

Exploring the Malaysian consumer preferences on pot plants and investigating pot plants production.

A Case Study of A Pot Plant Grower, Tapak Semaian Hong Seng Sdn. Bhd.



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**By
Wee Siang Ng
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ABSTRACT

Pot plant is an important horticulture product all over the world. It is estimated that the annual pot plant production value in Malaysia is less than RM 20 million (5 million Euro). However, it is believed that Malaysia will become a potential pot plants market. Therefore, the problem owner 'Tapak Semaian Hong Seng Sdn. Bhd.' hopes that they could expand their pot plants business based on their current situation and Malaysian consumer preference.

Tapak Semaian Hong Seng Sdn.Bhd. is a traditional horticultural company. They mainly produce oil palm seedlings, landscaping trees and shrubs. Pot plants business is only an extra part of their business. They choose the pot plants varieties which can be easily propagated. They do not test and control water quality just only sand tank filtration. Both water and medium are not sterilised before using and that the control of pests and diseases might be very difficult. Their average production cost is around RM5.25 (€1.31) for every variety. They sell their pot plants with limited value adding. Around 40% of their pot plants are sent to their own retail shop.

In terms of the consumer preference, the majority of existing consumers are elderly. Price is an important factor when purchasing pot plants. Most of the consumers prefer to buy flowering pot plants than foliage pot plants. In the research, we found that there are significant different on pot plants features preference and extra value adding preference between age below 41 and over 40. Consumers below 41 prefer air purification features whereas consumers over 40 prefer fragrance features and air purification features. On the other hand, consumers below 41 prefer to buy pot plants which attached with a plant tag and have a beautiful design or presentation. However, the consumers over 40 prefer to buy pot plants which have good quality ceramic pots.

In order to increase their pot plants sales, the company should focus on major existing consumers who are over 40. Alocasia, Anthurium, Bougainvillea, Bromeliads, Caladium, Codiaeum, Hibiscus and Citrus are popular among Malaysian consumers. Therefore, the company could produce these pot plants and push to the markets.

Keywords: existing consumers, features preference, extra value adding preference

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List of abbreviations

AIPH	International Organization of Horticultural Producers
CIA	Central Intelligence Agency (The world factbook)
EC	Electricity Conductivity
GNI	Gross National Income
PGRs	Plant Growth Regulators
RM	Ringgit Malaysian (RM 4 ≈ 1 Euro)

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CHAPTER 1: INTRODUCTION

This research is about a horticultural company, Tapak Semaian Hong Seng Sdn. Bhd., who wants to expand their pot plants business. However, the owner of the company wants to know more about Malaysian consumer preference on pot plants. Therefore, the purpose of this research is to exploring what kinds of pot plants are popular among Malaysian consumers and they could produce it based on their current farming systems.

Brief background information of this research will be indicated in this section. It includes a short problem statement, problem owner of this research, research objective, research questions and expected results.

The literature reviews includes the background information about the pot plants, background information about Malaysia, consumer preference and purchasing choice and marketing strategy.

In the methodology chapter is indicated that the research was conducted by a case study, interviews and questionnaire survey.

After that the results and discussion of this study which was categorized by the dimension of current pot plant situation of the company and the situation of the market and industry.

At last, the conclusions and recommendations of this study will be given.

1.1 BACKGROUND INFORMATION

Pot plants are very important horticultural products. The plants are sold together with pots. It was estimated that the flower and pot plant (cut flower and pot plant) production area in the world in 2011 was about 560,000 hectares and its production value was about 26,500 million Euro per year (AIPH, 2011).

In Malaysia, the production area of flowers and pot plants was 2000 hectares in 2005 and its production value was only 20 million Euro (AIPH, 2011). That means the production value was around 10,000 Euro per hectare which is lower than the average international production value, 47,000 Euro per hectare. According to Mr. Tan, a former chairman of Johor State flower association, the annual production value of pot plants in Malaysia domestic market is less than 5 million Euro (RM 20 million). The estimated population of Malaysia in 2012 is about 29 million (CIA, 2012). It means that the money spending on pot plants is less than 0.17 euro (RM 0.69) per person on average. On the other hand, the Gross National Income (GNI) per capita of Malaysia has been increasing recently, around 22% increase within four years (The World Bank, 2012). Therefore, the owner of a horticultural company, Tapak Semaian Hong Seng Sdn. Bhd., believes that there is a potential space for pot plant development in Malaysia. However, the company has no idea to expand and upgrade their pot plants business. The company wants to develop and increase the market of pot plant industry in Malaysia through an investigation of consumer preference as its marketing strategy.

1.2 PROBLEM STATEMENT

From this current situation, the owner of Tapak Semaian Hong Seng Sdn. Bhd. wants to know how the company could expand the pot plant business and increase the domestic market based on consumer preferences.

1.3 RESEARCH CONCEPTUAL FRAMEWORK

This research mainly involves the consumer preference on pot plants in Malaysia and interviewing several stakeholders in the pot plant chain. Based on the result of the questionnaire survey and interviews, proper recommendations and suggestions will be given to the problem owner. Therefore, the problem owner can produce pot plants and push to the market according to result of the study to increase their market share.

1.4 PROBLEM OWNER

The problem owner in this research is a pot plant producer, Tapak Semaian Hong Seng Sdn. Bhd.

1.5 RESEARCH OBJECTIVE

The objective for this research is to assess the Malaysian pot plant market and identify the consumer preference of pot plant based on the current situation.

1.6 RESEARCH QUESTIONS AND SUB-QUESTIONS

Main question 1: What is the current pot plant situation of the company?

Sub-questions:

What kinds of pot plants are produced by the company?

What are the current farming systems?

How does the company produce the plant materials?

What are the production costs?

How does the company market its pot plants?

Main question 2: What are the situations of Malaysian pot plant market and industry?

Sub-questions:

What are the consumer preferences on pot plants?

When is the high demand period?

What are the possible channels to market their pot plants?

What are the problems in this sector?

1.7. EXPECTED RESULTS

By conducting this research, the information from the interviewees and questionnaire result will be analysed. After that, SWOT analysis and recommendations will be given based on the results of this study.

CHAPTER 2: LITERATURE REVIEWS

In this chapter, the background information of pot plants, introduction of pot plants industry in Malaysia, the background information of Tapak Semaian Hong Seng Sdn. Bhd. and marketing strategy of pot plants will be described.

2.1 BACKGROUND INFORMATION OF POT PLANTS

The important of pot plant and its cultivation management will be mentioned in this section.

2.1.1 Introduction of pot plants

Pot plants, which the plants grown in a restricted volume, normally a pot. Pot plants are important horticultural product all over the world. The production area and import values of pot plants in different country were shown in table (1) and table (2). The import values of pot plants in Germany, United Kingdom, France, Russia, Switzerland, Italy, Japan and China was growing in 2009 to 2010.

Table 2.1: The production area in Netherlands and China (in ha.)

Country	2010	2009	2008	2007
Netherlands	1,383	1,464	1,431,	1,397
China	82,909	81,711	73,823	77,254

Source: AIPH (2011, p.14)

Table 2.2: International import values of pot plants (in million EUR)

Country	2010	2009
Germany	881	856
Netherlands	358	366
United Kingdom	243	214
France	470	457
Russia	70	60
Switzerland	198	178
Italy	358	160
Japan	64	53
China	8	2

Source: AIPH (2011, p.14)

In general, pot plants could be categorized into two groups, they are flowering pot plants and foliage pot plants.

In recent research, some indoor plants have a function that they could purify the air. Oyabu *et al.* (2003) indicated that plants have the purification capability to remove indoor air pollutants and offensive odours, especially formaldehyde.

2.1.2 Pot plants production management

In the pot plants production, there are some common techniques in terms of production and environment control involved. In the production aspect, it includes plant materials, growing media, irrigation water, fertilizer and application of plant growth regulators. In the environment aspect, it includes light and shading, humidity and temperature. In this part, most of the information is from Ball redbook crop production, Floriculture principles and species, and foliage pot plant manual. Other additional sources are added as a supplement.

Methods of propagation

Propagation is a very important technique in pot plant cultivation. The most common method used for pot plants is cutting propagation. Cuttings propagation is a vegetative propagation. Therefore, multiplying plants by cuttings has the greatest advantages that the plantlets will be identical to the parent stock or mother plants. However, the cuttings should from disease- and insect-free mother stock. Otherwise, the chances of spreading disease are high. In fact, some pot plants are grown from seeds such as most of the palms and scheffleras. In order to obtain higher successful germination in term of the germination rate and viability of many tropical plants, seeds should be sown within a short time. Other propagation methods are crown division and tissue culture. The propagation of pot plants by tissue culture or micro-propagation methods becomes common and important part of the commercial propagation of many plants because of its advantages (Michael and Paul, 2010). It is a means of the multiplication of commercial plant stocks, such as the production of orchids. The advantages of this propagation are that it is possible to get virus-free plantlets and produce large amount of plantlets rapidly.

Growing media

Growing media often involves physical and chemical properties. In general, the uptake of macro nutrient by plants will not be influence by the substrate physical characteristics. In fact, it will affect the drainage and water content in the soil. On the other hand, chemical condition of growing medium such as pH will affect the uptake of mineral elements by plants (Sonneveld and Voogt, 2009). The characteristic of an ideal media for plant growth should be well drained, low soluble salt level (EC less than 0.1 S/m), fine texture and contain no pathogens. Commercially, there are some

growing medium such as peat moss, bark, coir, perlite, vermiculite, rock wool, expanded polystyrene, formaldehyde foams, mineral soil, and muck peat soils. They could be blended together or used alone to provide a suitable medium to the plants. Among of these medium, mineral soil needs to be sterilized in order to remove soil pathogen. Also, the fine texture of mineral soil has poor drainage and less air space than other components.

