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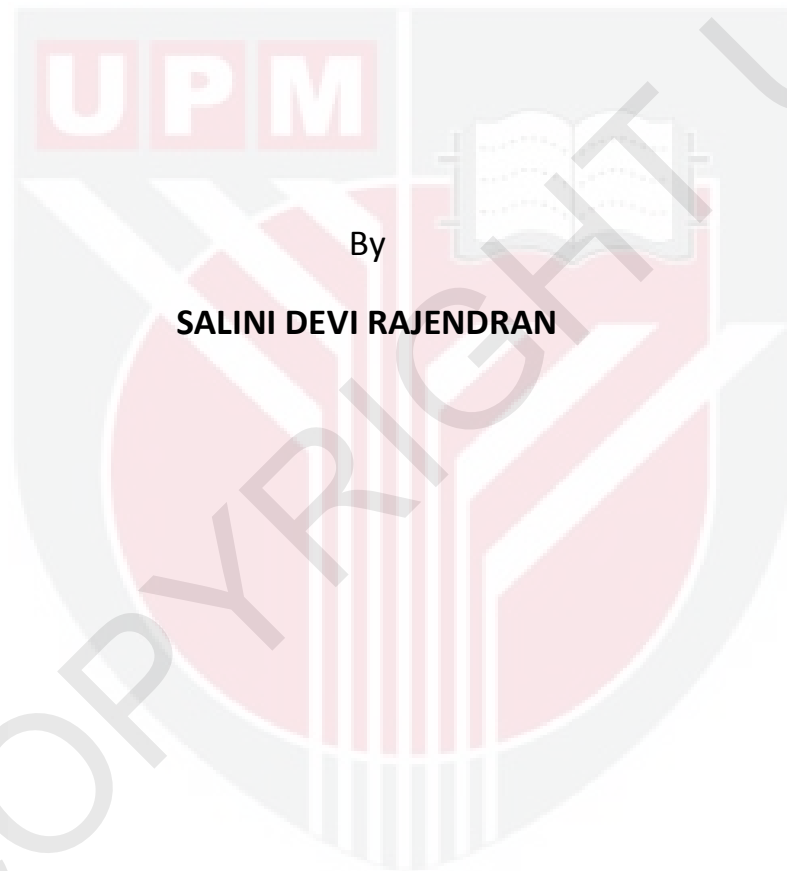
***BUYER-SUPPLIER RELATIONSHIPS IN MALAYSIAN PINEAPPLE
INDUSTRY SUPPLY CHAIN***

SALINI DEVI RAJENDRAN

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BUYER-SUPPLIER RELATIONSHIPS IN MALAYSIAN PINEAPPLE INDUSTRY

SUPPLY CHAIN



By

SALINI DEVI RAJENDRAN

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June 2013

Abstract of thesis presented to the Senate of Universiti Putra
Malaysia in fulfilment of the requirement for the degree of Master of Science

**BUYER-SUPPLIER RELATIONSHIPS IN MALAYSIAN PINEAPPLE INDUSTRY
SUPPLY CHAIN**

By

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June 2013

Chairman: Nitty Hirawaty Kamarulaman, PhD

Faculty : Agriculture

Pineapple or locally called as *nanas* is the second important tropical fruit after bananas which contributes over 20% of the world production of tropical fruits. The Malaysian pineapple industry is dominated by both estate holders and small scale farmers. The pineapple industry has a high potential to develop as it contributes high positive return to the country's economy. Realizing the importance of this industry, the government has formed a statutory body, the Malaysian Pineapple Industrial Board (MPIB) to provide attention to all matters related to the pineapple industry. Generally, the main systems being applied in the Malaysian pineapple industry are contract farming and non-contract farming. Even though contract farming is an effective way to ensure income and profit to both farmers and buyers, most of small scale farmers in the pineapple industry are preferred not to involve in contract farming and bind with any players in the industry. Both farmers and buyers need to ensure that the relationship they developed will lead to the efficiency of pineapple supply chain. In doing that, both players need to focus attention on price, quality, quantity, and delivery as well as other intangible elements such as trust, commitment, cooperation, satisfaction, power/dependence, reputation, and loyalty. In the light with the scenario in the Malaysian pineapple industry, an issue is addressed in this study on what factors influence the long-term relationships between

the non-contract buyers and growers. Thus, this study investigated the long-term relationship between buyers and growers in enhancing supply chain management of the pineapple industry in Malaysia.

The study was conducted in the southern region of Malaysia, the state of Johor among 171 growers and 69 buyers. The sample of the growers and buyers were chosen based on random sampling from the directories of MPIB and FAMA 2011. Face-to-face interviews with the respondents were conducted using a structured questionnaire consisting of five-point Likert Scale statements which were designed to measure the attitude of the respondents. Data was analyzed using descriptive analysis, chi-square analysis, correlation analysis, factor analysis, and multiple regression. The descriptive analysis was undertaken to picture the characteristics of the respondents. The correlation analysis was used to describe the strength and direction of the linear relationship between socio-demographic profiles (age, gender, race, level of education, farming status, years of farming, income, quantity produced and farm size) and buyer-supplier relationship duration. Factor analysis was carried out to identify factors that influenced long-term buyer-supplier relationship. Meanwhile, multiple regression was conducted to determine the factors that mostly influenced long-term relationship between buyers and growers in the Malaysian pineapple industry. Finally, chi-square analysis was carried out to identify the benefits of long-term buyer-supplier relationships in the Malaysian pineapple industry in terms of years dealing with the existing buyers and growers and benefits obtained by these players.

The findings based on the correlation analysis indicated that the growers' age, years of farming, income, quantity produced, and farm size have positive relationships towards buyer-supplier relationships except level of education, which showed a negative relationship

towards the relationship. Meanwhile, from the buyers' perspectives, age, years involved in business, income, and quantity purchased showed positive relationships towards the development of long-term buyer-supplier relationship. There was a similarity in accordance with growers' findings that the level of education indicated a negative relationship.

Briefly, the results of factor analysis and multiple regression revealed that in the Malaysian pineapple industry's supply chain; from the growers' perspectives, trust, power/dependence, loyalty and satisfaction were determined as the most influential determinants in maintaining long-term buyer-supplier relationships. Meanwhile, from the buyers' perspectives, quality, satisfaction, and reputation were the most important factors in the development of long-term relationship. Finally, the chi-square analysis findings proved that due to the long-term relationship, both the growers and buyers perceived benefits as high profits, efficient distribution system, cost reduction, and increase quality. Generally, the results obtained from this study showed that the non-contract growers and buyers in the Malaysian pineapple industry have established the long-term relationships.

As a conclusion, the results obtained from the analyses such as factor analysis, multiple regression and chi-square analysis proved that the concept of long-term buyer-supplier relationship among the Malaysian pineapple industry supply chain players particularly the growers and buyers played an important role in offering mutual benefits to both players. Potentially this may reflect the fact that majority of the pineapple growers and buyers in Malaysia are not bonded with a contractual agreement. The results from this study could provide an opportunity for the MPIB to establish effective strategies for production and marketing systems of small scale growers and buyers in the pineapple industry in Malaysia.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra
Malaysia sebagai memenuhi keperluan untuk Ijazah Master Sains

**HUBUNGAN PEMBELI-PEMBEKAL DI DALAM RANTAIAN BEKALAN
INDUSTRI NANAS MALAYSIA**

Oleh

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Jun 2013

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Dikenali sebagai nanas oleh penduduk tempatan merupakan buah tropika kedua yang terpenting selepas pisang menyumbang lebih 20% daripada pengeluaran dunia buah-buahan tropika. Industri nanas di Malaysia dikuasai oleh pengusaha estet dan petani berskala kecil. Industri nanas berpotensi tinggi untuk dibangunkan kerana ia menyumbang pulangan positif yang tinggi kepada ekonomi negara. Menyedari akan kepentingan industri ini, kerajaan telah menubuhkan sebuah badan berkanun iaitu Lembaga Perindustrian Nanas Malaysia (LPNM) untuk memberi perhatian kepada semua hal yang berkaitan dengan industri nanas. Secara umumnya, sistem utama yang diamalkan di Malaysia adalah ladang kontrak dan bukan ladang kontrak. Walaupun sistem ladang kontrak adalah merupakan satu cara berkesan yang menjamin pendapatan dan keuntungan para petani dan juga pembeli, namun kebanyakan petani berskala kecil tidak berminat untuk terlibat dan terikat dengan mana-mana pemain di dalam industri. Kedua-dua petani dan pembeli perlu memastikan hubungan yang dijalinan oleh mereka akan membawa kepada kecekapan rantaian bekalan industri nanas. Dalam berbuat demikian, kedua-dua pemain bukan sahaja perlu menumpukan perhatian terhadap harga, kualiti, kuantiti dan penghantaran tetapi unsur-unsur tidak ketara yang lain seperti

kepercayaan, komitmen, kerjasama, kepuasan, kuasa/pergantian, reputasi dan juga kesetiaan. Dengan senario yang berlaku di dalam industri nanas Malaysia, isu yang ditangani dalam kajian ini adalah mengenai faktor yang mempengaruhi hubungan jangka panjang antara pembeli dan petani yang tidak terikat dengan sistem ladang kontrak. Oleh itu, kajian ini bertujuan untuk menyiasat hubungan jangka panjang antara pembeli dan petani dalam meningkatkan pengurusan rantai bekalan industri nanas di Malaysia.

