (Appendix H-1 & H-2). This section provides a comprehensive discussion about the factors interdependence one by one.

(i) Sale Price per 40 Kg

It was very interesting to know that all the respondents from this group of large size citrus growers also preferred the highest price level of $11.1-13. As the variable 'Sale price per 40 Kg' was a constant, therefore, there existed no relationships of this variable with any other variable in the analysis. Despite the fact that there was no statistics relationship between age of the respondents and price, a clear trend can be observed

from the results as shown in figure 6.6. None of the respondents from all age groups preferred the other two levels of lower price than price level $11.1-13 of price factor as shown in figure 6.5.

Figure 6.5 Relationship between Age of the Respondents and Price



Like the other two groups of citrus growers, the level $11.1-$13 of factor 'Price' for this group of citrus growers was either traded off with the number of fruit picking or with the time of complete fruit picking factors according to their importance but only in rare cases. As the minimum utility of this level increased to its maximum value, the chances of trading off of this level with other levels as well as with other factors decreased. It was evident from the results that 14.28% of the total respondents of this group traded off this level factor with either number of fruit picking or time of complete fruit picking.

Similarly, all the respondents preferred the highest price level of $11.1-13 irrespective of their education, farm experience and size of the citrus orchard (citrus area) (Appendix H-3, H-4 & H-5).

(ii) Advance Payment

A significant relationship was found between advance payment and delay in payment (p value = 0.00). The results revealed that only 10% of the respondents who preferred 25% advance payment accepted less than one week and 1-2 week delay in payment whereas

80% of the respondents from this group preferred greater than three weeks delay in payment as shown in table 6.51.

Table 6.51 Advance Payment and Delay in Payment

Advance Payment		Delay in Payment		
		< 1 Week n=11	**1-2 Week n=1**	**≥ 3 Week n=9**
25% n=10	Count	1	1	8
	% within Advance Payment	10.0%	10.0%	80.0%
	% within Delay in Payment	9.1%	100.0%	88.9%
35% n=11	Count	10	0	1
	% within Advance Payment	90.9%	0.0%	9.1%
	% within Delay in Payment	90.9%	0.0%	11.1%

The results also revealed that 90.9% of the respondent who preferred 35% advance payment accepted less than one week delay in payment whereas only 9.1% of the respondents from this group accepted greater than three weeks delay in payment. None of the respondents preferred to accept 1-2 week delay in payment from this group of large size citrus growers.

(iii) Delay in Payment

There also existed significant relationship between delay in payment and harvesting fruit loss (p value = 0.03). The results revealed that 61.1% of the respondents who accepted high harvesting fruit loss preferred less than one week delay in payment as shown in table 6.52.

Table 6.52 Delay in Payment and Harvesting Fruit Loss

Delay in Payment		Harvesting Fruit Loss	
		Low n=3	**High n=18**
< 1 Week n=11	Count	0	11
	% within Delay in Payment	0.0%	100%
	% within Harvesting Fruit Loss	0.0%	61.1%
1-2 Week n=1	Count	1	0
	% within Delay in Payment	100.0%	0.0%
	% within Harvesting Fruit Loss	33.3%	0.0%
≥ 3 Week n=9	Count	2	7
	% within Delay in Payment	22.2%	77.8%
	% within Harvesting Fruit Loss	66.7%	38.9%

Only 38.9% of the respondents from this group of respondents accepted more than 3 weeks delay in payment. None of the respondents from this group accepted 1-2 weeks delay in payment. Similarly the results also revealed that 33.3% of the respondents who preferred low harvesting fruit loss accepted 1-2 weeks delay in payment and 66.7% of the respondents from this group accepted more than three weeks delay in payment. None of the respondents from this group accepted less than one week delay in payment.

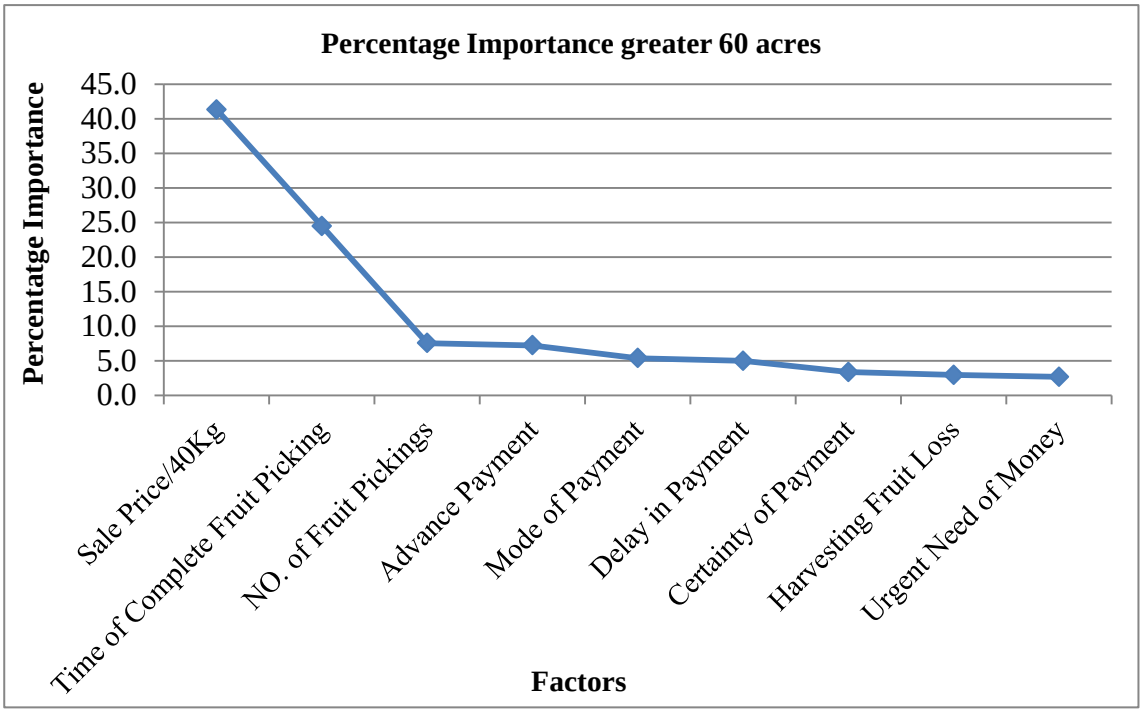
"As per agreement, all the fruit dropped/lost on the ground during harvesting belong to the buyer; hence, it is not a point of concern for me (citrus growers). However, in the case of high fruit drop, a delay of more than 3 weeks in payment is acceptable. This exception is given purely on the basis of humanity and friendly relationships with the buyer", one of the citrus growers commented on the high harvesting fruit drop issue.

(c) Summary

The percentage importance of factor 'sales price per 40kg' showed that it had the highest influence in determining the overall preference as shown in figure 6.6. The results revealed that this factor alone had 41.3% contribution on the overall citrus marketing channel choice decision process. This means that there was a large difference in preference between decision profiles having the highest price and those having the lowest price (Soutar & Turner, 2002). The factor 'time of complete fruit picking' had the second highest influence on the overall preference and it contributed almost one quarter of all the factors in the decision process. The results showed a decrease of almost 41% in the overall preference of this factor as compared to the preceding factor.

It can be easily observed from the results that first two factors influenced nearly 66% in determining the overall preference in the final decision as shown in table 6.53. Therefore, it can be concluded that these two factors were considered relatively highly preferred factors as compared to the other factors in the final decision making by the large size citrus growers.

Figure 6.6 Factors Averaged Importance Values



A further decrease of almost 69% in the overall preference of decision process was observed in the factor 'No. of fruit picking' from the preceding factor and this factor contributed only 7.6% in the citrus marketing channel choice decision process.

The respondents showed almost equal preference for 'No. of fruit picking' and 'advance payment' and it was 7.6% and 7.2% respectively.

Similarly, all the respondents showed equal preference for 'mode of payment' and 'delay in payment' and it was 5.4% and 5.0% respectively.

There was a decrease of nearly 32% in the percentage preference of 'certainty of payment' from the preceding factor showing that this factor and all the remaining factors were of lesser importance in the final decision process of marketing channel choice. However, the respondents put nearly equal preferences for 'certainty of payment' and 'harvesting fruit loss' as shown in table 6.53. The results also showed that 'urgent need of money' played the least important role in determining the overall preference and this factor only contributed 2.7% in overall preference.

Table 6.53 Accumulated Percentages of All Factors

Factor	Percentage Importance	Accumulated Percentage
Sale Price/40Kg	41.3	41.3
Time of Complete Fruit Picking	24.5	65.8
NO. of Fruit Pickings	7.6	73.4
Advance Payment	7.2	80.6
Mode of Payment	5.4	86.0
Delay in Payment	5.0	91.0
Certainty of Payment	3.4	94.4
Harvesting Fruit Loss	3.0	97.3
Urgent Need of Money	2.7	100.0

In order to clearly understand the large citrus grower's factor preferences, all the nine factors can be divided into different groups/tiers on the basis of percentage importance of each factor as follows:

First group is comprised of only one factor namely 'price' which alone contributed 41.3% in the overall preference of citrus marketing decision process.

The second group is also composed of one factor namely 'time of complete fruit picking' which contributed 24.5% in the overall preference of decision process. Both these groups together contributed 65.8% in the overall preference of channel choice

The third group is comprised of two factors namely 'NO. of fruit picking' and 'advance payment' which together contributed 14.8% in the overall preference.

The fourth group is also comprised of two factors namely 'mode of payment' and 'delay in payment' which contributed only 10.4% in the overall preference. All these four groups together contributed 91% in the overall preference of channel choice.

The fifth group is comprised of three factors namely 'certainty of payment', 'harvesting fruit loss' and 'urgent need of money' which contributed only 9% in the overall preference as shown in table 6.53.

It can be inferred from the results that there would be little effect on percentage importance, hence, on the utility of the overall decision, in moving amongst the factors within multiple factors groups. However, this effect would be high when moving from one group of factors to another group as shown in table 6.53. For example, moving from one factor to another factor in the third group would cause decrease in percentage

importance by only 4% (from No. of fruit pickings to advance payment). Whereas, if citrus growers move from first group of factors to second group this decrease in percentage importance would be 41% (sale price per 40 kg to time of complete fruit pickings).

The part-worth utility estimates for all the levels of each factor along with the percentage importance of each factor in the overall percentage preference is exhibited in the table 6.54. The part-worth utilities were estimated using the ordinary least square (OLS) analysis by the conjoint procedure in SPSS. Generally, if any factor or level was preferred over another one, it had larger part-worth utility value. For example, for the factor sale price per 40 kg all the respondents preferred level '$11.1-$13' over other levels and factors, therefore, it had the highest part-worth utility estimate of 6.963 as shown in table 6.54.

As described earlier, the overall worth or utility of the decision is the sum of all part-worth utility of different levels of all factors, therefore, this can be written as;

(Total worth of the decision) $_{ij}...n_{ij}$ = Part-worth of level i for factor 1 + Part-worth of level j for factor 2 + ...+ Part-worth of level n for factor m

The dependent variable in the above equation was the total worth of the respondents marketing decision. The independent variables were the levels of all the factors involved and were treated as dummy variables. The explanatory variables or levels of factors were defined as $P = 1$ if price was $7-$9, $P = 2$ if price was $9.1-$11 and $P = 3$ if price was $11.1-$13; $U = 1$ if respondents showed that they need money urgently and $U = 2$ if they did not need money for urgent purposes; $A = 1$ if respondents accepted 15% advance payment, $A = 2$ for 25% advance payment and $A = 3$ for 35% advance payment; $M = 1$ for cash payments, $M = 2$ for cash & cheque payments and $M = 3$ for only cheque payments; $S = 1$ for personal guarantee as a security of payment and $S = 2$ for post-dated cheques; $D = 1$ for less than one week delay in payment, $D = 2$ for 1-2 week delay in payment and $D = 3$ for greater than three weeks delay in payment; $N = 1$ for one picking, $N = 2$ for two number of pickings and $N = 3$ for three number of pickings; $T = 1$ for the time of complete fruit picking in January, $T = 2$ for February and $T = 3$ for March picking; $L = 1$ for low harvesting fruit loss and $L = 2$ for high fruit loss.

Table 6.54 Part-worth Utility Estimates of Factors

Factors	Levels	Part-worth Utility	Percentage Importance of Factors
Sale Price/40Kg	$7-$9	-7.460	41.3
	$9.1-$11	.497	
	$11.1-$13	6.963	
Urgent Need of Money	Yes	-.329	2.7
	No	.329	
Advance Payment	15%	-1.280	7.2
	25%	.646	
	35%	.635	
Mode of Payment	Cash	-.556	5.4
	Cash & Cheque	-.423	
	Cheque	.979	
Certainty of Payment	Personal Guarantee	.583	3.4
	Post Dated Cheques	-.583	
Delay in Payment	< 1 Week	.180	5.0
	1-2 Week	-.593	
	> 3 Week	.413	
NO. of Fruit Pickings	One	-1.360	7.6
	Two	.233	
	Three	1.127	
Time of Complete Fruit Picking	January	3.349	24.5
	February	1.312	
	March	-4.661	
Harvesting Fruit Loss	Low	-.401	3.0
	High	.401	
(Constant)		14.049	

The regression equation is, therefore,

$$TW = C + a_1P + a_2U + a_3A + a_4M + a_5S + a_6D + a_7N + a_8T + a_9L + \mu$$

Where TW = Total worth of the decision, C = Constant term, μ = *error term*

The part-worth utility estimates in table 6.54 can be summed up to give a total worth for any combination of factor levels. Therefore, profile or decision 1 would have a total worth of 21.922 as shown below which represents the sum of the factor level part-worths and the constant term;

Profile 1:

Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss
$11.1-$13	Yes	15%	Cash & Cheque	Personal Guarantee	≥ 3 Week	Two	February	High

$(TW)_1$ = (14.049) + (6.963) + (-0.329) + (-1.280) + -0.423) + (0.583) + (0.413) + (0.233) + (1.312) + (0.401) = 21.922

In a similar fashion, the total worth of all the 27 profiles or decisions were estimated and subsequently transformed into predicted rankings from highest total worths to the lowest (Appendix H-6 & H-7). The result showed that the profile/decision 20 had the maximum utility of 24.591 amongst all the 27 profiles/decisions as follows;

Profile 20:

Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss
$11.1-$13	NO	35%	Cash	Personal Guarantee	1-2 Week	Two	January	Low

and

$(TW)_{20}$ = (14.049) + (6.963) + (0.329) + (0.635) + (-0.556) + (0.583) + (-0.593) + (0.233) + (3.349) + (-0.401) = 24.591

The predicted total worth for each decision showed how large size citrus growers traded off between the factors and their levels while making the final decision for the selection of a marketing channel. For example, profile 20 and 1 had in common the price, certainty of payment, number of fruit pickings. They differ in urgent need of money, advance payment, mode of payment, delay in payment, time of complete fruit picking and harvesting fruit loss. The predicted total worth for profile 20 and 1 are 24.591 and 21.922 placing them first and fifth, respectively, in the rankings of profiles. This explained how large size citrus growers traded off different factors and their levels to come up with the highest utility. It implied that large size citrus growers were willing to

give up high utility value of 0.413 for ≥ 3 Week delay in payment with the low utility value of -0.593 for 1-2 weeks delay in payment thus moving towards maximizing total worth of the decision.

As already described, the higher the percentage importance of the factor, the greater would be its impact towards total estimated worth of the profiles/decisions. If large size citrus growers select the first two groups of factors (only 2 factors), their decision would be 65.8% true and its utility increases as they select the other factors. In other words, if large size citrus growers focus on the third group (2 more factors) and make the right choice while making citrus marketing decision, they would be 80.6% accurate in their decision.

Table 6.55 shows two statistics, Pearson's R and Kendall's tau, which provide measures of the correlation between the observed and estimated preferences. According to Field (2009), statistics close to 1.0 display that the model is a good fit. The Pearson's R correlation coefficient (0.974) which is close to 1.0 measures the positive correlation but not perfectly positive correlated between all observed and estimated preferences. The Kendall's tau (τ) correlation coefficient reports the extent of this correlation and confirms the validity of the model. Its value is in the range $-1 \leq \tau \leq 1$ showing the two extremes and it is very rare to get these values. However, models having tau value of ± 0.50 or more are considered good fit and models having τ value below ±0.50 are considered a fair fit (Burns & Burns, 2008; Field, 2009; Gustafsson et al., 2007).

Table 6.55 Correlations between Observed and Estimated Preferences

	Value	Sig.
Pearson's R	.974	.000
Kendall's tau (τ)	.869	.000

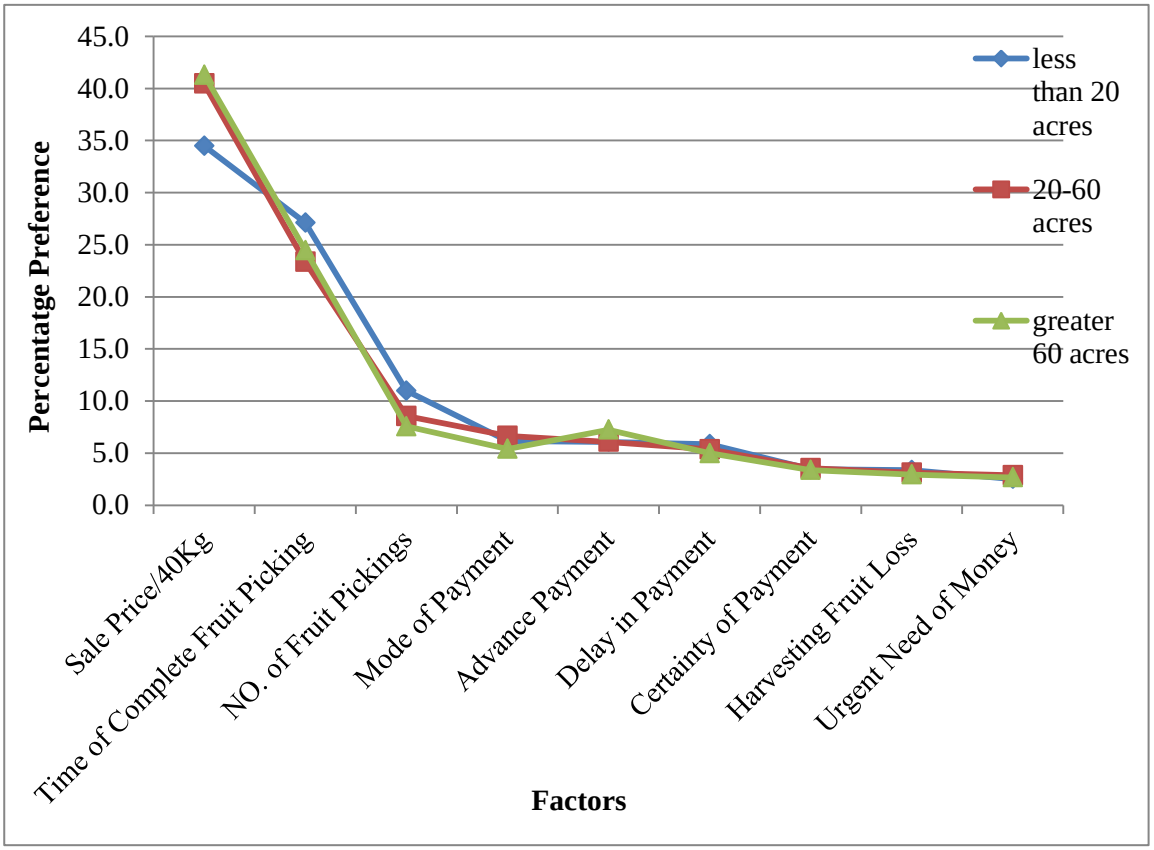
The value of Kendall's tau (0.869) also indicates the agreement between two rankings is not perfect (i.e., the two rankings are not the same), instead, the two rankings are nearly same. However, it can be inferred from the values of Pearson's R and Kendall's tau that the model is a good fit.

6.4 Comparison of All the Three Groups of Citrus Growers

The comparison of all the three groups of citrus growers showed that all the three groups of citrus growers placed different preference and different utility values for the

different factors when made selection out of the bundle of factors. Likewise, the percentage preference and utility values between any two factors is different for all the three groups of citrus growers, although, they had the same order of preferences for the same set of factors in order to make a certain marketing channel choice decision as shown in figure 6.7.

Figure 6.7 Percentage Preference of All the Three Groups of Citrus Growers



The other difference was the slight change in sequence of only one factor i.e., advance payment for the large size citrus growers who preferred it over mode of payment unlike other two groups of citrus growers as shown in table 6.56. The results revealed that small size citrus growers showed different preferences for the first three factors as compared to the other two groups of citrus growers.

The small size citrus growers placed low percentage preference of 34.5% for sale price per 40 Kg as compared to the percentage preference of the same factor for medium and large size citrus growers as 40.5% and 41.3% respectively. However, this group of small size citrus growers placed high percentage preference of 27.1% for time of complete fruit picking as compared to the percentage preference of this factor for

medium and large size citrus growers as 23.3% and 24.5% respectively. This showed that as compared to other groups of growers, fruit picking time was important than the sale price for small size citrus growers. Similarly, the small size citrus growers placed slightly higher preference of 11% for No. of fruit pickings as compared to the percentage preference of this factor for medium and large size citrus growers as 8.6% and 7.6% respectively.

Table 6.56 Factors Preferences for All the Three Groups of Citrus Growers

S.NO.	Growers having less than 20 acres	Growers having 20-60 acres	Growers having greater than 60 acres
1	Sale Price/40Kg	Sale Price/40Kg	Sale Price/40Kg
2	Time of Complete Fruit Picking	Time of Complete Fruit Picking	Time of Complete Fruit Picking
3	NO. of Fruit Pickings	NO. of Fruit Pickings	NO. of Fruit Pickings
4	Mode of Payment	Mode of Payment	Advance Payment
5	Advance Payment	Advance Payment	Mode of Payment
6	Delay in Payment	Delay in Payment	Delay in Payment
7	Certainty of Payment	Certainty of Payment	Certainty of Payment
8	Harvesting Fruit Loss	Harvesting Fruit Loss	Harvesting Fruit Loss
9	Urgent Need of Money	Urgent Need of Money	Urgent Need of Money

This also showed that as compared to other groups of citrus growers, the number of fruit pickings were more important for the small size citrus growers. The results showed that for the remaining six factors, all the three groups of citrus growers placed nearly equal percentage reference. It can be concluded from these results that the first three factors played a decisive role in citrus marketing decision making for all the three different types of citrus growers.

Table 6.57 shows the decisions with the highest utility values for all the three groups of citrus growers. The results showed that all the three groups of citrus growers had different highest utility values for all the levels of different factors. For example, small size citrus growers preferred ‘sale price per 40kg’, ‘time of complete fruit picking’ and ‘delay in payment’ and considered that these three factors produces highest utility for them. The medium and large size citrus growers preferred and considered that ‘sale price per 40kg’, ‘time of complete fruit picking’ and ‘number of fruit pickings’ produces highest utility. Although, the first three important and preferred factors for medium and large size citrus growers are same, however, the highest utility values are

still different for all these three factors. For example, for 'January' as a time of fruit picking, the highest utility values are 2.997 and 3.349 for medium and large size citrus growers respectively as shown in table 6.57.

Table 6.57 Highest Utility Value Decisions

Factors	Three Groups of Citrus Growers					
	less than 20 acres		20-60 acres		greater 60 acres	
	Level	Highest Utility Value	Level	Highest Utility Value	Level	Highest Utility Value
Sale Price/40Kg	$11.1-$13	5.579	$11.1-$13	6.921	$11.1-$13	6.963
Time of Complete Fruit Picking	January	4.202	January	2.997	January	3.349
Delay in Payment	1-2 Week	0.723	1-2 Week	0.447	1-2 Week	0.413
Advance Payment	35%	0.708	35%	0.497	35%	0.646
NO. of Fruit Pickings	Two	0.285	Two	0.942	Two	1.127
Mode of Payment	Cash	0.274	Cash	0.652	Cash	0.979
Certainty of Payment	Personal Guarantee	0.271	Personal Guarantee	0.588	Personal Guarantee	0.583
Urgent Need of Money	No	0.200	No	0.443	No	0.329
Harvesting Fruit Loss	Low	0.189	Low	0.454	Low	0.401

These differences in utility values and different percentage importance for different factors and corresponding levels emphasize that all these three groups of citrus growers are not same and can be studied separately in groups.

Chapter 7

7. RESULTS AND DISCUSSION-CITRUS PRE-HARVEST CONTRACTORS

7.1 Introduction

The purpose of this chapter is to explain and interpret the results obtained from the analysis of primary data. It explains the part-worth utility values of different levels of all factors used in analysis, factors relationship, the highest and lowest part worth utility combinations of different levels of all factors (profiles) and the best combination (profile) in citrus marketing channel choice decision making for different sizes of citrus pre-harvest contractors.

7.2 Analysis of the Data

The primary data was analysed using the statistical package PASW-21 (Predictive Analytics Software – version 21) previously known as SPSS (Statistical Product and Service Solutions). A total of 100 pre-harvest contractors were interviewed using convenience sampling method. Among all the citrus pre-harvest contractors interviewed, 48 contractors had business volume less than US $0.1 million (small size contractors), 32 contractors had business volume US $0.1-0.5 million (medium size citrus contractors) and 20 contractors had business volume more than US $0.5 million (large size citrus contractors). According to the number of factors and their corresponding levels, all the citrus pre-harvest contractors were asked to rank 16 profile cards (decision card) from the most preferred one to the least preferred one.

The part-worth utilities of all the levels of different factors were calculated from the preference data obtained from citrus growers in the field. Moreover, all factors with their appropriate levels were discussed one by one for each type of contractors. Fisher's exact test for significance was employed to measure the relationship between any two variables/factors followed by the explanation of all the significant relationships. Lastly, the percentage importance along with the part worth utility values of all levels of each factor was discussed. This section also threw light on the highest and lowest part worth utility combinations of different levels of all factors (profiles) and concluded which was

the best combination (profile) in citrus marketing channel choice decision making for different size of contractors.

7.3 Citrus Pre-harvest Contractors

According to the volume of citrus contracting business, citrus pre-harvest contractors were classified into three groups; small size citrus pre-harvest contractors (having business volume less than US $0.1 million), medium size pre-harvest contractors (having business volume of US $0.1-0.5 million) and large size pre-harvest contractors (having business volume of more than US $0.5 million).

7.3.1 Small Size Pre-harvest Contractors

(a) Part-worth Utility Values

The overall results of the part-worth utilities values of the levels of all the factors along with the utility ranges calculated from the respondents preferences for each factor used are shown in table 7.1.

Table 7.1 Part-worth Utility Ranges

Factors	Levels	Lowest Utility Value	Highest Utility Value	Range
Sale Price/40Kg	$12-$14	-4.000	-0.500	3.5000
	$14.1-$16	0.500	4.000	3.5000
Urgent Need of Money	Yes	-0.250	1.750	2.0000
	No	-1.750	0.250	2.0000
Advance Payment	25%	-5.333	1.167	6.5000
	35%	-0.708	2.042	2.7500
	45%	-0.458	3.417	3.8750
Mode of Payment	Cash	-1.500	2.500	4.0000
	Cash & Cheque	-1.750	0.750	2.5000
	Cheque	-1.250	0.500	1.7500
	Online	-1.750	2.750	4.5000
Certainty of Payment	Personal Guarantee	-1.000	4.000	5.0000
	Post Dated Cheques	-4.000	1.000	5.0000
Delay in Payment	< 1 Week	-0.333	1.500	1.8333
	1-2 Week	-0.583	0.500	1.0833
	> 3 Week	-1.375	0.458	1.8333
Bargaining Power	Yes	-0.375	4.000	4.3750
	No	-4.000	0.375	4.3750
Reliability	Highly Reliable	0.125	4.000	3.8750
	Reliable	-4.000	-0.125	3.8750
Selective Fruit Purchase	Yes	-4.000	-0.250	3.7500
	No	0.250	4.000	3.7500

Table 7.2 shows the percentage importance of each factor that was calculated on the basis of ranking of all the factors by the respondents. It showed that the higher the percentage preference of a factor, the more is its utility for the respondents and vice versa.

Table 7.2 Overall Percentage Importance of Factors

Rank	Factor	Percentage Importance
1	Sale Price/40Kg	30.20
2	Selective Fruit Purchase	21.70
3	Reliability	12.50
4	Advance Payment	9.50
5	Mode of Payment	9.10
6	Bargaining Power	4.70
7	Delay in Payment	4.60
8	Certainty of Payment	4.40
9	Urgent Need of Money	3.40

The detailed description of all the factors with their appropriate levels is discussed one by one for small size citrus contractors (having business volume less than US $0.1 million).

(i) Sale Price per 40 Kg

The overall preference for factor "Price" was ranked the highest amongst all the factors. The percentage importance of price factor in all factors was 30.20%.However, a great variation of part worth utilities between different levels as well as within each level of all factors can be observed in table 7.1.

For the price level of $14.1-$16, the part-worth utility range was 3.5000 with minimum utility of 0.500 and maximum of 4.000 as shown in table 6.101. This was the highest preferred level among all levels of price and also confirmed the universal truth of seller's inclination to get a high price for his produce. Both minimum and highest values were positive that indicated this level was highly important in citrus pre-harvest contractor's marketing choice decision making process. It was interesting to know that all the respondents preferred $14.1-$16 price level for making marketing channel choice decision.

"Like everyone in the market I also look forward to get high price for the fruit purchased from the citrus growers. For this purpose I try to sell my fruit in those local

or other districts markets which offer relatively high prices" one of the contractors commented on citrus price.

(ii) Selective Fruit Purchase

The overall preference for factor "Selective Fruit Purchase" was ranked second highest amongst all the factors. The percentage importance of this factor in all factors was 21.70%. Similar to the price factor, a great variation of part worth utilities between different levels as well as within each level can be observed in table 7.1.

For selective fruit purchase, both levels had similar ranges of utility value; however, there existed a difference in their highest utility values which reflected the importance of that particular level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value for the level 'No' of selective fruit purchase clearly showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with the other level of this factor or with other factor's levels.

The results also revealed that for the level 'Yes' of selective fruit purchase both lowest and highest utility values were in negative whereas for the level 'No' of this factor both the values were in positive which indicated its preferences over the other level. The 'No' for selective fruit purchase meant that contractors were not going to sell to those customers who wished to purchase only a part of their fruit (selective fruit purchase).

A majority of the respondents were of the opinion that if they allow buyers to purchase selective fruit from the total produce, it is very hard for them to sell the remaining fruit which ultimately turns into a loss.

"I am not left with any option except to sell the remaining fruit on very low price if I offer buyers to purchase selective fruit from the total lot. Therefore, I look for the buyers who can purchase all fruit without sorting in the first instance", one of the respondent advocated against selective fruit purchase.

(iii) Reliability

The overall percentage importance of this factor was ranked third according to the respondent's preference. The percentage importance of this factor was 12.50% and it was very low compared to the first two factors as discussed above. However, a

considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 7.1.

As far as reliability of the buyer(s) was concerned, all the respondents agreed that it was out of question to sell the fruit to the unreliable and untrustworthy buyer(s) in dealings.

"Yes! I can think and choose between a reliable and highly reliable buyer(s) but it is nearly impossible for me to sell my commodity to a completely untrustworthy or unreliable person even if I am offered the highest price in the market", one of the respondents highlighted the importance of reliability in the citrus marketing decision making process.

For reliability, both levels had similar ranges of utility value; however, there existed a difference in their highest utility values which reflected the importance of that particular level in the decision making. The highest utility value for the level "highly reliable" of factor reliability clearly showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with the other level of this factor or with other factor's levels.

The results also revealed that for the level "reliable" of factor 'reliability' both lowest and highest utility values were in negative whereas for the level "highly reliable" of this factor both the values were in positive which indicated its preference over the other level.

(iv) Advance Payment

The overall percentage importance of this factor was ranked fourth amongst all the nine factors according to the respondent's preference and was 9.50%.However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.1.

For advance payment of 35%, the part-worth utility range was 2.7500 with the lowest part-worth utility of -0.708 and the highest 2.042. The small utility range of this level showed that it was not frequently traded off with other levels of this factor and the highest part-worth utility of 2.042 indicated that it was more highly preferred than the preceding level. However, only 6.4% of the total respondents of this group preferred to accept 35% advance payment.

For 45% advance payment level, the part-worth utility range was 3.8750 with the lowest part-worth utility of -0.458 and the highest 3.417. The highest utility value for this level showed that this level had high preference for the respondents in their marketing decision making. The results showed that 80.9% of the total respondents of this group of small size citrus contractors agreed to sign the contract with 45% of advance payment. The reasons for such a high number of respondents who accept the high advance payments showed that citrus contractors were inclined to secure their payments and the best option was to accept 45% advance payments (nearly half of the total amount)

"It is very satisfactory for me to receive a high advance payment; however, in citrus business the reputation of the buyers also plays a very important role. Sometime I insisted for a high advance payment (nearly 45%) whereas in some cases I agreed to accept even lower than 25% advance payment. But in general every citrus contractor tries to receive more than 25% advance payment as there is no set standard about advance payment for citrus contractors", one of the experienced and prominent citrus contractors of the area replied.

(v) Mode of Payment

The overall percentage importance of this factor was ranked fifth amongst all the nine factors according to the respondent's preference and was 9.10%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 7.1.

For cash as a mode of payment, the part-worth utility range was 4.000 with minimum value of -1.500 and maximum of 2.500. Although, the highest utility value of this level was second to the level 'online', yet the small range of this level as compared to level "online" showed that it was highly preferred level for decision making and was not easily traded off with the other levels. The results showed that 66% of the total respondents from this group preferred "cash" mode of payment. It is also noticeable that some respondents have no positive utility for this level.

"If I was given an option to accept low price but with cash payment instead of high price and any other mode of payment, I would go for cash payment. The money in hand today has more value for me as compared to future receipts of money", one of the respondent expressed his feelings about mode of payment".

For online as a mode of payment, the part-worth utility range was 4.5000 with the lowest part-worth utility of -1.750 and the highest 2.750. The highest part-worth utility of 2.750 indicated that this level was very important as compared to any other levels but the range of this level showed that it was frequently traded off with other levels as well as with other factors. Nearly 17% of the respondents of this group preferred to accept payment through "online" mode of payment. The reason for this low number of respondents was due to the fact that 'online' mode of payment was relatively a new method of payment (Chaudry, 2004). Only few respondents had the understanding and approach to this facility because of the limited infrastructure availability. A large number of far off places are yet without this facility of 'online' banking (Omar et al., 2011).

"A few years back, I cannot even think that payments would be so easy to receive with high security through internet banking/online banking. Now I prefer to ask my buyers to pay online before agreeing to any other mode of payment", one of the respondents highlighted the importance of online banking.

(vi) Bargaining Power

The overall percentage importance of this factor was ranked sixth amongst all the nine factors according to the respondent's preference and was 4.70%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.1.

For bargaining power, despite the fact that both levels had the same utility ranges, there existed a difference in the highest and lowest utility values of both levels which reflected the importance of each level in the decision making. The level 'Yes' for bargaining power means that both the buyer and the seller have power to negotiate on the offered price and vice versa. The highest utility value for the level 'Yes' of factor "bargaining power" clearly showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with the other factor's levels.

It was evident from the results that 76.6% of the total respondents of this group preferred to sell their commodity with the right of price negotiation whereas remaining 23.4% of the respondents agreed with the price offered to them.

(vii) Delay in Payment

The overall percentage importance of this factor was ranked third lowest amongst all the nine factors according to the respondent's preference and was 4.60%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.1.

For delay in payment of less than one week, the part-worth utility range was 1.8333 with minimum value of -0.333 and maximum of 1.500. The highest utility value of this level clearly showed that it was the preferred level for decision making. Therefore, it was not easily traded off with other levels of this factor. The results showed that 63.8% of the total respondents of this group of small size contractors preferred to accept less than one week delay in payment.

"I do not have enough financial resources to fully finance all the business activities on my own. Like other businesses, credit is also involved in our citrus business; therefore a delay of one week is acceptable from the buyers against our payments. Two or more than two weeks delay in payments would create not only trouble for me but also affect my whole business cycle for the year", one of the respondents commented on delay in payment.

(viii) Certainty of Payment

The overall percentage importance of this factor was ranked second lowest amongst all the nine factors according to the respondent's preference and was 4.40%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.1.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for certainty of payment which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value for personal guarantee clearly showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with other factor's levels. The results showed that 57.4% of the total respondents preferred to accept personal guarantee as payment security. The small highest part-worth utility value (1.000) for post-dated cheque as

compared to personal guarantee reflected that it was less important in marketing decision making.

(ix) Urgent Need of Money

The overall percentage importance of this factor was ranked lowest amongst all the nine factors according to the respondent's preference and was 3.40%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.1.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for urgent need of money which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value for 'Yes' urgent need of money clearly showed that it had high preference for decision making. The results showed that 76.6% of the total respondents of this group preferred 'Yes' level of factor 'urgent need of money' whereas only 23.4% of the total respondents accepted the terms with level 'No'.

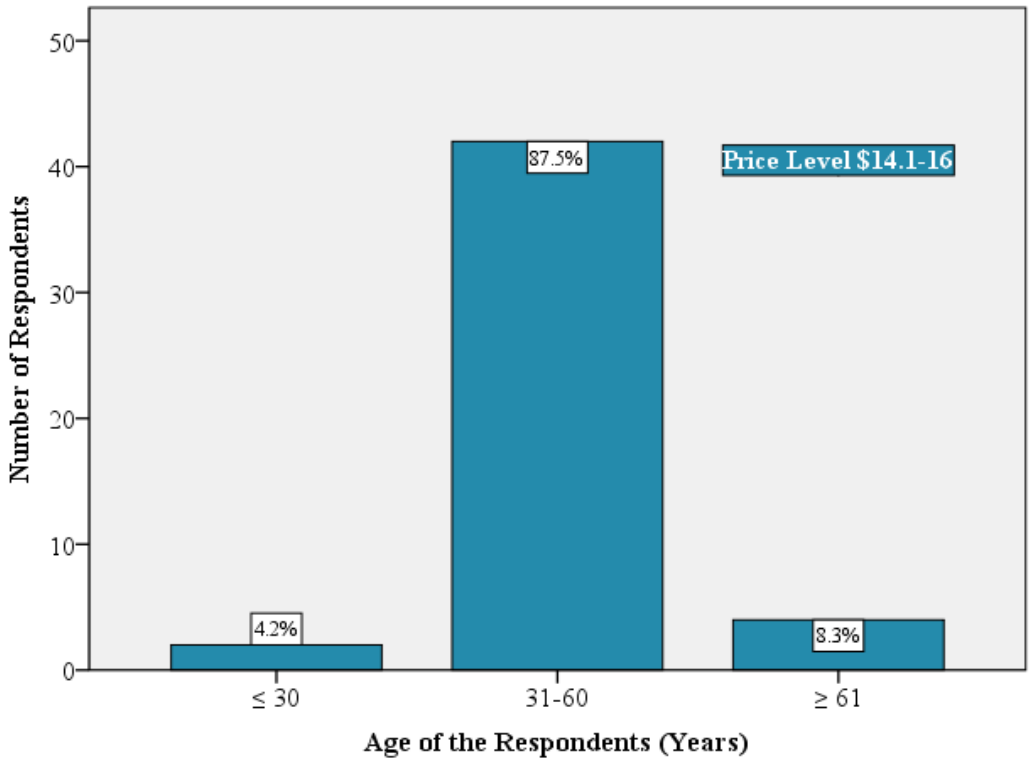
(b) Factors Relationship

A suitable statistical technique (Fisher's exact test for significance) was used to find out the relationship or interdependence between any two given qualitative or quantitative factors. These significance test results showed interesting significant and non-significant relationships between any two given factors (Appendix I-1 & I-2). This section provides the detailed discussion about the factors interdependence one by one.