Irrigation water quality

Irrigation water quality is an important factor in pot plant management. An initial and regularly check on water quality is essential and this should be done to make sure that the water quality is suitable for the pot plants. Water quality includes hardness of water, pH (acidity/alkalinity) and Electricity Conductivity (EC). Hard water contains high calcium and magnesium content. Calcium salts in the water supply can decrease the availability of trace element such as boron and zinc for pot plants and cause the deficiency symptoms. Also, hard water will cause the spotting of the foliage after the water evaporates. In fact, the water softening equipment is available to get in the market but it is costly to install. Therefore, rainwater is a good source for watering. On the other hand, the acidity or alkalinity of water will influence the micro-nutrient deficiency symptoms as well. The pH of water is influenced by carbonic and other acids, hydroxides and other compounds. The proper range of pH is around 5.5-6.5 which the majority of plants could grow well within this range. High EC water contains a large amount of dissolved salts and ions in the water. The salt levels will build up in the potting medium and that can seriously affect root growth and developments, especially to the salt sensitive plants. Therefore, low EC water, 0.1-0.5 mS/cm, will provide the greatest irrigation options and reduce the salt accumulation in the medium. Irrigation water from the surface water should be sterilized because it will be contaminated with plant disease organisms (BCMAFF, 1997).

Irrigation methods

There are three irrigation systems which are used for pot plants cultivation. The first system is the overhead irrigation which is quite flexible. The performance of the watering equipment will not be affected by the changes of plant arrangement and spacing. On the contrary, overhead irrigation systems can easily spread out of aerial diseases such as botrytis. Some pot plants cannot be watered by this irrigation system because the leaf canopy of plants will deflect the water away from the base so the plant cannot get adequate water. The second, surface irrigation system is less suitable for the mass production especially the small containers pot plants.

Nozzle drip is the most popular in this watering system. The disadvantages of this irrigation system are not only the cost of installation and labour involved in setting it up for every batch of plants, and also risk of blockage individual watering units. The third system is sub-irrigation system. The water is applied beneath the pots and water is taken up by capillary action. The advantage of this system is that the leaves will not be wetted when irrigating. However, the salt will accumulate in the potting medium especially near the surface after evaporation of irrigation water.

Fertilizer application

Plants need fundamental nutrition to grow and develop. Therefore, understanding of plant nutrition will be successful in pot plant production. In the pot plant cultivation, fertilizer is essential for providing enough mineral nutrients for their growth. In general, the mineral nutrients are divided into two groups which are macronutrients and micronutrients. In the macronutrients, it can be divided into two groups: primary and secondary nutrients. The primary nutrients are nitrogen (N), phosphorus (P) and potassium (K). The secondary nutrients are calcium (Ca), magnesium (Mg) and sulphur (S). The micronutrients are boron (B), copper (Cu), iron (Fe), chloride (Cl), manganese (Mn), molybdenum (Mo) and zinc (Zn) (Sonneveld and Voogt, 2009). There are three ways to feed or apply fertilizer to the plants which are top-dressing, foliar feeding and liquid feeding. Top-dressing is putting the fertilizers into each pot and the nutrient will be absorbed by plants after watering and dissolving. It is slow and unreliable. On the other hand, foliar feeding is seldom effective and it is risky of leaf scorch. Liquid feeding is the main commercial method in pot plant production currently as it is faster and easier to manage.

Plant growth regulators (PGRs) application

In the pot plant production, there are some PGRs used to control the plants growth. The simplest response after application is a reduction in plant growth and it is the greatest interest to the pot plants growers. Therefore, the plants will have shorter branches and be much more compact after application PGRs. On the other hand, PRGs also could be used for controlling of flowering of some plants. For example, in order to stimulate the flowering in bromeliads, acetylene gas or bromine solution could be used to achieve the purpose. There are some commercial PGRs such as Cycocel (CCC), A-Rest, Alar and B-Nine. The results will be influenced by the application dosage and plant varieties.

Shading and lighting

Light is an important element in plant photosynthesis and it should be optimised to gain the best results from any plant. Different plants require different light intensity. It is related to their natural habitat. In the pot plant cultivation, shading is used to reduce light intensity. Lighting could be a supplement on the natural light levels or control the day length requirements. Shading can also reduce certain levels of temperature of cultivation environment. Although some plants can adapt high temperatures, it may still be necessary to have shading system if the temperatures are too high. The shading system could control the light intensity of the production site and protect the crop from direct sunlight. In order to maintain the pot plants quality after leaving the nursery, shading system is needed to minimise the effect of the changes of environment. Paint over with the outside of the greenhouse with white colour could reflect the light into the greenhouse which can reduce the level of light penetration. Shading screens or shading net could be a choice to control the light levels of the cultivation environment.

Humidity control

Humidity control is an important factor in the production of pot plants especially foliage plants. For example, bromeliads and ferns grow well at high humidity. Misting systems is a good option to increase the greenhouse or growing field air humidity. Typical misting systems use a pressure which is around 500-600 psi, in order to produce little more than a fog. Water quality of misting system is also very important, because the salt deposits or solid particles such as sand and soil will block the fine nozzle outlets of the misting system. Therefore, filtration is necessary to remove water particle in the misting system.

Temperature

Temperature is also an important factor in the environmental control in the pot plant production. Delaying of plants growth, preventing flowering, and decreasing flower size will be occurred if growing the pot plants at the wrong or improper temperature. Some plants are sensitive to temperature which is above or below the optimum conditions than others. Temperature could be controlled by heating and cooling systems. Night temperature under 18°C is not good for most of the tropical and sub-tropical pot plants because the plants could not tolerate to this night temperature. The optimum growing temperature are varies between different kinds of pot plants variety. Normally, foliage plants could grow well at the temperature under 27°C.

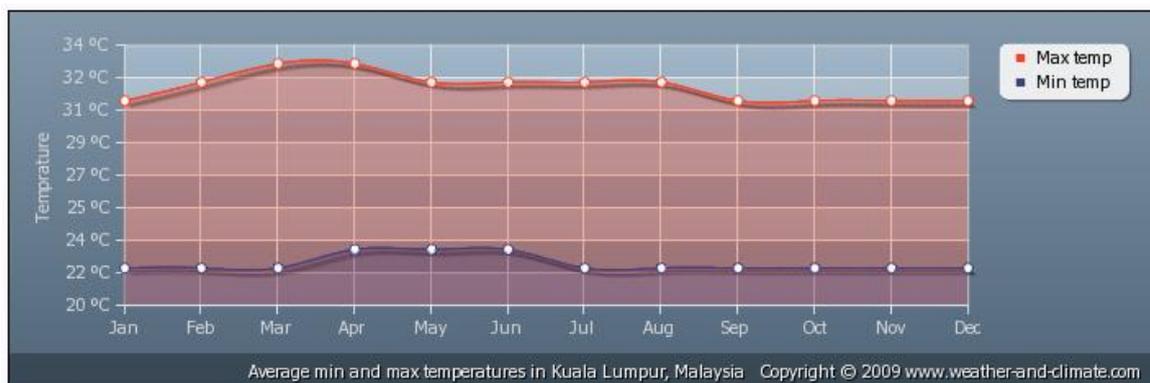
2.2 BACKGROUND INFORMATION OF MALAYSIA

In this part, a brief introduction of Malaysia in terms of the geography, economy, population and agricultural industry will be indicated in the introduction of Malaysia. After that, the introduction of pot plant industry in Malaysia will be described by a chain map and a table. The general description of their role of all stakeholders will be described in the table.

2.2.1 Introduction of Malaysia

According to information from Central Intelligence Agency (CIA), Malaysia is a tropical country which is located at Southeast Asia between Singapore and Thailand. The total land area is about 329,847 km². Among of this, around 5.46% of its land is arable land. On the other hand, there are a lot of natural resources and only a few natural disasters. The average weather and climate in Malaysia is around 20°C to 30 °C and the average rainfall is around 2500 mm throughout the year (World Weather and Climate Information, 2011). Figure (1) shows that the average minimum and maximum temperature in Malaysia throughout the year. Figure (2) indicate that there are two rainy seasons in Malay Peninsular which are from March to May and September to next year January. The relative humidity in Malaysia is around 70% to 90% and it receives the sunlight throughout the year (The Encyclopedia of Earth, 2011).

Figure 2.1: Average minimum and maximum temperature over the year.



Source: World weather and climate information.

<http://www.weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine.Kuala-Lumpur.Malaysia>

Figure 2.2: Average monthly precipitation over the year.



Source: World weather and climate information

<http://www.weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,Kuala-Lumpur,Malaysia>

The population of Malaysia is approximately 29,000,000 in 2011(CIA, 2012). The income level of Malaysian is upper middle income. The Gross National Income (GNI) per capita of Malaysia has been increased recently, which is from \$6,310 US Dollars in 2007 to \$7,760 US Dollars in 2010 (The World Bank, 2012).

The agriculture industry in Malaysia is important. It contributes around 12% to the GDP and 13% of the occupations. In terms of the value of gross output in agricultural sector, the total value was 8167.1 million Euro (RM 32,668.40) in year 2008. Flower industry (which is including pot plants, cut flowers and landscaping trees and shrubs) was the third among other agricultural crops, just behind the oil palm and rubber, in 2008, which was 43.1 million Euro (RM 172.4 million)(DOS, 2009).

2.2.2 Pot plants sector in Malaysia

There are two main pot plant production areas in Peninsular Malaysia which are in the Cameron Highlands and Johor state.

Cameron Highlands, lies between 1070 m and 1830 m above the mean sea level. The temperatures there are mild, average day temperature is around 24°C and average night temperature is around 14°C (Aminuddin *et al.*, 2005). Due to its favourable temperature, pot plant growers have more varieties options of pot plants to grow in Cameron Highlands to the market such as Gerbera, Gloxinia, Hydrangea Chrysanthemum and miniature roses (Tan, 2012).

Another main production area is in Johor state. The temperature there is higher than Cameron Highlands, the day temperature is around 28-30°C and night temperature is around 22-24°C. The main cultivated pot plants are mostly foliage plants such as Aglaonema, Anthurium, Bougainvillea, Caladium, Calathea, Dieffenbachia, Dracaena, Spathiphyllum, Philodendron and Ferns (Tan, 2012).