Kajian ini telah dijalankan di selatan Malaysia, iaitu negeri Johor di kalangan 171 petani dan 69 pembeli. Sampel petani dan pembeli telah dipilih berdasarkan persampelan rawak yang didapati dari direktori MPIB dan FAMA 2011. Temu bual secara langsung dengan responden telah dijalankan dengan menggunakan borang soal selidik berstruktur. Soalan-soalan berstruktur berskala Likert lima titik telah direka untuk mengukur sikap setiap responden. Data telah dianalisis menggunakan analisis deskriptif, khi-kuasa dua, analisis korelasi, analisis faktor, dan regresi berganda. Analisis deskriptif telah dijalankan untuk mendapatkan gambaran ciri-ciri responden. Analisis korelasi pula telah digunakan untuk menggambarkan kekuatan dan arah hubungan linear antara profil sosio-demografi (umur, jantina, bangsa, tahap pendidikan, status pertanian, tahun bertani, pendapatan, kuantiti yang dihasilkan dan saiz ladang) dan tempoh hubungan pembeli-pembekal. Manakala, analisis faktor telah dijalankan untuk mengenalpasti faktor-faktor yang mempengaruhi hubungan jangka panjang pembeli-pembekal. Sementara itu, regresi berganda telah digunakan untuk menentukan faktor-faktor utama yang mempengaruhi hubungan jangka panjang antara pembeli dan petani dalam industri nanas Malaysia. Akhirnya, analisis khi-kuasa dua dijalankan untuk mengenalpasti faedah hubungan jangka panjang antara para petani dan pembeli dalam industri nanas Malaysia.

Penemuan berdasarkan analisis korelasi pula menunjukkan bahawa umur petani, tahun bertani, pendapatan, kuantiti buah dihasilkan dan saiz ladang mempunyai hubungan yang positif terhadap hubungan pembeli-pembekal kecuali tahap pendidikan yang menunjukkan hubungan yang negatif terhadap tempoh hubungan. Manakala, dari perspektif pembeli, umur, tahun terlibat dalam perniagaan, pendapatan dan kuantiti buah yang dibeli menunjukkan hubungan yang positif ke arah pembangunan hubungan jangka panjang pembeli-pembekal. Terdapat persamaan dengan penemuan dari perspektif petani, iaitu tahap pendidikan menunjukkan hubungan yang negatif dengan hubungan jangka panjang petani-pembekal.

Secara ringkas, keputusan analisis faktor dan regresi berganda menunjukkan bahawa dalam rantaian bekalan industri nanas di Malaysia; dari perspektif petani, amanah, kuasa/pergantungan, kesetiaan dan kepuasan telah didapati sebagai penentu yang paling berpengaruh dalam mengekalkan hubungan jangka panjang pembeli-pembekal. Manakala, dari perspektif pembeli pula, kualiti, kepuasan dan reputasi adalah faktor yang paling penting dalam hubungan jangka panjang. Akhirnya, hasil analisis khi-kuasa dua pula membuktikan bahawa hubungan jangka panjang membawa kebaikan serta bermanfaat kepada kedua-dua petani dan pembeli dari segi keuntungan yang tinggi, sistem pengedaran yang cekap, penurunan kos dan peningkatan kualiti. Secara umumnya, keputusan yang diperolehi daripada kajian ini menunjukkan bahawa petani dan pembeli yang tidak terikat dengan amalan ladang kontak telah berjaya mewujudkan dan mengekalkan hubungan jangka panjang.

Kesimpulannya, keputusan yang diperolehi daripada analisis faktor, regresi berganda dan analisis khi-kuasa dua membuktikan bahawa konsep hubungan jangka panjang pembeli-pembekal di kalangan pemain-pemain rantaian bekalan dalam industri nanas Malaysia

khususnya petani berskala kecil dan pembeli memainkan peranan yang penting dalam menentukan keuntungan kepada kedua-dua pihak terlibat. Hal ini boleh membuktikan bahawa majoriti petani dan pembeli nanas di Malaysia tidak terikat dengan perjanjian kontrak. Hasil daripada kajian ini memberi peluang kepada MPIB untuk membangun strategi yang berkesan untuk sistem pengeluaran dan pemasaran petani berskala kecil dan pembeli dalam industri nanas di Malaysia.



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I certify that a Thesis Examination Committee has met on 19 June 2013 to conduct the final examination of Salini Devi A/P Rajendran on her thesis entitled “Buyer-Supplier Relationships in Malaysian Pineapple Industry Supply Chain” in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master Science (Agribusiness).

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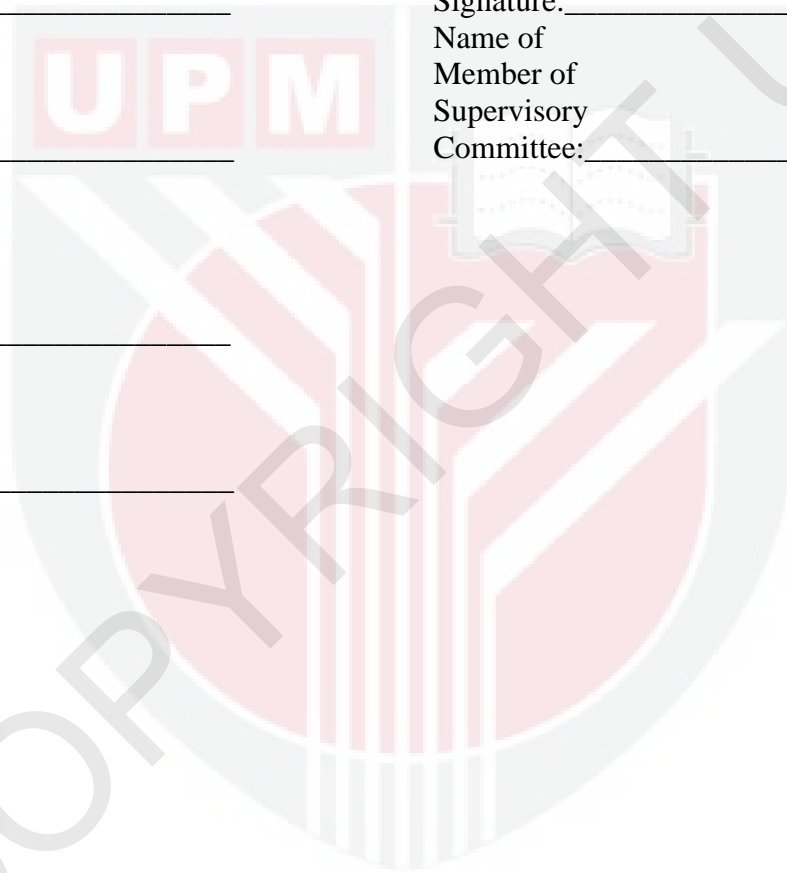


TABLE OF CONTENTS

| | |
|------------------------------|-------------|
| ABSTRACT | Page |
| <i>ABSTRAK</i> | ii |
| ACKNOWLEDGEMENTS | v |
| APPROVAL | ix |
| DECLARATION | x |
| LIST OF TABLES | xiii |
| LIST OF FIGURES | xvii |
| LIST OF ABBREVIATIONS | xix |
| | xx |

CHAPTER

| | | |
|----------|---|----|
| 1 | INTRODUCTION | |
| | 1.1 Malaysian Agriculture | 1 |
| | 1.2 History of Pineapple | 3 |
| | 1.3 World Market of Pineapple | 5 |
| | 1.4 Pineapple Industry in Malaysia | 10 |
| | 1.4.1 Pineapple Planting Area | 10 |
| | 1.4.2 Production of Pineapple | 12 |
| | 1.4.3 Pineapple Exporting Activities | 15 |
| | 1.4.4 The Marketing System of Pineapple Industry | 16 |
| | 1.4.5 Malaysian Pineapple Industry Board (MPIB) | 19 |
| | 1.5 Opportunities in the Malaysian Pineapple Industry | 21 |
| | 1.6 Issues and Challenges in the Malaysian Pineapple Industry | 23 |
| | 1.7 Contract and Non-Contract Farming in Agriculture | 26 |
| | 1.8 Problem Statement | 28 |
| | 1.9 Objectives of the Study | 31 |
| | 1.10 Significance of the Study | 31 |
| | 1.11 Organization of the Study | 32 |
| 2 | LITERATURE REVIEW | |
| | 2.1 Supply Chain Management | 33 |
| | 2.2 Role of Supply Chain Management | 38 |
| | 2.3 Buyer-Supplier Relationships | 39 |
| | 2.4 Factors Influencing Buyer-Supplier Relationships | 41 |
| | 2.4.1 Trust | 42 |
| | 2.4.2 Commitment | 44 |
| | 2.4.3 Satisfaction | 45 |
| | 2.4.4 Communication | 47 |
| | 2.4.5 Power and Dependence | 49 |
| | 2.4.6 Reputation | 51 |
| | 2.4.7 Quality | 52 |

| | | |
|----------|---|-----|
| | 2.4.8 Loyalty | 53 |
| | 2.5 Long-Term Relationships | 57 |
| | 2.6 Impacts of Long-Term Buyer-Supplier Relationships on Supply Chain Performance | 58 |
| | 2.7 Methods Used in Previous Studies | 61 |
| | 2.7 Summary | 63 |
| 3 | METHODOLOGY | |
| | 3.1 Conceptual Framework | 64 |
| | 3.2 Sources of Data | 68 |
| | 3.2.1 Secondary Data | 68 |
| | 3.2.2 Primary Data | 69 |
| | 3.3 Data Collection | 70 |
| | 3.3.1 Selection of Sample | 70 |
| | 3.3.2 Sampling Size | 70 |
| | 3.3.3 Questionnaire Design | 73 |
| | 3.4 Pilot Study | 74 |
| | 3.5 Data Analysis | 75 |
| | 3.5.1 Descriptive Analysis | 75 |
| | 3.5.2 Chi-Square Analysis | 76 |
| | 3.5.3 Correlation Analysis | 78 |
| | 3.5.4 Factor Analysis | 79 |
| | 3.5.5 Multiple Regression | 81 |
| | 3.6 Summary | 84 |
| 4 | RESULTS AND DISCUSSION | |
| | 4.1 Descriptive Analysis | 86 |
| | 4.1.1 Profile of Respondents | 87 |
| | 4.1.2 Information on Grower' Buyers | 91 |
| | 4.1.3 Information on Buyers' Suppliers | 94 |
| | 4.2 Correlation Analysis | 95 |
| | 4.2.1 Growers' Perspectives | 97 |
| | 4.2.2 Buyers' Perspectives | 100 |
| | 4.3 Reliability Analysis | 103 |
| | 4.4 Factor Analysis | 103 |
| | 4.4.1 Measure of Sampling Adequacy | 104 |
| | 4.4.2 Communality | 106 |
| | 4.4.3 Varimax Normalization | 108 |
| | 4.4.4 Eigenvalue Criteria | 109 |
| | 4.4.5 Factors that Influence Buyer-Supplier Relationships | 110 |
| | 4.4.5.1 Growers' Perspectives | 110 |
| | 4.4.5.2 Buyers' Perspectives | 115 |
| | 4.4.6 Reliability Analysis on Factor Scores | 120 |