(i) Sale Price per 40 Kg

It was very interesting to know that all the respondents from this group of small size citrus contractors only preferred the highest price level of $14.1-16. As the variable 'Sale price per 40 Kg' was a constant, therefore, there existed no relationships of this variable with any other variable in the analysis. Despite the fact that there was no statistical relationship between age of the respondents and price, a clear trend can be observed from the results as shown in figure 7.1. None of the respondents from all age groups preferred the other level of lower price than price level $14.1-16 of price factor.

Figure 7.1 Relationship between Age of the Respondents and Price



However, the level $14.1-$16 was traded off with the other factors like advance payment, bargaining power, reliability and selective fruit purchase according to the importance in the minds of respondents. It is very interesting to note that 47.9% of the total respondents from this group traded off this level with advance payment, bargaining power, reliability and selective fruit purchase. As the minimum utility of this level increased to its maximum value, the chances of trading off of this level with other levels as well as with other factors decreased.

All the respondents preferred the highest price level of $14.1-16 irrespective of their education and farm experience (Appendix I-3 & I-4).

(ii) Advance Payment

A significant relationship was found between advance payment and mode of payment (p value = 0.00). The majority of the respondents, 81.3% of the total respondents of this group, preferred to accept 45% advance payment whereas only 12.5% and 6.3% of the total respondents preferred 25% and 35% advance payments respectively as shown in table 7.3.

Table 7.3 Advance Payment and Mode of Payment

Advance Payment		Mode of Payment		
		Cash n=31	Cash & Cheque n=9	Online n=8
25% n=6	Count	1	5	0
	% within Advance Payment	16.7%	83.3%	0.0%
	% within Mode of Payment	3.2%	55.6%	0.0%
35% n=3	Count	2	0	1
	% within Advance Payment	66.7%	0.0%	33.3%
	% within Mode of Payment	6.5%	0.0%	12.5%
45% n=39	Count	28	4	7
	% within Advance Payment	71.8%	10.3%	17.9%
	% within Mode of Payment	90.3%	44.4%	87.5%

Out of 39 respondents who accepted 45% advance payment, 28 respondents (71.8%) preferred to accept cash and 7 respondents (17.9%) accepted online mode of payment. While only 4 respondents (10.3%) preferred to accept both cash and cheque as a mode of payment. The results also revealed that 64.6% of the total respondent of this group of respondents preferred cash as a mode of payment. While only 18.8% and 16.7% of the total respondents accepted cash & cheque and online mode of payment respectively.

(iii) Mode of Payment

A significant relationship was found between mode of payment and urgent need of money (p value= 0.03). A cross-tabulation between mode of payment and urgent need of money showed that 72.9% of the total respondents of this group showed that they need money urgently whereas only 27.1% of the respondents showed that they do not require money on urgent basis as shown in table 7.4.

Table 7.4 Urgent Need of Money and Mode of Payment

Urgent Need of Money		Mode of Payment		
		Cash n=31	Cash & Cheque n=9	Online n=8
Yes n=35	Count	19	9	7
	% within Urgent Need of Money	54.3%	25.7%	20.0%
	% within Mode of Payment	61.3%	100%	87.5%
No n=13	Count	12	0	1
	% within Urgent Need of Money	92.3%	0.0%	7.7%
	% within Mode of Payment	38.7%	0.0%	12.5%

The results also revealed that the respondents who were in need of money accepted three out of four modes of payments but preferred cash payments more than the other two modes. However, the respondents who did not need money urgently preferred to accept payment through cash followed by online payments.

A significant relationship was found between citrus contractors business experience and mode of payment (p value = 0.00). The results revealed that majority of the respondents, 68.8% of this group of small size citrus contractors, had 11-25 years of business experience while only 18.8% of the respondents from this group had greater than 25 years of experience as shown in table 7.5. Only 12.5% of the respondents from this group of respondents had less than 11 years of citrus marketing business experience.

Table 7.5 Experience of the Respondents and Mode of Payment

Citrus Contractor's Experience (Years)		**Mode of Payment**		
		Cash n=31	**Cash & Cheque n=9**	**Online n=8**
≤10 n=6	Count	0	2	4
	% within Citrus Contractor's Experience	0.0%	33.3%	66.7%
	% within Mode of Payment	0.0%	22.2%	50.0%
11-25 n=33	Count	23	7	3
	% within Citrus Contractor's Experience	69.7%	21.2%	9.1%
	% within Mode of Payment	74.2%	77.8%	37.5%
≥26 n=9	Count	8	0	1
	% within Citrus Contractor's Experience	88.9%	0.0%	11.1%
	% within Mode of Payment	25.8%	0.0%	12.5%

A cross-tabulation between citrus contractor's business experience and mode of payment also showed that 69.7% of the respondents who had 11-25 years of business experience preferred to accept cash whereas only 21.2% of the respondents of this group preferred both cash and cheque as a mode of payment. The results also revealed that among the respondents who had more than 25 years of experience, 88.9% of the respondents preferred to accept cash payments whereas only 11.1% of the respondents from this group preferred online payments. It was interesting to note that 66.7% of the respondents who had less than 11 years of citrus marketing business experience preferred online payments.

"I don't find it easy to do online transaction by going into the bank with different details of myself as well as of the buyer. I would love to accept cash payments of my produce", one of the experienced citrus contractors, who prefers to accept cash payments, commented.

(iv) Bargaining Power

A significant relationship was found between citrus contractors business experience and bargaining power (p value = 0.04). The results revealed that majority of the respondents, 68.8% of this group of small size citrus contractors, had 11-25 years of business experience while only 18.8% of the respondents from this group had greater than 25 years of experience as shown in table 7.6.

Table 7.6 Citrus Contractor's Experience and Bargaining Power

Citrus Contractor's Experience (Years)		Bargaining Power	
		Yes n=36	**No n=12**
≤10 n=6	Count	6	0
	% within Citrus Contractor's Experience	100.0%	0.0%
	% within Bargaining Power	16.7%	0.0%
11-25 n=33	Count	26	7
	% within Citrus Contractor's Experience	78.8%	21.2%
	% within Bargaining Power	72.2%	58.3%
≥26 n=9	Count	4	5
	% within Citrus Contractor's Experience	44.4%	55.6%
	% within Bargaining Power	11.1%	41.7%

Only 12.5% of the respondents from this group of respondents had less than 11 years of citrus marketing business experience.

A cross-tabulation between citrus contractor's business experience and bargaining power also showed that 78.8% of the respondents who had 11-25 years of business experience preferred to have bargaining power whereas only 21.2% of the respondents of this group did not prefer to have bargaining power. The results also revealed that among the respondents who had more than 25 years of experience, 44.4% of the respondents preferred to have power to decide the price of their commodity whereas 55.6% of the respondents from this group did not wish for that as shown in table 7.6. It was interesting to note that all the respondents who had less than 11 years of citrus

marketing business experience preferred to have the bargaining power in order to decide the price of their fruit.

"I am doing this business for a long time, nearly 30 years, and now I can say that it is a dream for me to fix or announce the price for my produce/commodity. All is happening is that market itself or few people who has power to affect the market announce or fix the price for my citrus", one of the experienced citrus contractors talked about the bargaining power.

(v) Payment Delay

There existed a significant relationship between citrus contractors experience and delay in payment (p value = 0.03*). The results also revealed that 48.5% of the respondents who had 11-25 years of business experience accepted less than one week of delay in payment and 36.4% of the respondents from this group preferred to accept 1-2 weeks delay in payment as shown in table 7.7.

Table 7.7 Citrus Contractors Experience and Delay in Payment

Citrus Contractor's Experience (Years)		Delay in Payment		
		≤ 1 Week n=31	**1-2 Week n=12**	**≥ 3 Week n=5**
≤10 n=6	Count	6	0	0
	% within Citrus Contractor's Experience	100.0%	0.0%	0.0%
	% within Delay in Payment	19.4%	0.0%	0.0%
11-25 n=33	Count	16	12	5
	% within Citrus Contractor's Experience	48.5%	36.4%	15.2%
	% within Delay in Payment	51.6%	100.0%	100.0%
≥26 n=9	Count	9	0	0
	% within Citrus Contractor's Experience	100.0%	0.0%	0.0%
	% within Delay in Payment	29.0%	0.0%	0.0%

Only 15.2% of the respondents from this group preferred more than three weeks delay in payment. It was interesting to note that the less experienced and very high experienced citrus contractors only accepted less than one week delay in payment.

"Having more than 30 years of experience in citrus contracting business I concluded that you would be profitable if you strictly follow up your outstanding payments and reduce the delay in payments as minimum as you can. Once you showed a relaxation and did not follow up your debtors properly, your payments might delay until the next

season, and this would be the worst situation for the business", one of the most experienced citrus contractors shared his views regarding delay in payments.

(vi) Payment Security

There also existed a significant relationship between age of the respondents and certainty of payment (p value = 0.00). The results showed that 87.5% of the respondents of this group belonged to age group of 31-60 years and 8.3% of the respondents were more than 60 years of age as shown in table 7.8. Only 4.2% of the respondents of this group were below 30 years of age.

Table 7.8 Age of the Respondents and Certainty of Payment

Age of the Respondents (Years)		**Certainty of Payment**	
		Personal Guarantee n=27	**Post Dated Cheques n=21**
≤ 30 n=2	Count	0	2
	% within Age of the Respondents	0.0%	100.0%
	% within Certainty of Payment	0.0%	9.5%
31-60 n=42	Count	27	15
	% within Age of the Respondents	64.3%	35.7%
	% within Certainty of Payment	100.0%	71.4%
≥ 61 n=4	Count	0	4
	% within Age of the Respondents	0.0%	100.0%
	% within Certainty of Payment	0.0%	19.0%

The results showed that 64.3% of the respondents who had 31-60 years of age accepted personal guarantee and remaining 35.7% of the respondents from this group preferred post-dated cheque as a payments security. It was interesting to note that all the respondents from the other two age groups only preferred post-dated cheque as a payments security.

(vii) Urgent Need of Money

There was a statistically significant relationship between experience of the respondents and urgent need of money (p value = 0.00). The results revealed that the majority of the respondents (81.8%) who had 11-25 years of business experience reflected that they were in urgent need of money as shown in table 7.9. Only 18.2% of the respondents accepted that they were not in urgent need of money.

Table 7.9 Experience of the Respondents and Urgent Need of Money

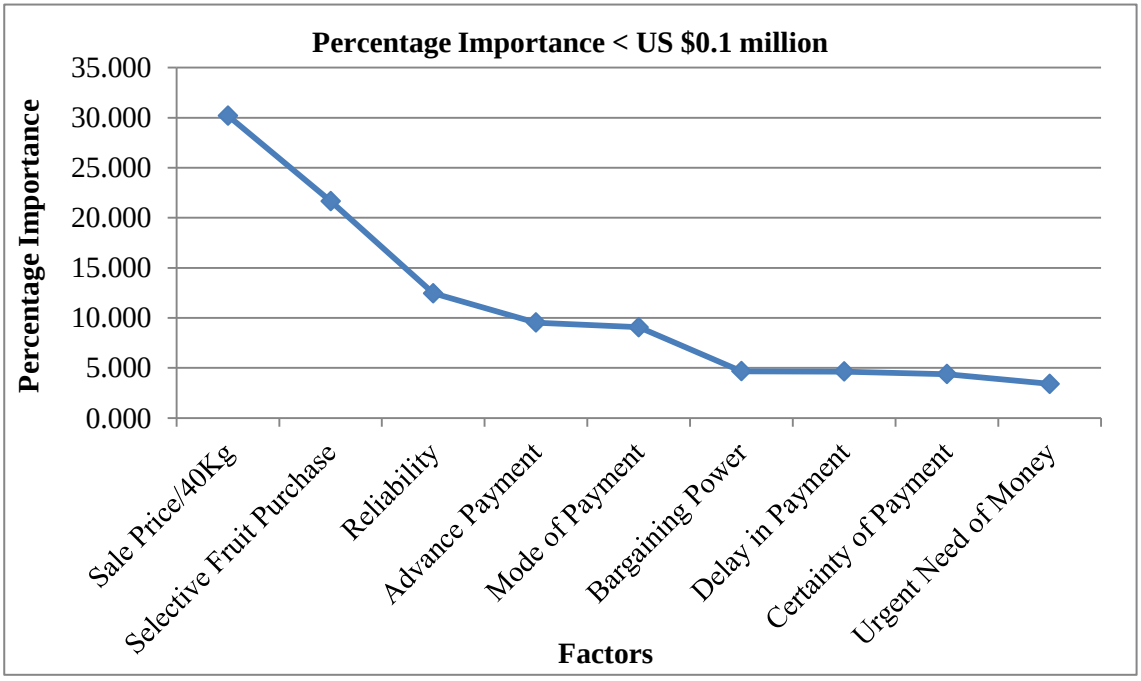
Citrus Contractor's Experience (Years)		Urgent Need of Money	
		Yes n=35	No n=13
≤10 n=6	Count	6	0
	% within Citrus Contractor's Experience	100.0%	0.0%
	% within Urgent Need of Money	17.1%	0.0%
11-25 n=33	Count	27	6
	% within Citrus Contractor's Experience	81.8%	18.2%
	% within Urgent Need of Money	77.1%	46.2%
≥26 n=9	Count	2	7
	% within Citrus Contractor's Experience	22.2%	77.8%
	% within Urgent Need of Money	5.7%	53.8%

On the contrary, majority of the respondents (77.8%) who had more than 25 years of experience showed that they did not need money on urgent basis and only 22.2% of the respondents showed that they needed money urgently at the time of contract. It was interesting to note that all the respondents who had less than 11 years of business experience preferred to accept 'No' level for urgent need of money.

(c) Summary

The percentage importance of factor 'sales price per 40kg' showed that it had the highest influence in determining the overall preference as shown in figure 7.2.

Figure 7.2 Factors Averaged Importance Values



The results revealed that this factor alone had nearly one third contribution on the overall citrus marketing channel choice decision process. This means that there was a large difference in preference between decision profiles having the highest price and those having the lowest price (Soutar & Turner, 2002). The factor 'selective fruit purchase' had the second highest influence on the overall preference and it contributed almost one fifth of all the factors in the decision process. The results showed a decrease of almost 28% in the overall preference of this factor as compared to the preceding factor. A further decrease of almost 42% in the overall preference of decision process was observed in the factor 'reliability' and this factor contributed only 12.5% in the citrus marketing channel choice decision process.

It can be observed from the results that first two factors influenced almost 52% in determining the overall preference in the final decision as shown in table 7.10. Therefore, it can be concluded that these two factors were considered relatively highly preferred factors as compared to the other factors in the final decision making by the small size citrus contractors.

The respondents showed almost equal preference for the 'advance payment' and 'mode of payment and it was 9.5% and 9.1% respectively. A decrease of nearly 24% and 29% in the overall preference from the preceding factor can also be observed for 'advance payment' and 'mode of payment' respectively.

There was a decrease of nearly 50% in the percentage preference of 'bargaining power' from the preceding factor showing that this factor and all the remaining factors were of lesser importance in the final decision process of marketing channel choice. However, the respondents put nearly equal preferences for 'bargaining power', 'delay in payment' and 'certainty of payment' as shown in table 7.10. The results also showed that 'urgent need of money' played the least important role in determining the overall preference and this factor only contributed 3.4% in overall preference.

In order to clearly understand the small size citrus contractor's factor preferences, all the nine factors can be divided into different groups/tiers on the basis of percentage importance of each factor as follows:

First group is comprised of one factor only namely 'price' which alone contributed 30.2% in the overall preference of the decision process.

The second group is also comprised of one factor namely 'selective fruit purchase' which contributed 21.7% in the overall preference.

Table 7.10 Accumulated Percentages of All Factors

Factor	Percentage Importance	Accumulated Percentage
Sale Price/40Kg	30.2	30.2
Selective Fruit Purchase	21.7	51.9
Reliability	12.5	64.3
Advance Payment	9.5	73.9
Mode of Payment	9.1	82.9
Bargaining Power	4.7	87.6
Delay in Payment	4.6	92.2
Certainty of Payment	4.4	96.6
Urgent Need of Money	3.4	100.0

The third group is again composed of one factor namely 'reliability' which contributed 12.5% in the overall preference of decision process. All these three groups together contributed 64.3% in the overall choice preference of citrus marketing channel.

The fourth group is comprised of two factors namely 'advance payment' and 'mode of payment' which contributed 18.6% in the overall preference.

The fifth group is comprised of four factors namely 'bargaining power', 'delay in payment', 'certainty of payment' and 'urgent need of money' which contributed 17.1% in the overall preference as shown in table 7.10.

It can be inferred from the results that there would be little effect on percentage importance, hence, on the utility of the overall decision, in moving among the factors within multiple factors groups. However, this effect would be high when moving from one group of factors to another group as revealed by the table 7.10. For example, moving from one factor to another factor in the fourth group would cause decrease in percentage importance by only 5% (from advance payment to mode of payment). Whereas, if citrus growers move from first group of factors to second group this decrease in percentage importance would be 28.3% (sale price per 40 kg to selective fruit purchase).

The part-worth utility estimates for all the levels of each factor along with the percentage importance of each factor in the overall percentage preference is exhibited in the table 7.11. The part-worth utilities were estimated using the ordinary least square

(OLS) analysis by the conjoint procedure in SPSS. Generally, if any factor or level was preferred over another one, it had larger part-worth utility value. For example, for the factor sale price per 40 kg all the respondents preferred level '$14.1-$16' over other levels and factors, therefore, it had the highest part-worth utility estimate of 2.573 as shown in table 7.11.

As described earlier, the overall worth or utility of the decision is the sum of all part-worth utility of different levels of all factors, therefore, this can be written as;

(Total worth of the decision) $_{ij}...n_{ij}$ = Part-worth of level i for factor 1 + Part-worth of level j for factor 2 + ...+ Part-worth of level n for factor m

Table 7.11 Part-worth Utility Estimates of Factors

Factors	Levels	Part-worth Utility	Percentage Importance of Factors
Sale Price/40Kg	$12-$14	-2.573	30.2
	$14.1-$16	2.573	
Urgent Need of Money	Yes	.253	3.4
	No	-.253	
Advance Payment	25%	-.833	9.5
	35%	.266	
	45%	.568	
Mode of Payment	Cash	.443	9.1
	Cash & Cheque	-.094	
	Cheque	-.568	
	Online	.219	
Certainty of Payment	Personal Guarantee	.164	4.4
	Post Dated Cheques	-.164	
Delay in Payment	< 1 Week	.326	4.6
	1-2 Week	-.054	
	> 3 Week	-.273	
Bargaining Power	Yes	.357	4.7
	No	-.357	
Reliability	Highly Reliable	1.135	12.5
	Reliable	-1.135	
Selective Fruit Purchase	Yes	-1.883	21.7
	No	1.883	
(Constant)		8.627	

The dependent variable in the above equation was the total worth of the respondents marketing decision. The independent variables were the levels of all the factors involved and were treated as dummy variables. The explanatory variables or levels of

factors were defined as P = 1 if price was \$12-\$14 and P = 2 if price was \$14.1-\$16; U = 1 if respondents showed that they need money urgently and U = 2 if they did not need money for urgent purposes; A = 1 if respondents accepted 25% advance payment, A = 2 for 35% advance payment and A = 3 for 45% advance payment; M = 1 for cash payments, M = 2 for cash & cheque payments, M = 3 for only cheque payments and M = 4 for online payments; S = 1 for personal guarantee as a security of payment and S = 2 for post-dated cheques; D = 1 for less than one week delay in payment, D = 2 for 1-2 week delay in payment and D = 3 for greater than three weeks delay in payment; B = 1 showing that both buyer and seller have the price negotiation power and B = 2 for no bargaining power; R = 1 for highly reliable buyer, R = 2 for reliable buyer; F = 1 for allowing buyer to purchase selective fruit and F = 2 for no selective fruit purchase.

The regression equation is, therefore,

$$TW = C + a_1P + a_2U + a_3A + a_4M + a_5S + a_6D + a_7B + a_8R + a_9F + \mu$$

Where TW = Total worth of the decision, C = Constant term, μ = *error term*

The part-worth utility estimates in table 7.11 can be summed up to give a total worth for any combination of factor levels. Therefore, profile or decision 1 would have a total worth of 10.333 as shown below which represents the sum of the factor level part-worths and the constant term;

Profile 1:

Sale Price per 40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
\$14.1-\$16	No	35%	Cash	Post Dated Cheques	1-2 Week	No	Highly Reliable	Yes

$(TW)_1$ = (8.627) + (2.573) + (-0.253) + (0.266) + (0.443) + (-0.164) + (-0.054) + (-0.357) + (1.135) + (-1.883) = 10.333

In a similar fashion, the total worth of all the 16 profiles or decisions were estimated and subsequently transformed into predicted rankings from highest total worth to the lowest (Appendix I-5 & I-6). The result showed that the profile/decision 14 had the maximum utility of 14.958 amongst all the 16 profiles/decisions as follows;

Profile 14:

Sale Price per 40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
$14.1-$16	No	45%	Cash & Cheque	Post Dated Cheques	< 1 Week	Yes	Highly Reliable	No

and

$(TW)_{14}$ = (8.627) + (2.573) + (-0.253) + (0.568) + (-0.094) + (-0.164) + (0.326) + (0.357) + (1.135) + (1.883) = 14.958

The predicted total worth for each decision showed how small size citrus contractors traded off between the factors and their levels while making the final decision for the selection of a marketing channel. For example, profile 14 and 1 had in common the price, urgent need of money, certainty of payment and reliability. They differ in advance payment, mode of payment, delay in payment, bargaining power and selective fruit purchase. The predicted total worth for profile 14 and 1 are 14.958 and 10.333 placing them first and sixth, respectively, in the rankings of profiles. This explained how small size citrus contractors traded off different factors and their levels to come up with the highest utility. It implied that small size citrus contractors were willing to give up high utility value of 0.443 for cash mode of payment with the low utility value of -0.094 for cash & cheque mode of payment thus moving towards maximizing total worth of the decision.

As already described, the higher the percentage importance of the factor, the greater would be its impact towards total estimated worth of the profiles/decisions. If small size citrus contractors select the first three groups of factors (only 3 factors), their decision would be 64.3% true and its utility increases as they select the other factors. In other words, if small size citrus contractors focus on the fourth group (2 more factors) and make the right choice while making citrus marketing decision, they would be 82.9% accurate in their decision.

Table 7.12 shows two statistics, Pearson's R and Kendall's tau, which provide measures of the correlation between the observed and estimated preferences. According to Field (2009), statistics close to 1.0 display that the model is a good fit. The Pearson's R

correlation coefficient for this group is 1.000 which measures the perfect positive correlation between all observed and estimated preferences. The Kendall's tau (τ) correlation coefficient reports the extent of this correlation and confirms the validity of the model. Its value is in the range $-1 \leq \tau \leq 1$ showing the two extremes and it is very rare to get these values. However, models having tau value of ± 0.50 or more are considered good fit and models having τ value below ±0.50 are considered a fair fit (Burns & Burns, 2008; Field, 2009; Gustafsson et al., 2007).

Table 7.12 Correlations between Observed and Estimated Preferences

	Value	**Sig.**
Pearson's R	1.000	.000
Kendall's tau (τ)	1.000	.000

The value of Kendall's tau (1.000) also indicates the agreement between two rankings is perfect (i.e., the two rankings are the same). However, it can be inferred from the values of Pearson's R and Kendall's tau that the model is a good fit.

7.3.2 Medium Size Pre-harvest Contractors

(a) Part-worth Utility Values of All Levels and their Ranges

The overall results of the part-worth utilities values of the levels of all the factors along with the utility ranges calculated from the respondents preferences for each factor used are shown in table 7.13.

Table 7.13 Part-worth Utility Ranges

Factors	Levels	Lowest Utility Value	Highest Utility Value	Range
Price	**$12-$14**	-4.000	-0.375	3.6250
	$14.1-$16	0.375	4.000	3.6250
Money	**Yes**	-0.625	1.750	2.3750
	No	-1.750	0.625	2.3750
Payment	**25%**	-3.667	0.833	4.5000
	35%	-2.292	0.833	3.1250
	45%	-0.083	2.833	2.9167
Payment Method	**Cash**	-0.250	3.250	3.5000
	Cash & Cheque	-1.250	1.500	2.7500
	Cheque	-3.500	0.250	3.7500
	Online	-1.500	2.500	4.0000
Payment Security	**Personal Guarantee**	-1.000	0.375	1.3750
	Post Dated Cheques	-0.375	1.000	1.3750
Payment Delay	**< 1 Week**	-0.333	2.667	3.0000
	1-2 Week	-0.333	1.042	1.3750
	> 3 Week	-2.667	0.667	3.3333
Bargaining Power	**Yes**	-0.875	0.500	1.3750
	No	-0.500	0.875	1.3750
Reliability	**Highly Reliable**	-0.250	4.000	4.2500
	Reliable	-4.000	0.250	4.2500
Selective Fruit Purchase	**Yes**	-4.000	-0.250	3.7500
	No	0.250	4.000	3.7500

Table 7.14 showed the percentage importance of each factor that was calculated on the basis of ranking of all the factors by the respondents. It showed that the higher the percentage preference of a factor, the more is its utility for the respondents and vice versa.

Table 7.14 Overall Percentage Importance of Factors

Rank	Factor	Percentage Importance
1	Selective Fruit Purchase	28.60
2	Sale Price per 40 Kg	21.40
3	Advance Payment	12.60
4	Payment Method	12.00
5	Payment Delay	11.00
6	Reliability	6.30
7	Urgent Need of Money	3.10
8	Bargaining Power	3.00
9	Payment Security	2.00

The detailed description of all the factors with their appropriate levels is discussed one by one for medium size citrus contractors (having business volume US $0.1-0.5 million).

(i) Selective Fruit Purchase

The overall preference for factor "selective fruit purchase" was ranked the highest amongst all the factors. The percentage importance of this factor in all factors was 28.60%. It was very interesting to note that this group of citrus contractors placed highest preference to this factor as compared to factor "Price" which was unusual in the citrus business.

"No doubt, price is the main focus of every seller but I think it is much profitable in the long run if I do not allow buyers to purchase only selective fruit from the whole lot. As you know it is a perishable commodity and I cannot hold it for a long time and by selling all my fruit to one or two buyers is appropriate, hassle free and of course profitable even on a low price", one of the citrus contractors shared his experience.

A great variation of part worth utilities between different levels as well as within each level can be observed as shown in table 7.13.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for selective fruit purchase which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the higher utility value for the level 'No' of selective fruit purchase clearly showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with other factor's levels.

The results also revealed that for the level 'Yes' of selective fruit purchase both lowest and highest utility values were in negative whereas for the level 'No' of this factor both the values were in positive which indicated its preferences over the other level.

A majority of the respondents were of the opinion that if they allow buyers to purchase selected fruit from the total produce; it would be very hard for them to sell the remaining fruit which ultimately turns into a loss. Therefore, all the citrus contractors from this group of respondents were thinking of selling their fruit to one or two buyers only even on low price to avoid the future loss in case of selling selective fruit to a number of buyers.

"I am not left with any option except to sell the remaining fruit on very low price if I offer buyers to purchase selective fruit from the total lot. Therefore, I look for the buyers who can purchase all fruit without sorting in the first instance even on a low price in the market", one of the respondents advocated against selective fruit purchase.

(ii) Sale Price per 40 Kg

The overall preference for factor "Price" was ranked second highest amongst all the factors. The percentage importance of this factor in all factors was 21.40%. Similar to the selective fruit purchase factor, a great variation of part worth utilities between different levels as well as within each level can be observed as shown in table 7.13.

For the price level of $14.1-$16, the part-worth utility range was also 3.6250 with minimum utility of 0.375 and maximum of 4.000 as shown in table 7.13. This was the highest preferred level among all levels of price and also confirmed the universal truth of seller's inclination to get high price of his produce. Both minimum and highest values were positive that indicated this level was highly important in citrus pre-harvest contractor's marketing choice decision making process. It was interesting to know that all the respondents preferred $14.1-$16 price level for making marketing channel choice decision.

(iii) Advance Payment

The overall percentage importance of this factor was ranked third amongst all the nine factors according to the respondent's preference and was 12.60%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can also be found as shown in table 7.13.

For 45% advance payment level, the part-worth utility range was 2.9167 with the lowest part-worth utility of -0.083 and the highest 3.250. The highest utility value for this level showed that this level had high preference for the respondents in their marketing decision making. The results revealed that 78.1% of the total respondents of this group of medium size citrus contractors agreed to sign the contract with 45% of advance payment. The reasons of such a high number of respondents who accept the high advance payments showed that citrus contractors were inclined to secure their payments and the best option was to accept 45% advance payments (nearly half of the total amount). The small lowest utility value and small range of this level as compared to other levels also confirmed that the importance and preference of this level in the process of citrus marketing channel choice decision making.

"It is very satisfactory for me to receive a high advance payment; however, in citrus business the reputation of the buyers also plays a very important role. Sometime I insisted for a high advance payment (nearly 45%) whereas in some cases I agreed to accept even lower than 25% advance payment. But in general every citrus contractor tries to receive more than 25% advance payment as there is no set standard about advance payment for citrus contractors", one of the experienced and prominent citrus contractors of the area replied.

(iv) Mode of Payment

The overall percentage importance of this factor was ranked fourth amongst all the nine factors according to the respondent's preference and was 12.00%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed as shown in table 7.13.

For cash as a mode of payment, the part-worth utility range was 3.500 with minimum value of -0.250 and maximum of 3.250. Although utility range of this level was third in all the four levels of this factor, the highest utility value for this level clearly showed that it was highly preferred level for decision making. The results revealed that 65.6% of the total respondents from this group preferred "cash" mode of payment. It was also noticeable that some respondents had negative utility for this level.

"Is there any other better option to accept payment other than cash?" one of the respondents promptly replied when asked about mode of payments.

For online as a mode of payment, the part-worth utility range was 4.000 with the lowest part-worth utility of -1.500 and the highest 2.500. The highest part-worth utility of 2.500 indicated that this level was next important after level "cash" in decision making but the range of this level showed that it was frequently traded off with other levels as well as with other factors. The other reason of swapping this level off with other levels might have the unavailability of 'online' banking facility in the area. Only 6.3% of the total respondents of this group preferred to accept payment through "online" mode of payment.

(v) Delay in Payment

The overall percentage importance of this factor was ranked fifth amongst all the nine factors according to the respondent's preference and was 11.00%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can also be found as shown in table 7.13.

For delay in payment for less than one week, the part-worth utility range was 3.000 with minimum value of -0.333 and maximum of 2.667. The highest utility value of this level clearly showed that it was highly preferred level for decision making. But the wide range showed that it was easily traded off with other levels of this factor or with other factors. The results revealed that 59.4% of the total respondents of this group of medium size contractors preferred to accept less than one week delay in payment.

"Well! One week is the maximum time which I can allow buyers to pay for my outstanding amount. I know I would be in trouble and cannot execute my business operations profitably if my payments are delayed two or more than two weeks", one of the respondents commented on delay in payment.

(vi) Reliability

The overall percentage importance of this factor was ranked sixth amongst all the nine factors according to the respondent's preference and was 6.30%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 7.13.

As far as reliability of the buyer(s) was concerned, all the respondents agreed that it was out of question to sell the fruit to the unreliable and untrustworthy buyer(s) in dealings.

"Yes! I can think and choose between a reliable and highly reliable buyer(s) but it is nearly impossible for me to sell my commodity to a completely untrustworthy or unreliable person even if I am offered with the highest price in the market", one of the respondents highlighted the importance of reliability in the citrus marketing decision making process.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for reliability which reflected the importance of each level in the decision making. Although the ranges for both the levels of this factor was same, however, the highest utility value for the level "highly reliable" of factor reliability clearly showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with other factor's levels.

The result also showed that overall this factor was less important in the process of decision making by the citrus contractors as compared to other factors as indicated by its low overall percentage importance of 6.30%.

(vii) Urgent Need of Money

The overall percentage importance of this factor was ranked third lowest amongst all the nine factors according to the respondent's preference and was 3.10%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.13.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for urgent need of money which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value for 'Yes' urgent need of money clearly showed that it had high preference for decision making. The results revealed that 68.8% of the total respondents of this group preferred 'Yes' level of factor urgent need of money whereas only 31.3% of the total respondents accepted the terms with level 'No'.

The result also showed that overall this factor was less important in the process of decision making by the citrus contractors as compared to other factors as indicated by its low overall percentage importance of 3.10%.

(viii) Bargaining Power

The overall percentage importance of this factor was ranked second lowest amongst all the nine factors according to the respondent's preference and was 3.0%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can also be found as shown in table 7.13.

For bargaining power, both levels had similar ranges of utility value; however, there existed a difference in their highest utility values which reflected the importance of that particular level in the decision making. The higher utility value for the level 'No' of factor bargaining power showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with other factor's levels.

The results showed that 62.5% of the total respondents of this group preferred to sell their commodity with the right of price negotiation whereas remaining 37.5% of the respondents agreed with the offered price to them.

(ix) Certainty of Payment

The overall percentage importance of this factor was ranked least important amongst all the nine factors according to the respondent's preference and was 2.0%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.13.

For payment security, both levels had similar ranges of utility value; however, there existed a difference in their highest utility value which reflected the importance of that particular level in the decision making. The higher utility value for post-dated cheques clearly showed that it was preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with other factor's levels. The results showed that 71.9% of the total respondents preferred to accept post-dated cheques as a payment security.

The small highest part-worth utility value (0.375) for personal guarantee as compared to post-dated cheque reflected that it was less important in marketing decision making. The result also showed that overall this factor was less importance in the process of decision making by the citrus growers as compared to other factors as indicated by its low overall percentage preference of 2.0%.

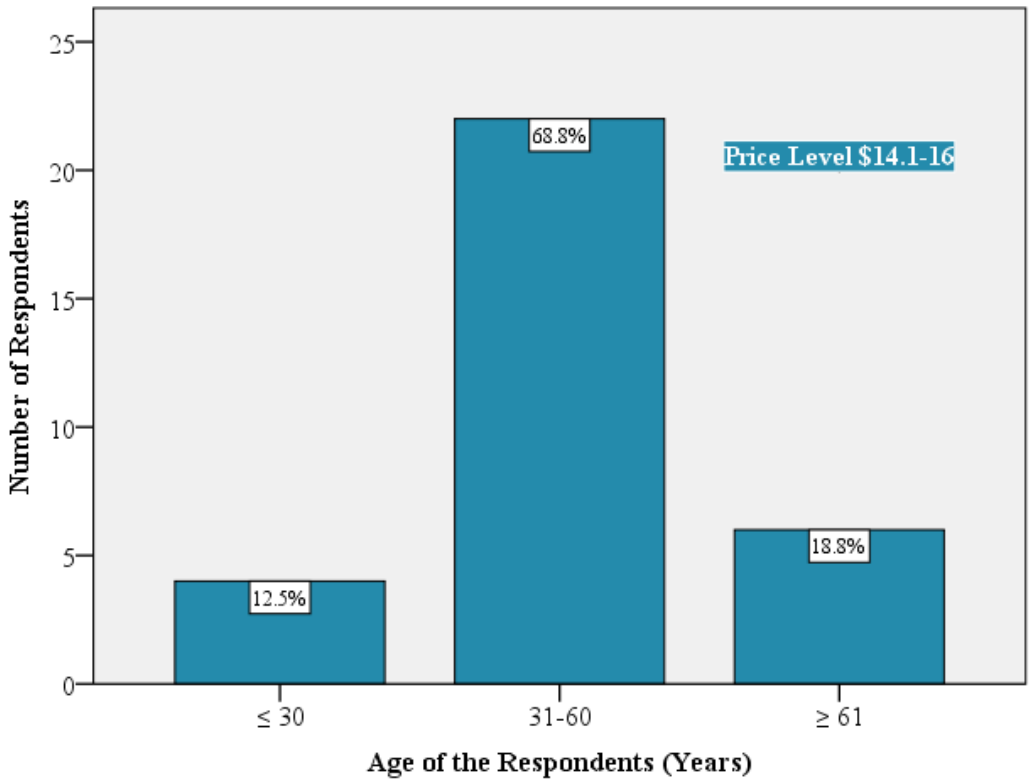
(b) Factors Relationship

A suitable statistical technique (Fisher's exact test for significance) was used to find out the relationship or interdependence between any two given qualitative or quantitative factors. These significance test results showed interesting significant and non-significant relationships between any two given factors (Appendix J-1 & J-2). This section provides discussion about the factors interdependence one by one.

(i) Sale Price per 40 Kg

It was interesting to know that all the respondents from this group of medium size citrus contractors only preferred the highest price level of $14.1-16. As the variable 'Sale price per 40 Kg' was a constant, therefore, there existed no relationships of this variable with any other variable in the analysis. Despite the fact that there was no statistical relationship between age of the respondents and price, a clear trend can be observed from the results as shown in figure 7.3. None of the respondents from all age groups preferred the other level of lower price than price level $14.1-16 of price factor.

Figure 7.3 Relationship between Age of the Respondents and Price



However, the level $14.1-$16 was traded off with the other factors like advance payment, payment method and selective fruit purchase according to the importance in the minds of respondents. It was interesting to note that 65.63% of the total respondents

from this group traded off this level with advance payment, payment method and selective fruit purchase. As the minimum utility of this level increased to its maximum value, the chances of trading off of this level with other levels as well as with other factors decreased. All the respondents preferred the highest price level of $14.1-16 irrespective of their education and farm experience (Appendix J-3 & J-4).

(ii) Advance Payment

A significant relationship was found between advance payment and mode of payment (p value = 0.00). The majority of the respondents, 78.1% of the total respondents of this group, preferred to accept 45% advance payment whereas only 21.9% of the total respondents preferred 35% advance payments as shown in table 7.15.

Table 7.15 Advance Payment and Mode of Payment

Advance Payment		Mode of Payment		
		Cash n=21	**Cash & Cheque n=9**	**Online n=2**
35% n=7	Count	1	6	0
	% within Advance Payment	14.3%	85.7%	0.0%
	% within Mode of Payment	4.8%	66.7%	0.0%
45% n=25	Count	20	3	2
	% within Advance Payment	80.0%	12.0%	8.0%
	% within Mode of Payment	95.2%	33.3%	100%

The results revealed that 80% of the respondents who accepted 45% advance payment, preferred to accept cash payments and 12% of the respondents from this group accepted both cash & cheque. Only 8% of the respondents from this group of medium size citrus contractors preferred ‘online’ mode of payment.

The results also revealed that 14.3% of the respondents who accepted 35% advance payment, preferred cash as a mode of payment whereas 85.7% of the total respondents from this group accepted both cash & cheque.

A significant relationship was found between advance payment and bargaining power (p value = 0.00). The results revealed that majority of the respondents, 62.5% of the total respondents of this group, preferred to accept the terms with bargaining power whereas 37.5% of the total respondents preferred the terms without the bargaining power as shown in table 7.16.

Table 7.16 Advance Payment and Bargaining Power

Advance Payment		Bargaining Power	
		Yes n=20	**No n=12**
35% n=7	Count	7	0
	% within Advance Payment	100.0%	0.0%
	% within Bargaining Power	35.0%	0.0%
45% n=25	Count	13	12
	% within Advance Payment	52.0%	48.0%
	% within Bargaining Power	65.0%	100.0%

The results also revealed that 65% of the respondents who preferred to have bargaining power accepted 45% advance payment and 35% of the respondents from this group accepted 35% level for advance payment. It was interesting to note that all respondent who accepted the terms without bargaining power preferred only 45% of the advance payment.

"I can sell all my fruit on the offered price, which is usually very close to market price, with 45% advance payment. In my opinion, this is good deal as I receive nearly 50% of the total amount which increases the bilateral relations", one of the respondents favoured the high advance payment.