Figure 2.3: Johor state annual temperature

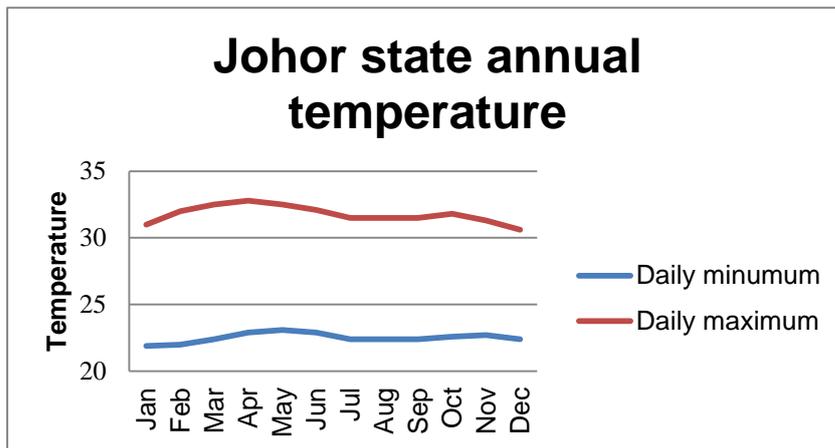
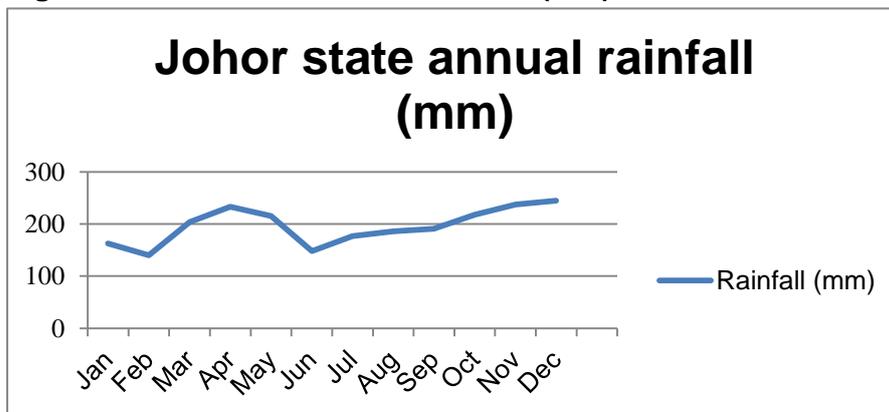


Figure 2.4: Johor state annual rainfall (mm)



Modified from: World meteorological organization

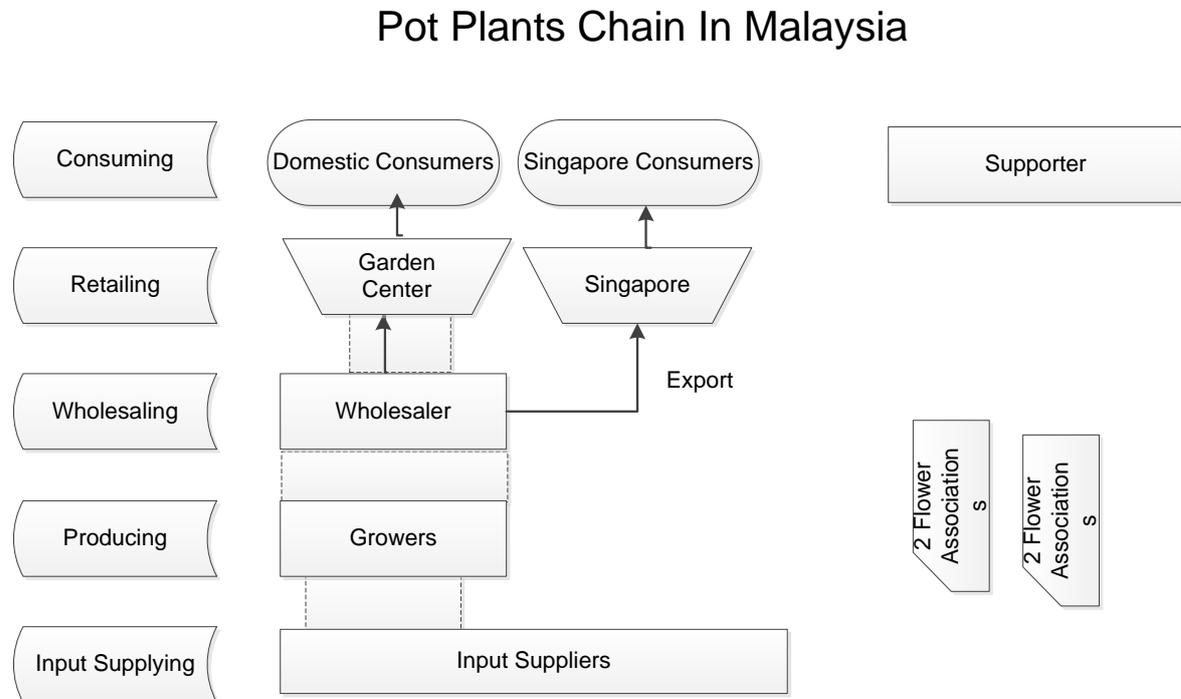
<http://worldweather.wmo.int/020/c00078.htm>

Tan said, Singapore is the main exporting country from Malaysia and it is difficult to compete with Thailand and China to access Japan and South Korea market in terms of the production price. Therefore, domestic market is relatively important at this moment if compared to export market.

Pot Plant Chain Map in Malaysia

The chain map displays the all stakeholders involved in the pot plant industry in Malaysia.

Figure 2.5: Malaysian pot plants chain map.



Pot plants chain stakeholders and their roles are described below.

Actors

Input suppliers

Roles

There are some kinds of input suppliers in terms of planting materials, plastic pots, fertilizers and pesticide. In terms of planting materials, some growers will buy the plantlets and seedlings from importers or they import themselves. On the contrary, some pot plant producer will propagate the plant themselves. Elite agricultural services sdn. bhd. is an import and export company. They are the agent of many overseas horticultural companies and they provide the plantlets and seedlings to the local pot plant growers. Growing medium are also provided by Some growers will import the planting materials from the Netherlands, Taiwan, and Thailand by themselves as well. Also, some growers will keep mother stock and produce plantlets by cutting, crown division, and tissue culture. In terms of plastic pots, Baba is the big plastic

pot manufacturer in Malaysia. They produce high quality plastic pots to the market. They also supply garden tools to their customers. In Malaysia, agricultural chemical such as fertilizers, pesticides and herbicides could easily find in the market. Yara, Bayer and Syngenta's agricultural products are sold in the Malaysia market. Growing media such as coco fibres, coco coir, peat moss, sphagnum moss and top soil are used in pot plant production. Most of the coco fibres and coco coir are produced in Malaysia, and some are imported from Sri Lanka or India. Peat Moss is mainly imported from Netherlands.

Producers Pot plant growers can be divided into two groups. High land growers and low land growers. High land growers are in Cameron Highlands. They mostly grow the plants which need lower temperature such as chrysanthemum, cyclamen, fuchsia, gerbera, gloxinia, hydrangea, ivy, kalanchoe, miniature roses, poinsettia and others. On the other hand, low land growers produce more foliage pot plants due to the limitation of the temperature condition. For example, Aglaonema, Alocasia, Caladium, Calathea, Codiaeum, Cordyline, Dracaena, Sansevieria, Schefflera, Palmae, Philodendron and others. Only a small part of the growers are modern, they use ebb and flow system, such as YG Park Sdn. Bhd. and Lian Mong International Sdn. Bhd,

Wholesalers/ middle man A lot of pot plant producers are also wholesaler or middle man. In order to fulfil the customer needs, they always buy pot plants from other pot plant growers if they do not have enough volume or they do not have certain product or variety. Some wholesalers also import pot plant from China, Taiwan, Thailand and the Netherlands.

Retailers Retailers normally buy the pot plants from growers or the middle man directly. Some retailers are also pot plant growers. They sell pot plants to consumers directly after producing. They also are garden centre, florist shop, shopping centre and furniture centre such as IKEA. During

Chinese New Year, there are a lot of stalls which sell the new year pot plants at the roadside or traditional markets.

Consumers The consumers are citizens of Malaysia. They are three main races in Malaysia. They are Malay, Chinese and India. A very little proportion consumers are from Singapore. They bring the pot plants to Singapore after visiting Malaysia.

Supporters

Roles

Flower associations There are two flower associations which are related to the pot plant industry in Malaysia. Both of them are producer organizations. They are in these two production area, Cameron Highlands and Johor state. In the Cameron Highlands flower association, cut flower and vegetable growers could be a member as well. The flower association in Cameron Highlands helps their members to buy planting materials together in order to reduce the cost. On the contrary, the flower association are mainly for landscaping trees and pot plants growers. In fact that these two association do not have any relationship.

Ministry of agricultural (MOA) The agricultural department mainly issues the related certificate such as sanitary and phytosanitary agreement for exporting. Apart from that, the department also do some research and trials on pot plant.

2.3 INTRODUCTION OF TAPAK SEMAIAN HONG SENG SDN. BHD.

The background information of the company and its marketing strategy will be described in this following section.

2.3.1 Background information about Tapak Semaian Hong Seng Sdn. Bhd.

Tapak Semaian Hong Seng Sdn. Bhd. is a family owned agricultural company founded by Ng Teo Meng in 1985. The company is located at the southern part of Peninsular Malaysia, Johor state, Yong Peng city. The company mainly produces oil palm seedlings, landscaping trees and shrubs and a small scale of pot plants. Presently, it owns approximately over 30 hectares nursery land with full stocks of not less than 500 species of plants and it has a retail store for local market as well. The number of staffs and workers in total are 32 people. The proportions of their

products in terms of volume are consisting of 60% oil palm seedlings, 30% landscaping trees and shrubs and 10% pot plants. The major income of the company is from oil palm seedlings, landscaping tree and shrubs. Ng said that the development of producing oil palm seedlings in Malaysia is almost saturated and competent in recent year. Therefore, the company plan to expand their pot plant sector. Currently, their production size of pot plants is only around one hectare and there are only two workers responsible for the whole pot plant production.

2.3.2 Marketing strategy of Tapak Semaian Hong Seng Sdn. Bhd.

In the pot plant sector, the company is also taking a role of wholesaler and retailer. The sale of pot plant is a kind of additional income for the company in current situation. The company not only grows and sells the pot plants, but also they buy some of the pot plants from other pot plant companies in order to fulfil their customer's demands and orders. They also have a retail store nearby the production site. Therefore, they sell their pot plants to the domestic market. They have more opportunities to get more income and information from consumers.

2.4 CONSUMER PREFERENCE AND PURCHASING CHOICE

Chen *et al.*, (2010) indicated that a relatively stable domestic market could be a buffer to intake or consume the product during the fluctuations of demand and price in the international market. Therefore, understanding the factors that influence domestic consumer decision is very important. Huang and Yeh (2009) said that understanding the factors that influence consumer's choices in regard to the purchases of flowers will help florists and in alleviating the concerns of the practitioners in the floral market.