| | | |
|----------|---|-----|
| 4.5 | Multiple Regression | 122 |
| | 4.5.1. Summary of Model from Growers' Perspectives | 123 |
| | 4.5.1.1 Model Parameters | 125 |
| | 4.5.2. Summary of Model from Buyers' Perspectives | 129 |
| | 4.5.2.1 Model Parameters | 130 |
| 4.6 | Chi-Square Analysis | 134 |
| | 4.6.1 Testing Relationship of Benefits of Long-Term Buyer-Supplier Relationships | 134 |
| | 4.6.1.1 Growers' Perspectives | 139 |
| | 4.6.1.2 Buyers' Perspectives | 140 |
| 4.7 | Summary | 143 |
| 5 | SUMMARY AND CONCLUSION | |
| | 5.1 Summary of the Findings | 144 |
| | 5.2 Conclusions | 147 |
| | 5.3 Recommendations | 148 |
| | 5.4 Limitations of the Study | 151 |
| | 5.5 Recommendations for Future Research | 152 |
| | REFERENCES | 153 |
| | APPENDICES | 167 |
| | BIODATA OF STUDENT | 169 |
| | LIST OF PUBLICATIONS | 170 |

LIST OF TABLES

| Table | Page |
|---|-------------|
| 1.1 World Top Fresh Pineapple Producers in 2011 | 6 |
| 1.2 World Top Fresh Pineapple Exporters in 2010 | 7 |
| 1.3 World Top Pineapple Canned Exporters in 2010 | 8 |
| 1.4 World Top Pineapple Juice Exporters in 2010 | 9 |
| 1.5 Plantation Area According to the Small Scale Farmers and Estate in the Year of 2011 | 12 |
| 1.6 Pineapple Production (MT) According States | 13 |
| 1.7 Pineapple Fruit Production (MT) by Small Scale Farmers and Estates in 2011 | 14 |
| 1.8 Export of Fresh Pineapple in 2011 | 15 |
| 1.9 Number of Small Scale Farmers Registered Under MPIB in 2010 | 17 |
| 1.10 Number of Small Scale Farmers who Engaged in Contract and Non-contract Farming Based on States in 2010 | 18 |
| 2.1 Selected Concepts and Definition of Supply Chain | 34-35 |
| 2.2 Selected Definition of Supply Chain Management | 36-37 |
| 2.3 Buyer-supplier Relationships Factors and Its Benefits Identified from Literatures | 55-56 |
| 2.4 Potential Advantages of Long-Term Relationships between Buyers and Suppliers | 61 |
| 4.1 Growers and Buyers Socio-Demographic Profiles | 89-90 |
| 4.2 Reasons for Growers Selling to Buyers | 92 |
| 4.3 Reasons for Not having Contractual Agreement with Buyers from Growers' Perspectives | 93 |
| 4.4 Growers Relationships Duration with Buyers | 94 |
| 4.5 Reasons for Procuring Pineapples from Suppliers | 96 |

| | | |
|------|---|---------------|
| 4.6 | Reasons for not having Contractual Agreement with Suppliers from Buyers Perspectives | 97 |
| 4.7 | Buyers Relationships Duration with Suppliers | 97 |
| 4.8 | Correlation Analysis between Socio-Demographics and Buyer-Supplier Relationships from Growers' Perspectives | 98 |
| 4.9 | Correlation Analysis between Socio-Demographics and Buyer-Supplier Relationships from Buyers' Perspectives | 101 |
| 4.10 | Reliability Statistics | 103 |
| 4.11 | KMO and Bartlett's Test | 105 |
| 4.12 | Communalities (Growers Perspectives) | 107 |
| 4.13 | Communalities (Buyers Perspectives) | 108 |
| 4.14 | Factors that Influence Buyer-Supplier Relationships from Grower's Perspectives | 114- 115 - |
| 4.15 | Factors that Influence Buyer-Supplier Relationships from Buyers Perspectives | 119 |
| 4.16 | Internal Reliability Analysis of Seven Factors from Grower's Perspectives on Their Buyers | 121 |
| 4.17 | Internal Reliability Analysis of Four Factors from Buyer's Perspectives on Their Suppliers | 121 |
| 4.18 | Regression Analysis Results from Growers' Perspective | 127 |
| 4.19 | Summary Result of Hypotheses Testing from Growers Perspective | 129 |
| 4.20 | Regression Analysis Results from Buyers Perspective | 132 |
| 4.21 | Summary Result of Hypotheses Testing from Buyers Perspective | 134 |
| 4.22 | Contingency Table Showing How Many Respondents Achieves and Do Not Achieves Benefits of Long-Term Buyer-Supplier Relationships from Growers' and Buyers' Perspectives | 136 |
| 4.23 | Relationship between Benefits of Long-Term Relationships and Length of Relationships from the Growers' Perspectives | 140 |
| 4.24 | Relationship between Benefits of Long-Term Relationships and Length of Relationships from the Buyers' Perspectives | 142 |

LIST OF FIGURES

| Figure | | Page |
|---------------|--|-------------|
| 1.1 | Marketing System of Malaysian Pineapple Industry | 16 |
| 1.2 | Small Scale Farmers who Engaged in Contract and Non-contract Farming in 2010 | 18 |
| 3.1 | Buyer-Supplier Relationships Conceptual Framework | 66 |
| 3.2 | Map of Johore State and Study Area | 70 |
| 4.1 | Type of Growers' Buyers for Selling Pineapples | 91 |
| 4.2 | Type of Suppliers | 95 |

LIST OF ABBREVIATIONS

| | |
|-------|--|
| DOA | Department of Agriculture |
| FAMA | Federal Agriculture Marketing Authority |
| FAO | Food and Agriculture Organization |
| GDP | Gross Domestic Product |
| GLC | Government Link Companies |
| LPNM | Lembaga Perindustrian Nanas Malaysia |
| LPNTM | Lembaga Perusahaan Nanas Tanah Melayu |
| NKEA | National Key Economic Area |
| MARDI | Malaysian Agriculture Research and Development Institute |
| MPIB | Malaysian Pineapple Industry Board |
| MOA | Ministry of Agriculture and Agro-based Industry |

CHAPTER 1

INTRODUCTION

The first chapter of the thesis consists of introduction, problem statement, research objectives, significance of the study, and organization of the thesis. In the introduction section, discussion on the Malaysian pineapple industry is presented, followed by the problem statement. The objectives and significance of the study are described in the following sections. The last section describes the organization of the thesis.

1.1 Malaysian Agriculture

In the early 70's, Malaysia which is only a middle-income country has transformed itself from a producer of raw materials into an emerging multi-sector economy. During that era, the country only relied on the export of primary natural resources such as rubber, oil palm and timber. However, as the country faced rapid development, Malaysia became newly industrialising country with a diversified export base.

As Malaysia economy's third engine of growth, agriculture sector contributes approximately 10% of Malaysia's GDP, and at least one-third of the country's population depends on the sector for its livelihood, with 14% employed on farms and plantations (Austin and Baharuddin, 2012). In Malaysia, approximately 39.2% of the total arable land or equal to 5.18 million hectares is planted with tree crops, such as

rubber, oil palm, cocoa, coconut and fruits and vegetables. The geographical of Malaysia in the tropical with annual average rainfall of 20,000 millimetres is ideal for the agricultural farming especially for premium tropical fruits. The nature of highland areas which have consistent temperatures between 14°C and 28°C are suitable for temperate crops such as tomato, capsicum, chillies and cabbages. However, constraints in scale, value chain as well as limited compliance to global food safety standards have hampered the ability to tap into the growth of the premium, food safety-assured market for fresh fruits and vegetables.

Thus, under the National Key Economic Area (NKEA), agriculture sub-sectors which have high-growth potential such as aquaculture, seaweed farming, swiftlet nests, herbal products, fruits and vegetables and premium processed food will be highly concentrated as these sectors would enable Malaysia to tap a large rapid global market. The government intended to increase the production of fruits and vegetables in terms of better quality as well as good tastes that comply with food safety standards. This would enable the country to access to premium markets in the Middle East and Europe. Among the premium varieties of tropical fruit be the core crops are the exotica papaya, MD2 pineapple, KR1 rock melon, B10starfruit, J32 jackfruit, Cavendish banana and three highland vegetables namely tomato, capsicum and lettuce.

1.2 History of Pineapple

Ananas colossus or more commonly known as pineapple is a type of tropical fruits believed to be originated from Middle East, South America. Locally, pineapple is called as *nanas*. In the category of tropical fruits, pineapple is identified as the second important fruit after bananas, contributing to over 20% of the world production of tropical fruits (Coveca, 2002). In Malaysia, this crop was introduced in the 16th century by the Portuguese. However only in 1921, pineapple began to be planted as a cash crop in Singapore, Johor, and Selangor. Pineapple plantation continued to expand mostly in peat soil area especially in Johor. Pineapple is considered as a non-seasonal crop and thus it is available all year round. Besides, the pineapple production period is also short which only takes about 13 to 15 months after planting.