(iii) Payment Delay

There was a significant relationship between age of the respondents and delay in payment (p value = 0.01). The results revealed that 50% of the respondents who had less than thirty years of age (≤ 30 years) preferred to accept less than one week and 1-2 weeks delay in payment equally as shown in table 7.17. None of the respondents from this age group preferred to accept more than three weeks delay in payment.

The results also revealed that 72.7% of the respondents who belonged to age group of 31-60 years preferred less than one weak delay in payment and 18.2% of the respondents from this group preferred more than three weeks in delay. Only 9.1% of the respondents from this group respondents preferred 1-2 weeks delay in payment.
The results revealed that 83.3% of the respondents who were more than 60 years of age preferred 1-2 weeks delay in payment whereas only 16.7% of the respondents from this group preferred less than one week delay in payment.

Table 7.17 Age of the Respondents and Delay in Payment

Age of the Respondents (Years)		Delay in Payment		
		≤ 1 Week n=19	**1-2 Week n=9**	**≥ 3 Week n=4**
≤ 30 n=4	Count	2	2	0
	% within Age of the Respondents	50.0%	50.0%	0.0%
	% within Delay in Payment	10.5%	22.2%	0.0%
31-60 n=22	Count	16	2	4
	% within Age of the Respondents	72.7%	9.1%	18.2%
	% within Delay in Payment	84.2%	22.2%	100.0%
≥ 61 n=6	Count	1	5	0
	% within Age of the Respondents	16.7%	83.3%	0.0%
	% within Delay in Payment	5.3%	55.6%	0.0%

"*I have noticed during my stay in citrus contracting business that once payment is delayed it would delay at least more than 1 week. Therefore, in my opinion the terms with 1-2 week delay in payment is rational and justifiable", one of the most experienced respondents shared his views.*

There also existed a significant relationship between citrus contractors experience and delay in payment (p value = 0.00). The results revealed that 43.8% of the total respondents of this group of citrus contractors had 11-25 years of business experience whereas 31.3% of the respondents from this group had business experience of less than 11 years as shown in table 7.18. Only 25% of the respondents from this group had more than 25 years of business experience.

Table 7.18 Citrus Contractors Experience and Delay in Payment

Citrus Contractor's Experience (Years)		Delay in Payment		
		≤ 1 Week n=19	**1-2 Week n=9**	**≥ 3 Week n=4**
≤10 n=10	Count	7	1	2
	% within Citrus Grower's Experience	70.0%	10.0%	20.0%
	% within Delay in Payment	36.8%	11.1%	50.0%
11-25 n=14	Count	11	1	2
	% within Citrus Grower's Experience	78.6%	7.1%	14.3%
	% within Delay in Payment	57.9%	11.1%	50.0%
≥26 n=8	Count	1	7	0
	% within Citrus Grower's Experience	12.5%	87.5%	0.0%
	% within Delay in Payment	5.3%	77.8%	0.0%

The results showed that 78.6% of the respondents who had 11-25 years of business experience accepted less than one week of delay in payment and 14.3% of the respondents from this group preferred to accept more than three weeks delay in payment. Only 7.1% of the respondents from this group preferred 1-2 weeks delay in payment as shown in table 7.18. The results also revealed that 70% of the respondents who had less than 10 years of business experience preferred less than 1 week delay in payment and 20% of the respondents preferred more than three weeks delay in payment. Only 10% of the respondents from this group preferred 1-2 weeks delay in payment.

It was interesting to note that majority of the very experienced citrus contractors (87.5%) accepted 1-2 weeks delay in payment and only 12.5% of the respondents from this group accepted less than one week delay in payment. On the contrary, the majority of the respondents from the other two groups preferred less than one week delay in payment as shown in table 7.18.

(iv) Reliability

There was a significant relationship between reliability and urgent need of money (p value = 0.00). The majority of the respondents, 68.8% of the total respondents from this group of medium size citrus contractors needed money urgently and only 31.2% of the respondents from this group accepted that they did not need money for urgent purposes as shown in table 7.19.

Table 7.19 Reliability and Urgent Need of Money

Urgent Need of Money		Reliability	
		Highly Reliable n=27	**Reliable n=5**
Yes n=22	Count	22	0
	% within Urgent Need of Money	100.0%	0.0%
	% within Reliability	81.5%	0.0%
No n=10	Count	5	5
	% within Urgent Need of Money	50.0%	50.0%
	% within Reliability	18.5%	100.0%

"The prime objective of any business is to earn a good profit; hence, I also want to get profit out of what I have been doing in the citrus business. Keeping in view all the possible options and ways to increase the profitability I prefer to sell my fruit to a highly reliable buyer on my price (bargaining power)", one of the experienced citrus contractors shared his views.

The results also revealed that all the respondents who needed money urgently preferred highly reliable buyers. Half of the respondents who did not need money on urgent basis accepted highly reliable buyers and remaining half preferred only reliable buyers for the contract.

There was a significant relationship between education of the respondents and reliability (p value = 0.00). The results revealed that majority of the respondents, 92.6% of the total respondents from this group of medium size citrus contractors, who preferred highly reliable buyers were undergraduate whereas 7.4% of the respondents from this group were illiterate as shown in table 7.20.

Table 7.20 Education of the Respondents and Reliability

Education of the Respondents (Years)		**Reliability**	
		Highly Reliable n=27	**Reliable n=5**
Illiterate n=2	Count	2	0
	% within Education of the Respondents	100.0%	0.0%
	% within Reliability	7.4%	0.0%
Undergraduate n=26	Count	25	1
	% within Education of the Respondents	96.2%	3.8%
	% within Reliability	92.6%	20.0%
Graduate n=1	Count	0	1
	% within Education of the Respondents	0.0%	100.0%
	% within Reliability	0.0%	20.0%
Postgraduate n=3	Count	0	3
	% within Education of the Respondents	0.0%	100.0%
	% within Reliability	0.0%	60.0%

The results also revealed that 60% of the respondents who preferred reliable buyers were postgraduate, 20% of the respondents from this group were undergraduate and remaining 20% were graduate in qualification.

(v) Urgent Need of Money

There was a statistically significant relationship between the education of the respondents and urgent need of money (p value = 0.01). The results revealed that the majority of the respondents, 68.8% of the total respondents of this group, accepted that they were in an urgent need of money at the time of contract as shown in table 7.21.

Hence, these respondents preferred to go with the marketing decision in which they expressed the indication of urgent need of money for various activities. Only 31.2% of the respondents accepted that they were not in urgent need of money.

The results also revealed that 76.9% of the undergraduate respondents accepted that they were in urgent need of money and only 23.1% of the respondents from this group showed they did not need money urgently.

Table 7.21 Education of the Respondents and Urgent Need of Money

Education of the Respondents (Years)		Urgent Need of Money	
		Yes n=22	**No n=10**
Illiterate n=2	Count	2	0
	% within Education of the Respondents	100.0%	0.0%
	% within Urgent Need of Money	9.1%	0.0%
Undergraduate n=26	Count	20	6
	% within Education of the Respondents	76.9%	23.1%
	% within Urgent Need of Money	90.9%	60.0%
Graduate n=1	Count	0	1
	% within Education of the Respondents	0.0%	100.0%
	% within Urgent Need of Money	0.0%	10.0%
Postgraduate n=3	Count	0	3
	% within Education of the Respondents	0.0%	100.0%
	% within Urgent Need of Money	0.0%	30.0%

It was interesting to know that all the illiterate respondents showed that they needed money urgently whereas all the graduate and postgraduate respondents showed that they did not need money urgently at the time of contract.

(vi) Payment Security

There also existed a significant relationship between age of the respondents and certainty of payment (p value = 0.00). The results showed that 68.75% of the respondents of this group belonged to age group of 31-60 years and 18.75% of the respondents were more than 60 years of age as shown in table 7.22. Only 12.5% of the respondents of this group were below 30 years of age. The results showed that 90.9% of the respondents having 31-60 years of age accepted post-dated cheques and remaining 9.1% of the respondents from this group preferred personal guarantee as a payments security. It was interesting to note that all the respondents from the age group, less than thirty years of age, preferred personal guarantee as a payments security as shown in

table 7.22. The results also showed that 50% of the respondents older than sixty years of age (≥ 61 years) preferred personal guarantee and 50% of the respondents preferred post-dated cheques as a certainty of payment.

Table 7.22 Age of the Respondents and Certainty of Payment

Age of the Respondents (Years)		Certainty of Payment	
		Personal Guarantee n=9	Post Dated Cheques n=23
≤ 30 n=4	Count	4	0
	% within Age of the Respondents	100.0%	0.0%
	% within Certainty of Payment	44.4%	0.0%
31-60 n=22	Count	2	20
	% within Age of the Respondents	9.1%	90.9%
	% within Certainty of Payment	22.2%	87.0%
≥ 61 n=6	Count	3	3
	% within Age of the Respondents	50.0%	50.0%
	% within Certainty of Payment	33.3%	13.0%

There also existed a significant relationship between education of the respondents and bargaining power (p value = 0.00). The results showed that 76.9% of the under graduate respondents preferred 'Yes' for bargaining power whereas only 23.1% of the respondent do not wish to have bargaining power while selling their produce as shown in table 7.23.

Table 7.23 Education of the Respondents and Bargaining Power

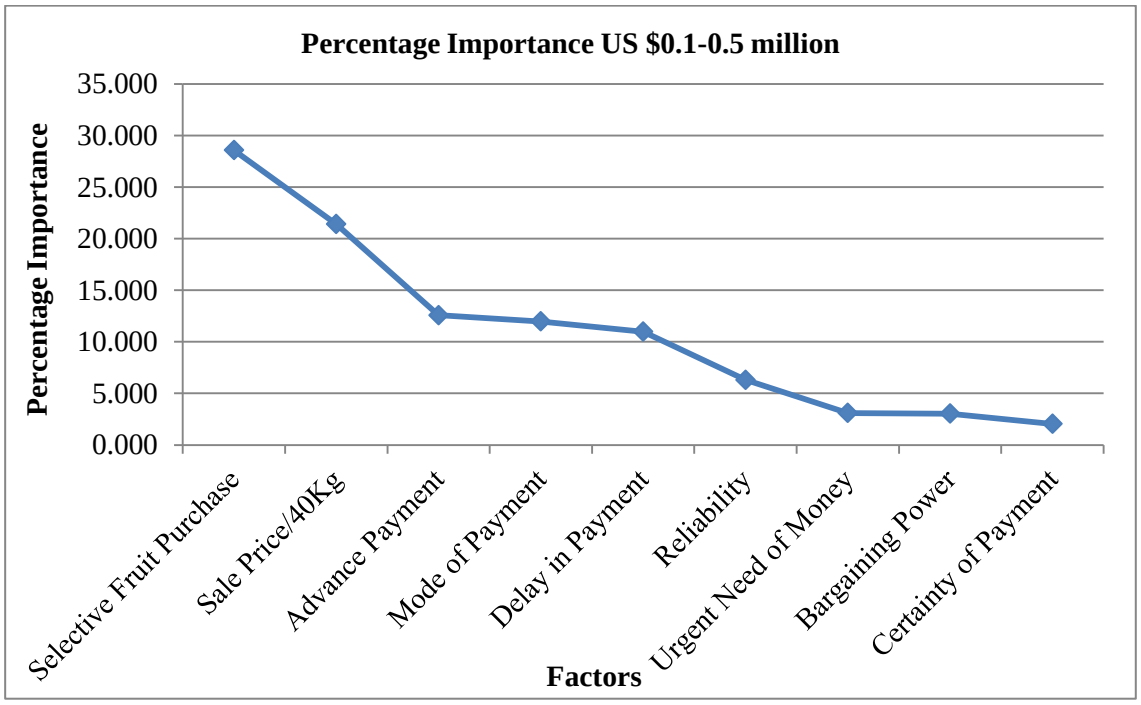
Education of the Respondents (Education Years)		Bargaining Power	
		Yes n=20	No n=12
Illiterate n=2	Count	0	2
	% within Education of the Respondents	0.0%	100.0%
	% within Bargaining Power	0.0%	16.7%
Undergraduate n=26	Count	20	6
	% within Education of the Respondents	76.9%	23.1%
	% within Bargaining Power	100.0%	50.0%
Graduate n=1	Count	0	1
	% within Education of the Respondents	0.0%	100.0%
	% within Bargaining Power	0.0%	8.3%
Postgraduate n=3	Count	0	3
	% within Education of the Respondents	0.0%	100.0%
	% within Bargaining Power	0.0%	25.0%

It was interesting to note that all other respondents preferred 'No' level for bargaining power in the citrus marketing channel choice decisions.

(c) Summary

The percentage importance of the factor 'selective fruit purchase' showed that it had the highest influence in determining the overall preference as shown in figure 7.4. The results revealed that this factor alone had nearly one third contribution on the overall citrus marketing channel choice decision process.

Figure 7.4 Factors Averaged Importance Values



This means that there was a large difference in preference between decision profiles which allowed buyers to purchase selective fruit and those which did not allow the selective fruit purchase (Soutar & Turner, 2002). It was interesting to note that the factor 'price' had the second highest influence on the overall importance and it contributed over one fifth of all the factors in the decision process. Only this group of citrus contractors preferred 'selective fruit purchase' over 'price' because they believed that they would be in profit by selling the whole fruit to only one buyer on comparatively low price in the market. According to the respondents, it was a problematic situation when they had to sell the fruit to different buyers even at the market price. The problems included the search for buyers for different grades of fruit, unavailability of storage facilities as well as the perishability of the fruit.

The results showed a decrease of almost 25% in the overall preference of the factor 'price' as compared to the factor 'selective fruit purchase'. A further decrease of almost 41% in the overall preference of decision process was observed in the factor 'advance payment' and this factor contributed only 12.5% in the citrus marketing channel choice decision process.

It can be observed from the results that first two factors influenced 50% in determining the overall preference in the final decision as shown in table 7.24. Therefore, it can be concluded that these two factors were considered relatively highly preferred factors as compared to the other factors in the final decision making by the medium size citrus contractors.

Table 7.24 Accumulated Percentages of All Factors

Factor	Percentage Importance	Accumulated Percentage
Selective Fruit Purchase	28.6	28.6
Sale Price/40Kg	21.4	50.0
Advance Payment	12.6	62.6
Mode of Payment	12.0	74.5
Delay in Payment	11.0	85.5
Reliability	6.3	91.8
Urgent Need of Money	3.1	94.9
Bargaining Power	3.0	98.0
Certainty of Payment	2.0	100.0

The respondents showed almost equal preference for the 'mode of payment' and 'delay in payment' and it was 12% and 11% respectively. A decrease of nearly 5% and 13% in the overall preference from the preceding factor can also be observed for 'mode of payment' and 'delay in payment' respectively.

There was a decrease of nearly 43% in the percentage preference of 'reliability' from the preceding factor showing that this factor and all the remaining factors were least important in the final decision process of marketing channel choice. However, the respondents put nearly equal preferences for 'urgent need of money', and 'bargaining power' as shown in table 7.24. The results also showed that 'certainty of payment' played the least important role in determining the overall preference and this factor only contributed 2.0% in overall preference.

In order to clearly understand the medium size citrus contractor's factor preferences, all the nine factors can be divided into different groups/tiers on the basis of percentage importance of each factor as follows:

First group is comprised of two factors only namely 'selective fruit purchase' and 'price' which contributed 50% in the overall preference of the decision process.

The second group is comprised of three factors namely 'advance payment', 'mode of payment' and 'delay in payment' which contributed 35.5% in the overall preference. These two groups together contributed 85.5% in the overall choice preference of citrus marketing channel.

The third group is composed of only one factor namely 'reliability' which contributed only 6.3% in the overall preference of decision process.

The fourth group is comprised of three factors namely 'urgent need of money', 'bargaining power' and 'certainty of payment' which contributes 8.2% in the overall preference as shown in table 7.24.

It can be inferred from the results that there would be little effect on percentage importance, hence, on the utility of the overall decision, in moving among the factors within multiple factors groups. However, this effect would be high when moving from one group of factors to another group as shown in table 7.24. For example, moving from one factor to another factor in the first group would cause decrease in percentage importance by only 25.1% (selective fruit purchase to sale price per 40 kg). Whereas, if citrus growers move from first group of factors to second group this decrease in percentage importance would be 41.2% (sale price per 40 kg to advance payment).

The part-worth utility estimates for all the levels of each factor along with the percentage importance of each factor in the overall percentage preference is exhibited in the table 7.25. The part-worth utilities were estimated using the ordinary least square (OLS) analysis by the conjoint procedure in SPSS. Generally, if any factor or level was preferred over another one, it had larger part-worth utility value. For example, for the factor 'selective fruit purchase' all the respondents preferred level 'No' over other levels and factors, therefore, it had the highest part-worth utility estimate of 2.609 as shown in table 7.25.

As described earlier, the overall worth or utility of the decision is the sum of all part-worth utility of different levels of all factors, therefore, this can be written as;

(Total worth of the decision) $_{ij}...n_{ij}$ = Part-worth of level i for factor 1 + Part-worth of level j for factor 2 + ...+ Part-worth of level n for factor m

Table 7.25 Part-worth Utility Estimates of Factors

Factors	Levels	Part-worth Utility	Percentage Importance of Factors
Sale Price/40Kg	$12-$14	-1.875	21.4
	$14.1-$16	1.875	
Urgent Need of Money	Yes	.148	3.1
	No	-.148	
Advance Payment	25%	-.844	12.6
	35%	-.227	
	45%	1.070	
Mode of Payment	Cash	1.078	12.0
	Cash & Cheque	.219	
	Cheque	-1.172	
	Online	-.125	
Certainty of Payment	Personal Guarantee	-.141	2.0
	Post Dated Cheques	.141	
Delay in Payment	< 1 Week	.823	11.0
	1-2 Week	.159	
	> 3 Week	-.982	
Bargaining Power	Yes	-.016	3.0
	No	.016	
Reliability	Highly Reliable	.523	6.3
	Reliable	-.523	
Selective Fruit Purchase	Yes	-2.609	28.6
	No	2.609	
(Constant)		8.505	

The dependent variable in the above equation was the total worth of the respondents marketing decision. The independent variables were the levels of all the factors involved and were treated as dummy variables. The explanatory variables or levels of factors were defined as P = 1 if price was $12-$14 and P = 2 if price was $14.1-$16*; U* = 1 if respondents showed that they need money urgently and U = 2 if they did not need money for urgent purposes; A = 1 if respondents accepted 25% advance payment, A = 2 for 35% advance payment and A = 3 for 45% advance payment; M = 1 for cash payments, M = 2 for cash & cheque payments, M = 3 for only cheque payments and M

= 4 for online payments; S = 1 for personal guarantee as a security of payment and S = 2 for post-dated cheques; D = 1 for less than one week delay in payment, D = 2 for 1-2 week delay in payment and D = 3 for greater than three weeks delay in payment; B = 1 showing that both buyer and seller have the price negotiation power and B = 2 for no bargaining power; R = 1 for highly reliable buyer, R = 2 for reliable buyer; F = 1 for allowing buyer to purchase selective fruit and F = 2 for no selective fruit purchase.

The regression equation is, therefore,

$$TW = C + a_1P + a_2U + a_3A + a_4M + a_5S + a_6D + a_7B + a_8R + a_9F + \mu$$

Where TW = Total worth of the decision, C = Constant term, μ = *error term*

The part-worth utility estimates in table 7.25 can be summed up to give a total worth for any combination of factor levels. Therefore, profile or decision 1 would have a total worth of 9.313 as shown below which represents the sum of the factor level part-worths and the constant term;

Profile 1:

Sale Price per 40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
$14.1-$16	No	35%	Cash	Post Dated Cheques	1-2 Week	No	Highly Reliable	Yes

$(TW)_1$ = (8.505) + (1.875) + (-0.148) + (-0.227) + (1.078) + (0.141) + (0.159) + (0.016) + (0.523) + (-2.609) = 9.313

In a similar fashion, the total worth of all the 16 profiles or decisions were estimated and subsequently transformed into predicted rankings from highest total worth to the lowest (Appendix J-5 & J-6). The result showed that the profile/decision 14 had the maximum utility of 15.601 amongst all the 16 profiles/decisions as follows;

Profile 14:

Sale Price per 40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
$14.1-$16	No	45%	Cash & Cheque	Post Dated Cheques	< 1 Week	Yes	Highly Reliable	No

and

$(TW)_{14}$ = (8.505) + (1.875) + (-0.148) + (1.070) + (0.219) + (0.141) + (0.823) + (-0.016) + (0.523) + (2.609) = 15.601

The predicted total worth for each decision showed how medium size citrus contractors traded off between the factors and their levels while making the final decision for the selection of a marketing channel. For example, profile 14 and 1 had in common the price, urgent need of money, certainty of payment and reliability. They differ in advance payment, mode of payment, delay in payment, bargaining power and selective fruit purchase. The predicted total worth for profile 14 and 1 are 15.601 and 9.313 placing them first and eighth, respectively, in the rankings of profiles. This explained how medium size citrus contractors traded off different factors and their levels to come up with the highest utility. It implied that medium size citrus contractors were willing to give up high utility value of 0.016 for 'No' bargaining power with the low utility value of -0.016 for 'Yes' bargaining power thus moving towards maximizing total worth of the decision.

As already described, the higher the percentage importance of the factor, the greater would be its impact towards total estimated worth of the profiles/decisions. If medium size citrus contractors select the first two groups of factors (only 5 factors), their decision would be 85.5% true and its utility increases as they rightly select the other factors. In other words, if medium size citrus contractors focus on the third group (1 more factors) and carefully make the right choice while making citrus marketing decision, they would be 91.8% accurate in their decision.

Table 7.26 shows two statistics, Pearson's R and Kendall's tau, which provide measures of the correlation between the observed and estimated preferences. According to Field (2009), statistics close to 1.0 display that the model is a good fit. The Pearson's R correlation coefficient (0.997) which is close to 1.0 measures the positive correlation but not perfectly positive correlated between all observed and estimated preferences. The Kendall's tau (τ) correlation coefficient reports the extent of this correlation and confirms the validity of the model. Its value is in the range $-1 \leq \tau \leq 1$ showing the two extremes and it is very rare to get these values. However, models having tau value of ± 0.50 or more are considered good fit and models having τ value below ±0.50 are considered a fair fit (Burns & Burns, 2008; Field, 2009; Gustafsson et al., 2007).

Table 7.26 Correlations between Observed and Estimated Preferences

	Value	Sig.
Pearson's R	0.997	.000
Kendall's tau (τ)	0.983	.000

The value of Kendall's tau (0.983) also indicates the agreement between two rankings is not perfect (i.e., the two rankings are not the same). However, it can be inferred from the values of Pearson's R and Kendall's tau that the model is a good fit.

7.3.3 Large Size Pre-harvest Contractors

(a) Part-worth Utility Values of All Levels and their Ranges

The overall results of the part-worth utilities values of the levels of all the factors along with the utility ranges calculated from the respondents preferences for each factor used are shown in table 7.27.

Table 7.27 Part-worth Utility Ranges

Factors	Levels	Lowest Utility Value	Highest Utility Value	Range
Price	$12-$14	-4.000	-.500	3.5000
	$14.1-$16	0.500	4.000	3.5000
Money	Yes	-0.500	1.500	2.0000
	No	-1.500	0.500	2.0000
Payment	25%	-4.167	-0.167	3.9997
	35%	-0.500	2.208	2.7083
	45%	-0.042	1.958	2.0000
Payment Method	Cash	-0.250	6.000	6.2500
	Cash & Cheque	-1.000	2.000	3.0000
	Cheque	-6.000	1.000	7.0000
	Online	-2.000	2.000	4.0000
Payment Security	Personal Guarantee	-0.625	4.000	4.6250
	Post Dated Cheques	-4.000	0.625	4.6250
Payment Delay	< 1 Week	-0.167	0.500	0.6667
	1-2 Week	-0.292	0.500	0.7917
	> 3 Week	-0.500	0.458	0.9583
Bargaining Power	Yes	-0.750	0.500	1.2500
	No	-0.500	0.750	1.2500
Reliability	Highly Reliable	-0.125	2.000	2.1250
	Reliable	-2.000	0.125	2.1250
Selective Fruit Purchase	Yes	-2.000	0.625	2.6250
	No	-0.625	2.000	2.6250

Table 7.28 shows the percentage importance of each factor that was calculated on the basis of ranking of all the factors by the respondents. It showed that the higher the percentage importance of a factor, the more is its utility for the respondents and vice versa.

Table 7.28 Overall Percentage Importance of Factors

Rank	Factor	Percentage Importance
1	Sale Price per 40 Kg	34.70
2	Payment Method	16.80
3	Selective Fruit Purchase	10.50
4	Advance Payment	9.90
5	Payment Security	9.0
6	Reliability	8.10
7	Bargaining Power	4.0
8	Urgent Need of Money	3.60
9	Payment Delay	3.40

The detailed description of all the factors with their appropriate levels is discussed one by one for large size citrus contractors (having business volume greater than US $0.5 million).

(i) Sale Price per 40 Kg

The overall preference for factor "Price" was ranked highest amongst all the nine factors. The percentage importance of this factor in all factors was 34.70%. A great variation of part worth utilities between different levels as well as within each level can be observed in table 7.27.

For the price level of $14.1-$16, the part-worth utility range was also 3.5000 with minimum utility of 0.500 and maximum of 4.000 as shown in table 7.27. This was the highest preferred level among all levels of price and also confirmed the universal truth of seller's inclination to get high price of his produce. Both minimum and highest values were positive that indicated this level was important in citrus pre-harvest contractor's marketing choice decision making process. It was interesting to know that all the respondents preferred $14.1-$16 price level for making marketing channel choice decision.

(ii) Mode of Payment

The overall percentage importance of this factor was ranked second highest amongst all the nine factors according to the respondent's preference and was 16.80%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 7.27.

For cash as a mode of payment, the part-worth utility range was 6.2500 with minimum value of -0.250 and maximum of 6.000. Although utility range of this level was second to the level 'cheque' the highest utility value for this level as compared to all other levels clearly showed that it was highly preferred level for decision making. Nearly 50% of the total respondents from this group preferred 'cash' mode of payment. It was also noticeable that some respondents had negative utility for this level.

For cash & cheque as a mode of payment, the part-worth utility range was 3.000 with the lowest part-worth utility of -1.000 and the highest 2.000. The highest part-worth utility of 2.000 indicated that this level was not as important as that of cash level. However, the small range of this level showed that it was not frequently traded off with other levels as well as with other factors as compared to the level "cash". Nearly 30% of the total respondents of this group preferred to accept payment through both 'cash & cheque'.

For online as a mode of payment, the part-worth utility range was 4.000 with the lowest part-worth utility of -2.000 and the highest 2.000. The highest part-worth utility of 2.000 indicated that this level was less important in the decision making process and the range of this level also showed that it was frequently traded off with other levels as well as with other factors. Only 10% of the total respondents of this group preferred to accept payment through 'online' mode of payment. One of the probable explanations to this low level of response for 'online' banking might be the unavailability of this service in the area (Omar et al., 2011).

(iii) Selective Fruit Purchase

The overall preference for factor "Selective fruit purchase" was ranked third highest amongst all the factors. The percentage importance of price factor in all factors was 10.50%. A great variation of part worth utilities between different levels as well as within each level can be observed in table 7.27.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for selective fruit purchase which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value for the level 'No' of selective fruit purchase clearly showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with other factor's levels.

A majority of the respondents were of the opinion that if they allow buyers to purchase selective fruit from the total produce, it was very hard for them to sell the remaining fruit which ultimately turns into a loss. Therefore, the majority of citrus contractors in the group, nearly 80% from this group of respondents were thinking of selling their fruit to one or two buyers only even on low price to avoid the future loss in case of selling selective fruit to a number of buyers.

(iv) Advance Payment

The overall percentage importance of this factor was ranked fourth amongst all the nine factors according to the respondent's preference and was 9.90%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.27.

For advance payment of 35%, the part-worth utility range was 2.7083 with the lowest part-worth utility of -0.500 and the highest 2.208. The utility range and highest utility value for this level clearly showed that it was the preferred level as compared to the preceding level. However, nearly 30% of the total respondents of this group preferred to accept 35% advance payment.

For 45% advance payment level, the part-worth utility range was 2.000 with the lowest part-worth utility of -0.042 and the highest 1.958. Although the highest utility value for this level was slightly lower than the preceding level, the lowest utility range value for this level showed that this level had high importance and preference for the respondents in their marketing decision making. Nearly 70% of the total respondents of this group of medium size citrus contractors agreed to sign the contract with 45% of advance payment. The reasons of such a high number of respondents who accept the high advance payments showed that citrus contractors were inclined to secure their payments and the best option was to accept 45% advance payments (nearly half of the total amount). The small lowest utility value and small range of this level as compared to

other levels also confirmed the importance and preference of this level in the process of citrus marketing channel choice decision making.

(v) Certainty of Payment

The overall percentage importance of this factor was ranked fifth amongst all the nine factors according to the respondent's preference and was 9.0%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.27.

The results showed that there existed a difference in the highest and lowest utility values of both levels for certainty of payment which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value for personal guarantee clearly showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with other factor's levels. However, nearly 55% of the total respondents preferred to accept personal guarantee as a payment security.

The small highest part-worth utility value (0.625) and the large negative lowest utility value for post-dated cheques as compared to personal guarantee reflected that it was less important in marketing decision making. The result also showed that nearly 45% of the respondents from this group preferred post-dated cheques.

(vi) Reliability

The overall percentage importance of this factor was ranked sixth amongst all the nine factors according to the respondent's preference and was 8.10%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be observed in table 7.27.

As far as reliability of the buyer(s) was concerned, all the respondents agreed that it was out of question to sell the fruit to the unreliable and untrustworthy buyer(s) in dealings.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for reliability which reflected the importance of each level in the decision making. Although the ranges for both the levels of this factor was same, however, the highest utility value for the level "highly reliable" of factor reliability

clearly showed that it was highly preferred level for decision making. Therefore, it was not easily traded off with other level of this factor or with other factor's levels.

The results revealed that nearly 55% of the respondents from this group of large size citrus contractors preferred highly reliable buyer(s) whereas the other 45% of the respondents preferred reliable buyer(s).

(vii) Bargaining Power

The overall percentage importance of this factor was ranked third lowest amongst all the nine factors according to the respondent's preference and was 4.0%. However, a considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.27.

The results revealed that there existed a difference in the highest and lowest utility values of both levels for bargaining power which reflected the importance of each level in the decision making. Although the range for both the levels of this factor was same, however, the highest utility value for the level 'No' of factor bargaining power clearly showed that it was preferred level for decision making. Therefore, it was not easily traded off with other level of this factor. However, the overall low utility value for both the levels showed that it was easily traded off with other factors.

Nearly 70% of the total respondents of this group preferred to sell their commodity with the right of price negotiation whereas remaining 30% of the respondents agreed with the offered price to them.

(viii) Urgent Need of Money

The overall percentage importance of this factor was ranked second lowest amongst all the nine factors according to the respondent's preference and was 3.6%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.27.

For urgent need of money, both levels had similar ranges of utility value; however, there existed a difference in their highest utility value which reflected the importance of that particular level in the decision making. The highest utility value for 'Yes' urgent need of money clearly showed that it had preference for decision making. Nearly 80%

of the total respondents of this group preferred 'Yes' level of factor urgent need of money whereas only 20% of the total respondents accepted the terms with level 'No'.

The result also showed that overall this factor was less important in the process of decision making by the citrus contractors as compared to other factors as indicated by its low overall percentage importance.

(ix) Delay in Payment

The overall percentage importance of this factor was ranked least important amongst all the nine factors according to the respondent's preference and was 3.40%. A considerable variation of part worth utilities between different levels as well as within each level of this factor can be found in table 7.27.

The highest utility value of all the three levels of this factor was similar; however, there existed a difference in the utility ranges of these three levels. For delay in payment for less than one week, the part-worth utility range was 0.6667 with minimum value of -0.167 and maximum of 0.500. The lowest utility range of this level as compared to other two levels showed that it was less frequently traded off with other levels. Nearly 60% of the total respondents of this group of medium size contractors preferred to accept less than one week delay in payment.

For delay in payment for 1-2 week, the part-worth utility range was 0.7917 with the lowest part-worth utility of -0.292 and the highest 0.500. This level had the same highest utility value as compared to the preceding level but the slightly higher utility range showed that this level was easily traded off. Nearly 30% of the total respondents preferred to accept 1-2 weeks delay in payments.

(b) Factors Relationship

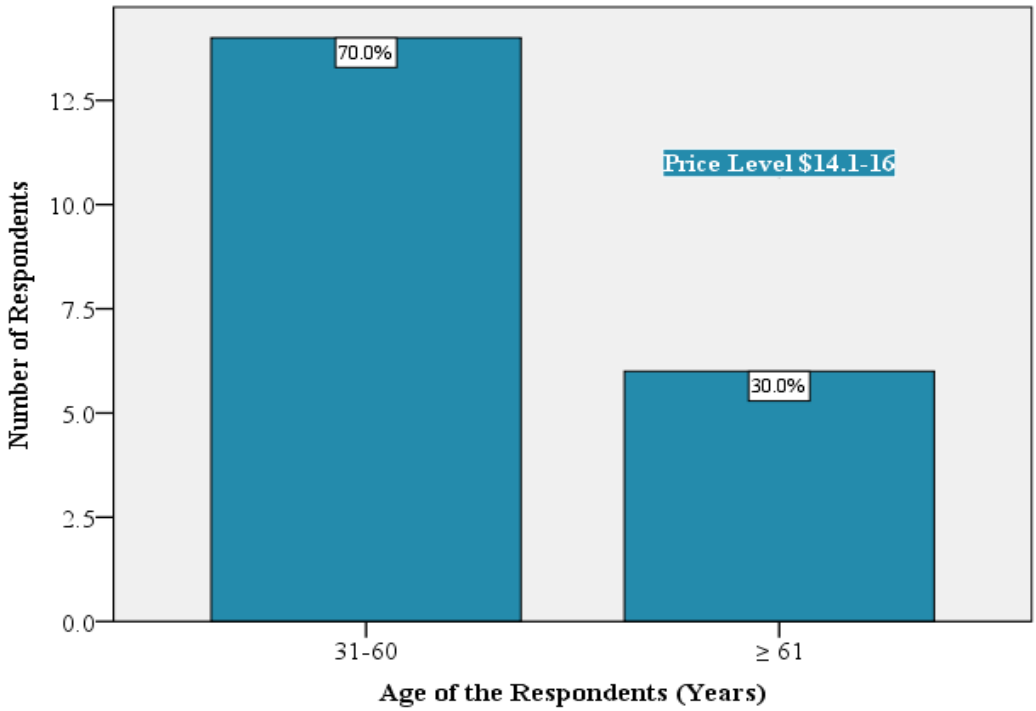
A suitable statistical technique (Fisher's exact test for significance) was used to find out the relationship or interdependence between any two given qualitative or quantitative factors. These significance test results showed interesting significant and non-significant relationships between any two given factors (Appendix K-1 & K-2). This section provides the detailed discussion about the factors interdependence one by one.

(i) Sale Price per 40 Kg

It was interesting to know that all the respondents from this group of large size citrus contractors only preferred the highest price level of $14.1-16. As the variable 'Sale price per 40 Kg' was a constant, therefore, there existed no relationships of this variable with any other variable in the analysis. Despite the fact that there was no statistical relationship between age of the respondents and price, a clear trend can be observed from the results as shown in figure 7.5. None of the respondents from two out of three age groups preferred the other level of lower price than price level $14.1-16 of price factor.

However, the level $14.1-$16 was traded off with the other factors like mode of payment and payment security according to the importance in the minds of respondents. It was very interesting to note that nearly 30% of the total respondents from this group traded off this level with mode of payment and payment security. As the minimum utility of this level increased to its maximum value, the chances of trading off of this level with other levels as well as with other factors decreased.

Figure 7.5 Relationship between Age of the Respondents and Price



All the respondents preferred the highest price level of $14.1-16 irrespective of their education and farm experience (Appendix K-3 & K-4).

(ii) Mode of Payment

A significant relationship was found between mode of payment and advance payment (p value= 0.04). A cross-tabulation between mode of payment and advance payment showed that 50% of the total respondents of this group preferred to accept cash payments only and 30% of the respondents preferred both cash and cheques payment as shown in table 7.29.

It was interesting to note that only 10% of the respondents preferred cheque and equally 10% of the respondents preferred online payments. The results also revealed that 60% of the respondents who preferred cash mode of payment accepted 45% advance payment and 40% of the respondents from this group accepted 35% advance payment. All the respondents who preferred both cash and cheque and online payments only accepted 45% advance payment whereas all the respondents who preferred cheque payments accepted 35% advance payments.

Table 7.29 Mode of Payment and Advance Payment

Mode of Payment		**Advance Payment**	
		35% n=6	**45% n=14**
Cash n=10	Count	4	6
	% within Mode of Payment	40.0%	60.0%
	% within Advance Payment	66.7%	42.9%
Cash & Cheque n=6	Count	0	6
	% within Mode of Payment	0.0%	100.0%
	% within Advance Payment	0.0%	42.9%
Cheque n=2	Count	2	0
	% within Mode of Payment	100.0%	0.0%
	% within Advance Payment	33.3%	0.0%
Online n=2	Count	0	2
	% within Mode of Payment	0.0%	100.0%
	% within Advance Payment	0.0%	14.3%

A significant relationship was found between mode of payment and certainty of payment (p value = 0.00). The results revealed that majority of the respondents, 55%, of this group of large size citrus contractors preferred personal guarantee as a payment security whereas only 45% of the respondents from this group accepted post-dated cheques as shown in table 7.30.

A cross-tabulation between mode of payment and certainty of payment showed that 81.8% of the respondents who preferred personal guarantee accepted cash payments and remaining 18.2% of the respondents from this group accepted online payments.

Table 7.30 Mode of Payment and Certainty of Payment

Mode of Payment		Certainty of Payment	
		Personal Guarantee n=11	**Post Dated Cheques n=9**
Cash n=10	Count	9	1
	% within Mode of Payment	90.0%	10.0%
	% within Certainty of Payment	81.8%	11.1%
Cash & Cheque n=6	Count	0	6
	% within Mode of Payment	0.0%	100.0%
	% within Certainty of Payment	0.0%	66.7%
Cheque n=2	Count	0	2
	% within Mode of Payment	0.0%	100.0%
	% within Certainty of Payment	0.0%	22.2%
Online n=2	Count	2	0
	% within Mode of Payment	100.0%	0.0%
	% within Certainty of Payment	18.2%	0.0%

The results also revealed that 66.7% of the respondents who preferred post-dated cheques as a payment security accepted both cash and cheques payments and 22.2% of the respondents from this group accepted cheque payments. Only 11.1% of the respondents preferred to accept cash payments as shown in table 7.30.

A significant relationship was found between mode of payment and delay in payment (p value = 0.00). The results revealed that majority of the respondents, 60%, of this group of large size citrus contractors preferred less than 1 week delay in payment, 30% of the respondents from this group preferred 1-2 weeks payment delay as shown in table 7.31.

Only 10% of the respondents of this group of large citrus contactors preferred to accept greater than 3 weeks delay in payment.

Table 7.31 Mode of Payment and Delay in Payment

Mode of Payment		Delay in Payment		
		≤ 1 Week n=12	**1-2 Week n=6**	**≥ 3 Week n=2**
Cash n=10	Count	6	4	0
	% within Mode of Payment	60.0%	40.0%	0.0%
	% within Delay in Payment	50.0%	66.7%	0.0%
Cash & Cheque n=6	Count	6	0	0
	% within Mode of Payment	100.0%	0.0%	0.0%
	% within Delay in Payment	50.0%	0.0%	0.0%
Cheque n=2	Count	0	0	2
	% within Mode of Payment	0.0%	0.0%	100.0%
	% within Delay in Payment	0.0%	0.0%	100.0%
Online n=2	Count	0	2	0
	% within Mode of Payment	0.0%	100.0%	0.0%
	% within Delay in Payment	0.0%	33.3%	0.0%

A cross-tabulation between mode of payment and delay in payment showed that 50% of the respondents who preferred less than one week delay in payment accepted only cash payments and equally 50% of the respondents from this group accepted both cash and cheque. The results also revealed that 66.7% of the respondents who preferred 1-2 weeks delay in payment accepted cash payments whereas only 33.3% of the respondents from this group accepted online payments.