Chen *et al.*, (2010) said that the first factor of purchasers in the decision making sequence was reasonable price. They added that offering caring instruction, longer blossom period and minimal chemical residues are also the factors when the price was acceptable. Huang and Yeh (1009) said that variety seeking is an element of consumers' novelty seeking behaviour. Consumers look for different varieties to fulfil their curiosity.

2.5 MARKETING STRATEGY

Marketing is an approach to identify and meet consumer needs or demands (Kotler *et al.*, 2009). Marketing strategy is a part of marketing plan. The business unit hopes to achieve its marketing objectives through a series of marketing activities (Kotler *et al.*, 2008).

Lux (2009) suggested that horticultural companies could market their plants via public relations and cooperative. The reason is that the cost will be lower and it will be very effective. He gave an example that displaying how to decorate with pot plants and their care in the consumer magazines and TV shows. He added that marketing through public relations is more powerful because it is much easier to win the press for writing on generic products like plants than writing on a brand or a special product. They could show plants as ideal decoration or gift.

According to Edwin van der Eijk, the marketing manager of Van Der Eijk (V.D.E. Plant) (2012), they are successful in promoting and stimulating their pot plants sales by different topics or themes such as 'easy care', 'fresh air', 'jungle rhythm', 'coffee to grow', 'tea to grow' and others.

CHAPTER 3: METHODOLOGY

In this research, the primary data base on information which collected through survey and interviewing key informants and discussion. Furthermore, the secondary sources of data as supplemental data were used as well such as books, internet sources, journals, publications. All of the interviews were conducted by telephone.

3.1 CASE STUDY

This case study focuses on the problem owner of this research, Tapak Semaian Hong Seng Sdn. Bhd., a pot plants grower. The interview focuses on their current production situation. A checklist for interviewing was made as annex 2.

3.2 INTERVIEW

The rest information was collected from other stakeholders such as retailers and a producer association. According to the retailers, the interview focuses on the market and consumers aspects. Retailers are the first person who has the direct relation to the consumers. In order to get unbiased information, four retailers were interviewed in this research. A checklist for interviewing retailers was made as annex 3. On the other hand, interviewing producer association could get broader information and background of this pot plants sector. A checklist for interviewing the representative of the association was made as well which is in the annex 4.

3.3 QUESTIONNAIRE SURVEY

Questionnaire design. In order to collect the primary information about the Malaysian consumer preferences and perspective on pot plants, questionnaires were composed into two versions which are English version and Chinese version. The questionnaires were given to the respondents at those four retail points within three weeks, from 23th July 2012 to 12th August 2012.

Sampling. A questionnaire was given to the participants at four retail shops, which are the retail points of the company, Best Bonsai, Riverview flora and Phoenix ocean Sdn.Bhd.. which are from four cities. They are in Yong Peng, Batu Pahat, Johor Bahru and Sungai Buloh. (The first three are within Johor state and one in Kuala Lumpur). Therefore, the information we got were close to the actual population. In order to exclude personal bias, all customers in these four retail shops in this period are our target group. Also, a small package of fertilizer or rooting powder as an incentive gift was given to those participants who complete the whole questionnaire.

In this study, around 70% of the total consumers, who visit these four retail shops within the research period, participated in the questionnaire survey. In total of 343 consumers participated in this study. However, only 337 questionnaires were valid to use in analysis because 6 questionnaires were incomplete.

Statistical analysis. The data obtained from the survey respondents were analysed using SPSS (Version 19.0)

CHAPTER 4: RESULTS

In this chapter, the results which are the information from the interview and consumer preference were indicated in this section. Also, the sequence of information was following the main questions and sub-questions.

4.1 CURRENT POT PLANTS SITUATION OF THE COMPANY

In this section, the information obtained from the case study interview is presented in following part. It is divided into two dimensions which are the production dimension and marketing dimension.

4.1.1 Production dimension

Tapak Semaian Hong Seng Sdn. Bhd. produces pot plants as an extra business of the company. Their main purpose to produce pot plants is to fulfil their customers' demand when their customers purchasing the landscaping trees and shrubs from them. The pot plants varieties they grow include Aglaonema, Calathea, Codiaeum, Coleus, Cordyline, Dieffenbachia, Dracaena, Ixora, Portulaca, Rheo, Sansevieria, Pandanus, Boston fern and Bird's nest fern. They grow around 10,000 pot plants a year. However, only 80% of the production could be sold and around 20% of the pot plants are discarded because of the poor quality and died. The production cost per pot plant is around RM 5.25 (€1.31). For more details, please refer to Annex 6.

This is a traditional company. They grow pot plants under simple polyethylene (PE) plastic shelter and shading net. In order to optimize the sunlight for different pot plants in the production area, 80% and 50% shading net level are mainly used. Under the construction, there is no misting and fogging system. The temperatures in the production area is around 25~28 °C. They never measure the temperatures, relative humidity, water pH and EC values. Around the production site, there is a pond to collect rain water. In order to remove the solid particles in the collected water, the rain water is only filtered by sand filter installation before irrigation. They used dripping system in the production area five years ago. However, the system is not used anymore because of blockage and leakage problems. They water the pot plants by hand-held hose overhead irrigation system. This is done by the workers.

The company produces the planting materials mainly by cuttings and crown division. They do not buy tissue culture plantlet and seeds. They keep the mother plants in their field. Some are under shading net such as Aglaonema, Calathea, Dieffenbachia, Dracaena, Boston fern and Bird's nest fern. The rest are planted in

the open field. They collect the cuttings and plantlets from the mother plants irregularly. This is done mostly before raining. They could propagate the plants indoor during the raining time. They propagate the plants directly to the final pot. They do not use plug and transplant production system in their production management. Around 90% of their pot plants are grown in plastic pot which is diameter 15 cm (Baba 150). Another 10% are grown in bigger pottery pots. The potting media they use are the mixture of top soil and coconut husk. Both are not sterilised before using. After propagation, they water the pot plants and put it on the growing table and under 80% shading net immediately. All of the processes are done by workers. They water the pot plants in the afternoon every day.

Granular chemical fertilisers are mainly applied monthly in their pot plant production. Furthermore, they apply liquid fertilizer once a week by spraying on the plant leaves. In terms of pesticide and fungicide application, they mix the pesticide and fungicide together and spray on the plants every week without monitoring pests and diseases. They use the same brand and same components of the agricultural chemical year round. All of the fertilizers and pesticides are recommended by local agricultural chemicals suppliers. In their pot plants production, they do not use any PGRs to manipulate their products.

The workers will remove the dead plants or disease infectious branches and leaves every day. The tools they use are not sterilised before or after using. The dead plants and disease infectious braches and leaves will be collected and burned out. After that, the empty pots will be re-used without disinfection.

4.1.2 Marketing dimension

The company propagates the pot plants by themselves in order to reduce the cost of purchasing plantlets. They prefer to grow the varieties which are easy grown.

Their customers are mainly garden centre and landscape designers. They come to the nursery and buy the landscaping trees, shrubs and pot plants together. Therefore, the company do not put too much effort on marketing. The customers, landscape designers and garden centre (retailers), mostly choose and pick up the product by their own. The pot plants chosen by the customers will put in the plastic sleeves. No decoration before putting in the sleeves. Over 40% of the pot plants will be sent to their own retail shop.

From the retail shop, they get some information from their customers. They

provide delivering service for free to local consumers if they buy their product with a certain volume.

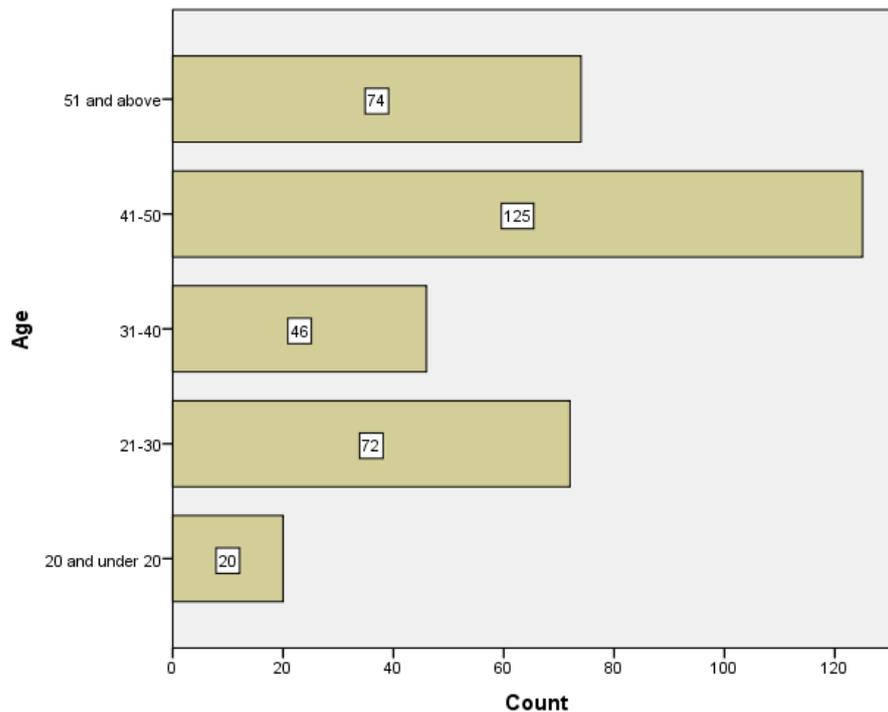
4.2 POT PLANTS MARKET AND INDUSTRY SITUATION IN MALAYSIA

Results from the consumer survey and information from the interviewee are presented in this section. The outputs of 337 complete questionnaires were processed by SPSS.

4.2.1 Consumer preference

The characteristics of the 337 participants are shown in Annex 9. Figure 4.1 shows that about 64% of the participants were women and 36% were men. The age distribution was 20 and under 20 years of age (6%), 21 to 30 years (21%), 31 to 40 years (14%), 41 to 50 years (37%) and over 50 (22%).

Figure 4.1: Age distribution of 377 participants.



About 17% of the participants reported that they had a monthly income of less than (in Ringgit Malaysia) 1,000; 1,001 to 2,000 (28%); 2,001 to 3,000 (34%); 3,001 to 4,000 (17%); and over 4000 (7%).