Pineapples are processed commercially to make pineapple products such as canned pineapple and pineapple juices. Apart from that, pineapple also can be processed into jams, biscuits and other snacks by adding value to the fresh pineapples. The pineapple canning industry has been around for more than 100 years and the industry was pioneered by the Chinese community in Singapore at that time. Before the development of agricultural commodity such as oil palm and cocoa is actively implemented, pineapple was the main contributor to the country's economy (Mat Lin, 2009). For the past ten years, the pineapple production in Malaysia exhibits an increasing trend over the years. There was a steady increment from the year 2000 till 2011 except there was a slight reduction in the year 2006 (MPIB, 2011).

Currently the pineapple canning industry is known as the second largest tropical fruits export after watermelon. This industry continues to contribute to country's economy by providing direct job opportunities in the plantation sector and processing industry as well as in the transportation and manufacturing industry. In line with pineapple industrial development, Lembaga Perusahaan Nanas Tanah Melayu (LPNTM) or currently known as Lembaga Perindustrian Nanas Malaysia (LPNM)/Malaysian Pineapple Industry Board (MPIB) was established under the 1957 Pineapple Industry Ordinance. The role of this board is to control and coordinate by providing attention to all matter related to the pineapple industry. With the research and development (R&D) carried out by the Malaysian Pineapple Industry Board (MPIB), Malaysia is capable to produce high quality pineapples that are with similar standards of other world top producers in the market.

Today, Malaysia is one of the world top producers of pineapple other than Thailand, Brazil, Costa Rica, Philippines and China. In 1990, Malaysia was ranked 15th in the world top fresh pineapple producers with total production of 21,300 metric ton (FAO, 1990). Over the last 20 years, this rank has changed. In 2010, Malaysia was ranked 11th with total production of 416,070 metric tonnes (FAO, 2010) However, in the following year, the production has dipped to 332,736 metric tonnes which results Malaysia to be in the 15th ranked. These statistical figures proved that Malaysian pineapple production has potential to improve although the production fluctuated over the years. As Malaysian fresh pineapple fruits have high demand market in Singapore and West Asia, Malaysia is competitive in producing fresh pineapples. Malaysia is highly potential to be main producer in the world market in future with

the existence of quality pineapple variety, technology and continuous support from government and non-government agencies.

Meanwhile, canned pineapple fruits have market demand in countries like Japan, United States, European Union, Middle East and Singapore. According to the MPIB (2012) statistical data, the production as well as export of canned pineapple was declining for the past five years. This was as a result of changes in consumer tastes and preferences as today's lifestyle gives more importance on healthy and fresh foods.

1.3 World Market of Pineapple

Global demand for both fresh and processed pineapples has been increasing annually. This is not only because of increasing population, higher income and technology, but also due to higher consumer preferences towards health foods. Among the world's major pineapple producers are Thailand, Brazil, Costa Rica, Philippines, and China. Thailand stands as the number one pineapple producers in the world. Around 13% of world's total pineapple production has been dominated by Thailand. Meanwhile, Brazil, Costa Rica, Philippines, and China ranked 2nd, 3rd, 4th and 5th contributing 12% to 11% in the production of pineapple in the world. Malaysia is also not left behind in the list of world's leading pineapple producers. According to Food and Agriculture Organization (FAO) 2011 statistical data, among the world's top pineapple producers, Malaysia ranked 15th place with total production 332,736 metric tonnes (Table 1.1). Malaysia has conquered almost 2% of

world pineapple production. Other countries, which have listed as world's leading producers, only contributed a small percentage in the production of pineapples. World production of pineapple was around 19.39 million metric tonnes in 2011 with 9.75% increase over the previous year. Table 1.1 depicts the list of main pineapple producing countries.

Table 1.1: World Top Fresh Pineapple Producers in 2011

| Rank | Area | Production (MT) |
|-------------|------------------------------------|------------------------|
| 1 | Thailand | 2,593,210 |
| 2 | Brazil | 2,318,120 |
| 3 | Costa Rica | 2,268,960 |
| 4 | Philippines | 2,246,810 |
| 5 | China | 1,551,367 |
| 6 | Indonesia | 1,540,630 |
| 7 | India | 1,415,000 |
| 8 | Nigeria | 920,000 |
| 9 | Mexico | 742,926 |
| 10 | Viet Nam | 533,384 |
| 11 | Colombia | 512,496 |
| 12 | Venezuela (Bolivarian Republic of) | 419,832 |
| 13 | Peru | 400,429 |
| 14 | Kenya | 371,310 |
| 15 | Malaysia | 332,736 |
| 16 | Angola | 326,352 |
| 17 | Guatemala | 234,560 |
| 18 | Benin | 230,000 |
| 19 | Dominican Republic | 221,736 |
| 20 | Bangladesh | 218,582 |
| | Total | 19,398,440 |

Source: FAO (2011)

In the list of world's fresh pineapple fruits exporters, Costa Rica, Belgium, Netherlands, United States of America and Germany were listed as the top five countries exporting fresh pineapple fruits in 2010. Costa Rica's fresh pineapple exported value reached nearly USD 677.39 million with total export 1.6 million tonnes. This is followed by Belgium and Netherlands with fresh pineapples export value around USD 206.754 and USD 150.628 million respectively. While the United

States of America and Germany have exported 99,076 tonnes and 37,545 tonnes with total export value around USD 102.73 and USD 42.40 respectively. In 2009, Malaysia is not listed as a major exporter of fresh pineapples in the world. However, in the year 2010, Malaysia has succeeded at the world's 18th spot with total quantity pineapple exported as much as 21,904 tonnes, worth around USD 6.89. Meanwhile, South Africa ranked last in the list of leading twenty exporters of pineapples with a lowest total export value nearly USD 3.81. Refer Table 1.2.

Table 1.2: World Top Fresh Pineapple Exporters in 2010

| Rank | Area | Quantity (tonnes) | Value ('000 USD) |
|-------------|--------------------------|------------------------------|-------------------------|
| 1 | Costa Rica | 1,677,702 | 677,392 |
| 2 | Belgium | 229,022 | 206,754 |
| 3 | Netherlands | 175,193 | 150,628 |
| 4 | United States of America | 99,076 | 102,735 |
| 5 | Germany | 37,545 | 42,407 |
| 6 | Philippines | 164,650 | 42,359 |
| 7 | Ecuador | 95,647 | 41,238 |
| 8 | Panama | 56,061 | 37,337 |
| 9 | Portugal | 31,619 | 31,892 |
| 10 | Mexico | 53,648 | 25,635 |
| 11 | Honduras | 36,725 | 22,791 |
| 12 | Côte d'Ivoire | 54,956 | 21,528 |
| 13 | Italy | 21,875 | 18,270 |
| 14 | France | 18,408 | 17,198 |
| 15 | Spain | 19,026 | 15,853 |
| 16 | United Kingdom | 19,032 | 15,808 |
| 17 | Lithuania | 11,904 | 14,425 |
| 18 | Malaysia | 21,904 | 6,899 |
| 19 | Guatemala | 10,624 | 6,266 |
| 20 | South Africa | 2,554 | 3,815 |

Source: FAO (2010)

Canned pineapple is the most important product in pineapple world trade. Thailand, Philippines and Indonesia, which are among the top producers, became main suppliers of canned pineapple too. Leading exporter Thailand has exported 518,974

tonnes of canned pineapple worth USD 462.83. Meanwhile, Philippines and Indonesia's canned pineapple exported value reached nearly USD 124.263 and USD 114.84 respectively. Almost 78% of pineapple canning industry has been covered by these three top countries. Malaysia captured the 8th place among world's pineapple canned exporters with total quantity exported 14,857tonnes valued around USD 10,216,000 (Table 1.3). Malaysia contributes minimal amount to the market of canned pineapple.

Table 1.3: World Top Pineapple Canned Exporters in 2010

| Rank | Area | Quantity (tonnes) | Value ('000 USD) |
|-------------|--------------------------|------------------------------|-------------------------|
| 1 | Thailand | 518,974 | 462,830 |
| 2 | Philippines | 138,742 | 124,263 |
| 3 | Indonesia | 136,934 | 114,845 |
| 4 | Kenya | 48,939 | 55,061 |
| 5 | Netherlands | 30,053 | 44,384 |
| 6 | China | 50,689 | 38,734 |
| 7 | Germany | 21,604 | 28,940 |
| 8 | Malaysia | 14,857 | 10,216 |
| 9 | United Arab Emirates | 3,909 | 8,751 |
| 10 | Viet Nam | 11,643 | 7,885 |
| 11 | Singapore | 8,635 | 6,955 |
| 12 | Spain | 3,785 | 6,441 |
| 13 | France | 2,710 | 5,973 |
| 14 | United States of America | 3,928 | 4,173 |
| 15 | Belgium | 2,993 | 3,925 |
| 16 | China, Hong Kong SAR | 4,637 | 3,529 |
| 17 | Swaziland | 2,809 | 3,294 |
| 18 | Guatemala | 2,137 | 2,221 |
| 19 | United Kingdom | 1,377 | 2,104 |
| 20 | Portugal | 963 | 1,942 |

Source: FAO (2010)

The supply of pineapple juice is concentrated mainly comes from Thailand with total quantity exported 131,316 tonnes valued around USD 203,632,000 (Table 1.4). Almost 29% of pineapple juice markets controlled by Thailand in 2010. Other important pineapple juice exporters in the world are Netherland, Costa Rica,

Philippines and Indonesia. The exported pineapple juice values of these countries are between USD 138,013,000 to USD 28,197,000. Nevertheless, Malaysia is not listed as a major exporter of pineapple juice in the world.