A significant relationship was found between mode of payment and bargaining power (p value = 0.04). The results revealed that majority of the respondents, 70%, of this group of large size citrus contractors accepted 'No' for bargaining power whereas 30% of the respondents from this group accepted 'Yes' for bargaining power as shown in table 7.32.

The results revealed that 66.7% of the respondents who accepted 'Yes' for bargaining power preferred cash payments whereas 33.3% of the respondents from this group accepted online payments. The results also showed that 42.9% of the respondents who preferred 'No' for bargaining power accepted cash payments and equally 42.9% of the respondents from this group accepted both cash and cheques. Only 14.3% of the respondents from this group accepted cheques as a mode of payment.

Table 7.32 Mode of Payment and Bargaining Power

Mode of Payment		Bargaining Power	
		Yes n=6	No n=14
Cash n=10	Count	4	6
	% within Mode of Payment	40.0%	60.0%
	% within Bargaining Power	66.7%	42.9%
Cash & Cheque n=6	Count	0	6
	% within Mode of Payment	0.0%	100.0%
	% within Bargaining Power	0.0%	42.9%
Cheque n=2	Count	0	2
	% within Mode of Payment	0.0%	100.0%
	% within Bargaining Power	0.0%	14.3%
Online n=2	Count	2	0
	% within Mode of Payment	100.0%	0.0%
	% within Bargaining Power	33.3%	0.0%

A significant relationship was found between mode of payment and reliability (p value = 0.00). The results revealed that majority of the respondents, 55%, of this group of large size citrus contractors preferred highly reliable buyer(s) whereas only 45% of the respondents from this group preferred only reliable buyer(s) as shown in table 7.33.

Table 7.33 Mode of Payment and Reliability

Mode of Payment		Reliability	
		Highly Reliable n=11	Reliable n=9
Cash n=10	Count	3	7
	% within Mode of Payment	30.0%	70.0%
	% within Reliability	27.3%	77.8%
Cash & Cheque n=6	Count	6	0
	% within Mode of Payment	100.0%	0.0%
	% within Reliability	54.5%	0.0%
Cheque n=2	Count	0	2
	% within Mode of Payment	0.0%	100.0%
	% within Reliability	0.0%	22.2%
Online n=2	Count	2	0
	% within Mode of Payment	100.0%	0.0%
	% within Reliability	18.2%	0.0%

The results revealed that 54.5% of the respondents who preferred highly reliable buyer(s) preferred both cash and cheques as a mode of payments and 27.3% of the respondents from this group accepted cash payments. Only 18.2% of the respondents

from this group of large size citrus contractors preferred online payments as shown in table 7.33.

The results also revealed that 77.8% of the respondents who preferred only reliable buyer(s) preferred cash payments whereas only 22.2% of the respondents from this group preferred cheques as a mode of payment.

A significant relationship was found between age of the respondents and mode of payment (p value = 0.00). The results revealed that majority of the respondents, 70%, of this group of large size citrus contractors were 31-60 years of age whereas only 30% of the respondents from this group were more than 60 years of age as shown in table 7.34.

Table 7.34 Age of the respondents and Mode of Payment

Age of the Respondents (Years)		**Mode of Payment**			
		Cash n=10	**Cash & Cheque n=6**	**Cheque n=2**	**Online n=2**
31-60 n=14	Count	10	2	2	0
	% within Age of the Respondents	71.4%	14.3%	14.3%	0.0%
	% within Mode of Payment	100.0%	33.3%	100.0%	0.0%
≥ 61 n=6	Count	0	4	0	2
	% within Age of the Respondents	0.0%	66.7%	0.0%	33.3%
	% within Mode of Payment	0.0%	66.7%	0.0%	100.0%

The results also revealed that 71.4% of the respondents who were 31-60 years of age preferred to accept cash payments and 14.3% of the respondents from this group preferred both cash and cheques. Only 14.3% of the respondents from this group of large size citrus contractors preferred only cheque payments. None of the respondents from this group of respondents preferred ‘online’ mode of payment.

Nearly 67% of the respondents who were more than 60 years of age preferred both cash and cheque as a mode of payment whereas only 33.3% of the respondents from this group accepted online payments. None of the respondents from this group of respondents preferred ‘cash’ and ‘cheque’ as a mode of payment.

“Up to a small amount, I accept cash payments but for large amount of money I usually prefer cheque or online payments. It is very safe mode of payment in the present scenario, therefore, banking transactions are gaining popularity among the sellers and

buyers in the market", one of the older citrus contractors advocated banking transactions.

A significant relationship had been found between education of the respondents and mode of payment (p value = 0.02). The results revealed that 80%, of this group of large size citrus contractors were undergraduate and 10% of the respondents were postgraduate whereas only 10% of the respondents from this group were illiterate as shown in table 7.35.

Table 7.35 Education of the respondents and Mode of Payment

Education of the Respondents (Years)		**Mode of Payment**			
		Cash n=10	**Cash & Cheque n=6**	**Cheque n=2**	**Online n=2**
Illiterate n=2	Count	0	0	0	2
	% within Education of the Respondents	0.0%	0.0%	0.0%	100.0%
	% within Mode of Payment	0.0%	0.0%	0.0%	100.0%
Undergraduate n=16	Count	8	6	2	0
	% within Education of the Respondents	50.0%	37.5%	12.5%	0.0%
	% within Mode of Payment	80.0%	100.0%	100.0%	0.0%
Graduate n=2	Count	2	0	0	0
	% within Education of the Respondents	100.0%	0.0%	0.0%	0.0%
	% within Mode of Payment	20.0%	0.0%	0.0%	0.0%

The results revealed that 50% of the undergraduate respondents preferred cash payments, 37.5% of the respondents preferred both cash and cheques. Only 12.5% of the respondents from this group preferred only cheque payments. None of the respondents from this group of respondents preferred 'online' mode of payment.

It was interesting to note that all the graduate respondents preferred only cash payments whereas all the illiterate respondents preferred online payments only.

"Being an illiterate person, I never used the cheques or banks for my business transactions. But once I visited the bank with my friend who was making an online transaction, to my surprise, it was really a simple and convenient method of payment. Simply make sure you have the right bank account number for the person whom you are sending the payment online", one of the illiterate respondents shared his experience of online banking.

A significant relationship was found between experience of the respondents and mode of payment (p value = 0.00). The results revealed that 50% of the respondents of this group of large size citrus contractors had 11-25 years of citrus marketing experience and about 40% of the respondents had more than 25 years of experience. Only 10% of the respondents from this group of respondents had below 11 years of citrus marketing business as shown in table 7.36.

Table 7.36 Experience of the respondents and Mode of Payment

Citrus Contractor's Experience (Years)		Mode of Payment			
		Cash n=10	**Cash & Cheque n=6**	**Cheque n=2**	**Online n=2**
≤10 n=2	Count	2	0	0	0
	% within Citrus Grower's Experience	100.0%	0.0%	0.0%	0.0%
	% within Mode of Payment	20.0%	0.0%	0.0%	0.0%
11-25 n=10	Count	8	0	2	0
	% within Citrus Grower's Experience	80.0%	0.0%	20.0%	0.0%
	% within Mode of Payment	80.0%	0.0%	100.0%	0.0%
≥26 n=8	Count	0	6	0	2
	% within Citrus Grower's Experience	0.0%	75.0%	0.0%	25.0%
	% within Mode of Payment	0.0%	100.0%	0.0%	100.0%

The results also revealed that 80% of the respondents who had 11-25 years of experience preferred to accept cash payments and only 20% of the respondents from this group accepted cheques as a mode of payment. On the contrary, 75% of the respondents who had more than 25 years of citrus marketing experience preferred both cash and cheques payments whereas only 25% of the respondents from this group accepted online payments as shown in table 7.36. It was interesting to note that all the respondents who had less than 10 years of citrus marketing business only accepted cash payments.

"I deal in large quantities of citrus and in the distant markets around the country, therefore, it is not feasible for me to accept or manage to receive cash payments. The only reliable, quick and safe option is the banking transaction i.e., cheques, online", one of the large size citrus contractors shared his views.

(iii) Selective Fruit Purchase

A significant relationship was found between experience of the respondents and selective fruit purchase (p value = 0.02). The majority, 80% of the total respondents,

who had 11-25 years of citrus marketing experience, did not prefer to sell selective fruit to different buyers whereas only 20% of the respondents agreed to sell selective fruit to different buyers as shown in table 7.37. It was interesting to note that all respondents who had more than 25 years of experience did not allow buyers to buy selective fruit whereas all the respondents who had below 11 years of experience allowed different buyers to buy selective fruit.

Table 7.37 Experience of the Respondents and Selective Fruit Purchase

Citrus Contractor's Experience (Years)		Selective Fruit Purchase	
		Yes n=4	**No n=16**
≤10 n=2	Count	2	0
	% within Citrus Grower's Experience	100.0%	0.0%
	% within Selective Fruit Purchase	50.0%	0.0%
11-25 n=10	Count	2	8
	% within Citrus Grower's Experience	20.0%	80.0%
	% within Selective Fruit Purchase	50.0%	50.0%
≥26 n=8	Count	0	8
	% within Citrus Grower's Experience	0.0%	100.0%
	% within Selective Fruit Purchase	0.0%	50.0%

"Through experiences I have learnt that it would be profitable for me if I don't' allow buyers to select fruit from my whole lot", one of the large size citrus contractors, who don't favour selective fruit purchase, shared his views.

(iv) Advance Payment

A significant relationship was found between advance payment and delay in payment (p value = 0.03). The majority of the respondents, 70% of the total respondents of this group, preferred to accept 45% advance payment whereas only 30% of the total respondents preferred 35% advance payments as shown in table 7.38.

The results revealed that 57.1% of the respondents who accepted 45% advance payment, preferred to accept less than one week delay in payments and 42.9% of the respondents from this group accepted 1-2 weeks delay in payments. None of the respondents from this group of large size citrus contractors preferred greater than three weeks delay in payment.

The results also revealed that 66.7% of the respondents who accepted 35% advance payment, preferred less than one week delay whereas 33.3% of the total respondents from this group accepted greater than three weeks delay in payment.

Table 7.38 Advance Payment and Delay in Payment

Advance Payment		Delay in Payment		
		≤ 1 Week n=12	**1-2 Week n=6**	**≥ 3 Week n=2**
35% n=6	Count	4	0	2
	% within Advance Payment	66.7%	0.0%	33.3%
	% within Delay in Payment	33.3%	0.0%	100.0%
45% n=14	Count	8	6	0
	% within Advance Payment	57.1%	42.9%	0.0%
	% within Delay in Payment	66.7%	100.0%	0.0%

A significant relationship was found between advance payment and reliability (p value = 0.00). The results revealed that majority of the respondents, 55% of the total respondents of this group, preferred highly reliable buyer(s) whereas only 45% of the total respondents preferred only reliable buyer(s) as shown in table 7.39.

It was interesting to note that all the respondents who preferred highly reliable buyer(s) accepted only 45% advance payments. It negated the usual perception that contractors accepted less advance payments from 'highly reliable' buyers and vice versa. Nearly 66.7% of the respondents who preferred only reliable buyer(s) accepted 35% advance payment whereas 33.3% of the respondents from this group accepted 45% advance payment.

Table 7.39 Advance Payment and Reliability

Advance Payment		Reliability	
		Highly Reliable n=11	**Reliable n=9**
35% n=6	Count	0	6
	% within Advance Payment	0.0%	100.0%
	% within Reliability	0.0%	66.7%
45% n=14	Count	11	3
	% within Advance Payment	78.6%	21.4%
	% within Reliability	100.0%	33.3%

A significant relationship was found between citrus grower's experience and advance payment (p value = 0.02). The results revealed that 50% of the respondents of the total

respondents of this group had 11-25 years of citrus marketing business whereas 40% of the respondents from this group had more than 25 years of experience. Only 10% of the respondents from this group had less than 11 years of marketing experience as shown in table 7.40.

The results also revealed that 60% of the respondents who had 11-25 years of experience preferred 35% advance payment and 40% of the respondents from this group accepted 45% advance payment. It was interesting to note that all the respondents who had less than 11 years and more than 25 years of citrus marketing experience only preferred 45% advance payment as shown in table 7.40. None of the respondents from all the groups did not preferred to accept 25% advance payment which showed that higher advance payments were highly preferred for citrus contractors.

Table 7.40 Experience of the Respondents and Advance Payment

Citrus Contractor's Experience (Years)		**Advance Payment**	
		35% n=6	**45% n=14**
≤10 n=2	Count	0	2
	% within Citrus Grower's Experience	0.0%	100.0%
	% within Advance Payment	0.0%	14.3%
11-25 n=10	Count	6	4
	% within Citrus Grower's Experience	60.0%	40.0%
	% within Advance Payment	100.0%	28.6%
≥26 n=8	Count	0	8
	% within Citrus Grower's Experience	0.0%	100.0%
	% within Advance Payment	0.0%	57.1%

(v) Payment Security

There also existed a significant relationship between certainty of payment and bargaining power (p value = 0.01). The results showed that 70% of the respondents of this group preferred to have 'No' bargaining power and 30% of the respondents of this group preferred to have bargaining power as shown in table 7.41.

It was interesting to note that all the respondents who preferred 'Yes' for bargaining power accepted personal guarantee as a payment security. The results also revealed that 64.3% of the respondents who preferred 'No' for bargaining power accepted personal guarantee whereas the remaining 35.7% of the respondents accepted post-dated cheques as a payment security.

Table 7.41 Certainty of Payment and Bargaining Power

Certainty of Payment		Bargaining Power	
		Yes n=6	**No n=14**
Personal Guarantee n=11	Count	6	5
	% within Certainty of Payment	54.5%	45.5%
	% within Bargaining Power	100.0%	35.7%
Post Dated Cheques n=9	Count	0	9
	% within Certainty of Payment	0.0%	100.0%
	% within Bargaining Power	0.0%	64.3%

(vi) Reliability

There was a significant relationship between reliability and selective fruit purchase (p value = 0.03). The results revealed that majority of the respondents, 55% of the total respondents from this group of large size citrus contractors preferred highly reliable buyers and 45% of the respondents from this group preferred reliable customers.

The results also revealed that all the respondents who preferred highly reliable buyers did not allow the buyer(s) to purchase selective fruit. Nearly 56% of the respondents who preferred only reliable buyer(s) did not allow selective purchase whereas 44.4% of the respondents from this group allowed the buyer(s) to purchase selective fruit as shown in table 7.42.

Table 7.42 Reliability and Selective Fruit Purchase

Reliability		Selective Fruit Purchase	
		Yes n=4	**No n=16**
Highly Reliable n=11	Count	0	11
	% within Reliability	0.0%	100.0%
	% within Selective Fruit Purchase	0.0%	68.8%
Reliable n=9	Count	4	5
	% within Reliability	44.4%	55.6%
	% within Selective Fruit Purchase	100.0%	31.3%

There was a significant relationship between age of the respondents and reliability (p value = 0.01). The majority of the respondents, 70% of the total respondents from this group of large size citrus contractors were 31-60 years of age and 30% of the respondents from this group were more than 60 years of age as shown in table 7.43.

The results also revealed 64.3% of the respondents who were 31-60 years of age preferred reliable buyer(s) whereas remainder of the respondents from this group preferred highly reliable buyer(s). It was interesting to note that all the respondents who were more than 60 years of age only preferred highly reliable buyer(s).

Table 7.43 Age of the Respondents and Reliability

Age of the Respondents (Years)		Reliability	
		Highly Reliable n=11	Reliable n=9
31-60 n=14	Count	5	9
	% within Age of the Respondents	35.7%	64.3%
	% within Reliability	45.5%	100.0%
≥ 61 n=6	Count	6	0
	% within Age of the Respondents	100.0%	0.0%
	% within Reliability	54.5%	0.0%

There was a significant relationship between experience of the respondents and reliability (p value = 0.00). The results revealed that majority of the respondents, 60% of the total respondents from this group of large size citrus contractors had 1-25 years of citrus marketing business experience whereas 40% of the respondents had more than 25 years of experience as shown in table 7.44.

Table 7.44 Experience of the Respondents and Reliability

Citrus Contractor's Experience (Years)		Reliability	
		Highly Reliable n=11	Reliable n=9
≤10 n=2	Count	0	2
	% within Citrus Grower's Experience	0.0%	100.0%
	% within Reliability	0.0%	22.2%
11-25 n=10	Count	3	7
	% within Citrus Grower's Experience	30.0%	70.0%
	% within Reliability	27.3%	77.8%
≥26 n=8	Count	8	0
	% within Citrus Grower's Experience	100.0%	0.0%
	% within Reliability	72.7%	0.0%

The results also revealed that 77.8% of the respondents who had 11-25 years of experience preferred reliable buyer(s) whereas only 27.3% of the respondents from this group preferred highly reliable buyer(s). It was interesting to note that all very

experienced respondents who had more than 25 years of business experience only preferred highly reliable buyer(s).

The results also revealed that all the respondents who had less than 11 years of citrus marketing experience preferred reliable buyer(s) only.

(vii) Urgent Need of Money

There was a statistically significant relationship between urgent need of money and delay in payment (p value = 0.00). The results revealed that majority of the respondents, 80% of the total respondents of this group, accepted that they had an urgent need of money at the time of contract as shown in table 7.45. Only 20% of the respondents accepted that they did not have an urgent need of money.

The results showed that 75% of the respondents who were in urgent need of money preferred less than one week delay in payment and 12.5% of the respondents from this group preferred 1-2 weeks delay in payment. The remaining 12.5% of the respondents from this group preferred to accept more than three weeks delay in payment.

Table 7.45 Urgent Need of Money and Delay in Payment

Urgent Need of Money		Delay in Payment		
		≤ 1 Week n=12	**1-2 Week n=6**	**≥ 3 Week n=2**
Yes n=16	Count	12	2	2
	% within Urgent Need of Money	75.0%	12.5%	12.5%
	% within Delay in Payment	100.0%	33.3%	100.0%
No n=4	Count	0	4	0
	% within Urgent Need of Money	0.0%	100.0%	0.0%
	% within Delay in Payment	0.0%	66.7%	0.0%

It was interesting to note that all the respondents who were not in urgent need of money preferred to accept only 1-2 weeks delay in payment.

There was a statistically significant relationship between experience of the respondents and urgent need of money (p value = 0.02). The results showed that 80% of the respondents who had 11-25 years of experience showed their preference that they needed money urgently whereas only 20% of the respondents preferred the terms of the contract with 'No' urgent need of money as shown in table 7.46.

It was interesting to note that all the respondents who had more than 25 years of business experience showed that they needed money on urgent basis whereas all the respondents who had less than 11 years of business experience preferred 'No' level for urgent need of money.

Table 7.46 Experience of the Respondents and Urgent Need of Money

Citrus Contractor's Experience (Years)		Urgent Need of Money	
		Yes n=16	No n=4
≤10 n=2	Count	0	2
	% within Citrus Grower's Experience	0.0%	100.0%
	% within Urgent Need of Money	0.0%	50.0%
11-25 n=10	Count	8	2
	% within Citrus Grower's Experience	80.0%	20.0%
	% within Urgent Need of Money	50.0%	50.0%
≥26 n=8	Count	8	0
	% within Citrus Grower's Experience	100.0%	0.0%
	% within Urgent Need of Money	50.0%	0.0%

(viii) Payment Delay

There was a significant relationship between delay in payment and bargaining power (p value = 0.00). The results revealed that 91.7% of the respondents who preferred less than one week delay in payment accepted 'No' for bargaining power whereas only 8.3% of the respondents from this group accepted 'Yes' for bargaining power as shown in table 7.47.

Table 7.47 Delay in Payment and Bargaining Power

Delay in Payment		Bargaining Power	
		Yes n=6	No n=14
≤ 1 Week n=12	Count	1	11
	% within Delay in Payment	8.3%	91.7%
	% within Bargaining Power	16.7%	78.6%
1-2 Week n=6	Count	5	1
	% within Delay in Payment	83.3%	16.7%
	% within Bargaining Power	83.3%	7.1%
≥ 3 Week n=2	Count	0	2
	% within Delay in Payment	0.0%	100.0%
	% within Bargaining Power	0.0%	14.3%

On the contrary, the results showed that 83.3% of the respondents who preferred 1-2 weeks delay in payment accepted 'Yes' for bargaining power whereas only 16.7% of the respondents from this group accepted 'No' for bargaining power. It was interesting to note that all the respondents who preferred more than three weeks delay in payment only accepted 'No' for bargaining power.

There also existed a significant relationship between delay in payment and selective fruit purchase (p value = 0.00). The results revealed that majority of the respondents, 60% of the respondents from this group of large size citrus contractors preferred less than one week delay in payment and 30% of the respondents from this group preferred 1-2 weeks delay in payment as shown in table 7.48. Only 10% of the respondents from this group preferred greater than three weeks delay in payment.

Table 7.48 Delay in Payment and Selective Fruit Purchase

Delay in Payment		**Selective Fruit Purchase**	
		Yes n=4	**No n=16**
≤ 1 Week n=12	Count	0	12
	% within Delay in Payment	0.0%	100.0%
	% within Selective Fruit Purchase	0.0%	75.0%
1-2 Week n=6	Count	2	4
	% within Delay in Payment	33.3%	66.7%
	% within Selective Fruit Purchase	50.0%	25.0%
≥ 3 Week n=2	Count	2	0
	% within Delay in Payment	100.0%	0.0%
	% within Selective Fruit Purchase	50.0%	0.0%

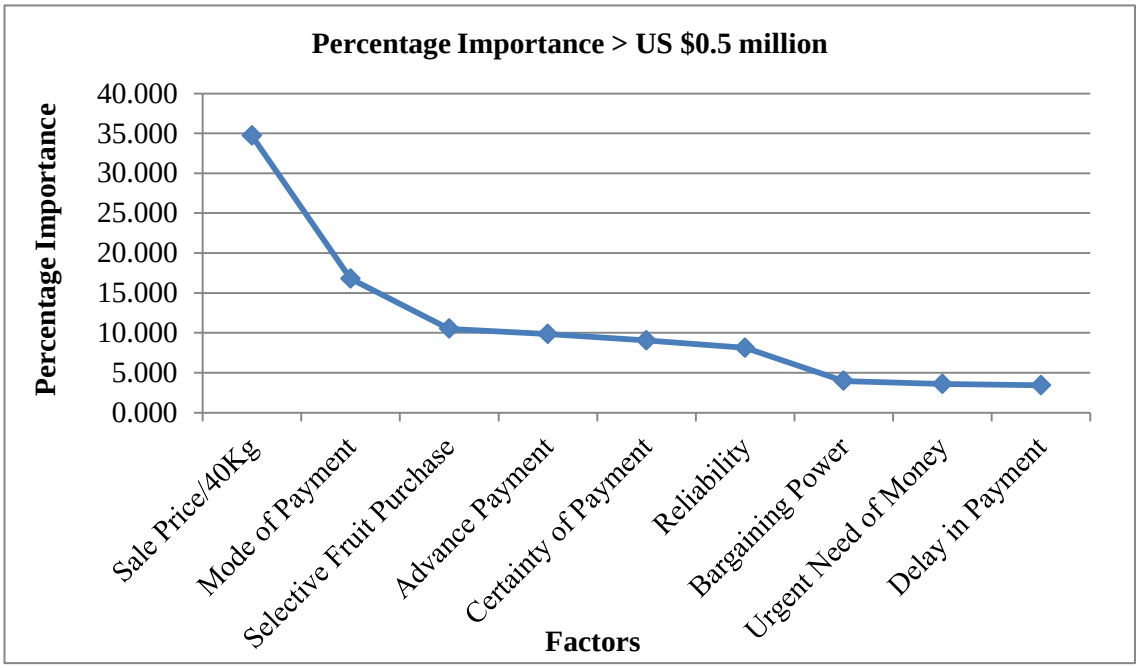
The results revealed that all the respondents who preferred less than one week in delay in payment did not allow buyers to purchase selective fruit. Nearly 67% of the respondents who preferred 1-2 weeks delay in payment did not allow buyer(s) to purchase selective fruit whereas only 33.3% of the respondents from this group allowed buyers to purchase selective fruit from the lot as shown in table 7.48.

It was interesting to note that all the respondents who preferred greater than three weeks delay in payment allowed buyer(s) to purchase selective fruit.

(c) Summary

The percentage importance of the factor 'sales price per 40kg' showed that it had the highest influence in determining the overall preference as shown in figure 7.6.

Figure 7.6 Factors Averaged Importance Values



The results showed that this factor alone had a more than one third contribution on the overall citrus marketing channel choice decision process. This means that there was a large difference in preference between decision profiles having the highest price and those having the lowest price (Soutar & Turner, 2002). The factor 'mode of payment' had the second highest influence on the overall preference and it contributed almost 17% in the decision process. The results showed a decrease of almost 52% in the overall preference of this factor as compared to the preceding factor. This showed that 'price' is the most important factor for this group of large size citrus contractors followed by the 'mode of payment'. A further decrease of almost 37% in the overall preference of decision process was observed in the factor 'selective fruit purchase' and this factor contributed only 10.5% in the citrus marketing channel choice decision process.

It can be observed from the results that first factor alone influenced 34.7% in determining the overall preference in the final decision as shown in table 7.49. Therefore, it can be concluded that this factor was considered relatively highly preferred

factor as compared to the other factors in the final decision making by the large size citrus contractors.

Table 7.49 Accumulated Percentages of All Factors

Factor	Percentage Importance	Accumulated Percentage
Sale Price/40Kg	34.7	34.7
Mode of Payment	16.8	51.5
Selective Fruit Purchase	10.5	62.0
Advance Payment	9.9	71.9
Certainty of Payment	9.0	80.9
Reliability	8.1	89.0
Bargaining Power	4.0	93.0
Urgent Need of Money	3.6	96.6
Delay in Payment	3.4	100.0

The respondents showed almost equal preference for the 'advance payment', 'certainty of payment' and 'reliability' and it was 9.9%, 9.0% and 8.1% respectively. A decrease of nearly 6%,14% and 24% in the overall preference from the preceding factor can also be observed for 'advance payment', 'certainty of payment' and 'reliability' respectively.

There was a decrease of nearly 51% in the percentage preference of 'bargaining power' from the preceding factor showing that this factor and all the remaining factors were least important in the final decision process of marketing channel choice. However, the respondents put nearly equal preferences for 'bargaining power', 'urgent need of money' and 'delay in payment' as shown in table 7.49. The results also showed that 'delay in payment' played the least important role in determining the overall preference and this factor only contributed 3.4% in overall preference.

In order to clearly understand the large size citrus contractor's factor preferences, all the nine factors can be divided into different groups/tiers on the basis of percentage importance of each factor as follows:

First group is comprised of one factor only namely 'price' which alone contributed 34.7% in the overall preference of the decision process.

The second group is also comprised of one factor namely 'mode of payment' which contributed 16.8% in the overall preference.

The third group is composed of three factors namely 'selective fruit purchase', 'advance payment' and 'certainty of payment' which contributes 29.4% in the overall preference of decision process. All these three groups together contribute 80.9% in the overall choice preference of citrus marketing channel.

The fourth group is comprised of only one factor namely 'reliability' which contributes 8.1% in the overall preference.

The fifth group is comprised of three factors namely 'bargaining power', 'urgent need of money' and 'delay in payment' which contributes 11% in the overall preference as shown in table 7.49.

It can be inferred from the results that there would be little effect on percentage importance, hence, on the utility of the overall decision, in moving among the factors within multiple factors groups. However, this effect would be high while moving from one group of factors to another group as shown in table 7.49. For example, moving from one factor to another factor in the third group would cause decrease in percentage importance by only 6.2% (selective fruit purchase to advance payment). Whereas, if citrus growers move from first group of factors to second group this decrease in percentage importance would be 51.6% (sale price per 40 kg to mode of payment).

The part-worth utility estimates for all the levels of each factor along with the percentage importance of each factor in the overall percentage preference are exhibited in the table 6.49. The part-worth utilities were estimated using the ordinary least square (OLS) analysis by the conjoint procedure in SPSS. Generally, if any factor or level was preferred over another one, it had larger part-worth utility value. For example, for the factor sale price per 40 kg all the respondents preferred level '\$14.1-\$16' over other levels and factors, therefore, it had the highest part-worth utility estimate of 3.050 as shown in table 7.50.

As described earlier, the overall worth or utility of the decision is the sum of all part-worth utilities of different levels of all factors, therefore, this can be written as;

$$(\text{Total worth of the decision})_{ij}...n_{ij} = \text{Part-worth of level i for factor 1} + \text{Part-worth of level j for factor 2} + ... + \text{Part-worth of level n for factor m}$$

Table 7.50 Part-worth Utility Estimates of Factors

Factors	Levels	Part-worth Utility	Percentage Importance of Factors
Sale Price/40Kg	$12-$14	-3.050	34.7
	$14.1-$16	3.050	
Urgent Need of Money	Yes	.188	3.6
	No	-.188	
Advance Payment	25%	-.883	9.9
	35%	.154	
	45%	.729	
Mode of Payment	Cash	1.075	16.8
	Cash & Cheque	.250	
	Cheque	-1.325	
	Online	.000	
Certainty of Payment	Personal Guarantee	.500	9.0
	Post Dated Cheques	-.500	
Delay in Payment	< 1 Week	.150	3.4
	1-2 Week	.038	
	> 3 Week	-.188	
Bargaining Power	Yes	-.225	4.0
	No	.225	
Reliability	Highly Reliable	.613	8.1
	Reliable	-.613	
Selective Fruit Purchase	Yes	-.750	10.5
	No	.750	
(Constant)		8.683	

The dependent variable in the above equation was the total worth of the respondents marketing decision. The independent variables were the levels of all the factors involved and were treated as dummy variables. The explanatory variables or levels of factors were defined as $P = 1$ if price was \$12-\$14 and $P = 2$ if price was \$14.1-\$16; $U = 1$ if respondents showed that they need money urgently and $U = 2$ if they did not need money for urgent purposes; $A = 1$ if respondents accepted 25% advance payment, $A = 2$ for 35% advance payment and $A = 3$ for 45% advance payment; $M = 1$ for cash payments, $M = 2$ for cash & cheque payments, $M = 3$ for only cheque payments and $M = 4$ for online payments; $S = 1$ for personal guarantee as a security of payment and $S = 2$ for post-dated cheques; $D = 1$ for less than one week delay in payment, $D = 2$ for 1-2 week delay in payment and $D = 3$ for greater than three weeks delay in payment; $B = 1$ showing that both buyer and seller have the price negotiation power and $B = 2$ for no bargaining power; $R = 1$ for highly reliable buyer, $R = 2$ for reliable buyer; $F = 1$ for allowing buyer to purchase selective fruit and $F = 2$ for no selective fruit purchase.

The regression equation is, therefore,

$$TW = C + a_1P + a_2U + a_3A + a_4M + a_5S + a_6D + a_7B + a_8R + a_9F + \mu$$

Where TW = Total worth of the decision, C = Constant term, μ = *error term*

The part-worth utility estimates in table 7.50 can be summed up to give a total worth for any combination of factor levels. Therefore, profile or decision 1 would have a total worth of 12.400 as shown below which represents the sum of the factor level part-worths and the constant term;

Profile 1:

Sale Price per 40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
$14.1-$16	No	35%	Cash	Post Dated Cheques	1-2 Week	No	Highly Reliable	Yes

$(TW)_1$ = (8.683) + (3.050) + (-0.188) + (0.154) + (1.075) + (-0.500) + (0.038) + (0.225) + (0.613) + (-0.750) = 12.400

In a similar fashion, the total worth of all the 16 profiles or decisions were estimated and subsequently transformed into predicted rankings from highest total worth to the lowest (Appendix K-5 & K-6). The result showed that the profile/decision 16 had the maximum utility of 13.388 amongst all the 16 profiles/decisions as follows;

Profile 16:

Sale Price per 40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
$14.1-$16	Yes	45%	Online	Personal Guarantee	< 1 Week	No	Highly Reliable	Yes

and

$(TW)_{16}$ = (8.683) + (3.050) + (0.188) + (0.729) + (0.000) + (0.500) + (0.150) + (0.225) + (0.613) + (-0.750) = 13.388

The predicted total worth for each decision showed how large size citrus contractors traded off between the factors and their levels while making the final decision for the selection of a marketing channel. For example, profile 16 and 1 had in common the price, bargaining power, reliability and selective fruit purchase. They differ in urgent need of money, advance payment, mode of payment, certainty of payment and delay in payment. The predicted total worth for profile 16 and 1 are 13.388 and 12.400 placing them first and third, respectively, in the rankings of profiles. This explained how large size citrus contractors traded off different factors and their levels to come up with the highest utility. It implied that large size citrus contractors were willing to give up high utility value of 1.075 for cash mode of payment with the low utility value of 0.000 for online mode of payment thus moving towards maximizing total worth of the decision.

As already described, the higher the percentage importance of the factor, the greater would be its impact towards total estimated worth of the profiles/decisions. If large size citrus contractors select the first two groups of factors (only 2 factors), their decision would be 51.5% true and its utility increases as they select the other factors. In other words, if large size citrus contractors focus on the third group (3 more factors) and make the right choice while making citrus marketing decision, they would be 80.9% accurate in their decision.

Table 7.51 shows two statistics, Pearson's R and Kendall's tau, which provide measures of the correlation between the observed and estimated preferences. According to Field (2009), statistics close to 1.0 display that the model is a good fit. The Pearson's R correlation coefficient for this group of respondents is 1.000 which measures the perfect positive correlated between all observed and estimated preferences. The Kendall's tau (τ) correlation coefficient reports the extent of this correlation and confirms the validity of the model. Its value is in the range $-1 \leq \tau \leq 1$ showing the two extremes and it is very rare to get these values. However, models having tau value of ± 0.50 or more are considered good fit and models having τ value below ±0.50 are considered a fair fit (Burns & Burns, 2008; Field, 2009; Gustafsson et al., 2007).

Table 7.51 Correlations between Observed and Estimated Preferences

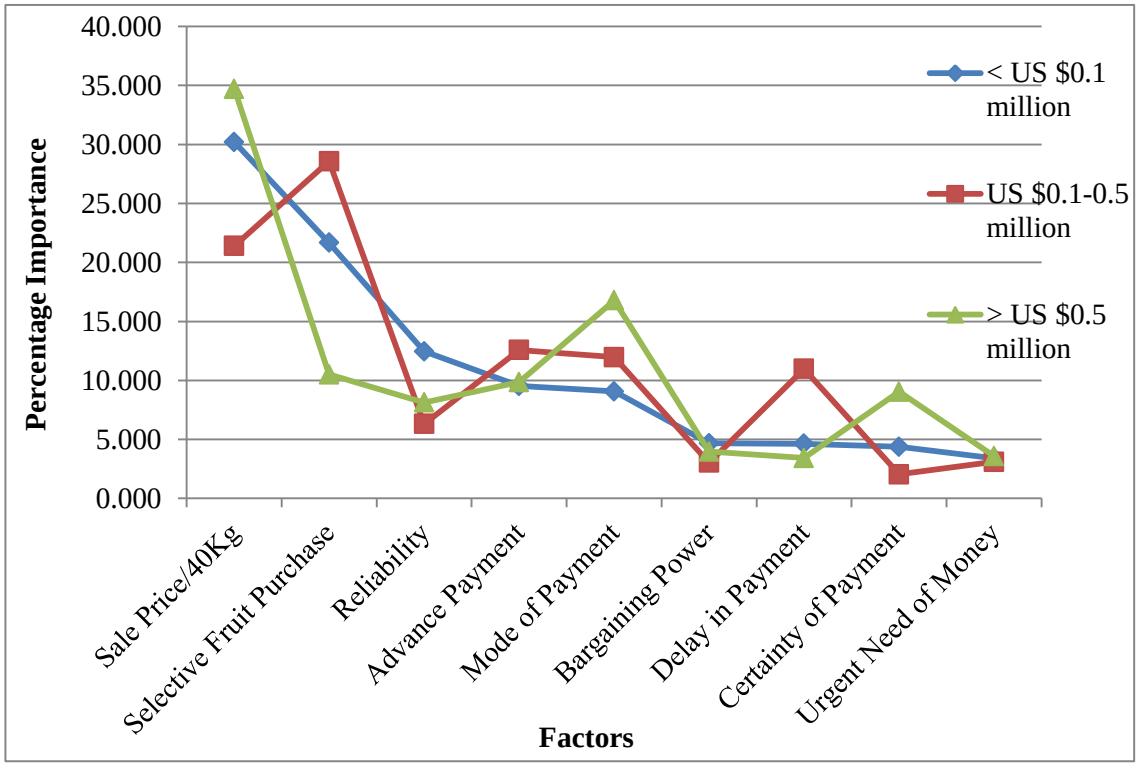
	Value	**Sig.**
Pearson's R	1.000	.000
Kendall's tau (τ)	0.975	.000

The value of Kendall's tau (0.975) indicates the agreement between two rankings is not perfect (i.e., the two rankings are not the same), instead, the two rankings are nearly same. However, it can be inferred from the values of Pearson's R and Kendall's tau that the model is a good fit.

7.4 Comparison of All the Three Groups of Citrus Pre-harvest Contractors

The comparison of all the three groups of citrus contractors showed that there existed diversity in preference for the same set of factors in order to make a certain marketing channel choice decision. The size of the citrus contractors played a significant role in the preference of the factors, thus, opting different priority to different factors as shown in figure 7.7.

Figure 7.7 Percentage Preference of All the Three Groups of Citrus Contractors



"I cannot afford to be deceived in any case (payment delay, payment security) because I have to earn my bread and butter through this business. Therefore, my prime focus (after price and selective fruit purchase) is on the reliability and trustworthiness of the buyer", one of the small size contractors shared his limitations.

The small and large size citrus contractors, as expected, highly preferred price in all the nine factors. However, it was interesting to note that the medium size contractors highly

preferred selective fruit purchase instead of price. This group of citrus contractors preferred to sell the whole fruit to only one or two buyers to avoid the difficulties in finding the alternative buyers for different grades of the fruit, storage unavailability and time and energy wastage in selling the leftover fruit.

The small size citrus contractors preferred and placed high importance on price, selective fruit purchase and reliability of the buyer(s) followed by the advance payment and mode of payment as shown in table 7.52. This showed that along with price and selective fruit purchase, the credibility, reputation and reliability of the buyer were very important for this group of small size citrus contractors.

Table 7.52 Factors Preferences for All the Three Groups of Citrus Contractors

S.NO.	< US $0.1 million	US $0.1-0.5 million	> US $0.5 million
1	Sale Price/40Kg	Selective Fruit Purchase	Sale Price/40Kg
2	Selective Fruit Purchase	Sale Price/40Kg	Mode of Payment
3	Reliability	Advance Payment	Selective Fruit Purchase
4	Advance Payment	Mode of Payment	Advance Payment
5	Mode of Payment	Delay in Payment	Certainty of Payment
6	Bargaining Power	Reliability	Reliability
7	Delay in Payment	Urgent Need of Money	Bargaining Power
8	Certainty of Payment	Bargaining Power	Urgent Need of Money
9	Urgent Need of Money	Certainty of Payment	Delay in Payment

In order to complete the business transaction smoothly and to avoid any delay in payment, this group of citrus contractors placed high priority for ‘reliability’ of the buyer. It would be difficult for this group to survive and continue with the business if their business deal got delayed or cancelled due to any reason. This group of small size citrus contractors was more interested in the amount of advance payment and mode of payment instead of payment delay and security of the payment. This group believed that the issues of delay and certainty of payment could be resolved if the buyer(s) selection is based on its reliability and credibility in the market. This group also believed that due to small business volume they could not bargain on price with the buyer(s) and therefore they had to sell their fruit on the market price. This group placed least preference for urgent need of money.