Figure 4.2 shows that nearly 80% of participants believe that pot plants are necessity goods in their daily life. On the other hand, figure 4.3 shows that the most important factor the consumer considers when buying pot plants. Around 86% of participants consider the price the most than quality and novelty when purchasing pot plants.

Figure 4.2: Malaysian consumers' perspective on pot plants.

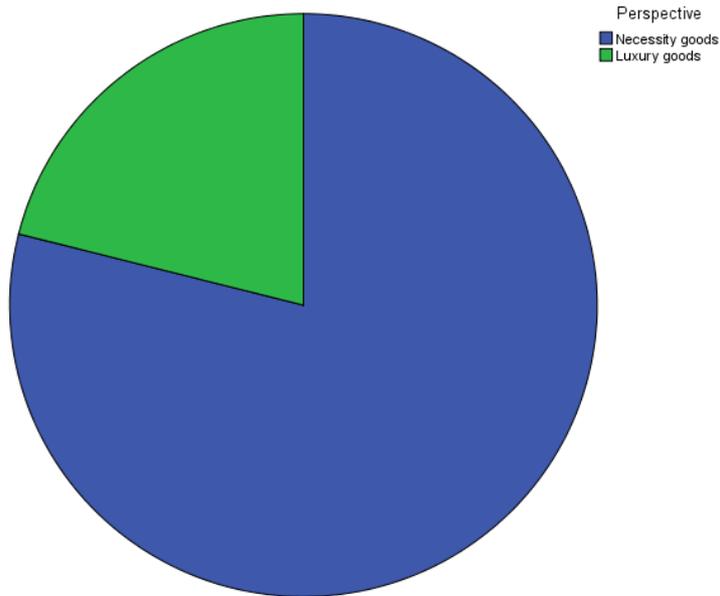
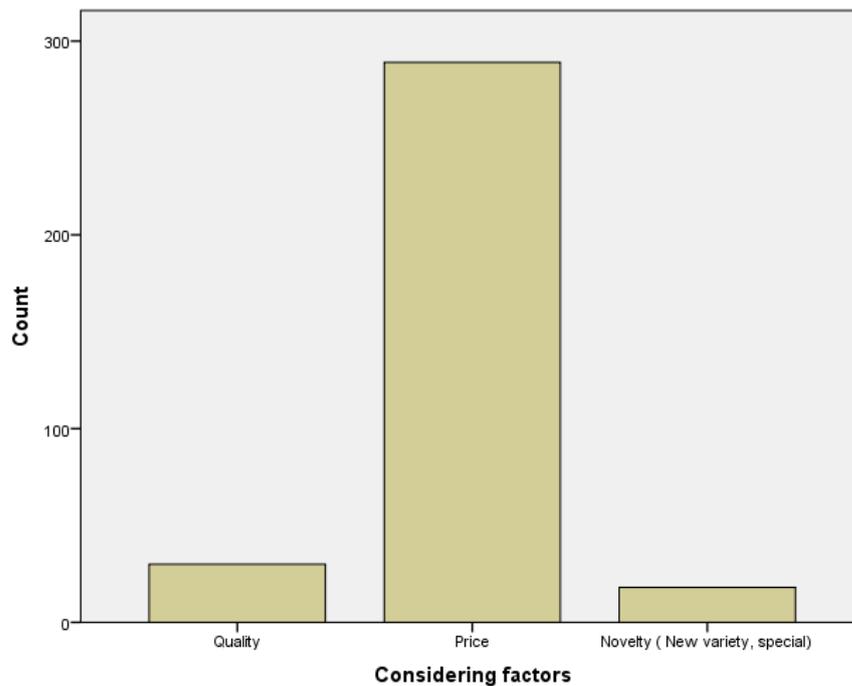


Figure 4.3: Considering factors of Malaysian consumer.



From figure 4.4, we see that over half of Malaysian consumers prefer to buy flowering pot plants than foliage pot plants. From our findings, we also see that only a few people prefer to buy cactus and bonsai which are in the “others” category.

Figure 4.4: Consumer preference of pot plants.

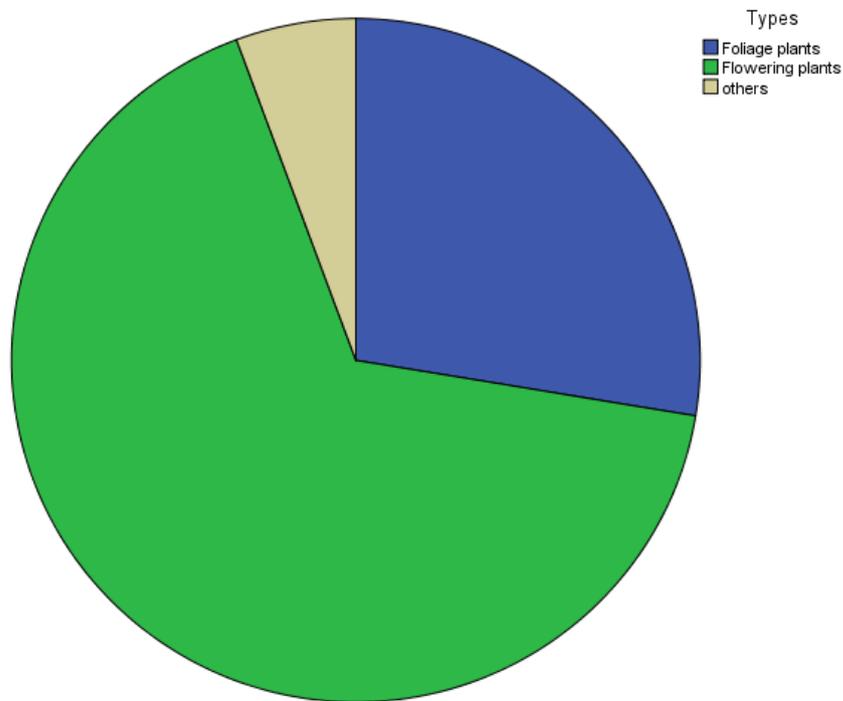
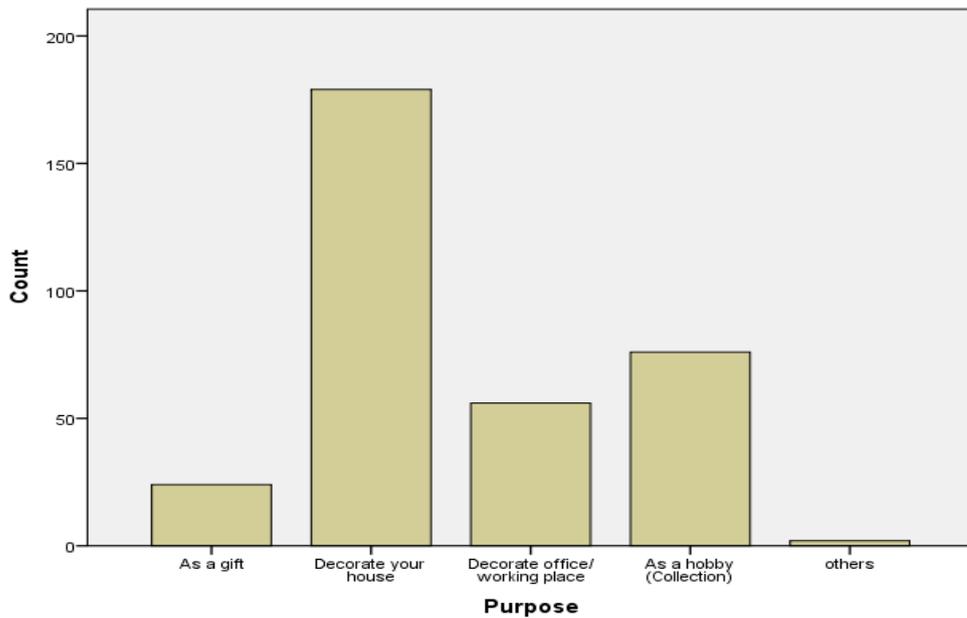


Figure 4.5 shows the purpose of buying pot plants. Approximately 53% participants buy pot plants for decorating their house, 23% of them for hobby collection and 17% for decorating their working place. Only a small amount of participant buys the pot plants as a gift.

Figure 4.5: The purpose of buying pot plants



On the other hand, figure 4.6 shows that pot plants which have air purification features stimulate around 50% of participants to buy. Fragrance is the second important features after air purification, around 34% participants are stimulated by this features. In fact, the Chi-square test shows that there is a significant difference (P value < 0.05) on pot plants features preference between two groups which are the participants from participants below 41 and over 40 (Annex 9). Figure 4.7 shows that the majority of participants below 41 prefer to buy pot plants which have air purification features. However, participants over 40 years old prefer to buy pot plants which are fragrant and have air purification features.

Figure 4.6: Pot plant features preference of Malaysian consumers.