Table 1.4: World Top Pineapple Juice Exporters in 2010

| Rank | Area | Quantity (tones) | Value ('000 USD) |
|-------------|----------------------------|-------------------------|-------------------------|
| 1 | Thailand | 131,316 | 203,632 |
| 2 | Netherlands | 73,472 | 138,013 |
| 3 | Costa Rica | 63,542 | 58,634 |
| 4 | Philippines | 77,367 | 47,956 |
| 5 | Indonesia | 21,273 | 28,197 |
| 6 | South Africa | 10,074 | 15,599 |
| 7 | Iran (Islamic Republic of) | 24,390 | 11,763 |
| 8 | Belgium | 12,527 | 11,285 |
| 9 | Italy | 4,235 | 8,111 |
| 10 | Israel | 4,290 | 7,722 |
| 11 | Germany | 3,587 | 7,431 |
| 12 | Brazil | 3,394 | 6,293 |
| 13 | France | 3,551 | 6,215 |
| 14 | China | 3,113 | 5,078 |
| 15 | Spain | 3,182 | 2,761 |
| 16 | Cyprus | 1,454 | 2,268 |
| 17 | United States of America | 1,347 | 2,084 |
| 18 | Honduras | 1,746 | 1,949 |
| 19 | Singapore | 1,004 | 1,617 |
| 20 | Saudi Arabia | 1,475 | 1,006 |

Source: FAO (2010)

Pineapple dominates the world trade of tropical fruits, although other fruits have gained market share. Statistics from FAO (2010) indicated that pineapple trade is encouraging and expanding year by year. The trend in pineapple production is expected to continue. Pineapple fruit is oriented to developed countries such as Japan, the USA and the European Community (Coveca, 2002). The pineapple industry has created new source of income to all producing countries, including Malaysia.

1.4 Pineapple Industry in Malaysia

Pineapple in Malaysia is cultivated as a single crop or as an inter-cropping together with oil palm, rubber and coconut. Generally, estate holders plant pineapple as a single crop while small scale farmers plant pineapple as an inter-cropping together with perennial crops. In Malaysia, there are three varieties of pineapple, which are planted in a large scale. They are Morris, Sarawak and Gandol. Besides these, there are two more varieties produced through hybrid. They are pineapple hybrid N36 and Josapine. Sarawak, Morris and Josapine are usually planted for fresh consumption while Gandol is for canning and juice. The varieties of Morris, Sarawak and Josapine are highly demanded in the world market because of their quality.

According to the MPIB (2012), currently 95% of canned pineapple productions are for export market and 5% is for domestic market while fresh pineapple contributes 30% to export market and 70% for domestic market. Malaysia pineapples have different characteristics from the rival competitors. Pineapple hybrid N36 is basically produced to meet the needs of both fresh consumption and canned production. The production of this variety is more concentrated for domestic consumption. Beside fresh, canned and juice other products such as candy, juices, sauces and jams.

1.4.1 Pineapple Planting Area

The pineapple plantation areas in Malaysia are showing a decreasing trend over the year 2000 - 2011. Small scale farmers and estates are reported to play a significant

role in the country's pineapple production. Based on the percentage of planted area, the involvement of small scale farmers in pineapple cultivation is declining however the involvement of estates is reported to be increasing annually. As shown in Table 1.5, the size of plantation area of estate growers was quite uniform which were around 2,023ha from the year 2000 until 2004. Then, in 2005, the size of planting area has increased to 2,428ha and remains unchanged until 2010. The planted area has increased slightly around 20%, from 47.58% in 2010 to 67.75% in 2011.

However, the small scale farmers only planted in a smaller size of area compared to estate holders. With exception for the year 2007, the size of plantation area of small scale farmers were between 1,000ha to 2,000ha only. In the year 2007, there was a drastic increment in the plantation area of small scale farmers, which was 5,923ha. Notably, the size of plantation area declined for the following years. The pineapple plantation area reduced year by year until there was only 1,310ha in 2011. The average planting area of the small scale farmers has decreased from 70.92% in 2007 to 32.25% in 2011. This case is due to the small scale farmers have moved their focus to a more remunerative crop such as oil palm that is suitable to be planted in peat soil (Mat Lin, 2009). In total, both the small scale farmers and estates holders owned only 4,062ha of pineapple plantation area in the year 2011 and the total plantation area according to the small scale farmers and estates had encountered reduction in Malaysian pineapple industry.

Table 1.5: Plantation Area According to the Small Scale Farmers and Estate in the Year of 2011

| Year | Small Scale Farmers (ha) | % | Estate (ha) | % | Total |
|-------------|---------------------------------|----------|--------------------|----------|--------------|
| 2000 | 2,271 | 52.88 | 2,023 | 47.12 | 4,294 |
| 2001 | 1,321 | 39.50 | 2,023 | 60.50 | 3,344 |
| 2002 | 1,366 | 40.30 | 2,023 | 59.70 | 3,389 |
| 2003 | 1,434 | 41.48 | 2,023 | 58.52 | 3,457 |
| 2004 | 1,477 | 42.19 | 2,023 | 57.81 | 3,500 |
| 2005 | 1,943 | 44.45 | 2,428 | 55.55 | 4,371 |
| 2006 | 2,383 | 49.53 | 2,428 | 50.47 | 4,811 |
| 2007 | 5,923 | 70.92 | 2,428 | 29.08 | 8,351 |
| 2008 | 2,425 | 49.97 | 2,428 | 50.03 | 4,853 |
| 2009 | 2,068 | 45.99 | 2,428 | 54.01 | 4,496 |
| 2010 | 2,675 | 52.42 | 2,428 | 47.58 | 5,103 |
| 2011 | 1,310 | 32.25 | 2,752 | 67.75 | 4,062 |

Source: Malaysian Pineapple Industry Board (2011)

1.4.2 Production of Pineapple in Malaysia

In the past 10 years, the pineapple production in Malaysia has been facing uncertainty situation where it exhibits a declining trend over the years. Number one pineapple producer in Malaysia, the state of Johor showed a decreasing trend in its production from 143,963tonnes to 75,019 tonnes in the year 2008 to 2009 (Table 1.6). Yet, in the following year, the production had increased to 91,939 tonnes and fluctuated again in 2011 to 80,389.22. For the year 2011, Johor has contributed 83% of country's total pineapple production. Other states such as Selangor, Perak, Kelantan, Terengganu, Negeri Sembilan, and Sarawak, pineapple are planted specifically for domestic consumption.

Table 1.6: Pineapple Production (MT) According States

| State | 2008 | 2009 | 2010 | 2011 |
|-----------------|-------------------|-------------------|-------------------|------------------|
| Johor | 143,963.00 | 75,019.00 | 91,939 | 80,389.22 |
| Kedah | 1,121.17 | 9,342.00 | 5,232 | 1,900.76 |
| Kelantan | 8,209.60 | 7,974.00 | 4,233.50 | 1,153.30 |
| Negeri Sembilan | 330.25 | 7,416.00 | 1,453 | 925.51 |
| Terengganu | 0.00 | 5,108.00 | 3,367 | 1,475.86 |
| Pulau Pinang | 681.64 | 3,780.00 | 2,315 | 531.16 |
| Pahang | 768.64 | 2,340.00 | 3,723 | 1,305.12 |
| Perak | 532.57 | 2,052.00 | 1,933 | 823.14 |
| Selangor | 504.05 | 1,284.00 | 887.50 | 2,367.44 |
| Melaka | 0.00 | 531.00 | 1,472 | 223.88 |
| Perlis | 0.00 | 112.00 | 18.5 | 22.76 |
| Sarawak | 0.00 | 0.00 | 10,841 | 5,839.05 |
| Total | 156,110.92 | 114,958.00 | 127,414.50 | 96,957.20 |

Source: Malaysian Pineapple Industry Board (2011)

Main producers of pineapple consist of small scale farmers and estate holders. The production from small scale farmers had declined from 10,053 tonnes to 8,743 tonnes in the year 2000 until 2003 before increasing again in 2004. The pineapple production in 2004 has increased 13.86% from 2003 to 2004, a drastic increase from 8,743 tonnes to 21,089 tonnes. However, for the following three years, the pineapple production continually declined until 2008. Again in the year 2008, the production of pineapple has increased 45.9%, a drastic increase from 12,109 in 2007 to 98,895 tonnes. The increment was due to the world demand for canned pineapple, which is estimated to increase 4% to 5% yearly. In 2009, the pineapple production has shown decrement around 11.88%, from 98,895 tonnes in 2008 to 59,164 tonnes in 2009. Once again, this reduction was due to the reduction in size of plantation area. In the year 2010, the pineapple production has increased 10.66%, from 59,164 to 75,158 and production has slightly decreased (15.82%) again in 2011. Instability in the pineapple production was due to uncertainties in planted area. Refer Table 1.7. Similar scenario occurred in the pineapple estates. There was fluctuation in

production over the years but it shows an increasing trend as can be seen in Table 1.7. The contribution from the estates showed an increasing trend where the production of pineapples in 2011 was around 52,052 tonnes compared to 48,257 in 2010. On the other hand, the smallholders contribution showed a declining trend as the production of pineapples in 2010 was 79,158 dipped to 44,905 in 2011. As a result of lower pineapple production by both the small scale farmers and estates, there was a reduction in the total pineapple production in Malaysia. In the year 2011, there was only 96,957 tonnes of pineapples produced in Malaysia. The small scale farmers and estates contributed around 46.31% (44,905 tonnes) and 53.69% (52,052 tonnes) respectively of the country's total pineapple production.