The medium size citrus contractors preferred and placed high utility values on selective fruit purchase, price and advance payment followed by the mode of payment and delay

in payment. This showed that along with selective fruit purchase and price, amount of advance payment, mode of payment and delay in payment were very important for this group of medium size citrus contractors. It was very interesting to note that this group of citrus contractors preferred selective fruit purchase over price as already described which was unusual in the citrus business. This group of medium size citrus contractors was also more interested in the amount of advance payment, mode of payment and delay in payment instead of reliability and security of the payment. This group believed that the issues of urgent need of money, and certainty of payment could be resolved to some extent if the buyer(s) agreed to high advance payment and minimum delay in outstanding payment. This group also believed that like other agricultural commodities they were not in a position to decide the price for their fruit.

The large size citrus pre-harvest contractors preferred and placed high importance on 'price' followed by 'mode of payment' and 'selective fruit purchase'. The results already showed that 'price' alone had nearly 35% impact in determining the overall preference for the citrus marketing decision for the large size citrus contractors. This clearly showed that along with price, mode of payment and selective fruit purchase was very important for this group of large size citrus contractors. This group of large size citrus was also more interested in the amount of advance payment, certainty of payment and reliability instead of bargaining power, urgent need of money and delay in payment. This group of citrus contractors placed least preference for delay in payment.

"There was nothing alarming for me if my payment is delayed for some time like one or two weeks. I can easily manage and withstand this delay in payment due to my creditability in the market but only to a certain extent", one of the large size citrus contractors replied about delay in payment.

Table 7.53 shows the decisions with the highest utility values for all the three groups of citrus contractors. The results showed all the citrus contractors preferred the same levels for four factors and different levels for the rest of five factors; however, they had different percentage importance for these factors and their levels.

Table 7.53 Highest Utility Value Decisions

Factors	Three Groups of Citrus Contractors		
	< US $0.1 million	**US $0.1-0.5 million**	**> US $0.5 million**
Sale Price/40Kg	$14.1-$16	$14.1-$16	$14.1-$16
Urgent Need of Money	No	No	Yes
Advance Payment	45%	45%	45%
Mode of Payment	Cash & Cheque	Cash & Cheque	Online
Certainty of Payment	Post Dated Cheques	Post Dated Cheques	Personal Guarantee
Delay in Payment	< 1 Week	< 1 Week	< 1 Week
Bargaining Power	Yes	Yes	No
Reliability	Highly Reliable	Highly Reliable	Highly Reliable
Selective Fruit Purchase	No	No	Yes

Chapter 8

8. CONCLUSION

8.1 Introduction

The purpose of this chapter is to summarize this research and conclude the results obtained from the analysis of data. The first section of the chapter discusses the objectives of this research. The second section of the chapter discusses the findings of the study and links the results with the research objectives. The third section deals with the limitations of the study. The last section of the chapter is about the contribution of this study and future research.

8.2 Research Objectives

This research focusses the following objectives:

1. To overview and discuss the citrus industry in Pakistan in context to its relevance to global citrus economy
2. To study the functions of key players in citrus (Kinnow) supply chains in Pakistan
3. To identify and evaluate major factors affecting marketing channel choice decisions of citrus growers and contractors in citrus (Kinnow) supply chain in Pakistan
4. To identify major constraints faced by citrus growers and contractors in Citrus (Kinnow) supply chain in Pakistan

8.3 Relating Results with Objectives

The results which were obtained by the use of multivariate decision analysis technique and Fisher's exact test for all the six groups of citrus growers and pre-harvest citrus contractors are discussed in the previous chapters. However, the key findings of these results are linked with the study objectives in this section.

Objective 1: To overview and discuss the citrus industry in Pakistan in context to its relevance to global citrus economy

The detailed description was presented about citrus fruit, its history, production, consumption and exports in the world in general and in Asia and Pakistan, in particular. A critical insight into the world citrus industry as well as the Pakistan citrus industry

revealed that China, Brazil and United States of America are the leading citrus producing countries of the world and produce nearly half of the world citrus. Similarly, oranges, which constitute major proportion of citrus fruit, are mainly grown in Brazil, United States of America, China and India. Pakistan is ranked 13th in citrus production with 2.1 million tonnes in the world. Among the four provinces, Punjab is the hub of citrus production in Pakistan and about 90% citrus fruit is produced in this province. The per capita consumption of citrus fruit in developed countries is far more than in developing countries. Per capita consumption of citrus fruit in Pakistan is almost stagnant and is the lowest among the four top citrus producing countries of Asia. The leading citrus fruit exporting countries include Spain, South Africa, United States of America and account for more than one third of the world's total exports. In Asia, leading exporters include Turkey, China, and Pakistan. Pakistan is ranked 3rd in citrus exports in Asia.

Objective 2: To study functions of key players in citrus (Kinnow) supply chains in Pakistan

An overview about functions of key players in citrus supply chains in Pakistan is presented. It was found that the agricultural marketing system in Pakistan is very diverse and nearly all citrus marketing channels are dominated by citrus growers, pre-harvest contractors and exporters of citrus fruit which ultimately decide the course of action of citrus fruit supply chain. The results also revealed that the size of citrus orchard in Pakistan ranges from 1 acre (0.40 ha) to 160 acres (64.7 ha) and the average size of citrus orchard is 46.93 acres (18.99 ha). Previously, majority of the citrus growers used to sell their fruit or orchard to pre-harvest contractors and only a small proportion of the growers was involved in direct sale to the local and or/international markets. Presently, citrus growers are becoming more market oriented and shifting away from the usual practice of selling the orchard before harvesting. The majority of the small size pre-harvest citrus contractors sell the citrus fruit locally whereas medium and large size contractors sell to the local and inter-provincial markets as well as to the exporters of citrus fruit in the country.

Objective 3: To identify and evaluate major factors affecting marketing channel choice decisions of citrus growers and contractors in citrus (Kinnow) supply chain in Pakistan

This study provides great insight about the prevalent factors frequently used in agribusiness decision making, particularly in the citrus supply chain. A number of different methods for the analysis and evaluation of these factors in general and for agribusiness/agri-food supply chains in particular are explained. A pilot study identified the major factors which affect citrus growers and pre-harvest contractors marketing channel choice decision making in Pakistan. Conjoint Analysis was used to evaluate and analyse the factors that affect the citrus growers and contractors channel choice decision in the supply chain of citrus fruit in Pakistan. A total of nine factors namely sale price per 40kg, urgent need of money, advance payment, mode of payment, certainty of payment, delay in payment, number of fruit pickings, time of complete fruit picking and harvesting fruit loss were identified as major factors which affect marketing channel choice decision making of citrus growers. It was concluded that all the three groups of citrus growers placed different preference and different utility values for the different factors when made selection out of the bundle of factors. Small size citrus growers preferred 'sale price per 40kg', 'time of complete fruit picking' and 'delay in payment' and considered that these three factors produces highest utility for them. The medium and large size citrus growers preferred and considered that 'sale price per 40kg', 'time of complete fruit picking' and 'number of fruit pickings' produces highest utility. Likewise, the percentage preference and utility values between any two factors is different for all the three groups of citrus growers. These results suggested that all these three groups of citrus growers have different preferences towards different factors and their levels depending upon their size and demographic characteristics. For example, the highly educated large size citrus growers preferred 'time of complete fruit picking' and 'number of fruit pickings' after price. These both factors were related with the health of the orchard and sustainability of their future business. Therefore, it stresses that all these three groups of citrus growers should be analysed separately, although, they had the same order of preferences for the same set of factors in order to make a certain marketing channel choice decision. In addition, the differences in utility values and different percentage importance for different factors and corresponding levels emphasize that all these three groups of citrus growers are not same and can be studied separately in groups. Lastly, this research is first of its kind; therefore, it should encompass all the minute details of marketing channel choice decision making of different groups of citrus growers and pre-harvest contractors in Pakistan citrus industry.

Similarly, a total of nine factors namely sale price per 40 kg, urgent need of money, advance payment, mode of payment, certainty of payment, delay in payment, bargaining power, reliability and selective fruit purchase were identified as major factors which affect marketing channel choice decision making of pre-harvest citrus contractors. The results also revealed that all the three groups of pre-harvest citrus contractors displayed diversity in preferences and different utility values for the different factors when made selection out of the bundle of factors in citrus marketing decision making. In addition, the percentage preference and utility values between any two factors is different for all the three groups of citrus pre-harvest contractors. Contrary to the citrus growers, pre-harvest contractors placed different order of preference for the same set of factors and the different combinations of the levels of all the factors in order to make a certain marketing channel choice decision. One of the important findings was the innovative practice which was exercised by one of the groups of citrus contractors i.e., Medium Size Contractors of preferring 'selective fruit purchase' factor over 'price' factor. However, the small and the large size citrus contractors, as expected, highly preferred 'price' in all the nine factors.

It was also concluded that the small size citrus contractors preferred and placed high utility value on the three factors namely; 'price', 'selective fruit purchase' and 'reliability' of the buyer(s). The medium size citrus contractors preferred and placed high utility value on the three factors namely; 'selective fruit purchase', 'price' and 'advance payment'. The large size citrus pre-harvest contractors preferred and placed high utility value on factor 'price' followed by 'mode of payment' and 'selective fruit purchase'.

The preliminary study also revealed a marked deviation of usual practice of citrus growers of selling citrus orchards to pre-harvest contractors. Citrus growers were becoming more progressive and were keeping themselves up to date with the changing market conditions, particularly, the price.

Objective 4: To identify major constraints faced by citrus growers and contractors in Citrus (Kinnow) supply chain in Pakistan

This study suggested that the major constraints faced by citrus growers can be grouped into marketing, physical infrastructure, irrigation and production input constraints. The details of these constraints are:

Marketing Constraints

- The price of fruit is decided by the exporters or some government agencies without taking into account the cost of production.
- The lack of bargaining power in deciding the fruit price according to the cost of production
- Conflict of interests: Citrus growers want fruit picking as early as possible whereas buyers delay the fruit picking in order to get ripened and good quality fruit.
- Citrus growers want fewer or less pickings to avoid damage to the orchards whereas buyers try to maximize the number of pickings to get good quality of fruit in every picking.
- Pre-harvest contractors used an estimation or guess work about the orchard production. There was no hard and fast rule to calculate the total production of the orchard. In case of wrong estimation, miss-commitments were often seen on the part of contractors.
- Mostly contractual agreement were not written, therefore, contractors withdrew the contract if they found that production had been decreased due to any reason (calamity, weather, or insects pests attacks).
- Limited access to local as well as international market information

Human Resource Constraints

- The lack of skilled and trained labour for fruit picking poses another marketing constraint which in turn affects the quality of picked fruit.
- Even the lack of seasonal or temporary labour for fruit picking

Physical Infrastructure Constraints

- Lack of living areas for the temporary labour
- Limited resources of transportation
- Lack of infrastructural facilities like roads, cold storages etc.
- Unhealthy and unhygienic conditions in the market place
- No information centre or agri-extension worker was found in the area to mitigate any emergency situation regarding crop management
- No soil or water testing laboratory was reported to be found in the area by the respondents in major citrus (kinnow) growing areas

Irrigation Constraints

- Water scarcity was found to be the major problem
- Improper and inadequate irrigation system, particularly, in the citrus growing areas

Production Input Constraints

- Unavailability or poor quality of fertilizers
- Unavailability or poor quality of pesticides
- No generic/specific pesticide was available for citrus fruit

Similarly, the major constraints faced by citrus pre-harvest contractors were financial and marketing constraints. These include;

- Most of the pre-harvest contractors operate with the finances of their lenders (usually commission agents, processors and exporters of the citrus fruit), therefore, they don't have any bargaining power to negotiate on the price they are offered by these lenders. The pre-harvest contractors are bound to sell the fruit to these lenders whatever price they offer at that time; hence, they are unable to influence the price.
- Pre-harvest contractors who do not use their own finances only get a small proportion of the total profit.
- In case of high price in the market or bumper crop, the citrus growers might back of the contractual agreement with the pre-harvest contractors and sell their orchards or fruit to someone else.

8.4 Contributions of the Research Study

Academic Contribution

This study investigates and analyse the marketing channel choice decision making of citrus growers and pre-harvest citrus contractors in the citrus supply chain of Pakistan. A detailed assessment and discussion of the results provide a foundation pillars on which the contribution of this study can be recognized towards the progressing citrus industry of Pakistan. This study also magnifies the priority areas for future research in the citrus industry of Pakistan.

Mostly decision making approaches focus on the monetary aspect of decisions only, however, this study investigates the combination of different factors, good or bad,

monetary or non-monetary and successfully evaluated the impact of these factors in decision making, hence, contributing towards decision theory. Similarly, most of the studies focus only on measuring the significance of the various factors on farmer's choice of marketing channels. This study investigates the actual impact of different factors along with their levels in citrus marketing channel choice decision making both by citrus growers and pre-harvest citrus contractors.

Using Conjoint Analysis in the context of citrus growers and pre-harvest contractors marketing channel choice decisions in the citrus industry of Pakistan is relatively a new approach. According to Chaudry (2004) and Sharif et al. (2005), both price and non-price factors played role in the selection of buyers by the citrus growers. However, there was a lack of research in this particular area which focused different factors used in the selection of marketing channel by the citrus growers and other supply chain members. Most of the studies revolved around in identifying the citrus marketing channels and estimating the margins of different marketing intermediaries, describing existing fruit marketing system, identifying constraints in fruit marketing systems and promoting exports, examining the citrus production system, factors affecting citrus production and marketing problems faced by the citrus growers (Aujla et al., 2007; Bashir et al., 2006; Ghafoor et al., 2010; Sabir et al., 2010; Sharif et al., 2005). This study helps identifying and evaluating the major factors (both price and non-price factors) which are considered important by the citrus growers in the citrus supply chain of Pakistan while making marketing channel choice decisions. This study takes a step forward and contributes more in the body of literature by taking into consideration the behaviour of other key player of citrus industry of Pakistan i.e., pre-harvest citrus contractors. This study focuses and analyses the major factors which affect the pre-harvest citrus contractors marketing channel choice decisions in the citrus supply chain of Pakistan.

This study uses the purposive sampling technique and conducts face-to-face interviews of citrus growers and pre-harvest contractors to get the in-depth understanding of the citrus industry due to limited availability of secondary data. In doing so, this research provides the immediate information and deep understanding of the current scenario of the citrus industry in the Pakistan. This study also explores how different sizes of citrus growers and pre-harvest citrus contractors work within this progressing but fragmented citrus industry of Pakistan.

Agricultural products, particularly, fruit and vegetables are seasonal and perishable in nature and require efficient and effective marketing practices. This involves rational decision making while marketing agricultural products by the stakeholders in order to sell their products in good condition, with better price and to combat the competition in the market. Therefore, this study helps citrus growers and pre-harvest contractors to decide rationally and make efficient marketing decision through which they can earn a good profit as well as increase the efficiency of the whole citrus supply chain.

This study is the re-contextualization of an existing technique, conjoint analysis, and showing the applicability of this technique to a new situation of citrus growers and pre-harvest citrus contractors marketing channel choice decision making process (selling decisions). In addition, this study provides deep understanding of the conjoint measurement, its use and application to a real world situation. It also gives insight and understanding about the different utility values, their meanings and interpretation to the existing situation and describes how citrus growers and pre-harvest contracts traded off different factors and their levels.

Practical Contribution

The findings of this study would help the citrus growers and pre-harvest contractors to analyse their decisions regarding citrus marketing channel choice decisions in Pakistan. This analysis would suggest them to make rational decisions and help choosing them the most appropriate combination of different levels of different factors which would increase their profits. This study identifies the most relevant factors and their levels which citrus growers and pre-harvest contractors preferred in citrus marketing channel choice decision making, thus, server as a guideline for the buyer's to deal with them accordingly. This would improve the efficiency and reduce the transaction cost along the citrus supply chain in Pakistan.

The findings of this study would also help policy makers to devise the policies which may minimize, if not completely remove, the constraints faced by citrus grower and pre-harvest contractors in Pakistan. This study also suggests the agricultural department in Pakistan to facilitate the citrus growers particularly and provide with them the required inputs like water, fertilizers and pesticides for their orchards. This would in turn increase the production and quality of the citrus fruit and may contribute towards the exports of citrus fruit from the country.

8.5 Limitations of the Research Study

This study used both qualitative as well as quantity methods to analyse and explain the results and focused on the analysis of major factors affecting citrus growers and pre-harvest contractors marketing channel choice decision. However, it implies few limitations:

- Although, there were many players in the citrus supply chain in Pakistan, due to time and cost constraints only citrus growers and pre-harvest contractors were included in this study.
- Samples for both the citrus growers and pre-harvest contractors were drawn by convenience sampling method and were not statistically true representative of their respective populations.
- Similarly, the small sample size of both the citrus growers and pre-harvest contractors was another limitation which added difficulty in generalizing the results.
- The creation of orthogonal design is used as a remedy against issue of multi-collinearity for the creation of realistic profiles in this research. However, among all the three remedies, the creation of super attribute is the conceptually superior and direct approach.
- At occasions, respondents perceived that researcher was from some government or private agent to benefit them. At times respondents supposed that researcher was an official and had come to collect monetary information in order to apply or increase the tax. Sometimes respondents, while looking at the profiles, thought about a researcher a new buyer in the town and wanted to buy orchards and therefore collecting information. A few of the respondents believed that researcher was planning to establish his own business as their competitor; hence, they were reluctant to share the information or gave wrong information. In all the cases where this situation aroused, data was cross checked to make sure only correct information would be recorded and included in the analysis.
- Two factors namely urgent need of money and advance payment seems to contradict each other. On one hand, citrus growers and pre-harvest citrus contractors show their consent they are not in urgent need of money but on the other hand they prefer to accept higher levels of advance payments.

8.6 Future Research

As the factor ‘price’ has a constant value which shows it already has a significant effect in citrus grower and pre-harvest contractors marketing decision making, therefore, in future this research may be carried out by eliminating the factor 'price" and only measure the effect of other factors in decision making. In future similar study can be executed using probability sampling or representative sampling technique subject to the availability of the sampling frame. This would help generalizing the results and finding of the research and help all the stakeholders improving their marketing decision making. Similarly, more meaningful and reliable results can be obtained by increasing the size of sample for all the six groups of citrus growers and pre-harvest contractors. In future, this study can be performed with large sample size for both the citrus growers and pre-harvest contractors which would also help generalizing the results.

Reconsidering the number and nature of factors and their levels may help other researchers to explore other dimensions of citrus growers and pre-harvest citrus contactors marketing channel choice decisions. It may increase the statistical basis of the study by combining/adding different factors and their levels, for example, adding level ‘online’ in mode of payment for citrus growers. Therefore, a conceptually superior and direct approach of creating super attributes for the creation of believable or realistic profiles would definitely open the new directions for the research and remove the limitation of this research study. For example, combining the factors ‘urgent need of money’ and ‘advance payment’ for both the citrus growers and pre-harvest contractors’ under one factor may solve the problem of factor’s contradictions to each other.

In future this study can be extended to analyse the decision making process of other players of the citrus supply chain and to other areas (districts and provinces) of citrus production in Pakistan. A comparison of decision making process in citrus supply chain with other supply chains of fruit and vegetables in Pakistan would be a major contribution in literature. This would help all the stakeholders involved in citrus as well as in other fruit and vegetables supply chains to make effective and efficient decisions.

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APPENDICES

Appendix A Export of Citrus Fruit From Pakistan (Country-Wise)

EXPORT OF CITRUS FRUIT FROM PAKISTAN (COUNTRY-WISE)				
	2008-2009		2007-2008	
COUNTRY / COMMODITY	Quantity (Kgs)	Value (1000$)	Quantity (Kgs)	Value (1000$)
ORANGES	**226**	**0.1**	**296045**	**151.5**
Canada	--	--	151180	87.4
New Zealand	--	--	91250	39.3
Saudi Arabia	--	--	50092	22.7
United Arab Emirates	226	0.1	3441	2.0
United Kingdom	--	--	82	0.1
KINO, FRESH	**176745119**	**44354.4**	**214764632**	**47752.1**
Afghanistan	34127208	12654.3	402000	79.5
Angola	--	0.0	53000	11.6
Azerbaijan	--	0.0	239640	56.3
Bahrain	1579447	339.3	1983936	524.1
Bangladesh	1537052	384.2	553700	144.6
Brunei Darussalam	18000	11.3	--	0.0
Canada	573399	208.6	1007581	301.4
China	9000	1.2	22540	3.8
Denmark	2900	1.0	24725	6.7
Georgia	24000	6.6	76000	12.5
Germany	57947	11.9	2623	1.4
Greece	--	0.0	16000	2.8
Hong Kong S.A.Re.Chi	342339	109.7	338663	99.6
India	--	0.0	1530	0.5
Indonesia	232274	51.7	3861998	832.8
Iran (Islamic Republic)	33493784	7280.5	69963240	16037.6
Iraq	--	0.0	427946	124.6
Italy	69200	26.6	220	0.1
Kuwait	5763239	893.0	4061841	721.1
Latvia	--	0.0	145200	34.1
Lithuania	514800	100.8	2685819	588.2
Malaysia	145392	43.1	334864	96.8
Maldives	--	0.0	880	0.3
Mauritius	846926	337.1	903821	239.7
Netherlands	2966587	772.8	4130211	1088.8
Norway	146880	33.4	173109	49.5
O.Asia (Tai.For.Pe.Ki)	--	0.0	30000	8.5
Oman	2661654	533.4	3500960	573.9
Philippines	2568080	487.7	13434852	3155.6

Poland	161706	53.1	56438	14.8
Qatar	632725	163.5	398188	82.9
Romania	81735	22.6	588804	110.2
Russian Federation	36263681	9736.2	27279956	7297.1
Saudi Arabia	10934281	2060.8	14602094	2910.8
Singapore	1045598	215.3	1388885	329.1
Slovenia	--	0.0	54000	17.0
Sri Lanka	3615945	749.9	3279742	681.1
Sudan	102520	41.7	--	0.0
Thailand	350	0.1	--	0.0
United States of America	26400	5.1	--	0.0
Ukraine	8103540	1917.9	16169415	3442.1
United Arab Emirates	25722091	4393.9	39727267	7109.6
United Kingdom	2374439	706.0	2817432	954.6
Viet Nam	--	0.0	25512	6.5
GRAPE FRUIT,FRESH OR DRIED	**1750**	**0.5**	**--**	**0.0**
United Arab Emirates	1750.0	0.5	--	0.0
LEMONS AND LIMES	**8127**	**3.7**	**24234**	**10.5**
Bahrain	100	0.0	420.0	0.2
Canada	850	0.4	--	0.0
Denmark	--	0.0	370.0	0.1
Germany	--	0.0	398.0	0.2
Kuwait	--	0.0	89.0	0.0
Norway	--	0.0	485.0	0.2
Qatar	1577	0.6	2160.0	0.8
Singapore	--	0.0	150.0	0.1
United Arab Emirates	104	0.0	20.0	0.0
United Kingdom	5496	2.5	20142.0	8.9
OTHER CITRUS FRUITS FRESH/DRIED.	**3966**	**3.3**	**7466**	**4.9**
Hong Kong S.A.Re.Chi	--	0.0	4100.0	2.5
Kuwait	81.0	0.1	--	0.0
Norway	930.0	0.7	70.0	0.0
Qatar	--	0.0	280.0	0.2
Saudi Arabia	186.0	0.1	800.0	0.6
United Arab Emirates	2344.0	1.8	--	0.0
United Kingdom	425.0	0.6	2216.0	1.6
Total	**176759188**	**44362.0**	**215092377**	**47919.0**

Source: (Government of Pakistan, 2009)

Appendix B Research Ethics Approval

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

18 November 2011

Muhammad Siddique
2/85 Linton Street
West End
PALMERSTON NORTH 4410

Dear Muhammad

Re: Factors Affecting Farmers and Contractors Marketing Channel Choice Decision in Citrus Supply Chain

Thank you for your Low Risk Notification which was received on 2 November 2011.

Your project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

The low risk notification for this project is valid for a maximum of three years.

Please notify me if situations subsequently occur which cause you to reconsider your initial ethical analysis that it is safe to proceed without approval by one of the University's Human Ethics Committees.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

> *"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.*
>
> *If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, e-mail humanethics@massey.ac.nz".*

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to provide a full application to one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

J. O'Neill

John G O'Neill (Professor)
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

cc Dr Norman Marr
Institute of Food, Nutrition and Human Health
PN452

Dr Elena Garnevska
Institute of Food, Nutrition and Human Health
PN452

Prof Richard Archer, HoI
Institute of Food, Nutrition and Human Health
PN452

Appendix C-1 Citrus Grower/Producer Questionnaire for Pilot Test

Personal/General Information

1. Name of Respondent: _____ Phone No. _____

2. Village: _____ Tehsil: _____ District: _____

3. Education Status: _____

4. Family size:

   (i) Male _____ Female _____

   (ii) Dependent: _____

5. Age: _____Years

Citrus Farming

1. Total Farm Size: _____ acres.

2. Citrus Farm Size: _____acres

3. Total Farming Experience: _____

4. Citrus Farming Experience: _____

5. Did you sell to alternative buyer(s) in the past (3-5 years)? If yes, Why?

6. Do you want to change the current buyer? If yes, Why?

6. What problems do you face while marketing your produce?

Thank you for your valuable time!!!!!!

Appendix C-2 Pre-harvest Citrus Contractor Questionnaire for Pilot Test

Personal/General Information

1. Job Title / Business_____

2. Name of Respondent: _____ Phone No. _____

3. Village: _____ Tehsil: _____ District: _____

4. Education Status: _____

5. Age _____ years

Agribusiness Information

1. Business Experience _____ Years

2. Citrus Business Experience _____Years

3. Citrus Business Volume:

a. In Quantity (Mnd = 40 Kg) _____ b. In Amount (PKR.) _____

4. Problems in contracting with citrus grower(s)/seller(s):

_____

_____

5. Did you sell to alternative buyer(s) in the past (3-5 years)? If yes, Why?

_____

6. Do you want to change the current buyer? i. Yes ii. No

If yes, Why?

_____

7. What problems do you face while marketing citrus?

_____

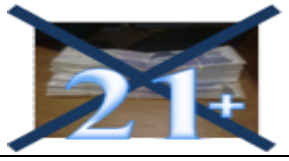
_____

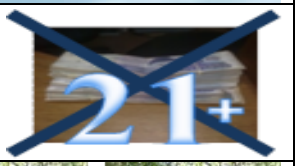
Thank you for your valuable time!!!!!!

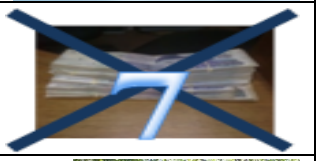
Appendix D-1 Citrus Growers Profiles

Card ID	1
Sale Price/40Kg	$11.1-$13 
Urgent Need of Money	Yes 
Advance Payment	15% 
Mode of Payment	Cash & Cheque  + 
Certainty of Payment	Personal Guarantee 
Delay in Payment	≥ 3 Week 
NO. of Fruit Picking	Two  
Time of Complete Fruit Picking	February 
Harvesting Fruit Loss	High 

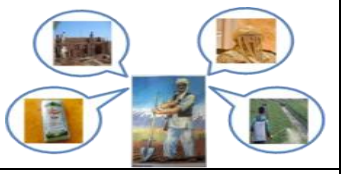
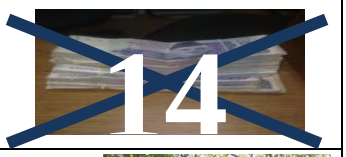
Card ID	2
Sale Price/40Kg	$11.1-$13 
Urgent Need of Money	Yes 
Advance Payment	15% 
Mode of Payment	Cash 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	< 1 Week 
NO. of Fruit Picking	Three 
Time of Complete Fruit Picking	March 
Harvesting Fruit Loss	High 

Card ID	3
Sale Price/40Kg	$7-$9
Urgent Need of Money	No 
Advance Payment	35% 
Mode of Payment	Cheque 
Certainty of Payment	Personal Guarantee 
Delay in Payment	≥ 3 Week 
NO. of Fruit Picking	One 
Time of Complete Fruit Picking	March 
Harvesting Fruit Loss	Low 

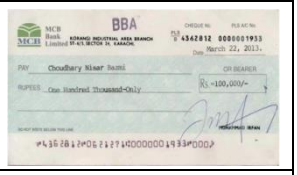
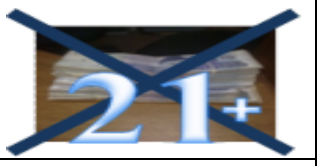
Card ID	4
Sale Price/40Kg	$9.1-$11 
Urgent Need of Money	Yes 
Advance Payment	35% 
Mode of Payment	Cheque 
Certainty of Payment	Personal Guarantee 
Delay in Payment	≥ 3 Week 
NO. of Fruit Picking	Two 
Time of Complete Fruit Picking	January 
Harvesting Fruit Loss	High 

Card ID	5
Sale Price/40Kg	$11.1-$13 
Urgent Need of Money	Yes 
Advance Payment	35% 
Mode of Payment	Cash & Cheque  
Certainty of Payment	Personal Guarantee 
Delay in Payment	< 1 Week 
NO. of Fruit Picking	One 
Time of Complete Fruit Picking	March 
Harvesting Fruit Loss	Low 

Card ID	6
Sale Price/40Kg	$9.1-$11 
Urgent Need of Money	Yes 
Advance Payment	25% 
Mode of Payment	Cash 
Certainty of Payment	Personal Guarantee 
Delay in Payment	≥ 3 Week 
NO. of Fruit Picking	Three 
Time of Complete Fruit Picking	January 
Harvesting Fruit Loss	Low 

Card ID	7
Sale Price/40Kg	$9.1-$11 Rs
Urgent Need of Money	Yes 
Advance Payment	35% 
Mode of Payment	Cash 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	1-2 Week 
NO. of Fruit Picking	One 
Time of Complete Fruit Picking	March 
Harvesting Fruit Loss	High 

Card ID	8
Sale Price/40Kg	$7-$9 **Rs**
Urgent Need of Money	Yes 
Advance Payment	25% 
Mode of Payment	Cash & Cheque  + 
Certainty of Payment	Personal Guarantee 
Delay in Payment	1-2 Week 
NO. of Fruit Picking	One 
Time of Complete Fruit Picking	February 
Harvesting Fruit Loss	High 

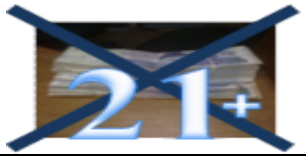
Card ID	9
Sale Price/40Kg	$7-$9 Rs
Urgent Need of Money	No 
Advance Payment	25% 
Mode of Payment	Cash 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	≥ 3 Week 
NO. of Fruit Picking	Two  
Time of Complete Fruit Picking	March 
Harvesting Fruit Loss	High 

Card ID	10
Sale Price/40Kg	$9.1-$11 Rs
Urgent Need of Money	No 
Advance Payment	35% 
Mode of Payment	Cash & Cheque  + 
Certainty of Payment	Personal Guarantee 
Delay in Payment	< 1 Week 
NO. of Fruit Picking	Three   
Time of Complete Fruit Picking	February 
Harvesting Fruit Loss	High 

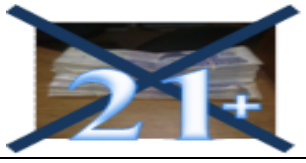
Card ID	11
Sale Price/40Kg	$7-$9 **Rs**
Urgent Need of Money	Yes 
Advance Payment	25% 
Mode of Payment	Cheque 
Certainty of Payment	Personal Guarantee 
Delay in Payment	< 1 Week 
NO. of Fruit Picking	Three 
Time of Complete Fruit Picking	January 
Harvesting Fruit Loss	High 

Card ID	12
Sale Price/40Kg	$9.1-$11 Rs
Urgent Need of Money	Yes 
Advance Payment	25% 
Mode of Payment	Cash & Cheque  + 
Certainty of Payment	Personal Guarantee 
Delay in Payment	1-2 Week 
NO. of Fruit Picking	Two 
Time of Complete Fruit Picking	March 
Harvesting Fruit Loss	Low 

Card ID	13
Sale Price/40Kg	$11.1-$13 
Urgent Need of Money	No 
Advance Payment	25% 
Mode of Payment	Cash & Cheque  + 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	1-2 Week 
NO. of Fruit Picking	Three   
Time of Complete Fruit Picking	January 
Harvesting Fruit Loss	Low 

Card ID	14
Sale Price/40Kg	$7-$9 **Rs**
Urgent Need of Money	No 
Advance Payment	15% 
Mode of Payment	Cash & Cheque  + 
Certainty of Payment	Personal Guarantee 
Delay in Payment	≥ 3 Week 
NO. of Fruit Picking	Three   
Time of Complete Fruit Picking	March 
Harvesting Fruit Loss	Low 

Card ID	15
Sale Price/40Kg	$7-$9 **Rs**
Urgent Need of Money	Yes 
Advance Payment	15% 
Mode of Payment	Cheque 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	1-2 Week 
NO. of Fruit Picking	Two 
Time of Complete Fruit Picking	February 
Harvesting Fruit Loss	Low 

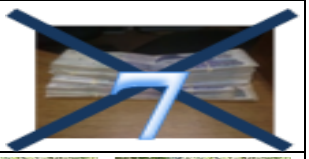
Card ID	16
Sale Price/40Kg	$11.1-$13 
Urgent Need of Money	Yes 
Advance Payment	35% 
Mode of Payment	Cheque 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	≥ 3 Week 
NO. of Fruit Picking	Three 
Time of Complete Fruit Picking	February 
Harvesting Fruit Loss	Low 

Card ID	17
Sale Price/40Kg	$9.1-$11 
Urgent Need of Money	Yes 
Advance Payment	15% 
Mode of Payment	Cheque 
Certainty of Payment	Personal Guarantee 
Delay in Payment	1-2 Week 
NO. of Fruit Picking	Three 
Time of Complete Fruit Picking	March 
Harvesting Fruit Loss	Low 

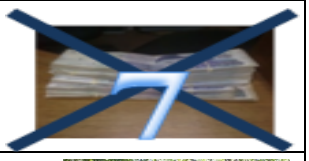
Card ID	18
Sale Price/40Kg	$9.1-$11 
Urgent Need of Money	Yes 
Advance Payment	15% 
Mode of Payment	Cash & Cheque  + 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	≥ 3 Week 
NO. of Fruit Picking	One 
Time of Complete Fruit Picking	January 
Harvesting Fruit Loss	Low 

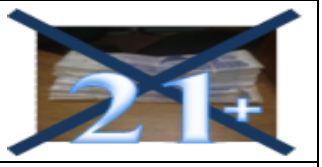
Card ID	19
Sale Price/40Kg	$11.1-$13 
Urgent Need of Money	No 
Advance Payment	15% 
Mode of Payment	Cheque 
Certainty of Payment	Personal Guarantee 
Delay in Payment	1-2 Week ~~14~~ 
NO. of Fruit Picking	One 
Time of Complete Fruit Picking	January 
Harvesting Fruit Loss	High 

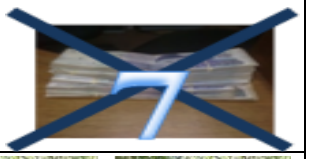
Card ID	20
Sale Price/40Kg	$11.1-$13 
Urgent Need of Money	No 
Advance Payment	35% 
Mode of Payment	Cash 
Certainty of Payment	Personal Guarantee 
Delay in Payment	1-2 Week 
NO. of Fruit Picking	Two 
Time of Complete Fruit Picking	January 
Harvesting Fruit Loss	Low 

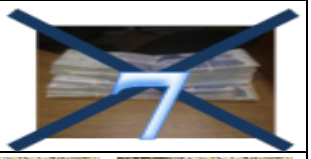
Card ID	21
Sale Price/40Kg	$9.1-$11 Rs
Urgent Need of Money	No 
Advance Payment	15% 
Mode of Payment	Cash 
Certainty of Payment	Personal Guarantee 
Delay in Payment	< 1 Week 
NO. of Fruit Picking	Two  
Time of Complete Fruit Picking	February 
Harvesting Fruit Loss	Low 

Card ID	22
Sale Price/40Kg	$7-$9 **Rs**
Urgent Need of Money	Yes 
Advance Payment	35% 
Mode of Payment	Cash 
Certainty of Payment	Personal Guarantee 
Delay in Payment	1-2 Week 
NO. of Fruit Picking	Three 
Time of Complete Fruit Picking	February 
Harvesting Fruit Loss	Low 

Card ID	23
Sale Price/40Kg	$7-$9 Rs
Urgent Need of Money	Yes 
Advance Payment	15% 
Mode of Payment	Cash 
Certainty of Payment	Personal Guarantee 
Delay in Payment	< 1 Week 
NO. of Fruit Picking	One 
Time of Complete Fruit Picking	January 
Harvesting Fruit Loss	Low 

Card ID	24
Sale Price/40Kg	$11.1-$13 
Urgent Need of Money	Yes 
Advance Payment	25% 
Mode of Payment	Cash 
Certainty of Payment	Personal Guarantee 
Delay in Payment	≥ 3 Week 
NO. of Fruit Picking	One 
Time of Complete Fruit Picking	February 
Harvesting Fruit Loss	Low 

Card ID	25
Sale Price/40Kg	$7-$9 **Rs**
Urgent Need of Money	Yes 
Advance Payment	35% 
Mode of Payment	Cash & Cheque  + 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	< 1 Week 
NO. of Fruit Picking	Two  
Time of Complete Fruit Picking	January 
Harvesting Fruit Loss	Low 

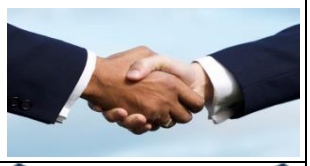
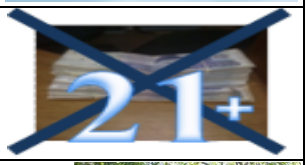
Card ID	26
Sale Price/40Kg	$11.1-$13 
Urgent Need of Money	Yes 
Advance Payment	25% 
Mode of Payment	Cheque 
Certainty of Payment	Personal Guarantee 
Delay in Payment	< 1 Week 
NO. of Fruit Picking	Two 
Time of Complete Fruit Picking	March 
Harvesting Fruit Loss	Low 

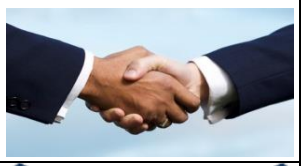
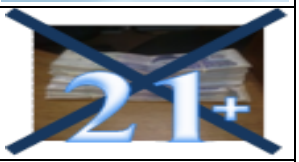
Card ID	27
Sale Price/40Kg	$9.1-$11 Rs
Urgent Need of Money	No 
Advance Payment	25% 
Mode of Payment	Cheque 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	< 1 Week 
NO. of Fruit Picking	One 
Time of Complete Fruit Picking	February 
Harvesting Fruit Loss	Low 

Appendix D-2 Citrus Growers Profiles (In Local Language)

کارڈ نمبر	1
ایک من کے لیے قیمتِ فروخت	941 روپے سے 1105 روپے 
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	15 فیصد 
ادائیگی کا طریقہ	نقد و چیک  + 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
پھل توڑوائی کی تعداد	دو 
وعدہ توڑوائی	فروری 
توڑوائی کے دوران نقصان	زیادہ 

کارڈ نمبر	2
ایک من کے لیے قیمتِ فروخت	941 روپے سے 1105روپے 
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	15 فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک ہفتہ 
پھل توڑوائی کی تعداد	تین 
وعدہ توڑوائی	مارچ 
توڑوائی کے دوران نقصان	زیادہ 

کارڈ نمبر	3
ایک من کے لئے قیمتِ فروخت	595 روپے سے 770 روپے Rs
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
پھل تڑوائی کی تعداد	ایک 
وعدہ تڑوائی	مارچ 
تڑوائی کے دوران نقصان	کم 