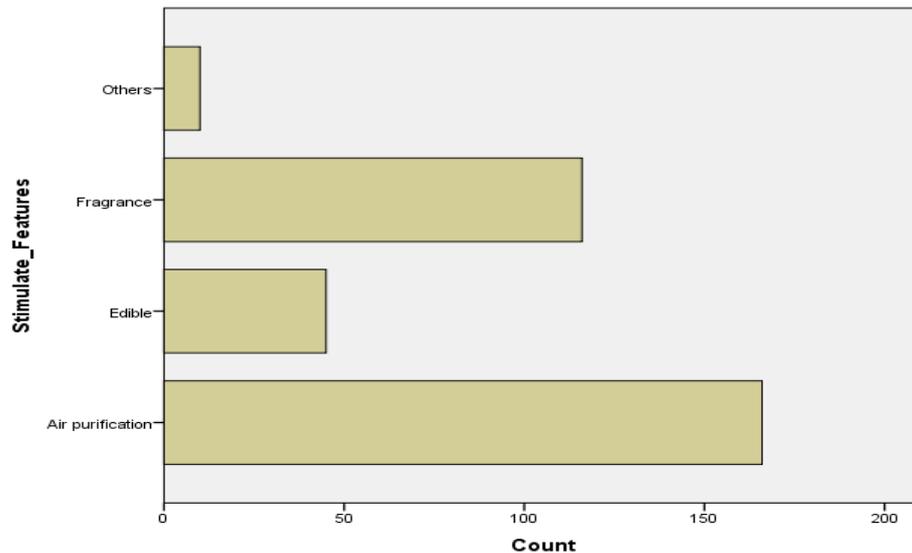
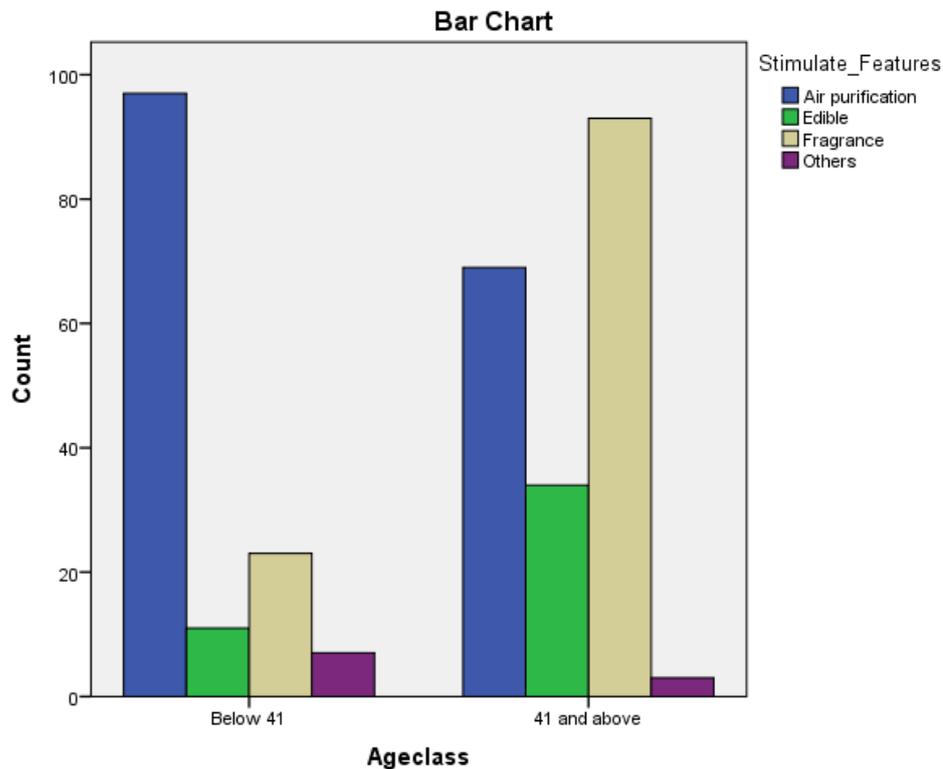


Figure 4.7: Consumer preference on pot plants features between two age classes.



Furthermore, table 4.1 and figure 4.8 show that around 46% and 43% of the participants who are below 41 years old prefer to buy pot plants which have beautiful design and attached with a plant tag respectively. However, around 70% of the participants who are over 40 years old prefer to buy pot plants which have high quality ceramic pots. In fact, the Chi-square test shows that there is a significant difference (P value <0.05) on extra addition preference between participants below 41 and over 40 (Annex 9).

Table 4.1: Percentage of Consumer preference in pot plants adding value between participants under 41 and over 40.

Added value	Participants below 41	Participants over 40
Attached with plant tag	43 %	5%
Beautiful design and presentation	46 %	25%
With high quality ceramic pot	11 %	70%

Figure 4.8: Consumer preference on extra adding value between two age classes.

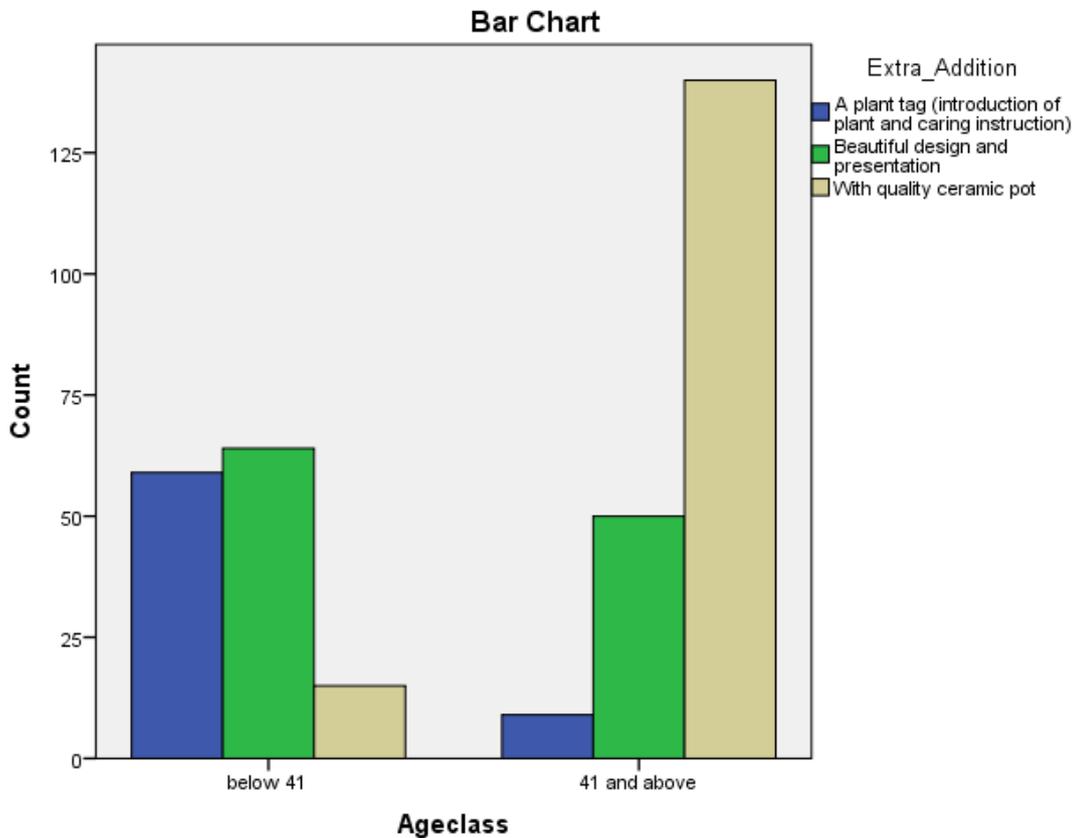


Figure 4.9 shows that around 67% of participants find that the price of pot plants is acceptable. However, about 28% of participants agree that the pot plants price expensive. In terms of the pot plants quality aspect, figure 4.10 indicates that the majority (83%) of participants hold the neutral opinion that the quality of pot plants is good. Around 13% of participants agree that the pot plant quality is good. Furthermore, figure 4.11 displays that more than 85% of participants spend the money on the pot plants under RM 50 per month. Only 4.5% of participants are willing to spent money more than RM 100 monthly on pot plants.

Figure 4.9: Consumers perspective about the pot plants price.

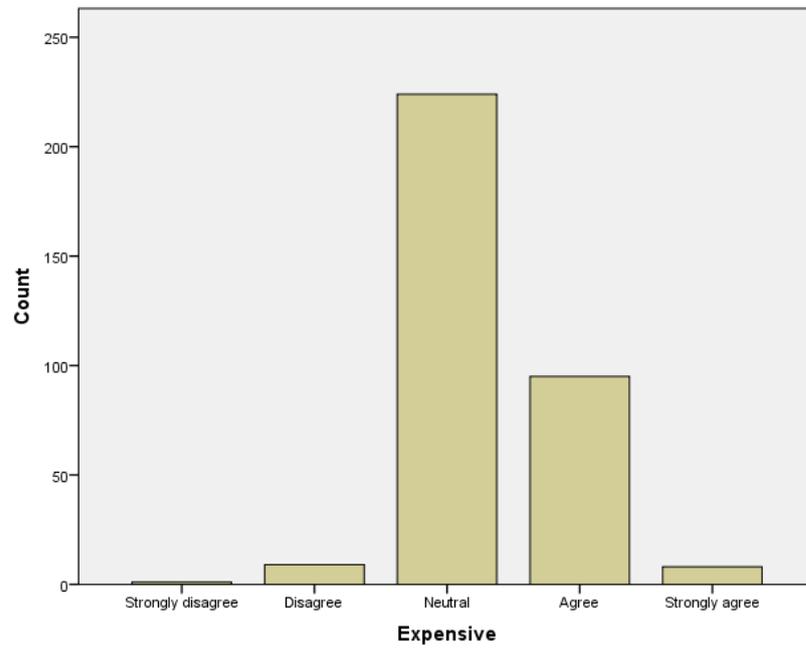


Figure 4.10: Consumers perspective about the pot plants quality.