Table 1.7: Pineapple Fruit Production (MT) By Small Scale Farmers and Estates in 2011

| Year | Small Scale Farmers | % | Estates | % | Total |
|-------------|----------------------------|----------|----------------|----------|--------------|
| 2000 | 10,053 | 14.15 | 60,990 | 85.85 | 71,043 |
| 2001 | 7,738 | 11.90 | 57,310 | 88.10 | 65,048 |
| 2002 | 8,327 | 11.89 | 61,725 | 88.11 | 70,052 |
| 2003 | 8,743 | 11.98 | 64,254 | 88.02 | 72,997 |
| 2004 | 21,089 | 25.84 | 60,529 | 74.16 | 81,618 |
| 2005 | 20,549 | 23.69 | 66,191 | 76.31 | 86,740 |
| 2006 | 14,954 | 17.41 | 70,948 | 82.59 | 85,902 |
| 2007 | 12,109 | 17.40 | 57,498 | 82.60 | 69,607 |
| 2008 | 98,895 | 63.35 | 57,216 | 36.65 | 156,111 |
| 2009 | 59,164 | 51.47 | 55,794 | 48.53 | 114,958 |
| 2010 | 79,158 | 62.13 | 48,257 | 37.87 | 127,415 |
| 2011 | 44,905 | 46.31 | 52,052 | 53.69 | 96,957 |

Source: Malaysian Pineapple Industry Board (2011)

1.4.3 Pineapple Exporting Activities

Malaysia mainly exports fresh pineapples to two major countries, Singapore and West Asia. For the last five years, quantity of pineapples exported to Singapore has increased annually. In 2011, Malaysia exported 34,478 tonnes, which valued RM 17,370,174 to Singapore (Table 1.8). This value shows that Malaysia has dominated the fresh pineapple market in Singapore. Meanwhile, quantity of pineapples exported to West Asia has decreased from 11,329 tonnes in 2010 to 6,233 tonnes in 2011 (Table 1.8). Overall, Malaysia has contributed around 40,711 tonnes, which valued almost RM26 million of the total export for fresh pineapples for the year 2011. Malaysia is known as one of the most important exporters of pineapple especially for Asia countries.

Table 1.8: Export of Fresh Pineapple in 2011

| Year | Singapore | | West Asia | | Total | |
|------|---------------|------------|---------------|------------|---------------|------------|
| | Quantity (MT) | Value (RM) | Quantity (MT) | Value (RM) | Quantity (MT) | Value (RM) |
| 2000 | 56,768 | 29,229,920 | 2,223 | 2,164,014 | 58,991 | 31,393,934 |
| 2001 | 73,019 | 21,823,880 | 2,623 | 3,186,534 | 75,642 | 25,010,414 |
| 2002 | 54,453 | 21,823,880 | 3,194 | 3,639,998 | 57,647 | 25,463,878 |
| 2003 | 61,964 | 24,863,385 | 2,085 | 2,635,353 | 64,049 | 27,498,738 |
| 2004 | 61,305 | 27,999,803 | 2,755 | 2,687,302 | 64,060 | 30,687,105 |
| 2005 | 48,345 | 23,522,032 | 3,658 | 3,011,545 | 52,003 | 26,533,577 |
| 2006 | 41,813 | 14,990,774 | 3,471 | 3,609,061 | 45,284 | 18,599,835 |
| 2007 | 27,493 | 14,104,039 | 4,667 | 5,555,297 | 32,160 | 19,659,336 |
| 2008 | 28,107 | 14,708,110 | 5,972 | 7,476,559 | 34,079 | 22,184,669 |
| 2009 | 28,578 | 14,819,306 | 9,408 | 14,087,082 | 37,986 | 28,906,388 |
| 2010 | 29,976 | 14,878,229 | 11,329 | 16,066,104 | 41,305 | 30,944,333 |
| 2011 | 34,478 | 17,370,174 | 6,233 | 8,611,617 | 40,711 | 25,981,791 |

Source: Malaysian Pineapple Industry Board (2011)

1.4.4 The Marketing System of Pineapple Industry

The marketing system for most of the fresh fruits and vegetables (FFV) sectors in Malaysia is similar. Most of the fresh fruits and vegetables (FFV) sectors have similar level of supply chain. In the case of pineapple, the players involves of small scale farmers, wholesalers, retailers, exporters and importers.

A large number of small scale farmers sell their produce through middleman which means most of the pineapple produce go through wholesalers or retailers before it reaches the consumers. For instance, the fresh pineapple has to go through wholesalers in the wholesale market (*pasarborong*). The wholesalers in the wholesale market in turn transport the pineapple to wholesalers in the local market. At the local market, pineapple is sold to either retailers or small wholesalers. In other words, the pineapple produce is handled by three or more middlemen before it reaches the end consumers. However, small number of farmers sells their pineapples directly to consumers. Figure 1.1 shows the marketing system of pineapple industry.

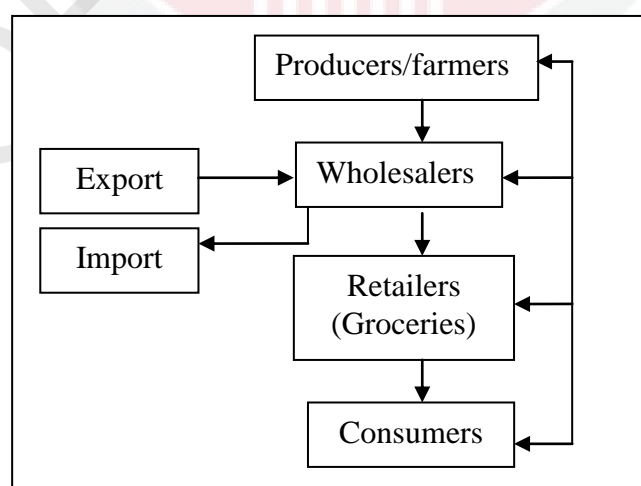


Figure 1.1: Marketing System of Malaysian Pineapple Industry

Source: Adapted from Fatimah (2012) and MPIB (2011)

Ten years ago, the number of small scale farmers who were registered under MPIB was 1,340 only. But, this number has increased to 3,318. However, the numbers of small scale farmers involved in the pineapple industry have decreased from 3,062 in 2008 to 2,503 in 2010 (Table 1.9). Pineapple farmers involve both the bumiputras and non-bumiputras. In the year 2010, 81.8% of farmers were bumiputra and 18.2% of farmers were non-bumiputra (Table 1.9). Majority of non-bumiputra farmers are Chinese.

Table 1.9: Number of Small Scale Farmers Registered Under MPIB in 2010

| Year | Bumiputra | % | Non-Bumiputra | % | Total |
|------|-----------|------|---------------|------|-------|
| 2000 | 1,179 | 88.0 | 161 | 12.0 | 1,340 |
| 2001 | 721 | 66.0 | 372 | 34.0 | 1,093 |
| 2002 | 945 | 80.0 | 236 | 20.0 | 1,181 |
| 2003 | 992 | 79.6 | 254 | 20.4 | 1,246 |
| 2004 | 1,021 | 79.3 | 267 | 20.7 | 1,288 |
| 2005 | 1,165 | 83.5 | 230 | 16.5 | 1,395 |
| 2006 | 2,732 | 88.4 | 359 | 11.6 | 3,091 |
| 2007 | 2,891 | 87.1 | 427 | 12.9 | 3,318 |
| 2008 | 2,498 | 81.6 | 564 | 18.4 | 3,062 |
| 2009 | 2,182 | 81.9 | 482 | 18.1 | 2,664 |
| 2010 | 2,048 | 81.8 | 455 | 18.2 | 2,503 |

Source: Malaysian Pineapple Industry Board (2010)

Based on 2010 MPIB statistical data, only 24% of 2,083 small scale farmers who registered under MPIB were engaged in contract farming. The remaining 76% small scale farmers in the pineapple industry were engaged in non-contract farming. Figure 1.2 presents the percentage of contract and non-contract farmers in pineapple industry.

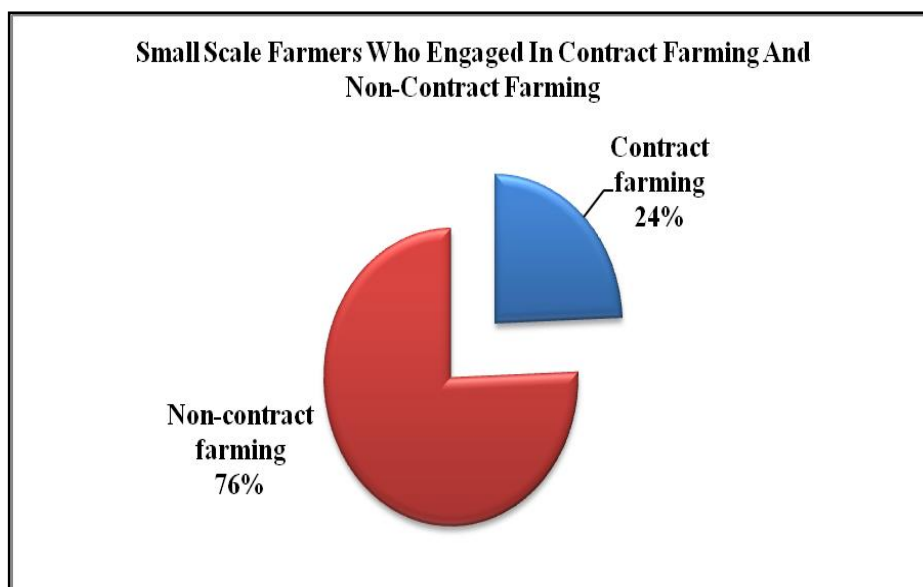


Figure 1.2: Small Scale Farmers Who Engaged in Contract and Non-Contract Farming in 2010

Source: Malaysian Pineapple Industry Board (2010)

Table 1.10 shows the number of small scale farmers who engaged in contract and non-contract farming based on states in 2010.