کارڈ نمبر	4
ایک من کے لئے قیمتِ فروخت	771 روپے سے 940 روپے Rs
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
پھل توڑوائی کی تعداد	دو  
وعدہ توڑوائی	جنوری 
توڑوائی کے دوران نقصان	زیادہ 

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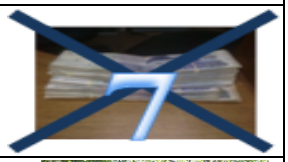
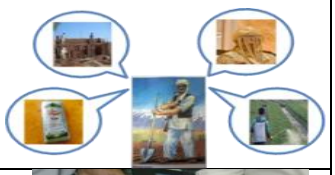
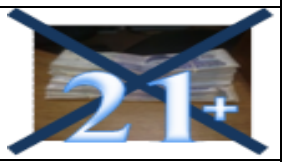
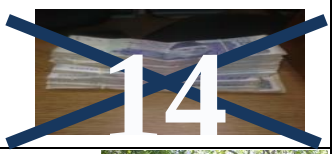
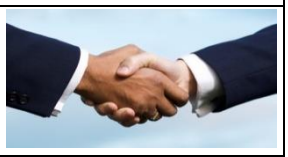
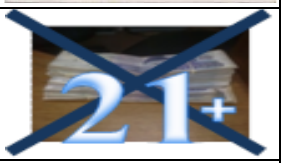
کارڈ نمبر	5
ایک من کے لئے قیمتِ فروخت	941 روپے سے 1105 روپے 
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	نقد و چیک 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک ہفتہ 
پھل تڑوائی کی تعداد	ایک 
وعدہ تڑوائی	مارچ 
تڑوائی کے دوران نقصان	کم 

کارڈ نمبر	6
ایک من کے لئے قیمتِ فروخت	771 روپے سے 940 روپے Rs
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
پھل تڑوائی کی تعداد	تین 
وعدہ تڑوائی	جنوری 
تڑوائی کے دوران نقصان	کم 

کارڈ نمبر	7
ایک من کے لئے قیمتِ فروخت	771 روپے سے 940 روپے Rs
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
پھل تڑوائی کی تعداد	ایک 
وعدہ تڑوائی	مارچ 
تڑوائی کے دوران نقصان	زیادہ 

کارڈ نمبر	8
ایک من کے لئے قیمتِ فروخت	595 روپے سے 770 روپے **Rs**
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	نقد و چیک  + 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
پھل تڑوائی کی تعداد	ایک 
وعدہ تڑوائی	فروری 
تڑوائی کے دوران نقصان	زیادہ 

کارڈ نمبر	9
ایک من کے لئے قیمتِ فروخت	595 روپے سے 770 روپے **Rs**
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
پھل تڑوائی کی تعداد	دو  
وعدہ تڑوائی	مارچ 
تڑوائی کے دوران نقصان	زیادہ 

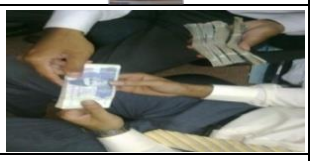
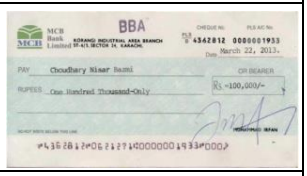
کارڈ نمبر	10
ایک من کے لئے قیمتِ فروخت	771 روپے سے 940 روپے **Rs**
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	نقد و چیک  + 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک ہفتہ 
پھل توڑوائی کی تعداد	تین 
وعدہ توڑوائی	فروری 
توڑوائی کے دوران نقصان	زیادہ 

کارڈ نمبر	11
ایک من کے لئے قیمتِ فروخت	595 روپے سے 770 روپے **Rs**
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک ہفتہ 
پھل توڑوائی کی تعداد	تین 
وعدہ توڑوائی	جنوری 
توڑوائی کے دوران نقصان	زیادہ 

کارڈ نمبر	12
ایک من کے لئے قیمتِ فروخت	771 روپے سے 940 روپے Rs
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	نقد و چیک  + 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
پھل تڑوائی کی تعداد	دو  
وعدہ تڑوائی	مارچ 
تڑوائی کے دوران نقصان	کم 

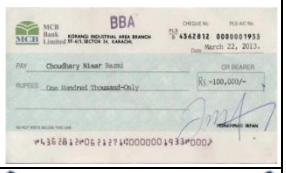
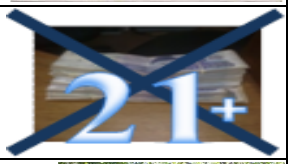
کارڈ نمبر	13
ایک من کے لئے قیمتِ فروخت	941 روپے سے 1105روپے 
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	25فیصد 
ادائیگی کا طریقہ	نقد و چیک  
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
پھل تڑوائی کی تعداد	تین 
وعدہ تڑوائی	جنوری 
تڑوائی کے دوران نقصان	کم 

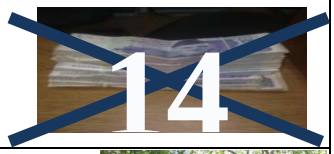
کارڈ نمبر	14
ایک من کے لئے قیمتِ فروخت	595 روپے سے 770 روپے **Rs**
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	15 فیصد 
ادائیگی کا طریقہ	نقد و چیک  + 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
پھل تڑوائی کی تعداد	تین 
وعدہ تڑوائی	مارچ 
تڑوائی کے دوران نقصان	کم 

کارڈ نمبر	15
ایک من کے لئے قیمتِ فروخت	595 روپے سے 770 روپے **Rs**
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	15 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
پھل تڑوائی کی تعداد	دو 
وعدہ تڑوائی	فروری 
تڑوائی کے دوران نقصان	کم 

کارڈ نمبر	16
ایک من کے لئے قیمتِ فروخت	941 روپے سے 1105روپے 
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
پھل تڑوائی کی تعداد	تین 
وعدہ تڑوائی	فروری 
تڑوائی کے دوران نقصان	کم 

کارڈ نمبر	17
ایک من کے لئے قیمتِ فروخت	771 روپے سے 940 روپے Rs
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	15 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
پھل توڑوائی کی تعداد	تین 
وعدہ توڑوائی	مارچ 
توڑوائی کے دوران نقصان	کم 

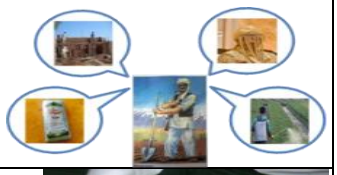
کارڈ نمبر	18
ایک من کے لئے قیمتِ فروخت	771 روپے سے 940 روپے **Rs**
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	15 فیصد 
ادائیگی کا طریقہ	نقد و چیک  + 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
پھل تڑوائی کی تعداد	ایک 
وعدہ تڑوائی	جنوری 
تڑوائی کے دوران نقصان	کم 

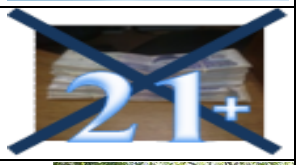
کارڈ نمبر	19
ایک من کے لئے قیمتِ فروخت	941 روپے سے 1105روپے 
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	15 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
پھل تڑوائی کی تعداد	ایک 
وعدہ تڑوائی	جنوری 
تڑوائی کے دوران نقصان	زیادہ 

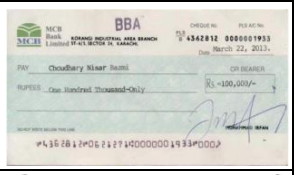
کارڈ نمبر	20
ایک من کے لئے قیمتِ فروخت	941 روپے سے 1105روپے 
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	35فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
پھل تڑوائی کی تعداد	دو 
وعدہ تڑوائی	جنوری 
تڑوائی کے دوران نقصان	کم 

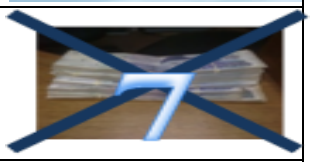
کارڈ نمبر	21
ایک من کے لئے قیمتِ فروخت	771 روپے سے 940 روپے **Rs**
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	15 فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک ہفتہ 
پھل تڑوائی کی تعداد	دو 
وعدہ تڑوائی	فروری 
تڑوائی کے دوران نقصان	کم 

کارڈ نمبر	22
ایک من کے لئے قیمتِ فروخت	595 روپے سے 770 روپے **Rs**
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
پھل توڑوائی کی تعداد	تین 
وعدہ توڑوائی	فروری 
توڑوائی کے دوران نقصان	کم 

کارڈ نمبر	23
ایک من کے لئے قیمتِ فروخت	595 روپے سے 770 روپے **Rs**
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	15 فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک ہفتہ 
پھل توڑوائی کی تعداد	ایک 
وعدہ توڑوائی	جنوری 
توڑوائی کے دوران نقصان	کم 

کارڈ نمبر	24
ایک من کے لئے قیمتِ فروخت	941 روپے سے 1105روپے 
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	25فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
پھل توڑوائی کی تعداد	ایک 
وعدہ توڑوائی	فروری 
توڑوائی کے دوران نقصان	کم 

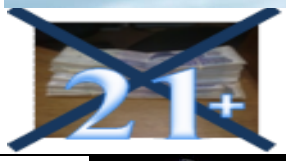
کارڈ نمبر	25
ایک من کے لئے قیمتِ فروخت	595 روپے سے 770 روپے **Rs**
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	نقد و چیک  + 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک ہفتہ 
پھل تڑوائی کی تعداد	دو 
وعدہ تڑوائی	جنوری 
تڑوائی کے دوران نقصان	کم 

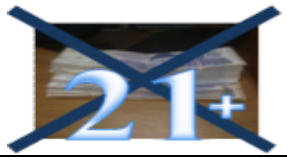
کارڈ نمبر	26
ایک من کے لئے قیمتِ فروخت	941 روپے سے 1105روپے 
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	25فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک ہفتہ 
پھل توڑوائی کی تعداد	دو 
وعدہ توڑوائی	مارچ 
توڑوائی کے دوران نقصان	کم 

کارڈ نمبر	27
ایک من کے لئے قیمتِ فروخت	771 روپے سے 940 روپے **Rs**
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک ہفتہ 
پھل تڑوائی کی تعداد	ایک 
وعدہ تڑوائی	فروری 
تڑوائی کے دوران نقصان	کم 

Appendix E-1 Pre-harvest Citrus Contractors Profiles

Card ID	1
Sale Price/40Kg	$14.1-$16 
Urgent Need of Money	No 
Advance Payment	35% 
Mode of Payment	Cash 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	1-2 Week 
Bargaining Power	No 
Reliability	Highly Reliable 
Selective Fruit Purchase	Yes  

Card ID	2
Sale Price/40Kg	$14.1-$16 Rs
Urgent Need of Money	No 
Advance Payment	25% 
Mode of Payment	Cash & Cheque  + 
Certainty of Payment	Personal Guarantee 
Delay in Payment	≥ 3 Week 
Bargaining Power	No 
Reliability	Reliable 
Selective Fruit Purchase	Yes  

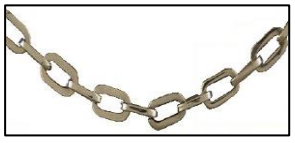
Card ID	3
Sale Price/40Kg	$14.1-$16 
Urgent Need of Money	Yes 
Advance Payment	35% 
Mode of Payment	Cheque 
Certainty of Payment	Personal Guarantee 
Delay in Payment	≥ 3 Week 
Bargaining Power	Yes 
Reliability	Highly Reliable 
Selective Fruit Purchase	No 

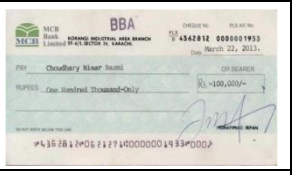
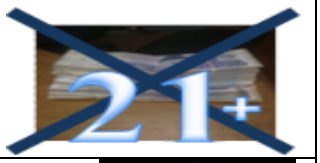
Card ID	4
Sale Price/40Kg	$12-$14 
Urgent Need of Money	No 
Advance Payment	25% 
Mode of Payment	Cheque 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	< 1 Week 
Bargaining Power	No 
Reliability	Highly Reliable 
Selective Fruit Purchase	No 

Card ID	5
Sale Price/40Kg	$14.1-$16 
Urgent Need of Money	Yes 
Advance Payment	25% 
Mode of Payment	Online 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	1-2 Week 
Bargaining Power	Yes 
Reliability	Reliable 
Selective Fruit Purchase	No  

Card ID	6
Sale Price/40Kg	$12-$14 Rs
Urgent Need of Money	Yes 
Advance Payment	35% 
Mode of Payment	Cash & Cheque  
Certainty of Payment	Post Dated Cheques 
Delay in Payment	< 1 Week 
Bargaining Power	Yes 
Reliability	Reliable 
Selective Fruit Purchase	Yes  

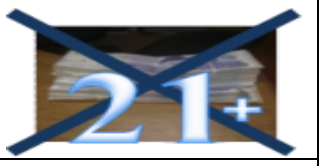
Card ID	7
Sale Price/40Kg	$12-$14 
Urgent Need of Money	Yes 
Advance Payment	25% 
Mode of Payment	Cash & Cheque  
Certainty of Payment	Personal Guarantee 
Delay in Payment	1-2 Week 
Bargaining Power	No 
Reliability	Highly Reliable 
Selective Fruit Purchase	No 

Card ID	8
Sale Price/40Kg	$14.1-$16 
Urgent Need of Money	No 
Advance Payment	25% 
Mode of Payment	Cash 
Certainty of Payment	Personal Guarantee 
Delay in Payment	< 1 Week 
Bargaining Power	Yes 
Reliability	Reliable 
Selective Fruit Purchase	No  

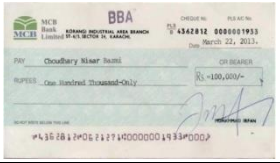
Card ID	9
Sale Price/40Kg	$12-$14 Rs
Urgent Need of Money	Yes 
Advance Payment	45% 
Mode of Payment	Cash 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	≥ 3 Week 
Bargaining Power	No 
Reliability	Reliable 
Selective Fruit Purchase	No  

Card ID	10
Sale Price/40Kg	$12-$14 **Rs**
Urgent Need of Money	No 
Advance Payment	35% 
Mode of Payment	Online 
Certainty of Payment	Personal Guarantee 
Delay in Payment	< 1 Week 
Bargaining Power	No 
Reliability	Reliable 
Selective Fruit Purchase	No  

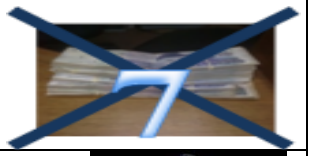
Card ID	11
Sale Price/40Kg	$14.1-$16 
Urgent Need of Money	Yes 
Advance Payment	25% 
Mode of Payment	Cheque 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	< 1 Week 
Bargaining Power	No 
Reliability	Reliable 
Selective Fruit Purchase	Yes 

Card ID	12
Sale Price/40Kg	$12-$14 **Rs**
Urgent Need of Money	No 
Advance Payment	25% 
Mode of Payment	Online 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	≥ 3 Week 
Bargaining Power	Yes 
Reliability	Highly Reliable 
Selective Fruit Purchase	Yes 

Card ID	13
Sale Price/40Kg	$12-$14 Rs
Urgent Need of Money	No 
Advance Payment	45% 
Mode of Payment	Cheque 
Certainty of Payment	Personal Guarantee 
Delay in Payment	1-2 Week 
Bargaining Power	Yes 
Reliability	Reliable 
Selective Fruit Purchase	Yes 

Card ID	14
Sale Price/40Kg	$14.1-$16 Rs
Urgent Need of Money	No 
Advance Payment	45% 
Mode of Payment	Cash & Cheque  + 
Certainty of Payment	Post Dated Cheques 
Delay in Payment	< 1 Week 
Bargaining Power	Yes 
Reliability	Highly Reliable 
Selective Fruit Purchase	No  

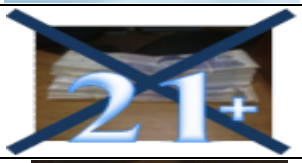
Card ID	15
Sale Price/40Kg	$12-$14 Rs
Urgent Need of Money	No 
Advance Payment	25% 
Mode of Payment	Cash 
Certainty of Payment	Personal Guarantee 
Delay in Payment	< 1 Week 
Bargaining Power	Yes 
Reliability	Highly Reliable 
Selective Fruit Purchase	Yes  

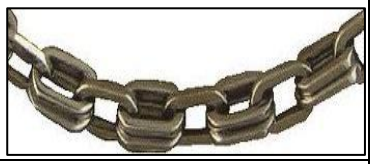
Card ID	16
Sale Price/40Kg	$14.1-$16 
Urgent Need of Money	Yes 
Advance Payment	45% 
Mode of Payment	Online 
Certainty of Payment	Personal Guarantee 
Delay in Payment	< 1 Week 
Bargaining Power	No 
Reliability	Highly Reliable 
Selective Fruit Purchase	Yes 

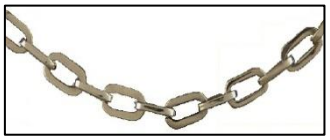
Appendix E-2 Pre-harvest Citrus Contractors Profiles (In Local Language)

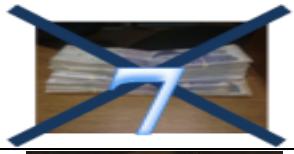
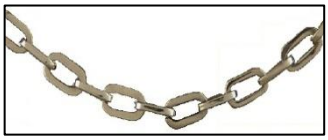
کارڈ نمبر	1
ایک من کے لئے قیمتِ فروخت	1161 روپے سے 1360 روپے Rs
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
سودے بازی کی طاقت	نہیں 
اعتماد کے قابل	انتہائی قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	ہاں 

کارڈ نمبر	2
ایک من کے لئے قیمتِ فروخت	1161 روپے سے 1360 روپے Rs
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	نقد و چیک  + 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
سودے بازی کی طاقت	نہیں 
اعتماد کے قابل	قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	ہاں  

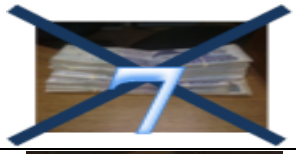
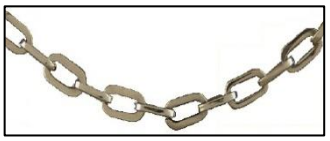
کارڈ نمبر	3
ایک من کے لئے قیمتِ فروخت	1161 روپے سے 1360 روپے Rs
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
سودے بازی کی طاقت	ہاں 
اعتماد کے قابل	انتہائی قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	نہیں 

کارڈ نمبر	4
ایک من کے لئے قیمتِ فروخت	1020 روپے سے 1160 روپے **Rs**
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک ہفتہ 
سودے بازی کی طاقت	نہیں 
اعتماد کے قابل	انتہائی قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	نہیں  

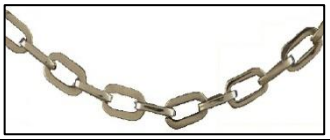
کارڈ نمبر	5
ایک من کے لئے قیمتِ فروخت	1161 روپے سے 1360 روپے **Rs**
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	آن لائن 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
سودے بازی کی طاقت	ہاں 
اعتماد کے قابل	قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	نہیں 

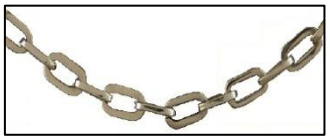
کارڈ نمبر	6
ایک من کے لئے قیمتِ فروخت	1020 روپے سے 1160 روپے Rs
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	نقد و چیک  + 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک ہفتہ 
سودے بازی کی طاقت	ہاں 
اعتماد کے قابل	قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	ہاں 

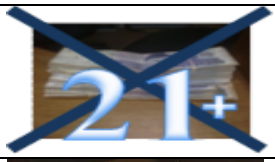
کارڈ نمبر	7
ایک من کے لئے قیمتِ فروخت	1020 روپے سے 1160 روپے Rs
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	نقد و چیک  + 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
سودے بازی کی طاقت	نہیں 
اعتماد کے قابل	انتہائی قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	نہیں 

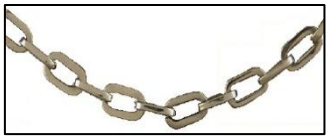
کارڈ نمبر	8
ایک من کے لئے قیمتِ فروخت	1161 روپے سے 1360 روپے Rs
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک ہفتہ 
سودے بازی کی طاقت	ہاں 
اعتماد کے قابل	قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	نہیں 

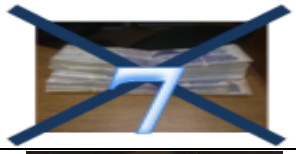
کارڈ نمبر	9
ایک من کے لئے قیمتِ فروخت	1020 روپے سے 1160 روپے **Rs**
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	45 فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
سودے بازی کی طاقت	نہیں 
اعتماد کے قابل	قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	نہیں 

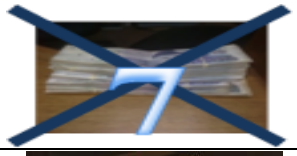
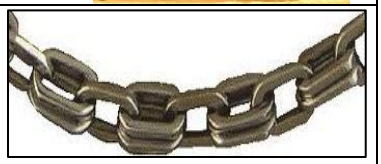
کارڈ نمبر	10
ایک من کے لئے قیمتِ فروخت	1020 روپے سے 1160 روپے Rs
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	35 فیصد 
ادائیگی کا طریقہ	آن لائن 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک ہفتہ 
سودے بازی کی طاقت	نہیں 
اعتماد کے قابل	قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	نہیں  

کارڈ نمبر	11
ایک من کے لئے قیمتِ فروخت	1161 روپے سے 1360 روپے **Rs**
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک ہفتہ 
سودے بازی کی طاقت	نہیں 
اعتماد کے قابل	قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	ہاں 

کارڈ نمبر	12
ایک من کے لئے قیمتِ فروخت	1020 روپے سے 1160 روپے **Rs**
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	آن لائن 
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	تین یا تین سے زیادہ ہفتے 
سودے بازی کی طاقت	ہاں 
اعتماد کے قابل	انتہائی قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	ہاں 

کارڈ نمبر	13
ایک من کے لئے قیمتِ فروخت	1020 روپے سے 1160 روپے **Rs**
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	45 فیصد 
ادائیگی کا طریقہ	چیک 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک سے دو ہفتے 
سودے بازی کی طاقت	ہاں 
اعتماد کے قابل	قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	ہاں  

کارڈ نمبر	14
ایک من کے لئے قیمتِ فروخت	1161 روپے سے 1360 روپے 
رقم کی فوری ضرورت	نہیں 
پیشگی ادائیگی	45 فیصد 
ادائیگی کا طریقہ	نقد و چیک  
ادائیگی کا یقین	پیشگی چیک 
ادائیگی میں تاخیر	ایک ہفتہ 
سودے بازی کی طاقت	ہاں 
اعتماد کے قابل	انتہائی قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	نہیں  

کارڈ نمبر	15
ایک من کے لئے قیمتِ فروخت	1020 روپے سے 1160 روپے Rs
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	25 فیصد 
ادائیگی کا طریقہ	نقد 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک ہفتہ 
سودے بازی کی طاقت	ہاں 
اعتماد کے قابل	انتہائی قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	ہاں 

کارڈ نمبر	16
ایک من کے لئے قیمتِ فروخت	1161 روپے سے 1360 روپے Rs
رقم کی فوری ضرورت	ہاں 
پیشگی ادائیگی	45 فیصد 
ادائیگی کا طریقہ	آن لائن 
ادائیگی کا یقین	ذاتی گارنٹی 
ادائیگی میں تاخیر	ایک ہفتہ 
سودے بازی کی طاقت	نہیں 
اعتماد کے قابل	انتہائی قابلِ اعتماد 
منتخب شدہ پھل کی خریداری	ہاں 

Appendix F-1 Significance Test Results between Qualitative and Quantitative Factors for Small Size Citrus Growers

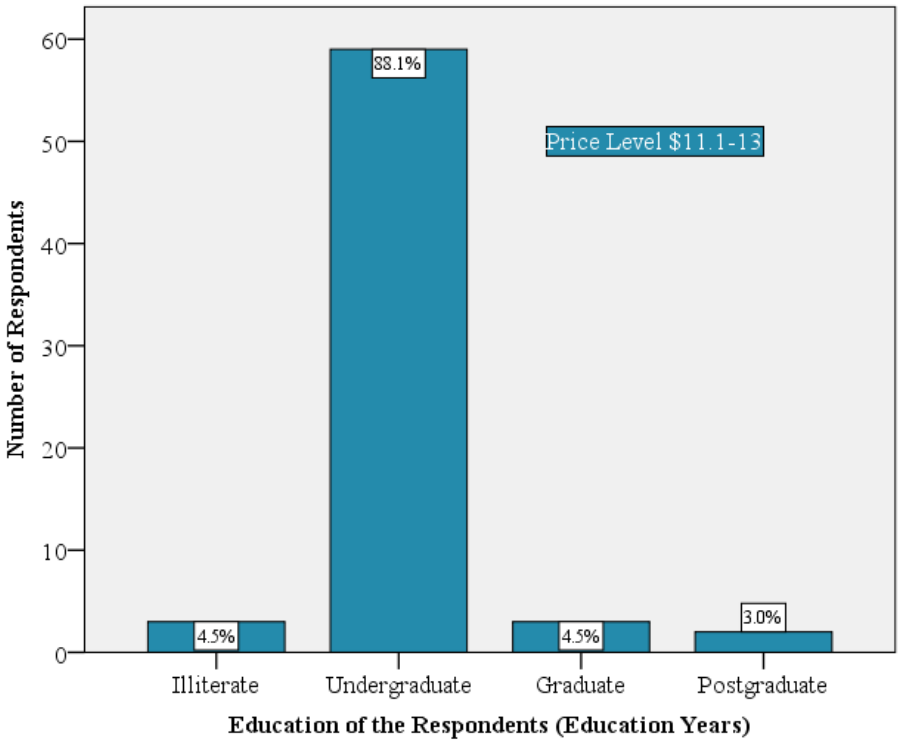
S.NO.	Factors	p-Value	Relationship
1	Age of the Respondents (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
2	Education of the Respondents (Education Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
3	Citrus Grower's Experience (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
4	Area Under Citrus / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
5	Area Under Citrus / Urgent Need of Money	1.00	Non-significant
6	Education of the Respondents (Education Years) / Time of Complete Fruit Picking	1.00	Non-significant
7	Area Under Citrus / Time of Complete Fruit Picking	1.00	Non-significant
8	Age of the Respondents (Years) / Time of Complete Fruit Picking	1.00	Non-significant
9	Education of the Respondents (Education Years) / Advance Payment	0.94	Non-significant
10	Citrus Grower's Experience (Years) / Delay in Payment	0.83	Non-significant
11	Citrus Grower's Experience (Years) / Urgent Need of Money	0.76	Non-significant
12	Education of the Respondents (Education Years) / NO. of Fruit Picking	0.53	Non-significant
13	Age of the Respondents (Years) / Delay in Payment	0.40	Non-significant
14	Citrus Grower's Experience (Years) / Advance Payment	0.34	Non-significant
15	Citrus Grower's Experience (Years) / Time of Complete Fruit Picking	0.33	Non-significant
16	Age of the Respondents (Years) / Mode of Payment	0.30	Non-significant
17	Education of the Respondents (Education Years) / Certainty of Payment	0.29	Non-significant
18	Age of the Respondents (Years) / Urgent Need of Money	0.23	Non-significant
19	Age of the Respondents (Years) / NO. of Fruit Picking	0.18	Non-significant
20	Area Under Citrus / NO. of Fruit Picking	0.15	Non-significant
21	Age of the Respondents (Years) / Advance Payment	0.14	Non-significant
22	Age of the Respondents (Years) / Certainty of Payment	0.12	Non-significant
23	Citrus Grower's Experience (Years) / Mode of Payment	0.11	Non-significant
24	Education of the Respondents (Education Years) / Mode of Payment	0.07	Non-significant

25	Area Under Citrus / Advance Payment	0.06	Non-significant
26	Area Under Citrus / Mode of Payment	0.05	Significant
27	Education of the Respondents (Education Years) / Harvesting Fruit Loss	0.03	Significant
28	Education of the Respondents (Education Years) / Delay in Payment	0.02	Significant
29	Citrus Grower's Experience (Years) / Certainty of Payment	0.02	Significant
30	Citrus Grower's Experience (Years) / Harvesting Fruit Loss	0.02	Significant
31	Area Under Citrus / Delay in Payment	0.02	Significant
32	Citrus Grower's Experience (Years) / NO. of Fruit Picking	0.01	Significant
33	Area Under Citrus / Certainty of Payment	0.00	Significant
34	Area Under Citrus / Harvesting Fruit Loss	0.00	Significant
35	Education of the Respondents (Education Years) / Urgent Need of Money	0.00	Significant
36	Age of the Respondents (Years) / Harvesting Fruit Loss	0.00	Significant

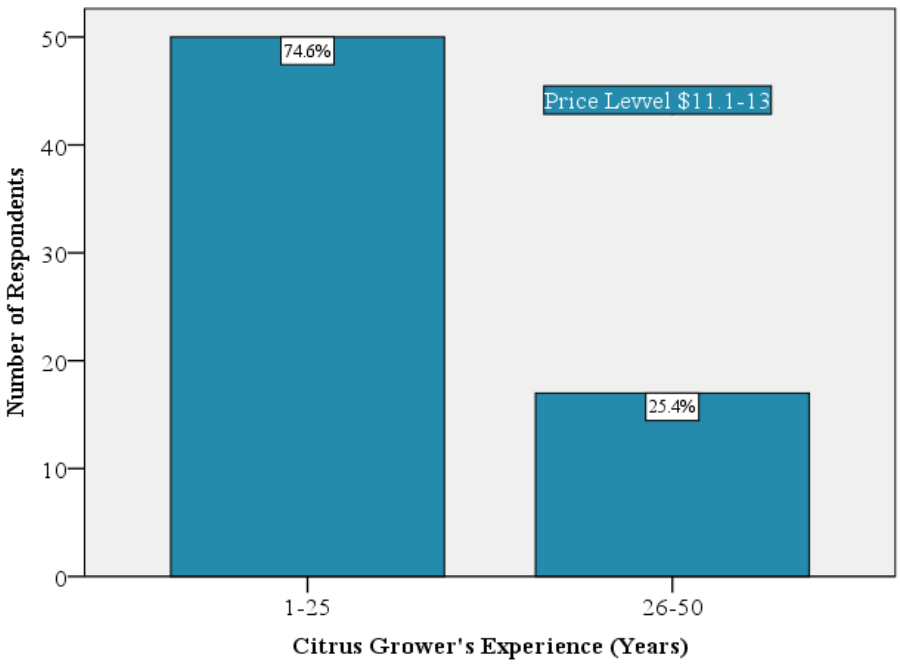
Appendix F-2 Significance Test Results between Two Quantitative Factors for Small Size Citrus Growers

S.NO.	Factors	p-value	Relationship
1	Mode of Payment / Time of Complete Fruit Picking	1.00	Non-significant
2	Urgent Need of Money / Advance Payment	0.91	Non-significant
3	Time of Complete Fruit Picking / Harvesting Fruit Loss	0.57	Non-significant
4	Urgent Need of Money / Time of Complete Fruit Picking	0.57	Non-significant
5	Certainty of Payment / Time of Complete Fruit Picking	0.57	Non-significant
6	Advance Payment / Delay in Payment	0.40	Non-significant
7	Advance Payment / NO. of Fruit Picking	0.36	Non-significant
8	NO. of Fruit Picking / Time of Complete Fruit Picking	0.23	Non-significant
9	Urgent Need of Money / NO. of Fruit Picking	0.20	Non-significant
10	Advance Payment / Time of Complete Fruit Picking	0.19	Non-significant
11	Urgent Need of Money / Harvesting Fruit Loss	0.18	Non-significant
12	Urgent Need of Money / Certainty of Payment	0.05	Significant
13	Mode of Payment / NO. of Fruit Picking	0.02	Significant
14	Delay in Payment / Time of Complete Fruit Picking	0.02	Significant
15	Advance Payment / Mode of Payment	0.00	Significant
16	Mode of Payment / Certainty of Payment	0.00	Significant
17	Certainty of Payment / Delay in Payment	0.00	Significant
18	Delay in Payment / NO. of Fruit Picking	0.00	Significant
19	Urgent Need of Money / Delay in Payment	0.00	Significant
20	Advance Payment / Certainty of Payment	0.00	Significant
21	Mode of Payment / Delay in Payment	0.00	Significant
22	Mode of Payment / Harvesting Fruit Loss	0.00	Significant
23	Certainty of Payment / NO. of Fruit Picking	0.00	Significant
24	Certainty of Payment / Harvesting Fruit Loss	0.00	Significant
25	Delay in Payment / Harvesting Fruit Loss	0.00	Significant
26	NO. of Fruit Picking / Harvesting Fruit Loss	0.00	Significant
27	Urgent Need of Money / Mode of Payment	0.00	Significant
28	Advance Payment / Harvesting Fruit Loss	0.00	Significant

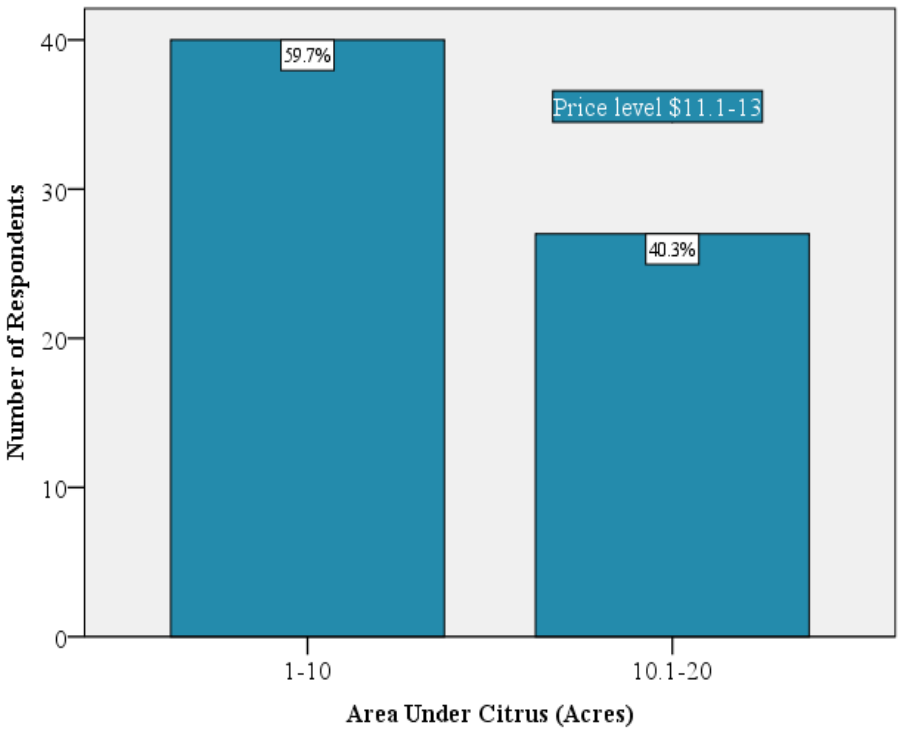
Appendix F-3 Relation between Education of the Respondents and Price for Small Size Citrus Growers



Appendix F-4 Relation between Experience of the Respondents and Price for Small Size Citrus Growers



Appendix F-5 Relation between Area under Citrus and Price for Small Size Citrus Growers



Appendix F-6 All Profiles/Decisions for Small Size Citrus Growers

Profile ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss
1	$11.1-$13	Yes	15%	Cash & Cheque	Personal Guarantee	≥ 3 Week	Two	February	High
2	$9.1-$11	No	35%	Cash & Cheque	Personal Guarantee	< 1 Week	Three	February	High
3	$7-$9	No	35%	Cheque	Personal Guarantee	≥ 3 Week	One	March	Low
4	$9.1-$11	Yes	35%	Cheque	Personal Guarantee	≥ 3 Week	Two	January	High
5	$11.1-$13	Yes	35%	Cash & Cheque	Personal Guarantee	< 1 Week	One	March	Low
6	$9.1-$11	Yes	25%	Cash	Personal Guarantee	≥ 3 Week	Three	January	Low
7	$9.1-$11	Yes	35%	Cash	Post Dated Cheques	1-2 Week	One	March	High
8	$7-$9	Yes	25%	Cash & Cheque	Personal Guarantee	1-2 Week	One	February	High
9	$7-$9	No	25%	Cash	Post Dated Cheques	≥ 3 Week	Two	March	High
10	$7-$9	Yes	25%	Cheque	Personal Guarantee	< 1 Week	Three	January	High
11	$9.1-$11	Yes	25%	Cash & Cheque	Personal Guarantee	1-2 Week	Two	March	Low
12	$11.1-$13	Yes	15%	Cash	Post Dated Cheques	< 1 Week	Three	March	High
13	$11.1-$13	No	25%	Cash & Cheque	Post Dated Cheques	1-2 Week	Three	January	Low
14	$7-$9	No	15%	Cash & Cheque	Personal Guarantee	≥ 3 Week	Three	March	Low

15	$7-$9	Yes	15%	Cheque	Post Dated Cheques	1-2 Week	Two	February	Low
16	$11.1-$13	Yes	35%	Cheque	Post Dated Cheques	≥ 3 Week	Three	February	Low
17	$9.1-$11	Yes	15%	Cheque	Personal Guarantee	1-2 Week	Three	March	Low
18	$9.1-$11	Yes	15%	Cash & Cheque	Post Dated Cheques	≥ 3 Week	One	January	Low
19	$11.1-$13	No	15%	Cheque	Personal Guarantee	1-2 Week	One	January	High
20	$11.1-$13	No	35%	Cash	Personal Guarantee	1-2 Week	Two	January	Low
21	$9.1-$11	No	15%	Cash	Personal Guarantee	< 1 Week	Two	February	Low
22	$7-$9	Yes	35%	Cash	Personal Guarantee	1-2 Week	Three	February	Low
23	$7-$9	Yes	15%	Cash	Personal Guarantee	< 1 Week	One	January	Low
24	$11.1-$13	Yes	25%	Cash	Personal Guarantee	≥ 3 Week	One	February	Low
25	$7-$9	Yes	35%	Cash & Cheque	Post Dated Cheques	< 1 Week	Two	January	Low
26	$11.1-$13	Yes	25%	Cheque	Personal Guarantee	< 1 Week	Two	March	Low
27	$9.1-$11	No	25%	Cheque	Post Dated Cheques	< 1 Week	One	February	Low

Appendix F-7 Predicted Rankings of all Profiles/Decisions for Small Size Citrus Growers