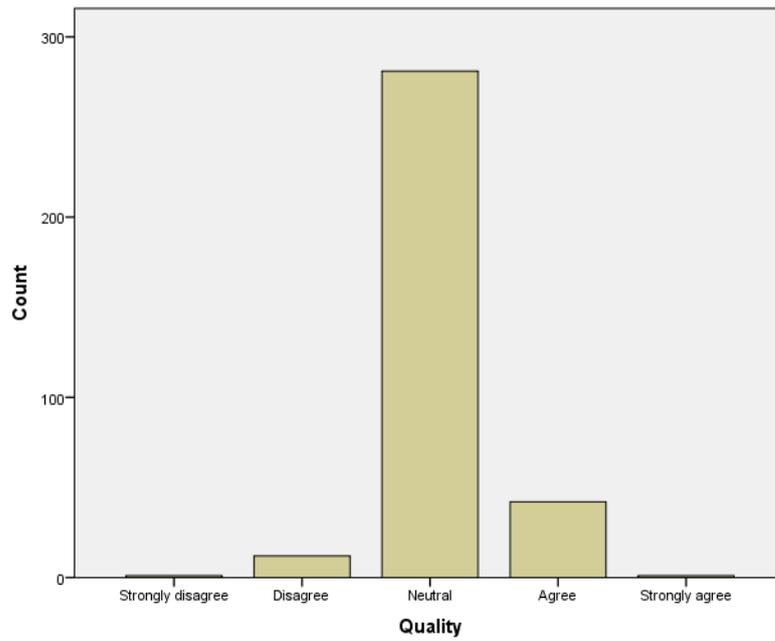
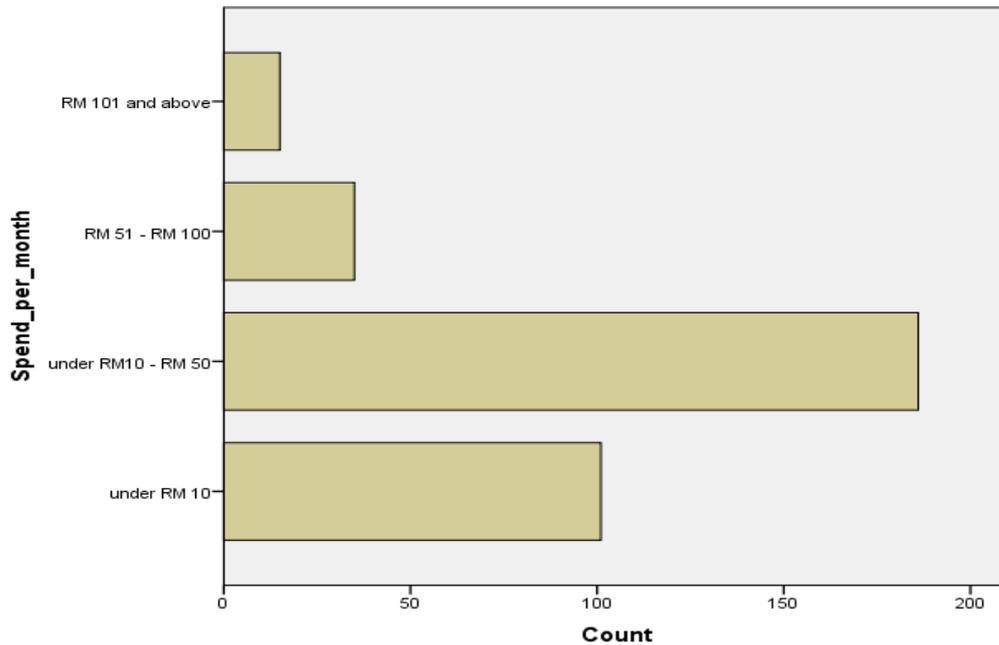


Figure 4.11: Money spending on pot plants monthly by Malaysian consumers.



4.2.2 Demand seasons

According to the four retailers, there are two main pot plants demand seasons which are from December to February and July to October.

Mr. Lim, the owner of the Best Bonsai, said that there are several festivals in the period of December to February. The demand of Poinsettia, Anthurium and pine tree pot plants are quite high in around Christmas. Furthermore, Bromeliads, Chrysanthemum, Dracaena (Lucky Bamboo), Hydrangea, Kalanchoe and citrus pot plants are hot selling products during Chinese New Year. Mrs. Zeng, the representative of Phoenix Ocean Sdn. Bhd., added that Chinese people prefer moving to their new house before Chinese New Year. Therefore, the demand of the pot plants is very huge during December to February which is around 40% of their yearly sales. On the contrary, there is also a high demand of pot plants during July to October because of Eid ul-Fitr which is a big festival of Malay people. Alocasia, Bougainvillea, Caladium, Codiaeum, Hibiscus and Orchids are the popular pot plants in this season. In addition, the pot plants demand in other seasons keeps stable.

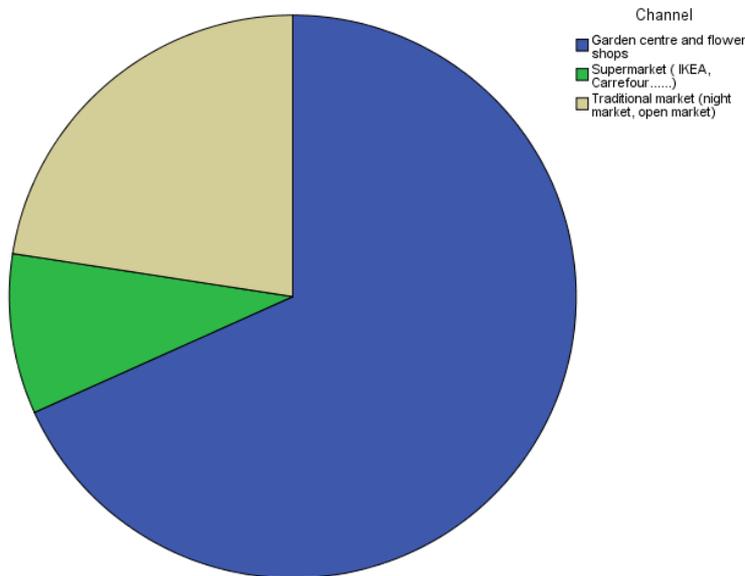
The prices of each pot plants are shown in the annex 7. The retail prices of the pot plants are almost the same. Mr. Wong, the owner of the Riverview flora, said that they could get cheaper price from the growers if they picked up by themselves.

According to the owner of Best Bonsai and Phoenix Ocean Sdn. Bhd., the major consumers are elderly because they have more leisure time caring the plants. Also, elderly have extra money and the power in a family to decide home decoration.

4.2.3 Possible Channel

Figure 4.12 shows that more than 68% of all participants prefer to buy pot plants from garden centre and flower shops than supermarket and traditional market. However, the traditional market is the second channel to buy pot plants which occupied around 23%.

Figure 4.12: Channel preference in purchasing pot plants.



4.2.4 Challenges of Malaysian pot plants industry

From the interview with the representative of Johor State flower association, the problems of the pot plant industry in this state were obtained and summarized as below:

1. The young generations are unwilling and uninterested in agricultural works.
2. Malaysian government restricts and limits the entry of the foreign workers to Malaysia in recent years. Therefore, shortage of manpower problem is serious.
3. Production cost is higher than neighbour countries such as Thailand and China.
4. The assistant or research from Agricultural department is too limited.
5. The growers are mostly low educated. They do not know how to search useful information for improving their product quality and their business.
6. There is no standard criterion for the pot plants. Therefore, pot plants from different growers are not the same (size, plant height, quality).
7. The market in Malaysia is not big enough. It is very difficult that one grower produce one to two products. They have to produce different kind of varieties in order to be able to stay in the industry.

CHAPTER 5: CONCLUSIONS AND DISCUSSIONS

Conclusions

By conducting this research, Tapak Semaian Hong Seng Sdn. Bhd. is a traditional horticultural company. They produce pot plants under plastic shelter and shading net. They produce the pot plants which are easily propagated by cutting, crown division, runner and sucker such as Aglaonema, Calathea, Codiaeum, Coleus, Cordyline, Dieffenbachia, Dracaena, Ixora, Portulaca, Rheo, Sansevieria, Pandanus, Boston fern and Bird's nest fern. Growing medium and irrigation water are not sterilized in their management. Their current farming system is simple. They water the pot plants by hand-held hose overhead irrigation daily. Granular chemical fertilisers and liquid fertilizers are applied to manage the pot plants nutrition. They do not apply PGRs to control their pot plants growth because they do not know how to apply PGRs. Dead plants, disease infectious branches and leaves are removed by workers every day. They propagate the pot plants from the cuttings, crown division plantlets, runners and suckers. The mother plants are kept in their field. They produce the plant around 10,000 pot plants annually. However, their production loss is around 20%. Therefore, only around 8,000 plants are sold. Their average production cost for all products is approximately RM 5.25 (€ 1.31) per pot plant. Most of their customers will come to their nursery to pick up the plants by themselves. The chosen plants will be put in plastic sleeves. The pot plants are sold with plastic pots. Over 40% of their pot plants are sent to their retail shop.

In terms of the pot plants market, more 50% of the existing consumers are over 40 year old. Nearly 80% of consumers feel that pot plants are necessity goods in their daily life. Furthermore, the majority (86%) of Malaysian consumers consider the price the most when purchasing pot plants and over 60% of consumers prefer to buy flowering pot plants than foliage plants. Around 50% and 34% of consumers are stimulated to buy pot plants for air purification and fragrance feature respectively. On the other hand, around 46% of consumers are stimulated to buy pot plant which has a good quality ceramic pot. Consumers below 40 year old prefer pot plants which have beautiful design and are attached with a plant tag. More than 85% of consumers prefer to buy pot plant under RM 50 (€12.50).

There are two main demand periods in the whole year. One is around December to February and another one is July to October. Both of the demand seasons are related to the festival such as Christmas, Chinese New Year and Eid ul-Fitr.

Garden centre and flower shops are the best place to market their pot plants

because more than 68% of consumers prefer to buy pot plants from there. Furthermore, traditional market is the second channel to buy pot plants.

In the Malaysian pot plants industry, there is a gap between old generation and young generation because the young people are unwilling and uninterested in agricultural work. Also, inadequate of labour is a problem in Malaysia agricultural sector. The production cost of pot plants is higher than Thailand and China, therefore, it is difficult to compete with them (Tan, 2012).

5.1 SWOT analysis of the company.

Strengths	Weaknesses
<ul style="list-style-type: none"> ● The company has stable income from other crops such as oil palm seedlings, landscaping tree and shrubs. ● They get higher margin when selling the 40% of pot plants through their own retail shop. ● The market information is easy to get from their own retail shop. 	<ul style="list-style-type: none"> ● Poor cultivation management and technique such as no PGRs application and traditional watering systems. They do not know how to apply PGRs. ● Inadequate added value on pot plants. The company only puts the pot plants in plastic sleeves.
Opportunities	Threats
<ul style="list-style-type: none"> ● The environment in terms of the temperature and water source is suitable for tropical pot plant growth under simple facilities. ● It is easy to get growing materials such as media and fertilisers. 	<ul style="list-style-type: none"> ● Inadequate labour due to the unfavourable laws of foreign labour entrance from government. ● Limited support from government.

Discussion

In terms of their production management, the company does not test their water before using the water. Inappropriate pH and EC will influence pot plants quality and plant growth. Also, they use the pond water to irrigate their pot plants. According to BCMAFF (1997), the irrigation water from surface water will be contaminated with plant disease. In their production management, they also do not sterilise the water and medium before using. That could be a factor of their production loss. The water quality management should be improved as Ng (2012) indicates that their dripping system was blocking and leaking because the water contains particles or high calcium and magnesium. The pot plants quality will be reduced due to the spotting

of the foliage after the water evaporates.