Table 1.10: Number of Small Scale Farmers Who Engaged in Contract and Non-Contract Farming Based On States In 2010

| State | Contract farming | % | Non-contract farming | % | Total number farmers |
|-----------------|------------------|-------------|----------------------|-------------|----------------------|
| Johor | 131 | 12.0 | 959 | 87.9 | 1090 |
| Melaka | 8 | 6.6 | 4 | 3.3 | 12 |
| Negeri Sembilan | 34 | 42.5 | 46 | 57.5 | 80 |
| Selangor | 4 | 3.8 | 100 | 96.1 | 104 |
| Perak | 144 | 92.3 | 12 | 7.6 | 156 |
| Pulau Pinang | 11 | 18.6 | 48 | 81.3 | 59 |
| Kedah | 34 | 21.9 | 121 | 78.0 | 155 |
| Perlis | 1 | 12.5 | 7 | 87.5 | 8 |
| Pahang | 74 | 74.0 | 26 | 26.0 | 100 |
| Terengganu | 65 | 50.7 | 63 | 49.2 | 128 |
| Kelantan | 2 | 1.0 | 189 | 98.9 | 191 |
| Total | 508 | 24.3 | 1,575 | 75.6 | 2,083 |

Source: Malaysian Pineapple Industry Board (2010)

As shown in Table 1.10, Johor, which is the largest pineapple producer in Malaysia, has a total number of 1,090 farmers. Out of this figure, 959 farmers were engaged in non-contract and only 131 farmers were engaged in contract farming. The same scenario occurred in all states in Malaysia.

1.4.5 Malaysian Pineapple Industry Board (MPIB)

Malaysian pineapple industry is unique as it is supported by the government and local companies. A government agency is specifically formed for the development of the pineapple industry in Malaysia. The Malaysian Pineapple Industrial Board (MPIB) is a Statutory Body established in 1957. It was formerly known as *Lembaga Perusahaan Nanas Tanah Melayu* (LPNTM). Moving towards with the development of the pineapple industry, the agency's name was changed to *Lembaga Perindustrian Nanas Malaysia* subject to Pineapple Industrial Act 1957 (Revised 1990) under the Ministry of Main Industry in 1992.

MPIB is known as one of the leading agencies responsible in managing pineapple industry in Malaysia. The aim of MPIB is “to be recognized as a viable agency managing Malaysian Pineapple Industry”. The vision of MPIB is “To establish MPIB as a pioneering institution in the pineapple industry at a global level by 2020”. While, the mission of MPIB is “To stabilize the country's pineapple industry up to a product strengthening standard at a global level via technical services and physical assistance up to the marketing stage in a more creative and innovative manner”. Among the objectives of the MPIB are as follows:-

- (1) To increase the agriculture sector's contribution towards the country's income, foreign currency exchange and employment opportunities;
- (2) To manage the pineapple plantation sector and maximize production in a continuous manner and;
- (3) To increase the efficiency of pineapple based processing factories and increase high value-added and upstream pineapple industry activities.

In brief, it can be described that MPIB plays a role as a one-stop centre in providing financial assistance, the development, the cultivation, collection and dissemination of information, quality control and marketing of pineapple. MPIB is an agency responsible to provide attention to all matters related to pineapple industry. Besides MPIB, the success of the pineapple industry in Malaysia is due to the support of the government policies and initiatives. The Ministry of Agriculture and Agro-based Industry (MOA) has come up with ideas and business plans for viable agriculture projects. For the pineapple industry, several initiatives and supports extended by MOA including: (1) Land developing policy; (2) The development of appropriate technology through research activities; (3) Strengthening existence market and exploring new markets; (4) Encourage investment and increase the involvement of government link companies (GLCs) in the industry and (5) Increase the efficiency of pineapple based processing factories and increase pineapple industry activities. The growers and farm sector are given priority by the government agencies through the implementation of development and industrial program. By the establishment of MPIB and support of the government agencies and initiatives, the Malaysian pineapple industries are able to meet higher global demand (MPIB, 2012).

1.5 Opportunities for Malaysian Pineapple Industry Development

Over the years, the agriculture sector has become an important contributor to Malaysia GDP. Based on the report published in 2012 by the World Bank, about 10.63% of GDP in Malaysia was contributed by agriculture which includes sectors like forestry, hunting and fishing as well as cultivation of crop and livestock production. Besides, the production of main food commodities such as paddy, fruits, vegetables as well broilers, layers and milk has an increasing growth rate of 3.7% per year (FAMA, 2011). Moreover, in the Malaysian National Key Economic Area (NKEA), one of government initiatives is to develop the pineapple industry by increasing the production of especially the variety of MD2.

Thus, it is believed that the Malaysian pineapple industry has high potential to develop as it contributes high positive return to the country's economy. Pineapple, which is also known as multi-purpose commodity, is being used in multiple industries to produce canned products, juice, snacks and fresh fruits. Besides, Malaysian canned pineapple is said to have a unique characteristics compared to competitors in terms of colour aspect as the Malaysian pineapples are gold in colour. Moreover, pineapple hybrid produced namely N36 can be used for both fresh purpose and canning purpose in the domestic markets. This ensures that fresh pineapple market in the country is able to compete with other competitors especially with neighbourhood country such as Thailand. As the domestic market is controlled by local pineapple produce, Malaysia has the capability to dominate the domestic pineapple industry.

The opportunity to expand the current market share is widely available, in line with the development of commercial fresh fruits, processed fruits and fruit juice in the world market. Currently the total pineapple production in Malaysia is lower compared to other Asian countries (Refer to Table 1.1). Malaysia still has more areas that are suitable for pineapple plantation. For instance, Sarawak has lands that fit for big scale pineapple production. Therefore, Sarawak can be developed as pineapple production area for commercialization. In Malaysia, the suitability of weather and land are the major factors, which give great influence to the industry's production. Based on the current situation, the export destinations can expand to Asian regions, Australia, New Zealand and the Middle East. Part of country's total fresh pineapple export also concentrated on Singapore. Around 85% of the market share of fresh pineapple in Singapore has been dominated by Malaysia.

Country's fresh pineapple exporting activities has a good future. Fresh pineapple can be exported to Japan, Korea, Taiwan, China and Hong Kong, New Zealand and Australia besides strengthening the existing market share in Singapore, United Arab Emirates and Brunei. Japan, Korea, Taiwan, China and Hong Kong, New Zealand and Australia are selected to be the destinations for the latest market for Malaysia's fresh pineapple because of strategic geographical location which is closest to Malaysia compared to other major exporting countries such as Costa Rica, Belgium, Netherlands, Cote d'Ivoire, Honduras and Ghana. Not only that these countries are also undergoing a positive growth in terms of import valued of fresh pineapples. But the market for fresh pineapple in the USA and most of European countries almost being monopolized by large exporting countries as Costa Rica, Cote d'Ivoire, Honduras and Ghana. Although Malaysia pineapple industry has small market share,

yet the industry still can potentially be developed as one of the world's most major markets. Malaysia has to take the opportunity to expand its pineapple market share worldwide. There are several of ways and strategies that can be implemented from time to time.

The government in terms of land development through the implementation of policies and development programs supports the Malaysian pineapple industry. Apart from that, rubber and oil palm plantations are targeted as suitable areas for pineapple intercropping. At the same time, the existence of the MPIB under the Ministry of Agriculture and Agro-based Industry (MOA) generates and organizes the journey of the pineapple industry by developing small scale farmers in order to hand in line with the objectives of the pineapple industry in the country. Moreover, the existence of Malaysian Agricultural Research and Development Institute (MARDI) helps in pineapples research and development activities. This shows that R&D in the pineapple industry can be strengthened and enhanced as a competitive industry from every aspect over a period of time.

1.6 Issues and Challenges in Malaysian Pineapple Industry

The growth of agriculture in Malaysia faces tremendous strengths particularly in tree-crops agriculture and management of large scale production of selected crops, livestock and fisheries. Specifically looking into the Malaysian pineapple industry, various issues in the industry were reported which prevented the industry to increase its competitiveness. Traditionally, among the major problems faced by the industry

are shortage of land, natural disasters, climate change, insufficient resources, limited budget and shortage of labours (MPIB, 2011). Mainly, lands are being utilized for other potential commodities such oil palm, rubber and coconut. In addition, most of pineapples grown on peat soil are not compatible with the use of heavy machinery. Due to this phenomenon, the industry highly depends on labours particularly the foreign workers. This scenario illustrates rather a risky situation for the industry. However, as the global market being competitive, a good development and management of respective supply chains and trading networks turn to be as one of the main barriers to the industry. Furthermore, looking into other perspectives, focus on agriculture and its role as an engine of growth should not only concentrate on the production, but also the activities in their entire supply chains which mean from ‘seed to shelf’ or from inputs to final end-customers.

In Malaysia, the agriculture sector is characterized by a large number of small and uncommercialised farms (Fatimah, 2012). The productions are generally unstable and inconsistent in quality and quantity. Majority of the small-scale farmers are dependable on the buyers for financial assistance and agricultural inputs to carry out their business (Fatimah, 2012). Similar scenario is faced by the pineapple industry in Malaysia. Moreover, both contract and non-contract farming systems are being applied in the pineapple industry. However, majority of players in the pineapple industry supply chain involved in non-contract farming. Even contract farming is an effective way to ensure income and profit to both farmers and buyers, but these small scale farmers preferred not to bound with any players in the industry. This is due to the risks that they might face if any of the players are not committed as contracted.

This phenomenon directs to the development of an unbalance relationship between the small-scale farmers and their buyers.