Profile ID	Constant	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss	Total Worth
20	14.039	5.579	0.200	0.143	0.237	0.271	-0.496	0.041	4.202	-0.189	**24.027**
19	14.039	5.579	0.200	-0.851	0.274	0.271	-0.496	0.285	4.202	0.189	**23.692**
13	14.039	5.579	0.200	0.708	-0.511	-0.271	-0.496	-0.327	4.202	-0.189	**22.934**
24	14.039	5.579	-0.200	0.708	0.237	0.271	0.723	0.285	0.925	-0.189	**22.378**
16	14.039	5.579	-0.200	0.143	0.274	-0.271	0.723	-0.327	0.925	-0.189	**20.696**
4	14.039	0.706	-0.200	0.143	0.237	0.271	0.723	0.041	4.202	0.189	**20.351**
1	14.039	5.579	-0.200	-0.851	-0.511	0.271	0.723	0.041	0.925	0.189	**20.205**
6	14.039	0.706	-0.200	0.708	0.237	0.271	0.723	-0.327	4.202	-0.189	**20.170**
18	14.039	0.706	-0.200	-0.851	-0.511	-0.271	0.723	0.285	4.202	-0.189	**17.933**
27	14.039	0.706	0.200	0.708	0.274	-0.271	-0.227	0.285	0.925	-0.189	**16.450**
2	14.039	0.706	0.200	0.143	-0.511	0.271	-0.227	-0.327	0.925	0.189	**15.408**
26	14.039	5.579	-0.200	0.708	0.274	0.271	-0.227	0.041	-5.128	-0.189	**15.168**
21	14.039	0.706	0.200	-0.851	0.237	0.271	-0.227	0.041	0.925	-0.189	**15.152**
5	14.039	5.579	-0.200	0.143	-0.511	0.271	-0.227	0.285	-5.128	-0.189	**14.062**
12	14.039	5.579	-0.200	-0.851	0.237	-0.271	-0.227	-0.327	-5.128	0.189	**13.040**
10	14.039	-6.285	-0.200	0.708	0.274	0.271	-0.227	-0.327	4.202	0.189	**12.644**
23	14.039	-6.285	-0.200	-0.851	0.237	0.271	-0.227	0.285	4.202	-0.189	**11.282**
25	14.039	-6.285	-0.200	0.143	-0.511	-0.271	-0.227	0.041	4.202	-0.189	**10.742**
7	14.039	0.706	-0.200	0.143	0.237	-0.271	-0.496	0.285	-5.128	0.189	**9.504**
11	14.039	0.706	-0.200	0.708	-0.511	0.271	-0.496	0.041	-5.128	-0.189	**9.241**
8	14.039	-6.285	-0.200	0.708	-0.511	0.271	-0.496	0.285	0.925	0.189	**8.925**
22	14.039	-6.285	-0.200	0.143	0.237	0.271	-0.496	-0.327	0.925	-0.189	**8.118**
17	14.039	0.706	-0.200	-0.851	0.274	0.271	-0.496	-0.327	-5.128	-0.189	**8.099**
15	14.039	-6.285	-0.200	-0.851	0.274	-0.271	-0.496	0.041	0.925	-0.189	**6.987**
9	14.039	-6.285	0.200	0.708	0.237	-0.271	0.723	0.041	-5.128	0.189	**4.453**
3	14.039	-6.285	0.200	0.143	0.274	0.271	0.723	0.285	-5.128	-0.189	**4.333**
14	14.039	-6.285	0.200	-0.851	-0.511	0.271	0.723	-0.327	-5.128	-0.189	**1.942**

Appendix G-1 Significance Test Results between Qualitative and Quantitative Factors for Medium Size Citrus Growers

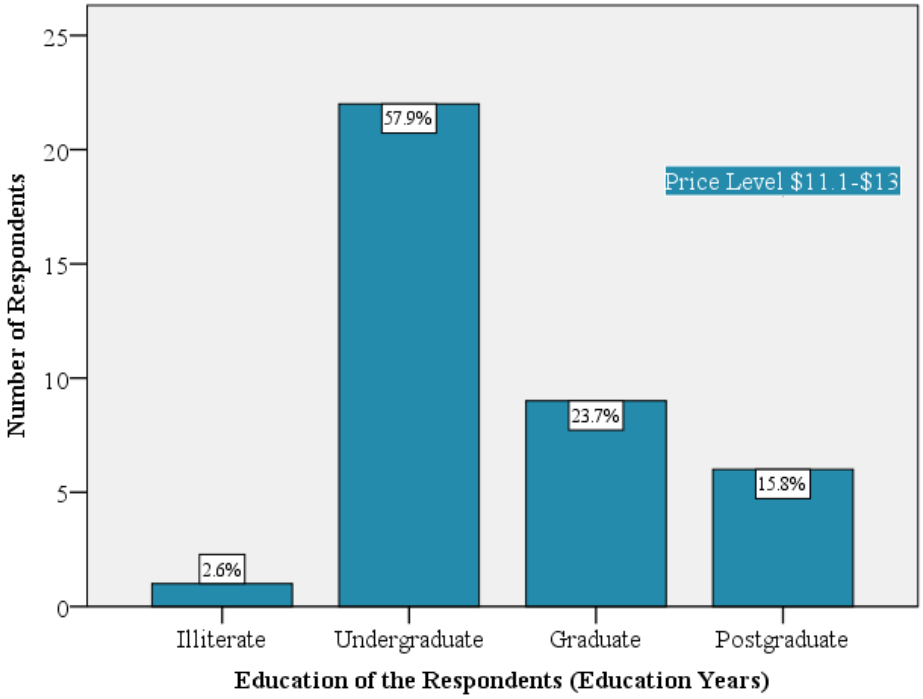
S.NO.	Factors	p-Value	Relationship
1	Age of the Respondents (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
2	Education of the Respondents (Education Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
3	Citrus Grower's Experience (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
4	Area Under Citrus / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
5	Area Under Citrus / Mode of Payment	1.00	Non-significant
6	Area Under Citrus / Time of Complete Fruit Picking	1.00	Non-significant
7	Age of the Respondents (Years) / Advance Payment	1.00	Non-significant
8	Citrus Grower's Experience (Years) / NO. of Fruit Picking	1.00	Non-significant
9	Age of the Respondents (Years) / Urgent Need of Money	1.00	Non-significant
10	Age of the Respondents (Years) / Certainty of Payment	1.00	Non-significant
11	Age of the Respondents (Years) / Time of Complete Fruit Picking	1.00	Non-significant
12	Age of the Respondents (Years) / Delay in Payment	0.84	Non-significant
13	Citrus Grower's Experience (Years) / Mode of Payment	0.84	Non-significant
14	Area Under Citrus / Advance Payment	0.69	Non-significant
15	Age of the Respondents (Years) / Harvesting Fruit Loss	0.69	Non-significant
16	Education of the Respondents (Education Years) / NO. of Fruit Picking	0.68	Non-significant
17	Education of the Respondents (Education Years) / Urgent Need of Money	0.67	Non-significant
18	Age of the Respondents (Years) / Mode of Payment	0.39	Non-significant
19	Education of the Respondents (Education Years) / Harvesting Fruit Loss	0.33	Non-significant
20	Citrus Grower's Experience (Years) / Urgent Need of Money	0.30	Non-significant
21	Area Under Citrus / NO. of Fruit Picking	0.29	Non-significant
22	Education of the Respondents (Education Years) / Certainty of Payment	0.27	Non-significant
23	Citrus Grower's Experience (Years) / Advance Payment	0.24	Non-significant
24	Area Under Citrus / Harvesting Fruit Loss	0.19	Non-significant
25	Area Under Citrus / Urgent Need of Money	0.15	Non-significant

26	Education of the Respondents (Education Years) / Mode of Payment	0.13	Non-significant
27	Education of the Respondents (Education Years) / Time of Complete Fruit Picking	0.13	Non-significant
28	Citrus Grower's Experience (Years) / Delay in Payment	0.13	Non-significant
29	Age of the Respondents (Years) / NO. of Fruit Picking	0.13	Non-significant
30	Education of the Respondents (Education Years) / Delay in Payment	0.11	Non-significant
31	Area Under Citrus / Delay in Payment	0.10	Non-significant
32	Citrus Grower's Experience (Years) / Certainty of Payment	0.09	Non-significant
33	Citrus Grower's Experience (Years) / Time of Complete Fruit Picking	0.07	Non-significant
34	Area Under Citrus / Certainty of Payment	0.05	Significant
35	Citrus Grower's Experience (Years) / Harvesting Fruit Loss	0.04	Significant
36	Education of the Respondents (Education Years) / Advance Payment	0.00	Significant

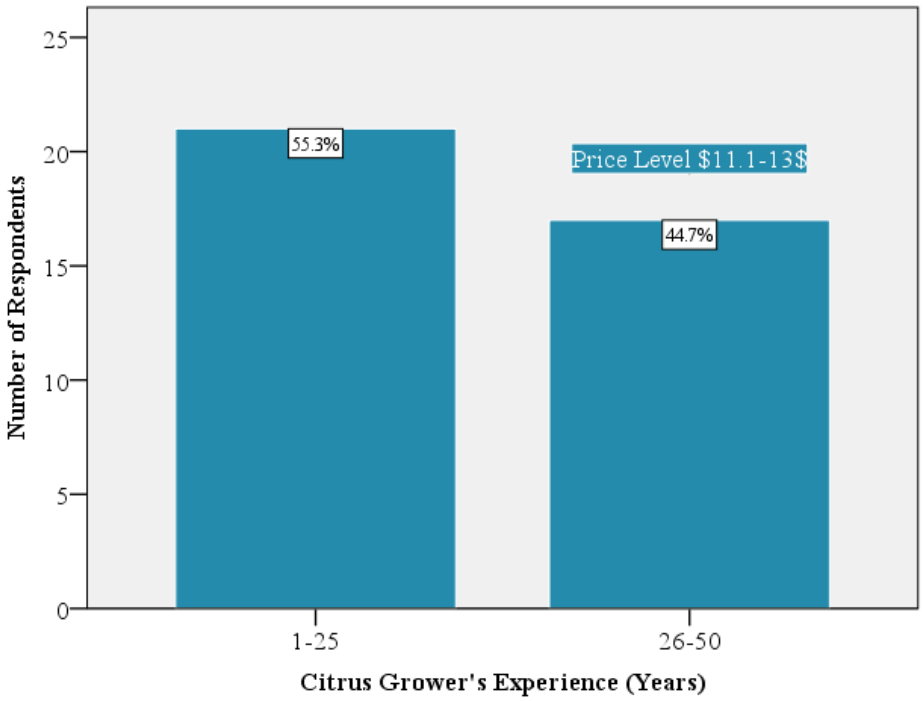
Appendix G-2 Significance Test Results between Two Quantitative Factors for Medium Size Citrus Growers

S.NO.	Factors	p-value	Relationship
1	Urgent Need of Money * Mode of Payment	1.00	Non-significant
2	Certainty of Payment * NO. of Fruit Picking	1.00	Non-significant
3	Mode of Payment * Certainty of Payment	1.00	Non-significant
4	Urgent Need of Money * Time of Complete Fruit Picking	1.00	Non-significant
5	NO. of Fruit Picking * Time of Complete Fruit Picking	0.84	Non-significant
6	NO. of Fruit Picking * Harvesting Fruit Loss	0.75	Non-significant
7	Mode of Payment * NO. of Fruit Picking	0.71	Non-significant
8	Mode of Payment * Harvesting Fruit Loss	0.57	Non-significant
9	Certainty of Payment * Time of Complete Fruit Picking	0.55	Non-significant
10	Urgent Need of Money * NO. of Fruit Picking	0.46	Non-significant
11	Delay in Payment * NO. of Fruit Picking	0.40	Non-significant
12	Mode of Payment * Time of Complete Fruit Picking	0.30	Non-significant
13	Urgent Need of Money * Delay in Payment	0.17	Non-significant
14	Time of Complete Fruit Picking * Harvesting Fruit Loss	0.17	Non-significant
15	Urgent Need of Money * Advance Payment	0.15	Non-significant
16	Mode of Payment * Delay in Payment	0.14	Non-significant
17	Certainty of Payment * Delay in Payment	0.07	Non-significant
18	Advance Payment * NO. of Fruit Picking	0.05	Significant
19	Advance Payment * Mode of Payment	0.04	Significant
20	Advance Payment * Certainty of Payment	0.03	Significant
21	Urgent Need of Money * Certainty of Payment	0.03	Significant
22	Urgent Need of Money * Harvesting Fruit Loss	0.02	Significant
23	Advance Payment * Time of Complete Fruit Picking	0.02	Significant
24	Advance Payment * Harvesting Fruit Loss	0.01	Significant
25	Delay in Payment * Time of Complete Fruit Picking	0.00	Significant
26	Delay in Payment * Harvesting Fruit Loss	0.00	Significant
27	Advance Payment * Delay in Payment	0.00	Significant
28	Certainty of Payment * Harvesting Fruit Loss	0.00	Significant

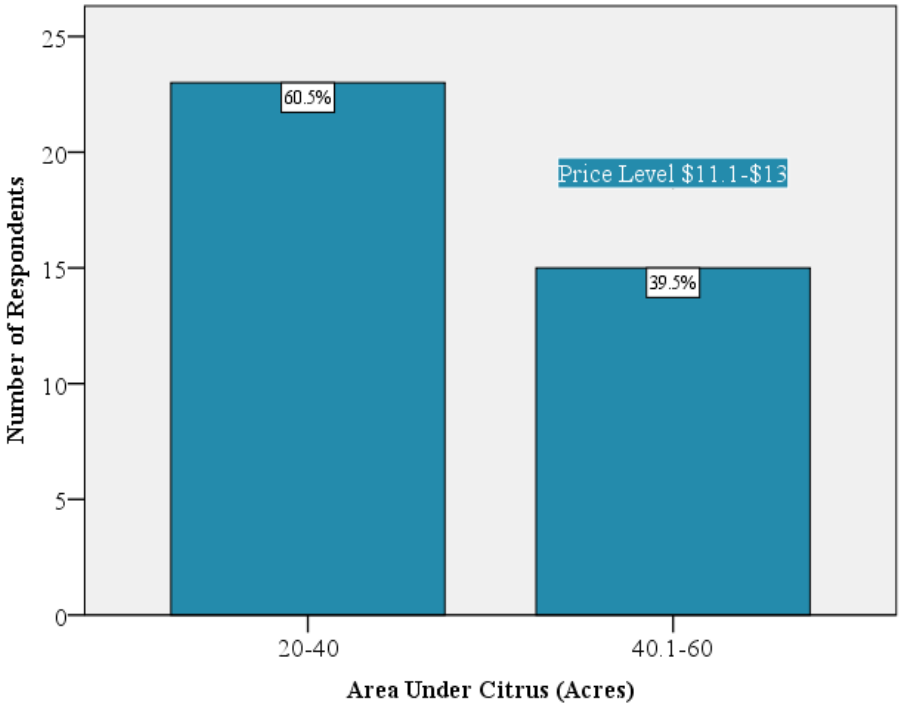
Appendix G-3 Relation between Education of the Respondents and Price for Medium Size Citrus Growers



Appendix G-4 Relation between Experience of the Respondents and Price for Medium Size Citrus Growers



Appendix G-5 Relation between Area under Citrus and Price for Medium Size Citrus Growers



Appendix G-6 All Profiles/Decisions for Medium Size Citrus Growers

Profile ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss
1	$11.1-$13	Yes	15%	Cash & Cheque	Personal Guarantee	≥ 3 Week	Two	February	High
2	$9.1-$11	No	35%	Cash & Cheque	Personal Guarantee	< 1 Week	Three	February	High
3	$7-$9	No	35%	Cheque	Personal Guarantee	≥ 3 Week	One	March	Low
4	$9.1-$11	Yes	35%	Cheque	Personal Guarantee	≥ 3 Week	Two	January	High
5	$11.1-$13	Yes	35%	Cash & Cheque	Personal Guarantee	< 1 Week	One	March	Low
6	$9.1-$11	Yes	25%	Cash	Personal Guarantee	≥ 3 Week	Three	January	Low
7	$9.1-$11	Yes	35%	Cash	Post Dated Cheques	1-2 Week	One	March	High
8	$7-$9	Yes	25%	Cash & Cheque	Personal Guarantee	1-2 Week	One	February	High
9	$7-$9	No	25%	Cash	Post Dated Cheques	≥ 3 Week	Two	March	High
10	$7-$9	Yes	25%	Cheque	Personal Guarantee	< 1 Week	Three	January	High
11	$9.1-$11	Yes	25%	Cash & Cheque	Personal Guarantee	1-2 Week	Two	March	Low
12	$11.1-$13	Yes	15%	Cash	Post Dated Cheques	< 1 Week	Three	March	High
13	$11.1-$13	No	25%	Cash & Cheque	Post Dated Cheques	1-2 Week	Three	January	Low
14	$7-$9	No	15%	Cash & Cheque	Personal Guarantee	≥ 3 Week	Three	March	Low
15	$7-$9	Yes	15%	Cheque	Post Dated Cheques	1-2 Week	Two	February	Low

16	$11.1-$13	Yes	35%	Cheque	Post Dated Cheques	≥ 3 Week	Three	February	Low
17	$9.1-$11	Yes	15%	Cheque	Personal Guarantee	1-2 Week	Three	March	Low
18	$9.1-$11	Yes	15%	Cash & Cheque	Post Dated Cheques	≥ 3 Week	One	January	Low
19	$11.1-$13	No	15%	Cheque	Personal Guarantee	1-2 Week	One	January	High
20	$11.1-$13	No	35%	Cash	Personal Guarantee	1-2 Week	Two	January	Low
21	$9.1-$11	No	15%	Cash	Personal Guarantee	< 1 Week	Two	February	Low
22	$7-$9	Yes	35%	Cash	Personal Guarantee	1-2 Week	Three	February	Low
23	$7-$9	Yes	15%	Cash	Personal Guarantee	< 1 Week	One	January	Low
24	$11.1-$13	Yes	25%	Cash	Personal Guarantee	≥ 3 Week	One	February	Low
25	$7-$9	Yes	35%	Cash & Cheque	Post Dated Cheques	< 1 Week	Two	January	Low
26	$11.1-$13	Yes	25%	Cheque	Personal Guarantee	< 1 Week	Two	March	Low
27	$9.1-$11	No	25%	Cheque	Post Dated Cheques	< 1 Week	One	February	Low

Appendix G-7 Predicted Rankings of all Profiles/Decisions for Medium Size Citrus Growers

Profile ID	Constant	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss	Total part Worth
20	14.103	6.921	0.443	0.374	-0.243	0.588	-0.851	0.085	2.997	-0.454	**23.963**
13	14.103	6.921	0.443	0.497	-0.409	-0.588	-0.851	0.942	2.997	-0.454	**23.601**
16	14.103	6.921	-0.443	0.374	0.652	-0.588	0.447	0.942	1.626	-0.454	**23.580**
19	14.103	6.921	0.443	-0.871	0.652	0.588	-0.851	-1.026	2.997	0.454	**23.410**
1	14.103	6.921	-0.443	-0.871	-0.409	0.588	0.447	0.085	1.626	0.454	**22.501**
24	14.103	6.921	-0.443	0.497	-0.243	0.588	0.447	-1.026	1.626	-0.454	**22.016**
4	14.103	0.336	-0.443	0.374	0.652	0.588	0.447	0.085	2.997	0.454	**19.593**
2	14.103	0.336	0.443	0.374	-0.409	0.588	0.404	0.942	1.626	0.454	**18.861**
6	14.103	0.336	-0.443	0.497	-0.243	0.588	0.447	0.942	2.997	-0.454	**18.770**
26	14.103	6.921	-0.443	0.497	0.652	0.588	0.404	0.085	-4.623	-0.454	**17.730**
12	14.103	6.921	-0.443	-0.871	-0.243	-0.588	0.404	0.942	-4.623	0.454	**16.056**
21	14.103	0.336	0.443	-0.871	-0.243	0.588	0.404	0.085	1.626	-0.454	**16.017**
27	14.103	0.336	0.443	0.497	0.652	-0.588	0.404	-1.026	1.626	-0.454	**15.993**
5	14.103	6.921	-0.443	0.374	-0.409	0.588	0.404	-1.026	-4.623	-0.454	**15.435**
18	14.103	0.336	-0.443	-0.871	-0.409	-0.588	0.447	-1.026	2.997	-0.454	**14.092**
10	14.103	-7.257	-0.443	0.497	0.652	0.588	0.404	0.942	2.997	0.454	**12.937**
17	14.103	0.336	-0.443	-0.871	0.652	0.588	-0.851	0.942	-4.623	-0.454	**9.379**
11	14.103	0.336	-0.443	0.497	-0.409	0.588	-0.851	0.085	-4.623	-0.454	**8.829**
25	14.103	-7.257	-0.443	0.374	-0.409	-0.588	0.404	0.085	2.997	-0.454	**8.812**
22	14.103	-7.257	-0.443	0.374	-0.243	0.588	-0.851	0.942	1.626	-0.454	**8.385**
23	14.103	-7.257	-0.443	-0.871	-0.243	0.588	0.404	-1.026	2.997	-0.454	**7.798**
7	14.103	0.336	-0.443	0.374	-0.243	-0.588	-0.851	-1.026	-4.623	0.454	**7.493**
8	14.103	-7.257	-0.443	0.497	-0.409	0.588	-0.851	-1.026	1.626	0.454	**7.282**
15	14.103	-7.257	-0.443	-0.871	0.652	-0.588	-0.851	0.085	1.626	-0.454	**6.002**
9	14.103	-7.257	0.443	0.497	-0.243	-0.588	0.447	0.085	-4.623	0.454	**3.318**
3	14.103	-7.257	0.443	0.374	0.652	0.588	0.447	-1.026	-4.623	-0.454	**3.247**
14	14.103	-7.257	0.443	-0.871	-0.409	0.588	0.447	0.942	-4.623	-0.454	**2.909**

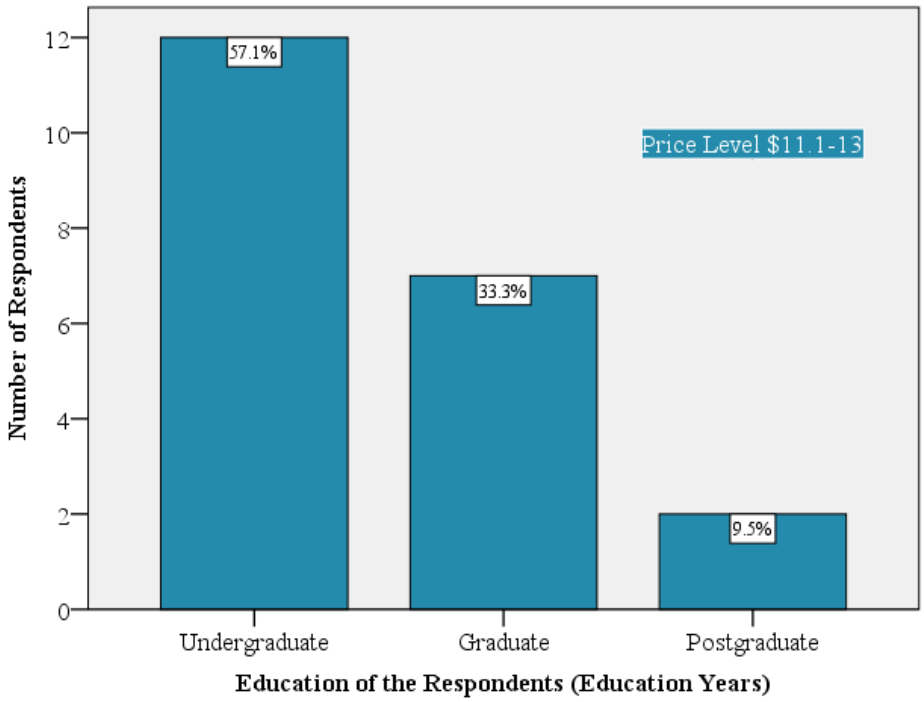
Appendix H-1 Significance Test Results between Qualitative and Quantitative Factors for Large Size Citrus Growers

S.NO.	Factors	p-Value	Relationship
1	Age of the Respondents (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
2	Education of the Respondents (Education Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
3	Citrus Grower's Experience (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
4	Area Under Citrus / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
5	Citrus Grower's Experience (Years) / Harvesting Fruit Loss	1.00	Non-significant
6	Area Under Citrus / Advance Payment	1.00	Non-significant
7	Education of the Respondents (Education Years) / Advance Payment	1.00	Non-significant
8	Age of the Respondents (Years) / Time of Complete Fruit Picking	1.00	Non-significant
9	Education of the Respondents (Education Years) / Urgent Need of Money	1.00	Non-significant
10	Education of the Respondents (Education Years) / NO. of Fruit Picking	1.00	Non-significant
11	Age of the Respondents (Years) / Mode of Payment	1.00	Non-significant
12	Age of the Respondents (Years) / Certainty of Payment	1.00	Non-significant
13	Citrus Grower's Experience (Years) / Advance Payment	0.67	Non-significant
14	Age of the Respondents (Years) / Delay in Payment	0.86	Non-significant
15	Area Under Citrus / Harvesting Fruit Loss	1.00	Non-significant
16	Education of the Respondents (Education Years) / Time of Complete Fruit Picking	1.00	Non-significant
17	Education of the Respondents (Education Years) / Delay in Payment	0.68	Non-significant
18	Citrus Grower's Experience (Years) / Urgent Need of Money	0.57	Non-significant
19	Age of the Respondents / Urgent Need of Money	1.00	Non-significant
20	Age of the Respondents (Years) / NO. of Fruit Picking	1.00	Non-significant
21	Age of the Respondents (Years) / Advance Payment	0.81	Non-significant
22	Citrus Grower's Experience (Years) / NO. of Fruit Picking	1.00	Non-significant
23	Area Under Citrus / Mode of Payment	0.52	Non-significant
24	Area Under Citrus / Certainty of Payment	0.52	Non-significant
25	Area Under Citrus / Delay in Payment	0.47	Non-significant
26	Area Under Citrus / Time of Complete Fruit Picking	0.41	Non-significant
27	Citrus Grower's Experience (Years) / Time of Complete Fruit Picking	0.23	Non-significant
28	Age of the Respondents / Harvesting Fruit Loss	0.59	Non-significant
29	Education of the Respondents (Education Years) / Harvesting Fruit Loss	0.65	Non-significant
30	Education of the Respondents (Education Years) / Mode of Payment	0.43	Non-significant
31	Education of the Respondents (Education Years) / Certainty of Payment	0.43	Non-significant
32	Area Under Citrus / NO. of Fruit Picking	0.57	Non-significant
33	Citrus Grower's Experience (Years) / Delay in Payment	0.16	Non-significant
34	Area Under Citrus / Urgent Need of Money	0.36	Non-significant
35	Citrus Grower's Experience (Years) / Mode of Payment	0.33	Non-significant
36	Citrus Grower's Experience / Certainty of Payment	0.33	Non-significant

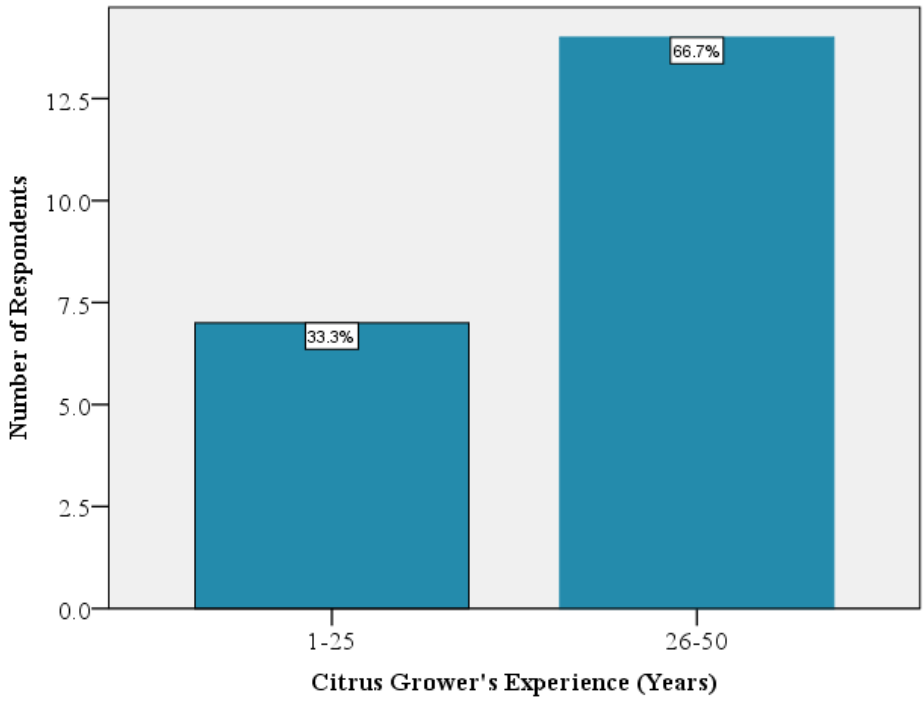
Appendix H-2 Significance Test Results between Two Quantitative Factors for Large Size Citrus Growers

S.NO.	Factors	p-value	Relationship
1	Advance Payment / NO. of Fruit Picking	1.00	Non-significant
2	Certainty of Payment / NO. of Fruit Picking	1.00	Non-significant
3	Mode of Payment / NO. of Fruit Picking	1.00	Non-significant
4	Urgent Need of Money / NO. of Fruit Picking	1.00	Non-significant
5	Certainty of Payment / Time of Complete Fruit Picking	1.00	Non-significant
6	Mode of Payment / Time of Complete Fruit Picking	1.00	Non-significant
7	NO. of Fruit Picking / Time of Complete Fruit Picking	1.00	Non-significant
8	Urgent Need of Money / Time of Complete Fruit Picking	1.00	Non-significant
9	Time of Complete Fruit Picking / Harvesting Fruit Loss	1.00	Non-significant
10	Advance Payment / Mode of Payment	0.48	Non-significant
11	Advance Payment / Certainty of Payment	0.48	Non-significant
12	Delay in Payment / NO. of Fruit Picking	0.27	Non-significant
13	Urgent Need of Money / Harvesting Fruit Loss	0.27	Non-significant
14	NO. of Fruit Picking / Harvesting Fruit Loss	0.27	Non-significant
15	Urgent Need of Money / Advance Payment	0.21	Non-significant
16	Mode of Payment / Harvesting Fruit Loss	0.14	Non-significant
17	Certainty of Payment / Harvesting Fruit Loss	0.14	Non-significant
18	Delay in Payment / Time of Complete Fruit Picking	0.12	Non-significant
19	Urgent Need of Money / Delay in Payment	0.10	Non-significant
20	Urgent Need of Money / Mode of Payment	0.10	Non-significant
21	Urgent Need of Money / Certainty of Payment	0.10	Non-significant
22	Advance Payment / Harvesting Fruit Loss	0.09	Non-significant
23	Advance Payment / Time of Complete Fruit Picking	0.09	Non-significant
24	Mode of Payment / Certainty of Payment	0.05	Significant
25	Mode of Payment /Delay in Payment	0.05	Significant
26	Certainty of Payment / Delay in Payment	0.05	Significant
27	Delay in Payment / Harvesting Fruit Loss	0.03	Significant
28	Advance Payment / Delay in Payment	0.00	Significant

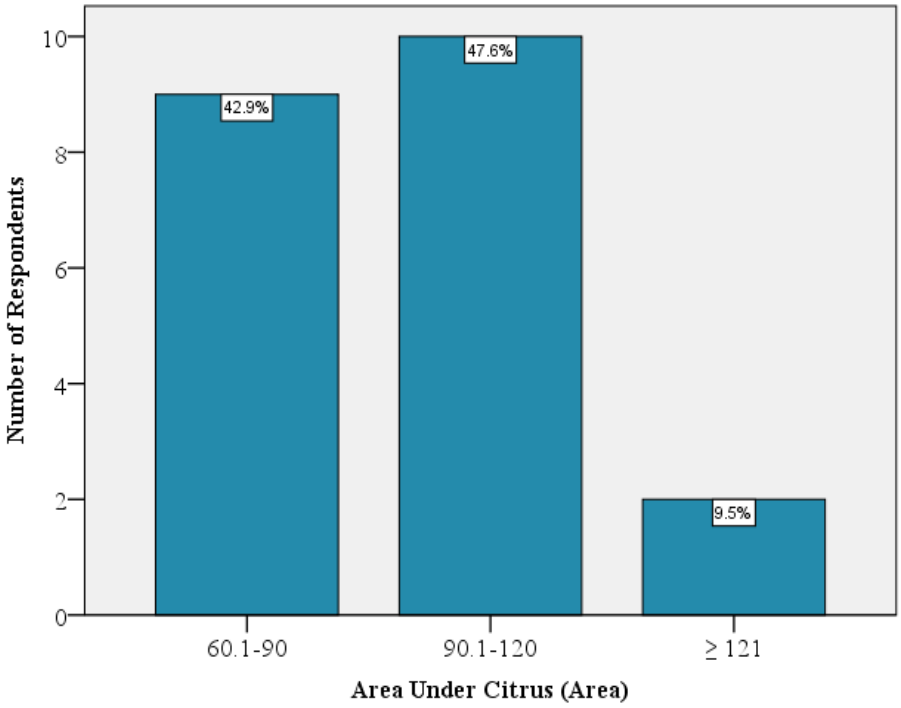
Appendix H-3 Relation between Education of the Respondents and Price for Large Size Citrus Growers



Appendix H-4 Relation between Experience of the Respondents and Price for Large Size Citrus Growers



Appendix H-5 Relation between Area under Citrus and Price for Large Size Citrus Growers



Appendix H-6 All Profiles/Decisions for Large Size Citrus Growers

Profile ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	NO. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss
1	$11.1-$13	Yes	15%	Cash & Cheque	Personal Guarantee	≥ 3 Week	Two	February	High
2	$9.1-$11	No	35%	Cash & Cheque	Personal Guarantee	< 1 Week	Three	February	High
3	$7-$9	No	35%	Cheque	Personal Guarantee	≥ 3 Week	One	March	Low
4	$9.1-$11	Yes	35%	Cheque	Personal Guarantee	≥ 3 Week	Two	January	High
5	$11.1-$13	Yes	35%	Cash & Cheque	Personal Guarantee	< 1 Week	One	March	Low
6	$9.1-$11	Yes	25%	Cash	Personal Guarantee	≥ 3 Week	Three	January	Low
7	$9.1-$11	Yes	35%	Cash	Post Dated Cheques	1-2 Week	One	March	High
8	$7-$9	Yes	25%	Cash & Cheque	Personal Guarantee	1-2 Week	One	February	High
9	$7-$9	No	25%	Cash	Post Dated Cheques	≥ 3 Week	Two	March	High
10	$7-$9	Yes	25%	Cheque	Personal Guarantee	< 1 Week	Three	January	High
11	$9.1-$11	Yes	25%	Cash & Cheque	Personal Guarantee	1-2 Week	Two	March	Low
12	$11.1-$13	Yes	15%	Cash	Post Dated Cheques	< 1 Week	Three	March	High
13	$11.1-$13	No	25%	Cash & Cheque	Post Dated Cheques	1-2 Week	Three	January	Low
14	$7-$9	No	15%	Cash & Cheque	Personal Guarantee	≥ 3 Week	Three	March	Low
15	$7-$9	Yes	15%	Cheque	Post Dated Cheques	1-2 Week	Two	February	Low

16	$11.1-$13	Yes	35%	Cheque	Post Dated Cheques	≥ 3 Week	Three	February	Low
17	$9.1-$11	Yes	15%	Cheque	Personal Guarantee	1-2 Week	Three	March	Low
18	$9.1-$11	Yes	15%	Cash & Cheque	Post Dated Cheques	≥ 3 Week	One	January	Low
19	$11.1-$13	No	15%	Cheque	Personal Guarantee	1-2 Week	One	January	High
20	$11.1-$13	No	35%	Cash	Personal Guarantee	1-2 Week	Two	January	Low
21	$9.1-$11	No	15%	Cash	Personal Guarantee	< 1 Week	Two	February	Low
22	$7-$9	Yes	35%	Cash	Personal Guarantee	1-2 Week	Three	February	Low
23	$7-$9	Yes	15%	Cash	Personal Guarantee	< 1 Week	One	January	Low
24	$11.1-$13	Yes	25%	Cash	Personal Guarantee	≥ 3 Week	One	February	Low
25	$7-$9	Yes	35%	Cash & Cheque	Post Dated Cheques	< 1 Week	Two	January	Low
26	$11.1-$13	Yes	25%	Cheque	Personal Guarantee	< 1 Week	Two	March	Low
27	$9.1-$11	No	25%	Cheque	Post Dated Cheques	< 1 Week	One	February	Low

Appendix H-7 Predicted Rankings of all Profiles/Decisions for Large Size Citrus Growers

Profile ID	Constant	Sale Price/40Kg	Urgent Need of M-1.360y	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	0.329. of Fruit Picking	Time of Complete Fruit Picking	Harvesting Fruit Loss	Total Part Worth
20	14.049	6.963	0.329	0.635	-0.556	0.583	-0.593	0.233	3.349	-0.401	**24.591**
13	14.049	6.963	0.329	0.646	-0.423	-0.583	-0.593	1.127	3.349	-0.401	**24.463**
16	14.049	6.963	-0.329	0.635	0.979	-0.583	0.413	1.127	1.312	-0.401	**24.165**
19	14.049	6.963	0.329	-1.280	0.979	0.583	-0.593	-1.36	3.349	0.401	**23.420**
1	14.049	6.963	-0.329	-1.280	-0.423	0.583	0.413	0.233	1.312	0.401	**21.922**
24	14.049	6.963	-0.329	0.646	-0.556	0.583	0.413	-1.36	1.312	-0.401	**21.320**
4	14.049	0.497	-0.329	0.635	0.979	0.583	0.413	0.233	3.349	0.401	**20.810**
6	14.049	0.497	-0.329	0.646	-0.556	0.583	0.413	1.127	3.349	-0.401	**19.378**
2	14.049	0.497	0.329	0.635	-0.423	0.583	0.18	1.127	1.312	0.401	**18.690**
26	14.049	6.963	-0.329	0.646	0.979	0.583	0.18	0.233	-4.661	-0.401	**18.242**
27	14.049	0.497	0.329	0.646	0.979	-0.583	0.18	-1.36	1.312	-0.401	**15.648**
12	14.049	6.963	-0.329	-1.28	-0.556	-0.583	0.18	1.127	-4.661	0.401	**15.311**
5	14.049	6.963	-0.329	0.635	-0.423	0.583	0.18	-1.36	-4.661	-0.401	**15.236**
21	14.049	0.497	0.329	-1.28	-0.556	0.583	0.18	0.233	1.312	-0.401	**14.946**
18	14.049	0.497	-0.329	-1.28	-0.423	-0.583	0.413	-1.36	3.349	-0.401	**13.932**
10	14.049	-7.46	-0.329	0.646	0.979	0.583	0.18	1.127	3.349	0.401	**13.525**
17	14.049	0.497	-0.329	-1.28	0.979	0.583	-0.593	1.127	-4.661	-0.401	**9.971**
11	14.049	0.497	-0.329	0.646	-0.423	0.583	-0.593	0.233	-4.661	-0.401	**9.601**
25	14.049	-7.46	-0.329	0.635	-0.423	-0.583	0.18	0.233	3.349	-0.401	**9.250**
22	14.049	-7.46	-0.329	0.635	-0.556	0.583	-0.593	1.127	1.312	-0.401	**8.367**
7	14.049	0.497	-0.329	0.635	-0.556	-0.583	-0.593	-1.36	-4.661	0.401	**7.500**
8	14.049	-7.46	-0.329	0.646	-0.423	0.583	-0.593	-1.36	1.312	0.401	**6.826**
23	14.049	-7.46	-0.329	-1.28	-0.556	0.583	0.18	-1.36	3.349	-0.401	**6.775**
15	14.049	-7.46	-0.329	-1.28	0.979	-0.583	-0.593	0.233	1.312	-0.401	**5.927**
3	14.049	-7.46	0.329	0.635	0.979	0.583	0.413	-1.36	-4.661	-0.401	**3.106**
9	14.049	-7.46	0.329	0.646	-0.556	-0.583	0.413	0.233	-4.661	0.401	**2.811**
14	14.049	-7.46	0.329	-1.28	-0.423	0.583	0.413	1.127	-4.661	-0.401	**2.276**