Besides, in a competitive global market, scale of market participants and market information are the factors, which determined marketing systems for a produce. According to Hamid and Ishak (2011), the growth of farmers' markets operations in Malaysia has tremendously increased in recent years. Generally, farmers' market provides a platform for trading partners to earn better income and enhance growth in their business ventures. However, FAMA (2011) revealed that most of farmers could not afford to promote their products due to high costs in marketing. Furthermore, farmers' fresh produces moving multi-layer marketing system as middle-men take part to sell the farms' products. This had created a situation where markets were highly populated by non-farmers and consumers who expected to buy fresh goods might not have their expectations fulfilled. Meanwhile, since majority of farmers were located in rural areas, farmers tend to sell their supplies to the buyers closer to their farms. Logistics and time constraint tend to be among of the problems causing the low marketing and expansion in their entire businesses.

Despite the promising outlook, the government is concerned with the unbalance relationships among the players in the entire supply chain. From the authority's perspectives, the upstream and downstream players should establish a long term contract farming to guarantee sufficient supply and minimum price for their produce as well eliminate the middleman activities. The Ministry of Agriculture and Agro-based Industry (MOA) and government agencies especially the MPIB and the Federal Agriculture Marketing Authority (FAMA) play an important role to help the

pineapple industry to increase the supply of pineapple to the market as well as to improve the processing activities and marketing strategies of pineapple products.

1.7 Contract and Non-Contract Farming in Agriculture

Contract farming is fairly new introduction in Malaysia that has emerged as a result of the government's agricultural industrialization program (Arumugam *et al.*, 2010). Initially, contract farming was implemented by the Malaysian Federal Land Development Authority (FELDA) and the system was developed for poultry-based broiler farms, and was then widen to other types of farming (Abu Samah *et al.*, 2012). In line with the introduction of 'agriculture is business' concept in 2003, a new high impact agriculture program known as Federal Agriculture Marketing Authority (FAMA) Contract Farming was formed in order to facilitate the increase of food production and sustain economic growth in Malaysia by increasing farmers' income, production, products as well encouraging technology application. Farmers engage with a contract called market specification contract with FAMA which is a preharvest agreement between producers and buyers on the conditions of governing the sale of the crop.

Malaysian government is supporting and motivating fresh fruits and vegetable farmers (FFV) to engage in contract farming in line with the Ninth Malaysian Plan (9MP) which has proposed contract farming to be part of making agricultural production more profitable and competitive. Contract farming can be one of effective mechanisms to integrate FFV farmers to the market and improve their livelihood. Depending on types of agreement, some contractors provides inputs such as seeds,

fertilisers, and machineries in order to coordinate the production and ensure efficiency gains without disrupting producer's primary activities (Unidroit, 2013). In Malaysia, the scale to which contract farming is practiced is difficult to assess because quantitative data are scarce and difficult to obtain. According to Norsida and Nolila (2010), the contract farming has increased the market access and information of the farmers in Malaysia.

In a study carried out by Singh (2002), contract farming means advance agreement between producers and purchasers on the some or all factors such as price, quality, quantity, and time of delivery. In a bonded relationship, specific terms and arrangements determine the ways of both parties share the benefits, costs and risks of coordination. This type of relationship will ensure a reliable supply for the buyers (Simmons *et al.*, 2005). Besides, contract farming systems organized entire chains and networks, where the coordination of production, processing and distribution activities is closely monitored (Da Silva, 2005). According to Arumugam *et al.* (2010), other factors which motivate farmers to engage in contract farming are market stability, access to marketing information and technology, transfer of technology to improve farm practices, access to inputs and indirect benefit. Agricultural contracts also offer the farmers an opportunity to secure income from the activity generated through a guaranteed access to markets. Higher yields and better quality derive from the extension services and technology supplied by contractors (Singh, 2002).

Even though contract farming benefits both parties in business, yet there are farmers perceived constrain to involve in contract relationships. The primary reasons farmers

do not participate in contract farming are buyers do not comply with the contractual agreement particularly on fruits collection and delivery, delay in payments, high costs and lack of trust on buyers (Okorley and Ayekpa, 2009). Price fluctuation was also identified as one of key disadvantages for contracts where farmers prefer a stable income for their produce (Arumugam *et al.*, 2010). Despite of lack of interest from large scale buyers to engage with small scale farmers, farmers do not have opportunity to participate in contract farming. Another key point is, small scale farmers perceived contract farming as a complicated process (Arumugam *et al.*, 2011). All those factors play a key role which disallows the farmers from involving in a bond relationship. According to Ring and Van de Ven (1992), informal contracts or so called as non-contract serve as a substitute for formal contracts when trust was exhibited between the partners. It is believed that written contracts were ranked as low contributors to relationship success (Perks and Oosthuizen, 2013). This is supported by Frankel *et al.* (1996); Atkin and Rinehart (2006) that non-contract built more trust and stronger contributors to relationship success.

1.8 Problem Statement

Generally, in the Malaysian pineapple industry, small scale farmers engage in both contract and non-contract farming. It is undeniable that contract farming guarantees the growers an outlet and it reduces the marketing risks such as uncertainty of costs, prices, and demand in the market. Contracts give opportunities to the growers to access the market easily. By this, the growers limit their task to search buyers for their produce by transferring to the buyers the uncertainties involved in identifying market outlets for their production. Buyers also do not face any difficulties in tracing

the products if the purchase is made from contract growers as well as they are able to measure the performance of each supplier in terms of production, quality, delivery, and customer services. All this information will assist the growers to improve their field activities and the buyers benefit from having a guaranteed supply that meet their specifications such as quality, quantity and punctual deliveries (Arumugam *et al.*, 2011). Flexible and long-term contract relationships ensure the production system of both buyers and suppliers.

However, based on MPIB statistical data, in 2010, there was only 24% of small scale growers were engaged in contract farming. The remaining 76% were engaged in non-contract farming. These small scale farmers were not preferred to engage in contract farming due to several reasons; (1) buyers do not comply with the contractual agreement on fruits and collection delivery; (2) delay in payments; (3) high cost; (4) lack of trust on buyers; (5) complicated process; (6) price risks; and (7) lack of opportunities (Arumugam *et al.*, 2011, Okorley and Ayekpa, 2009). Generally, it is believed that non-contract farming does not guarantee a stable and long-term relationship, yet majority of the farmers maintain long-term relationships with their partners. One of the ways these players ensure the flow of activities moves smoothly from the upstream to the downstream is all the players including growers, manufacturers, processors, wholesalers, and exporters have established a good relationship.

A good relationship among the non-contract buyers and growers is very important because poor relationship among the growers and the buyers in the supply chain will affect the production and distribution systems in the industry. This will lead to

shortage of supplies. The shortage of supplies disrupts the down-stream activities of the processors, manufacturers, wholesalers and retailers. Another risk is that inability of the growers and the manufacturers in producing and distributing products at the right time. These may be due to improper delivery schedules of growers and buyers, bad intermediation as well as delays in transporting fresh pineapples to the processors. Inefficient production and distribution systems effect on time delivery of supplies. Irregular supplies become the main challenge in keeping the industry from operating at full capacity. Pineapples are perishable, so it should be packed within a day of harvest. It means that, pineapple processing factories must obtain regular supplies of fresh pineapples daily. If not, the processed pineapples that are produced will low in value. The quality of a product is not only based on the final products but on the whole process of production. Besides, small scale growers are lack of strategic information on domestic or international market condition, supply, demand, competitors and prices. To the growers, market information on stock levels and prices are needed for forecasts and future planning. These are among the conflicts faced by majority of the growers. Thus, they are unable to maintain and increase their market shares. At the end, the industries are unable to produce products that meet consumers' preferences and hamper the attempt to compete in the market. Overall, these are the problems that might be faced by the Malaysian pineapple industry players if the relationships between non- contract partners are disrupted which then lead to inefficiency of the industry supply chain.

1.9 Objectives of the Study

The general objective of this study is to investigate factors that could trigger the long-term buyer and supplier relationship in enhancing supply chain management of pineapple industry in Malaysia.

The specific objectives of this study are as follows:

- i. To identify factors that influence long-term relationship between buyers and suppliers in the Malaysian pineapple industry.
- ii. To determine which factors that mostly influences the long-term relationship between buyers and suppliers in the Malaysian pineapple industry.
- iii. To determine the benefits of long-term buyer-supplier relationships to the buyers and suppliers in the Malaysian pineapple industry.

1.10 Significance of the Study

There are a number of variables that contribute to the development and maintenance of long-term relationships. Among the variables are trust, cooperation, satisfaction, quality, power/dependence, reputation and loyalty. However, some researchers believed that variables such as trust, commitment and satisfaction are the most significant variables, which contribute to the development of longer term relationships (Dwyer *et al.* 1987; Andaleeb, 1996). Liu *et al.* (2009) argued that trust and commitment were the central to successful long-term relationship. Further, as discussed by Dayan (2010) and Kamarulzaman *et al.* (2008), trust is an important

factor for establishing long-term relationships. Thus, it is hoped that this study provides knowledge about the factors influencing long-term relationships among non-contract buyers and suppliers in the Malaysian pineapple industry. It is important for buyers and suppliers to embrace these factors in their relationships because relationships without bonding agreement does not guarantee to last long. Therefore, to avoid any disruption in the relationships, these intangible factors could play a role to ensure non-bonded players to remain with existing partners for a long time. At the same time, this study attempts to look at the benefits of long-term relationships on the performance of pineapple players.

1.11 Organization of the Thesis

The thesis is divided into five chapters. Chapter one briefly discusses the background of the study, problems in the industry and its objectives. Chapter two summarizes previous literatures and findings related to the buyer-supplier relationship, long-term relationship and benefits to supply chain management. Chapter three explains the conceptual framework, methodology and analysis used for this study. Chapter four discusses the analysis and the results of the study. Finally, chapter five summarizes the results of this study and discusses recommendation, limitation and conclusion for the study.

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