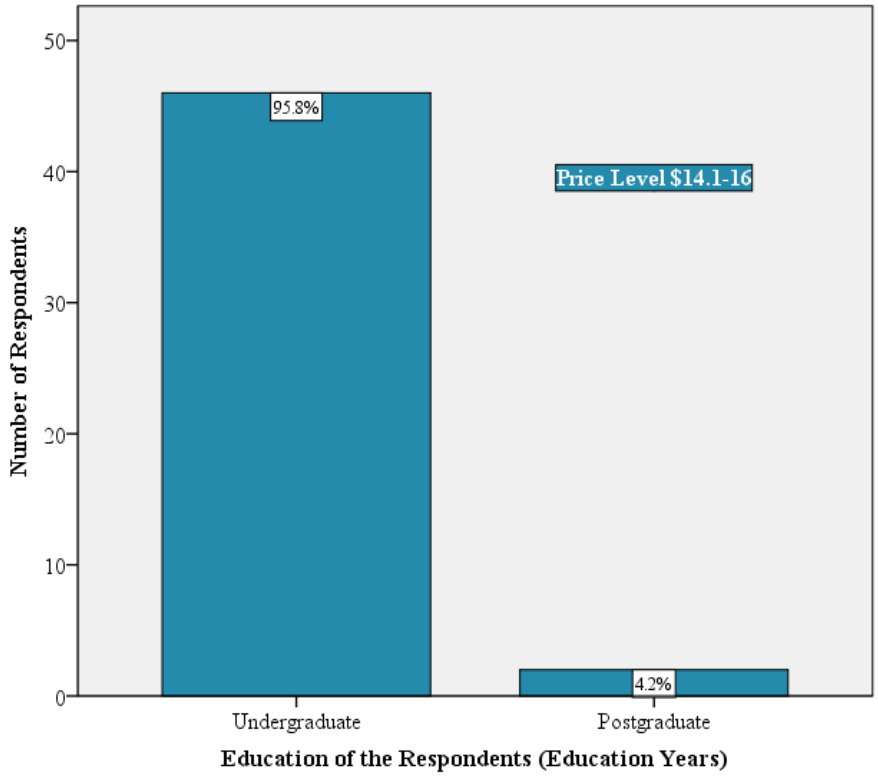
Appendix I-1 Significance Test Results between Qualitative and Quantitative Factors for Small Size Pre-Harvest Contractors

S. NO.	Factors	p-Value	Relationship
1	Age of the Respondents (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
2	Education of the Respondents (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
3	Citrus contractor's Experience (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
4	Education of the Respondents (Years) / Reliability	No statistics	Reliability is a constant
5	Citrus contractor's Experience (Years) / Reliability	No statistics	Reliability is a constant
6	Age of the Respondents (Years) / Reliability	No statistics	Reliability is a constant
7	Education of the Respondents (Years) / Selective Fruit Purchase	No statistics	Selective Fruit Purchase is a constant
8	Age of the Respondents (Years) / Selective Fruit Purchase	No statistics	Selective Fruit Purchase is a constant
9	Citrus contractor's Experience (Years) / Selective Fruit Purchase	No statistics	Selective Fruit Purchase is a constant
10	Age of the Respondents (Years) / Education of the Respondents (Years)	1.00	Non-significant
11	Age of the Respondents (Years) / Advance Payment	1.00	Non-significant
12	Education of the Respondents (Years) / Advance Payment	1.00	Non-significant
13	Age of the Respondents (Years) / Urgent Need of Money	1.00	Non-significant
14	Education of the Respondents (Years) / Mode of Payment	1.00	Non-significant
15	Education of the Respondents (Years) / Citrus contractor's Experience (Years)	1.00	Non-significant
16	Education of the Respondents (Years) / Bargaining Power	1.00	Non-significant
17	Citrus contractor's Experience (Years) / Certainty of Payment	0.67	Non-significant
18	Age of the Respondents (Years) / Delay in Payment	0.67	Non-significant
19	Education of the Respondents (Years) / Certainty of Payment	0.50	Non-significant
20	Age of the Respondents (Years) / Bargaining Power	0.43	Non-significant
21	Citrus contractor's Experience (Years) / Advance Payment	0.16	Non-significant
22	Education of the Respondents (Years) / Delay in Payment	0.12	Non-significant
23	Age of the Respondents (Years) / Mode of Payment	0.10	Non-significant
24	Education of the Respondents (Years) / Urgent Need of Money	0.07	Non-significant
25	Citrus contractor's Experience (Years) / Bargaining Power	0.04	Significant
26	Citrus contractor's Experience / Delay in Payment	0.02	Significant
27	Citrus contractor's Experience / Mode of Payment	0.00	Significant
28	Age of the Respondents (Years) / Certainty of Payment	0.00	Significant
29	Citrus contractor's Experience (Years) / Urgent Need of Money	0.00	Significant
30	Age of the Respondents (Years) / Citrus contractor's Experience (Years)	0.00	Significant

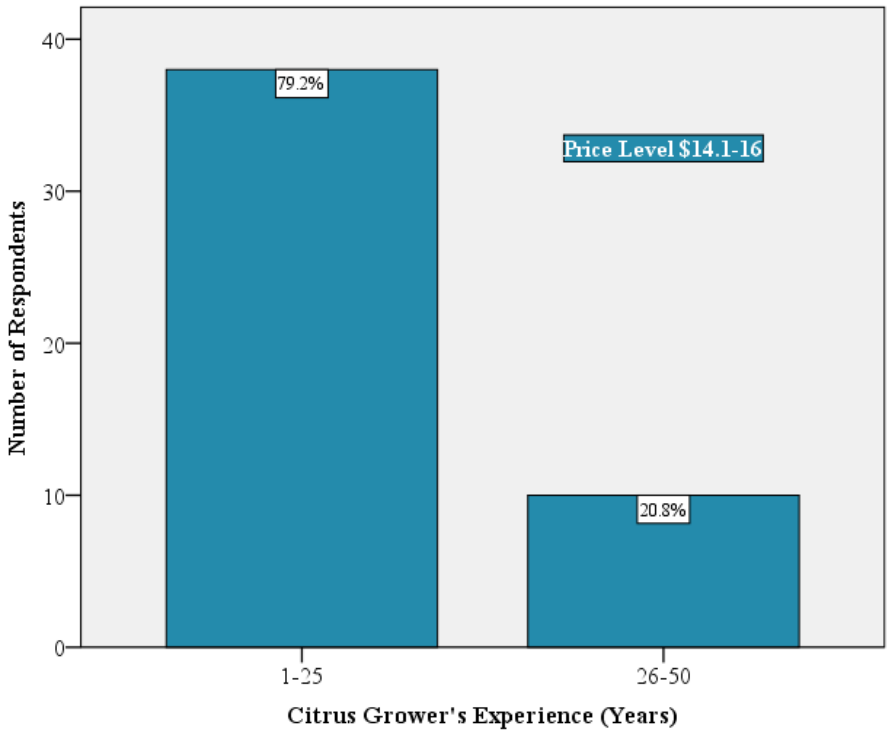
Appendix I-2 Significance Test Results between Two Quantitative Factors for Small Size Pre-Harvest Contractors

S.NO.	Factors	p-value	Relationship
1	Bargaining Power / Selective Fruit Purchase	Selective Fruit Purchase is a constant	Non-significant
2	Urgent Need of Money / Selective Fruit Purchase	Selective Fruit Purchase is a constant	Non-significant
3	Delay in Payment / Selective Fruit Purchase	Selective Fruit Purchase is a constant	Non-significant
4	Advance Payment / Selective Fruit Purchase	Selective Fruit Purchase is a constant	Non-significant
5	Mode of Payment / Selective Fruit Purchase	Selective Fruit Purchase is a constant	Non-significant
6	Certainty of Payment / Selective Fruit Purchase	Selective Fruit Purchase is a constant	Non-significant
7	Bargaining Power / Reliability	Reliability is a constant	Non-significant
8	Urgent Need of Money / Reliability	Reliability is a constant	Non-significant
9	Advance Payment / Reliability	Reliability is a constant	Non-significant
10	Mode of Payment / Reliability	Reliability is a constant	Non-significant
11	Certainty of Payment / Reliability	Reliability is a constant	Non-significant
12	Delay in Payment / Reliability	Reliability is a constant	Non-significant
13	Reliability / Selective Fruit Purchase	Both are constant	Non-significant
14	Delay in Payment / Bargaining Power	1.00	Non-significant
15	Certainty of Payment / Bargaining Power	1.00	Non-significant
16	Advance Payment / Certainty of Payment	0.86	Non-significant
17	Mode of Payment / Certainty of Payment	0.58	Non-significant
18	Certainty of Payment / Delay in Payment	0.46	Non-significant
19	Advance Payment / Delay in Payment	0.45	Non-significant
20	Mode of Payment / Delay in Payment	0.40	Non-significant
21	Urgent Need of Money / Delay in Payment	0.38	Non-significant
22	Mode of Payment / Bargaining Power	0.38	Non-significant
23	Urgent Need of Money / Certainty of Payment	0.34	Non-significant
24	Advance Payment / Bargaining Power	0.29	Non-significant
25	Urgent Need of Money / Advance Payment	0.25	Non-significant
26	Urgent Need of Money / Bargaining Power	0.06	Non-significant
27	Urgent Need of Money / Mode of Payment	0.03	Significant
28	Advance Payment / Mode of Payment	0.00	Significant

Appendix I-3 Relation between Education of the Respondents and Price for Small Size Pre-Harvest Contractors



Appendix I-4 Relation between Experience of the Respondents and Price for Small Size Pre-Harvest Contractors



Appendix I-5 All Profiles/Decisions for Small Size Pre-harvest Citrus Contractors

Profile ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
1	$14.1-$16	No	35%	Cash	Post Dated Cheques	1-2 Week	No	Highly Reliable	Yes
2	$14.1-$16	No	25%	Cash & Cheque	Personal Guarantee	≥ 3 Week	No	Reliable	Yes
3	$14.1-$16	Yes	35%	Cheque	Personal Guarantee	≥ 3 Week	Yes	Highly Reliable	No
4	$12-$14	No	25%	Cheque	Post Dated Cheques	< 1 Week	No	Highly Reliable	No
5	$14.1-$16	Yes	25%	Online	Post Dated Cheques	1-2 Week	Yes	Reliable	No
6	$12-$14	Yes	35%	Cash & Cheque	Post Dated Cheques	< 1 Week	Yes	Reliable	Yes
7	$12-$14	Yes	25%	Cash & Cheque	Personal Guarantee	1-2 Week	No	Highly Reliable	No
8	$14.1-$16	No	25%	Cash	Personal Guarantee	< 1 Week	Yes	Reliable	No
9	$12-$14	Yes	45%	Cash	Post Dated Cheques	≥ 3 Week	No	Reliable	No
10	$12-$14	No	35%	Online	Personal Guarantee	< 1 Week	No	Reliable	No
11	$14.1-$16	Yes	25%	Cheque	Post Dated Cheques	< 1 Week	No	Reliable	Yes
12	$12-$14	No	25%	Online	Post Dated Cheques	≥ 3 Week	Yes	Highly Reliable	Yes
13	$12-$14	No	45%	Cheque	Personal Guarantee	1-2 Week	Yes	Reliable	Yes
14	$14.1-$16	No	45%	Cash & Cheque	Post Dated Cheques	< 1 Week	Yes	Highly Reliable	No
15	$12-$14	Yes	25%	Cash	Personal Guarantee	< 1 Week	Yes	Highly Reliable	Yes
16	$14.1-$16	Yes	45%	Online	Personal Guarantee	< 1 Week	No	Highly Reliable	Yes

Appendix I-6 Predicted Rankings of all Profiles/Decisions for Small Size Pre-harvest Citrus Contractors

Profile ID	Constant	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase	Total Part Worth
14	8.627	2.573	-0.253	0.568	-0.094	-0.164	0.326	0.357	1.135	1.883	**14.958**
3	8.627	2.573	0.253	0.266	-0.568	0.164	-0.273	0.357	1.135	1.883	**14.417**
8	8.627	2.573	-0.253	-0.833	0.443	0.164	0.326	0.357	-1.135	1.883	**12.152**
5	8.627	2.573	0.253	-0.833	0.219	-0.164	-0.054	0.357	-1.135	1.883	**11.726**
16	8.627	2.573	0.253	0.568	0.219	0.164	0.326	-0.357	1.135	-1.883	**11.625**
1	8.627	2.573	-0.253	0.266	0.443	-0.164	-0.054	-0.357	1.135	-1.883	**10.333**
7	8.627	-2.573	0.253	-0.833	-0.094	0.164	-0.054	-0.357	1.135	1.883	**8.151**
9	8.627	-2.573	0.253	0.568	0.443	-0.164	-0.273	-0.357	-1.135	1.883	**7.272**
4	8.627	-2.573	-0.253	-0.833	-0.568	-0.164	0.326	-0.357	1.135	1.883	**7.223**
10	8.627	-2.573	-0.253	0.266	0.219	0.164	0.326	-0.357	-1.135	1.883	**7.167**
11	8.627	2.573	0.253	-0.833	-0.568	-0.164	0.326	-0.357	-1.135	-1.883	**6.839**
2	8.627	2.573	-0.253	-0.833	-0.094	0.164	-0.273	-0.357	-1.135	-1.883	**6.536**
15	8.627	-2.573	0.253	-0.833	0.443	0.164	0.326	0.357	1.135	-1.883	**6.016**
12	8.627	-2.573	-0.253	-0.833	0.219	-0.164	-0.273	Yes	1.135	-1.883	**4.002**
6	8.627	-2.573	0.253	0.266	-0.094	-0.164	0.326	0.357	-1.135	-1.883	**3.980**
13	8.627	-2.573	-0.253	0.568	-0.568	0.164	-0.054	0.357	-1.135	-1.883	**3.250**

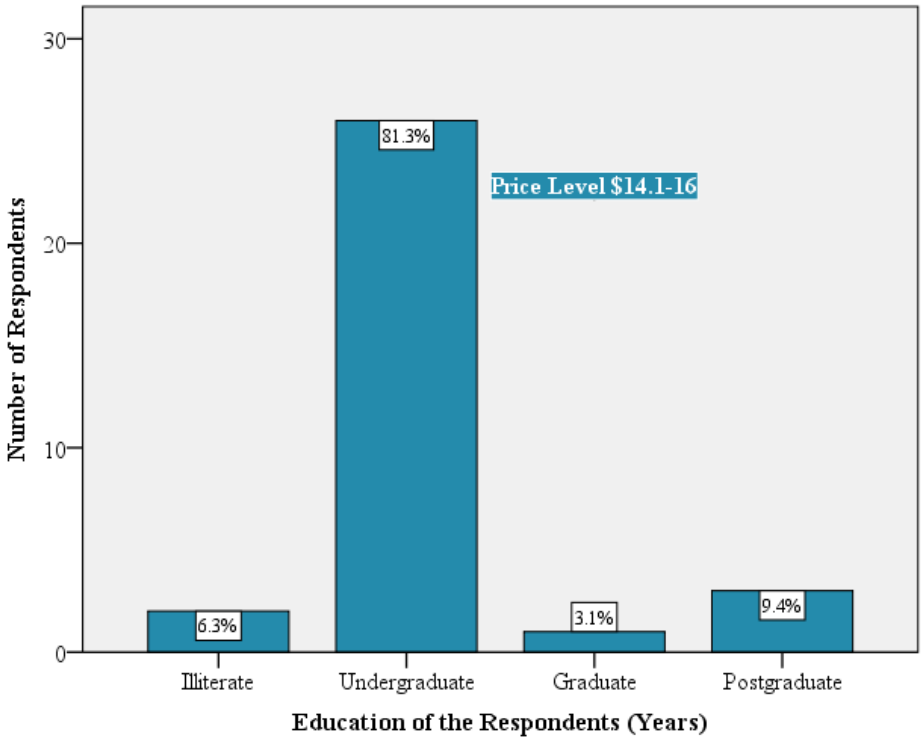
Appendix J-1 Significance of Qualitative & Quantitative Variables for Medium Size Pre-harvest Contractors

S. NO.	Factors	p-Value	Relationship
1	Age of the Respondents (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
2	Education of the Respondents (Education Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
3	Citrus Contractors Experience (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
4	Education of the Respondents (Education Years) / Selective Fruit Purchase	No statistics	Non-significant
5	Age of the Respondents (Years) / Selective Fruit Purchase	No statistics	Non-significant
6	Citrus Contractors Experience (Years) / Selective Fruit Purchase	No statistics	Non-significant
7	Citrus Contractors Experience (Years) / Reliability	0.18	Non-significant
8	Age of the Respondents (Years) / Education of the Respondents (Education Years)	0.91	Non-significant
9	Age of the Respondents (Years) / Urgent Need of Money	0.72	Non-significant
10	Citrus Contractors Experience (Years) / Urgent Need of Money	1.00	Non-significant
11	Age of the Respondents (Years) / Reliability	1.00	Non-significant
12	Education of the Respondents (Education Years) / Advance Payment	0.80	Non-significant
13	Citrus Contractors Experience (Years) / Certainty of Payment	0.29	Non-significant
14	Education of the Respondents (Education Years) / Certainty of Payment	0.69	Non-significant
15	Citrus Contractors Experience (Years) / Bargaining Power	0.59	Non-significant
16	Age of the Respondents (Years) / Advance Payment	0.43	Non-significant
17	Age of the Respondents (Years) / Mode of Payment	0.35	Non-significant
18	Education of the Respondents (Education Years) / Delay in Payment	0.32	Non-significant
19	Education of the Respondents (Education Years) / Mode of Payment	0.27	Non-significant
20	Citrus Contractors Experience (Years) / Mode of Payment	0.13	Non-significant
21	Citrus Contractors Experience (Years) / Advance Payment	0.26	Non-significant
22	Age of the Respondents (Years) / Bargaining Power	0.06	Non-significant
23	Education of the Respondents (Education Years) / Citrus Contractors Experience (Years)	0.05	Significant
24	Education of the Respondents (Education Years) / Urgent Need of Money	0.01	Significant
25	Education of the Respondents (Education Years) / Bargaining Power	0.00	Significant
26	Age of the Respondents (Years) / Delay in Payment	0.01	Significant
27	Citrus Contractors Experience (Years) / Delay in Payment	0.00	Significant
28	Education of the Respondents (Education Years) / Reliability	0.00	Significant
29	Age of the Respondents (Years) / Certainty of Payment	0.00	Significant
30	Age of the Respondents (Years) / Citrus Contractors Experience (Years)	0.00	Significant

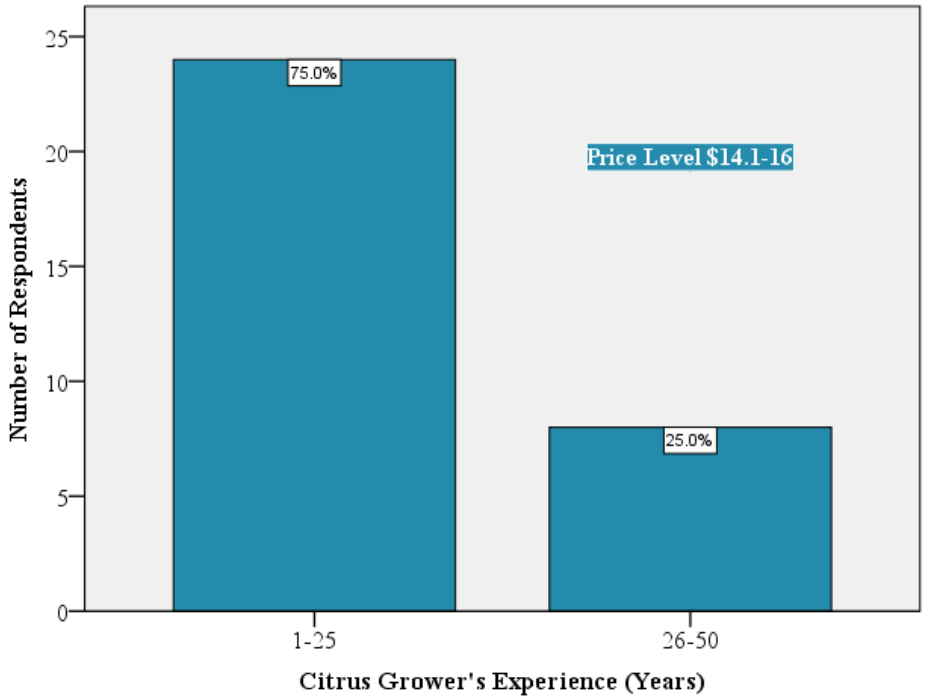
Appendix J-2 Significance Test Results between Two Quantitative Factors for Medium Size Pre-harvest Contractors

S.NO.	Factors	p-value	Relationship
1	Bargaining Power / Selective Fruit Purchase	No Statistics	Non-significant
2	Urgent Need of Money / Selective Fruit Purchase	No Statistics	Non-significant
3	Delay in Payment / Selective Fruit Purchase	No Statistics	Non-significant
4	Advance Payment / Selective Fruit Purchase	No Statistics	Non-significant
5	Mode of Payment / Selective Fruit Purchase	No Statistics	Non-significant
6	Certainty of Payment / Selective Fruit Purchase	No Statistics	Non-significant
7	Reliability / Selective Fruit Purchase	No Statistics	Non-significant
8	Urgent Need of Money / Bargaining Power	1.00	Non-significant
9	Delay in Payment / Bargaining Power	1.00	Non-significant
10	Certainty of Payment / Reliability	1.00	Non-significant
11	Mode of Payment / Certainty of Payment	0.84	Non-significant
12	Delay in Payment / Reliability	1.00	Non-significant
13	Urgent Need of Money / Advance Payment	0.65	Non-significant
14	Urgent Need of Money / Mode of Payment	0.58	Non-significant
15	Advance Payment / Certainty of Payment	0.64	Non-significant
16	Urgent Need of Money / Delay in Payment	0.47	Non-significant
17	Urgent Need of Money / Certainty of Payment	0.41	Non-significant
18	Certainty of Payment / Bargaining Power	0.42	Non-significant
19	Advance Payment / Delay in Payment	0.39	Non-significant
20	Mode of Payment / Delay in Payment	0.28	Non-significant
21	Mode of Payment / Reliability	0.38	Non-significant
22	Advance Payment / Reliability	0.56	Non-significant
23	Mode of Payment / Bargaining Power	0.18	Non-significant
24	Certainty of Payment / Delay in Payment	0.11	Non-significant
25	Bargaining Power / Reliability	0.05	Significant
26	Advance Payment / Bargaining Power	0.03	Significant
27	Urgent Need of Money / Reliability	0.00	Significant
28	Advance Payment / Mode of Payment	0.00	Significant

Appendix J-3 Relation between Education of the Respondents and Price for Medium Size Pre-harvest Contractors



Appendix J-4 Relation between Experience of the Respondents and Price for Medium Size Pre-harvest Contractors



Appendix J-5 All Profiles/Decisions for Medium Size Citrus Pre-harvest Contractors

Profile ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
1	$14.1-$16	No	35%	Cash	Post Dated Cheques	1-2 Week	No	Highly Reliable	Yes
2	$14.1-$16	No	25%	Cash & Cheque	Personal Guarantee	≥ 3 Week	No	Reliable	Yes
3	$14.1-$16	Yes	35%	Cheque	Personal Guarantee	≥ 3 Week	Yes	Highly Reliable	No
4	$12-$14	No	25%	Cheque	Post Dated Cheques	< 1 Week	No	Highly Reliable	No
5	$14.1-$16	Yes	25%	Online	Post Dated Cheques	1-2 Week	Yes	Reliable	No
6	$12-$14	Yes	35%	Cash & Cheque	Post Dated Cheques	< 1 Week	Yes	Reliable	Yes
7	$12-$14	Yes	25%	Cash & Cheque	Personal Guarantee	1-2 Week	No	Highly Reliable	No
8	$14.1-$16	No	25%	Cash	Personal Guarantee	< 1 Week	Yes	Reliable	No
9	$12-$14	Yes	45%	Cash	Post Dated Cheques	≥ 3 Week	No	Reliable	No
10	$12-$14	No	35%	Online	Personal Guarantee	< 1 Week	No	Reliable	No
11	$14.1-$16	Yes	25%	Cheque	Post Dated Cheques	< 1 Week	No	Reliable	Yes
12	$12-$14	No	25%	Online	Post Dated Cheques	≥ 3 Week	Yes	Highly Reliable	Yes
13	$12-$14	No	45%	Cheque	Personal Guarantee	1-2 Week	Yes	Reliable	Yes
14	$14.1-$16	No	45%	Cash & Cheque	Post Dated Cheques	< 1 Week	Yes	Highly Reliable	No
15	$12-$14	Yes	25%	Cash	Personal Guarantee	< 1 Week	Yes	Highly Reliable	Yes
16	$14.1-$16	Yes	45%	Online	Personal Guarantee	< 1 Week	No	Highly Reliable	Yes

Appendix J-6 Predicted Rankings of all Profiles/Decisions for Medium Size Citrus Pre-harvest Contractors

Profile ID	Constant	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase	Total Part Worth
14	8.505	1.875	-0.148	1.070	0.219	0.141	0.823	-0.016	0.523	2.609	**15.601**
8	8.505	1.875	-0.148	-0.844	1.078	-0.141	0.823	-0.016	-0.523	2.609	**13.218**
5	8.505	1.875	0.148	-0.844	-0.125	0.141	0.159	-0.016	-0.523	2.609	**11.929**
3	8.505	1.875	0.148	-0.227	-1.172	-0.141	-0.982	-0.016	0.523	2.609	**11.122**
9	8.505	-1.875	0.148	1.070	1.078	0.141	-0.982	0.016	-0.523	2.609	**10.187**
16	8.505	1.875	0.148	1.070	-0.125	-0.141	0.823	0.016	0.523	-2.609	**10.085**
7	8.505	-1.875	0.148	-0.844	0.219	-0.141	0.159	0.016	0.523	2.609	**9.319**
1	8.505	1.875	-0.148	-0.227	1.078	0.141	0.159	0.016	0.523	-2.609	**9.313**
10	8.505	-1.875	-0.148	-0.227	-0.125	-0.141	0.823	0.016	-0.523	2.609	**8.914**
4	8.505	-1.875	-0.148	-0.844	-1.172	0.141	0.823	0.016	0.523	2.609	**8.578**
11	8.505	1.875	0.148	-0.844	-1.172	0.141	0.823	0.016	-0.523	-2.609	**6.360**
15	8.505	-1.875	0.148	-0.844	1.078	-0.141	0.823	-0.016	0.523	-2.609	**5.592**
2	8.505	1.875	-0.148	-0.844	0.219	-0.141	-0.982	0.016	-0.523	-2.609	**5.368**
6	8.505	-1.875	0.148	-0.227	0.219	0.141	0.823	-0.016	-0.523	-2.609	**4.586**
13	8.505	-1.875	-0.148	1.070	-1.172	-0.141	0.159	-0.016	-0.523	-2.609	**3.250**
12	8.505	-1.875	-0.148	-0.844	-0.125	0.141	-0.982	-0.016	0.523	-2.609	**2.570**

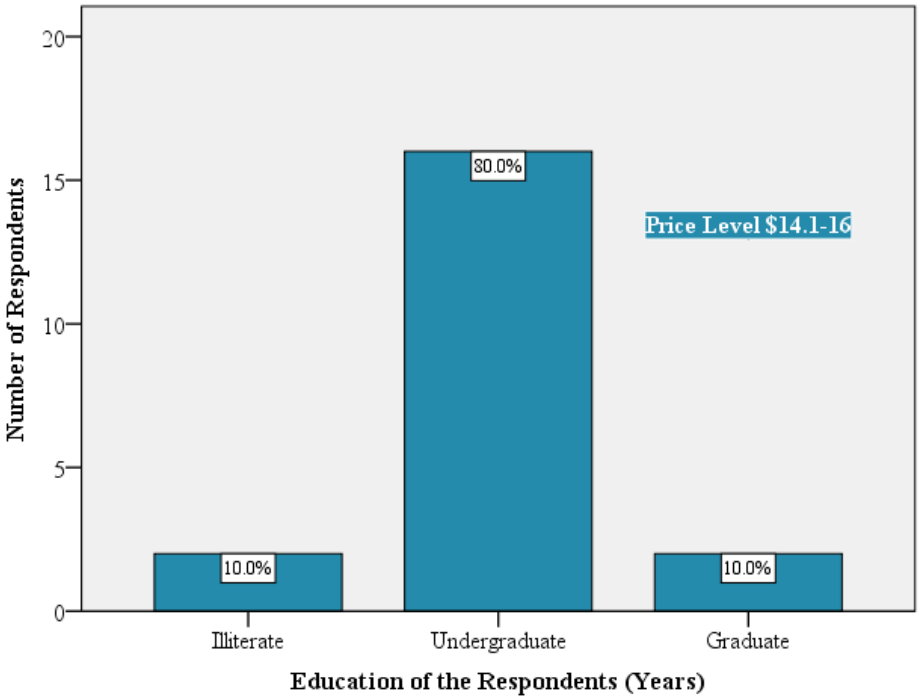
Appendix K-1 Significance of Qualitative & Quantitative Variables for Large size Pre-harvest Contractors

S.NO.	Factors	p-value	Relationship
1	Certainty of Payment / Selective Fruit Purchase	1.00	Non-significant
2	Bargaining Power / Reliability	1.00	Non-significant
3	Advance Payment / Certainty of Payment	0.64	Non-significant
4	Advance Payment / Bargaining Power	0.61	Non-significant
5	Urgent Need of Money / Certainty of Payment	0.59	Non-significant
6	Bargaining Power / Selective Fruit Purchase	0.55	Non-significant
7	Advance Payment / Selective Fruit Purchase	0.55	Non-significant
8	Certainty of Payment / Reliability	0.41	Non-significant
9	Urgent Need of Money / Reliability	0.29	Non-significant
10	Urgent Need of Money / Advance Payment	0.27	Non-significant
11	Delay in Payment / Reliability	0.24	Non-significant
12	Urgent Need of Money / Mode of Payment	0.22	Non-significant
13	Urgent Need of Money / Selective Fruit Purchase	0.16	Non-significant
14	Certainty of Payment / Delay in Payment	0.12	Non-significant
15	Urgent Need of Money / Bargaining Power	0.06	Non-significant
16	Mode of Payment / Selective Fruit Purchase	0.06	Non-significant
17	Mode of Payment / Bargaining Power	0.04	Significant
18	Advance Payment / Mode of Payment	0.04	Significant
19	Advance Payment / Delay in Payment	0.03	Significant
20	Reliability / Selective Fruit Purchase	0.03	Significant
21	Certainty of Payment / Bargaining Power	0.01	Significant
22	Mode of Payment / Reliability	0.00	Significant
23	Delay in Payment / Selective Fruit Purchase	0.00	Significant
24	Delay in Payment / Bargaining Power	0.00	Significant
25	Urgent Need of Money / Delay in Payment	0.00	Significant
26	Mode of Payment / Certainty of Payment	0.00	Significant
27	Advance Payment / Reliability	0.00	Significant
28	Mode of Payment / Delay in Payment	0.00	Significant

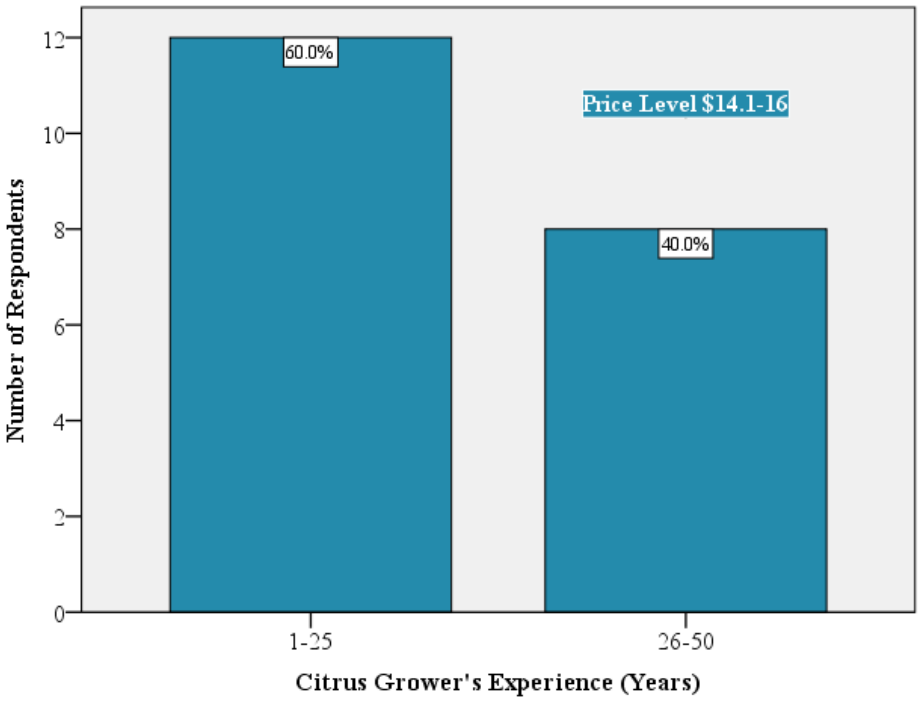
Appendix K-2 Significance Test Results between Two Quantitative Factors for Large size Pre-harvest Contractors

S.NO.	Factors	p-Value	Relationship
1	Age of the Respondents (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
2	Education of the Respondents (Education Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
3	Citrus Contractors' Experience (Years) / Sale Price/40Kg	No statistics	Sale Price/40Kg is a constant
4	Age of the Respondents (Years) / Bargaining Power	1.00	Non-significant
5	Age of the Respondents (Years) / Delay in Payment	1.00	Non-significant
6	Education of the Respondents (Education Years) / Selective Fruit Purchase	1.00	Non-significant
7	Education of the Respondents (Education Years) / Urgent Need of Money	1.00	Non-significant
8	Education of the Respondents (Education Years) / Advance Payment	0.54	Non-significant
9	Education of the Respondents (Education Years) / Citrus Contractors' Experience (Years)	0.41	Non-significant
10	Age of the Respondents (Years) / Certainty of Payment	0.34	Non-significant
11	Education of the Respondents (Education Years) / Delay in Payment	0.29	Non-significant
12	Age of the Respondents (Years) / Selective Fruit Purchase	0.27	Non-significant
13	Age of the Respondents (Years) / Urgent Need of Money	0.27	Non-significant
14	Education of the Respondents (Education Years) / Certainty of Payment	0.23	Non-significant
15	Education of the Respondents (Education Years) / Reliability	0.23	Non-significant
16	Age of the Respondents (Years) / Education of the Respondents (Education Years)	0.16	Non-significant
17	Education of the Respondents (Education Years) / Bargaining Power	0.16	Non-significant
18	Citrus Contractors' Experience (Years) / Delay in Payment	0.15	Non-significant
19	Citrus Contractors' Experience (Years) / Bargaining Power	0.12	Non-significant
20	Age of the Respondents (Years) / Advance Payment	0.12	Non-significant
21	Citrus Contractors' Experience (Years) / Certainty of Payment	0.10	Non-significant
22	Citrus Contractors' Experience (Years) / Urgent Need of Money	0.02	Significant
23	Citrus Contractors' Experience (Years) / Selective Fruit Purchase	0.02	Significant
24	Citrus Contractors' Experience (Years) / Advance Payment	0.02	Significant
25	Education of the Respondents (Education Years) / Mode of Payment	0.02	Significant
26	Age of the Respondents (Years) / Reliability	0.01	Significant
27	Age of the Respondents (Years) / Mode of Payment	0.00	Significant
28	Citrus Contractors' Experience (Years) / Reliability	0.00	Significant
29	Citrus Contractors' Experience (Years) / Mode of Payment	0.00	Significant
30	Age of the Respondents (Years) / Citrus Contractors' Experience (Years)	0.00	Significant

Appendix K-3 Relation between Education of the Respondents and Price for Large size Pre-harvest Contractors



Appendix K-4 Relation between Experience of the Respondents and Price for Large size Pre-harvest Contractors



Appendix K-5 All Profiles/Decisions for Large size Pre-harvest Contractors

Profile ID	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase
1	$14.1-$16	No	35%	Cash	Post Dated Cheques	1-2 Week	No	Highly Reliable	Yes
2	$14.1-$16	No	25%	Cash & Cheque	Personal Guarantee	≥ 3 Week	No	Reliable	Yes
3	$14.1-$16	Yes	35%	Cheque	Personal Guarantee	≥ 3 Week	Yes	Highly Reliable	No
4	$12-$14	No	25%	Cheque	Post Dated Cheques	< 1 Week	No	Highly Reliable	No
5	$14.1-$16	Yes	25%	Online	Post Dated Cheques	1-2 Week	Yes	Reliable	No
6	$12-$14	Yes	35%	Cash & Cheque	Post Dated Cheques	< 1 Week	Yes	Reliable	Yes
7	$12-$14	Yes	25%	Cash & Cheque	Personal Guarantee	1-2 Week	No	Highly Reliable	No
8	$14.1-$16	No	25%	Cash	Personal Guarantee	< 1 Week	Yes	Reliable	No
9	$12-$14	Yes	45%	Cash	Post Dated Cheques	≥ 3 Week	No	Reliable	No
10	$12-$14	No	35%	Online	Personal Guarantee	< 1 Week	No	Reliable	No
11	$14.1-$16	Yes	25%	Cheque	Post Dated Cheques	< 1 Week	No	Reliable	Yes
12	$12-$14	No	25%	Online	Post Dated Cheques	≥ 3 Week	Yes	Highly Reliable	Yes
13	$12-$14	No	45%	Cheque	Personal Guarantee	1-2 Week	Yes	Reliable	Yes
14	$14.1-$16	No	45%	Cash & Cheque	Post Dated Cheques	< 1 Week	Yes	Highly Reliable	No
15	$12-$14	Yes	25%	Cash	Personal Guarantee	< 1 Week	Yes	Highly Reliable	Yes
16	$14.1-$16	Yes	45%	Online	Personal Guarantee	< 1 Week	No	Highly Reliable	Yes

Appendix K-6 Predicted Rankings of all Profiles/Decisions for Large size Pre-harvest Contractors

Profile ID	Constant	Sale Price/40Kg	Urgent Need of Money	Advance Payment	Mode of Payment	Certainty of Payment	Delay in Payment	Bargaining Power	Reliability	Selective Fruit Purchase	Total Part Worth
16	8.683	3.050	0.188	0.729	0.000	0.500	0.150	0.225	0.613	-0.750	**13.388**
14	8.683	3.050	-0.188	0.729	0.250	-0.500	0.150	-0.225	0.613	0.750	**13.312**
1	8.683	3.050	-0.188	0.154	1.075	-0.500	0.038	0.225	0.613	-0.750	**12.400**
8	8.683	3.050	-0.188	-0.883	1.075	0.500	0.150	-0.225	-0.613	0.750	**12.299**
3	8.683	3.050	0.188	0.154	-1.325	0.500	-0.188	-0.225	0.613	0.750	**12.200**
5	8.683	3.050	0.188	-0.883	0.000	-0.500	0.038	-0.225	-0.613	0.750	**10.488**
2	8.683	3.050	-0.188	-0.883	0.250	0.500	-0.188	0.225	-0.613	-0.750	**10.086**
11	8.683	3.050	0.188	-0.883	-1.325	-0.500	0.150	0.225	-0.613	-0.750	**8.225**
7	8.683	-3.050	0.188	-0.883	0.250	0.500	0.038	0.225	0.613	0.750	**7.314**
9	8.683	-3.050	0.188	0.729	1.075	-0.500	-0.188	0.225	-0.613	0.750	**7.299**
10	8.683	-3.050	-0.188	0.154	0.000	0.500	0.150	0.225	-0.613	0.750	**6.611**
15	8.683	-3.050	0.188	-0.883	1.075	0.500	0.150	-0.225	0.613	-0.750	**6.301**
4	8.683	-3.050	-0.188	-0.883	-1.325	-0.500	0.150	0.225	0.613	0.750	**4.475**
6	8.683	-3.050	0.188	0.154	0.250	-0.500	0.150	-0.225	-0.613	-0.750	**4.287**
13	8.683	-3.050	-0.188	0.729	-1.325	0.500	0.038	-0.225	-0.613	-0.750	**3.799**
12	8.683	-3.050	-0.188	-0.883	0.000	-0.500	-0.188	-0.225	0.613	-0.750	**3.512**