The potting medium is mixture of top soil and coconut husk. Hamrick (2003) said that the mineral soil should be sterilised because there are potential plant pathogen in it. However, the company do not sterilise the potting media. It will be difficult to control the soil-borne diseases.

On the other hand, the company propagates the plants by themselves via vegetative propagation such as cuttings, crown division and sucker. Hamrick (2003) indicated that the chances of spreading disease are high if the cuttings are gained from disease- and insect- infected mother plants.

In terms of their watering system, the company use hand-held hose overhead irrigation system. In the Grower Books (1983) indicated that overhead irrigation system encourage the spread of aerial diseases. Therefore, the company has to spray chemical frequently.

The output of questionnaire research shows that the majority (59%) of existing pot plants consumers are from age over 40. Mr. Wong and Mr. Lim said that the major existing consumers are elderly because they have more leisure time.

Malaysian consumers consider the price the most when buying pot plants which is the same as Chen *et al.*, research in 2010.

Moreover, the result shows that decorating house is main purpose for purchasing pot plants.

Table 4.1 shows that around 43% of consumers under 41 years old prefer to buy pot plants which are attached with a tag. They prefer to get the caring information from it. It is assumed that the consumers are worried how to care the plants. However, around 70% of elderly prefer to buy pot plants which have high quality ceramic pots. From the consumers' perspective, the majority of them find that pot plants are necessity goods instead of luxury goods and over 55% of consumers are willing to spend around RM10 to RM50 on pot plants. From the result of consumers' perspective on the current pot plant price, it seems that the current pot plants price is acceptable for most of the consumers.

CHAPTER 6: RECOMMENDATIONS

In this chapter, recommendations were given to the company and flower association respectively based on the literature reviews and results of this research.

6.1 Recommendations for the company

The recommendation for the company is divided into two parts which are their production dimensions and marketing dimensions.

Production dimensions

In terms of their production management, the recommendations were given as below:-

- The company should analyse and control water pH, EC and mineral contents. The pH should be around 5.5-6.5 and EC should be under 1.0 mS/cm because water is the most important factor in the management.
- The water filtration system should be improved to remove the solid particle in water. The solid particle will block the pipe and lower pot plant quality.
- In order to control the plant diseases, both irrigation water and medium should be sterilised before using.
- Using tissue culture plantlets will be good for managing pot plants quality due to virus free and uniformity. By doing that the frequency of spraying pesticide will be reduced.
- The company could create value on pot plants through using PGRs. PGRs could increase the pot plants quality such as more compact and controlling flowers.

Marketing dimensions

The company produces pot plants with limited marketing strategy and creates limited value on the pot plants. In order to increase the value share, the company could produce pot plants through consumer-driven marketing strategy. In this research, the information we get via questionnaire survey and interviews with retailers is very useful to achieve their goal. The recommendations were given as below:-

- The company could take the successful marketing strategy from V.D.E. plant such as creating 'fresh air', 'easy grow' and other theme. The example is shown as Figure 6.1. The result of the questionnaire survey indicated that consumers are stimulated by air purification feature. Therefore, it could be a good way to promote their products with 'fresh air' theme.
- Information from the interviewees indicated that there are two main seasons of

pot plants demand. Therefore, the company could produce more pot plants for these two seasons than other season.

- The popular pot plants among Malaysian consumers such as Alocasia, Anthurium, Bougainvillea, Bromeliads, Caladium, Codiaeum, Hibiscus and Citrus can be grown under their production environment. Therefore, the company could consider producing these pot plant varieties especially flowering pot plants because the majority (67%) of Malaysian consumers prefer to buy flowering pot plants.
- The company could add value on pot plants by attaching plant tag, attractive decoration and putting in high quality ceramic pots for different target groups. The existing consumers are mainly over 40 and they would like to buy pot plants which have good quality ceramic pots.

Figure 6.1: The marketing strategy example of V.D.E. plant.



Source: <http://www.vdeplant.nl/index.php/en/>

6.2 RECOMMENDATIONS FOR THE JOHOR STATE FLOWER ASSOCIATION.

The role and functions of the Johor state flower association in the pot plants are quite simple. In order to stimulate the development of the sector and overcome the barriers they met, the flower association could play even better role in the chain. The recommendations are listed as below:-

- Lux (2009) gave a very good suggestion that association could promote the pot plants market through the media such as consumer magazines and TV shows.
- Purchasing and importing some growing materials such as medium, plant materials together to reduce the production cost.
- In order to solve the inadequate labour problem, the association could help their members to invest in semi-automatic systems for their production.
- The association could co-operate with educational institute to provide practical training course to members or provide scholarship to young generations for studying agricultural programs.
- Setting up the product standard in terms of size, plant height and quality. It would help their export in the future because international traders always require uniform products.

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ANNEXES

ANNEX 1: QUESTIONNAIRE SURVEY FOR CONSUMERS

Dear Ladies and Gentlemen:

This survey is about the investigation of consumer preferences and perspective about pot plant in Malaysia market. Your response will be recorded for academic purpose only. Please feel free of privacy concerns when answering the questionnaires. Your participation is appreciated very much.

Please give a “v” mark appropriate in the

1. Gender: Male Female

2. What is your age?: 20 and under 20

21- 30

31- 40

41- 50

51 and above

3. Monthly Income : RM 0 - RM 1000

RM 1001 - RM 2000

RM 2001 - RM 3000

RM 3001 - RM 4000

RM4001 and above

4. Where do you prefer the most to buy pot plants?

Garden centre and flower shops

Supermarket (IKEA, Carrefour.....)

Traditional market (night market, open market)

5. What is the main purpose to buy pot plants?

as a gift

decorate your house

decorate office/ working place

as a hobby (Collecting)

Others: _____

6. What types of pot plant do you prefer the most?

- Foliage plants
- Flowering plants
- Others: _____

7. What do you consider the most when purchasing pot plants?

- Quality
- Price
- Novelty (New variety, special)
- Others: _____

8. What do you think about pot plants?

- Necessity goods
- Luxury goods
- Others: _____

9. How much are you willing to spend on pot plant monthly?

- under RM 10
- RM 10 – RM 50
- RM 51- RM 100
- RM 101 and above

10. What features of pot plants will stimulate you to buy? (Only one answer)

- air purification ability
- edible (For example, spice, herbs....)
- Fragrance
- others _____

11. What kinds of extra addition will stimulate you to buy pot plants? (Only one answer)

- a plant tag (Introduction of the plant and its caring tips)
- beautiful design and presentation
- with good quality ceramic pot
- Others: _____

12. Do you think the price of pot plants is expensive?

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

13. Do you feel the quality of pot plants is good?

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

ANNEX 2: CHECKLIST OF THE INTERVIEW TO THE PROBLEM OWNER

A case study interviewing- Tapak Semaian Hong Seng Sdn. Bhd.

Production dimension

1. What kinds of pot plants do you grow?
2. What is the cultivation environment?
 - a. Shelter facilities/plastic
 - b. Shading net
 - c. Misting equipment
3. What is the growing media?
4. Where do you buy the plantlets?
5. What kinds of fertilizer do you use?
6. How do you control pest and disease?
7. What is the water quality? (Any treatment?)
8. What is the irrigation method?

Marketing dimension

1. How do you plan or decide for your production?
2. How many pot plants do you produce annually?
3. Who are your main customers?
4. How do you transport your pot plants?
5. What is your selling price of pot plants (for example)?

Production Cost calculation

1. Fix cost
2. Variable cost (input cost, labour cost, Running cost (electricity, water))

ANNEX 3: CHECKLIST FOR INTERVIEWING RETAILERS

Retailers

1. What kinds of pot plants are do you sell?
2. Which pot plants is the most popular?
3. What are the selling prices (For example)?
4. What services do you offer to your customers?
5. When is the high demand season for pot plants?
6. How do you order the pot plants?
7. Where do you buy the pot plants?

ANNEX 4: CHECKLIST FOR INTERVIEWING THE REPRESENTATIVE OF JOHOR STATE FLOWER ASSOCIATION

The representative of Johor state flower association

1. What is role of the association?
2. What are the functions of the association?
3. What are the advantages in association?
4. What are the challenges/ restrictions/ unfavourable conditions for the pot plants industry developments?

ANNEX 5 : THE SUMMARY OF THE INTERVIEW OF FOUR RETAILERS

All the data were obtained through telephone interview.

	Tapak Semaian Hong Seng Sdn. Bhd. Retail store (Location: Yong Peng)	Best Bonsai (Location: Batu Pahat)	Riverview flora (Location: Johor Bahru)	Phoenix Ocean Sdn. Bhd. (Location: Sungai Buloh)
What kinds of pot plant do you sell?	<p>Flowering pot plants: Catharanthus, Chrysanthemum, Cyclamen, Hibiscus, Heliconia, Hydrangea, Ixora, Orchids, Petunia, Portulaca, Gerbera, Rose, Miniature rose, Spathiphyllum;</p> <p>Foliage pot plants: Aglaonema, Caladium, Calathea, Codiaeum, Coleus, Cordyline, Dieffenbachia, Dracaena, Ferns, Pandanus, Philodendron, Rheo,</p>	<p>Flowering pot plants: African violet, Anthurium, Bougainvillea, Bromeliads, Catharanthus, Chrysanthemum, Cyclamen, Gerbera, Gloxinia, Hibiscus, Hydrangea, Kalanchoe, Orchids, Petunia, Pelargonium, Miniature rose, Spathiphyllum, Torenia, Verbena.</p> <p>Foliage pot plants: Aglaonema, Alocasia, Calathea, Caladium, Codiaeum, Dieffenbachia,</p>	<p>Flowering pot plants: Adenium, African violet, Amaryllis, Anthurium, Azalea, Bougainvillea, Bromeliads, Catharanthus, Chrysanthemum, Cyclamen, Gerbera, Gloxinia, Hibiscus, Hydrangea, Jasmine, Kalanchoe, Lipstick plant, Orchids, Petunia, Pelargonium, Rose, Miniature rose, Spathiphyllum, Verbena;</p> <p>Foliage pot plants: Aglaonema, Alocasia, Begonia, Calathea,</p>	<p>Flowering pot plants: Adenium, African violet, Anthurium, Azalea, Bougainvillea, Bromeliads, Catharanthus, Celosia, Chrysanthemum, Cyclamen, Gerbera, Gloxinia, Helianthus, Heliconia, Hibiscus, Hydrangea, Kalanchoe, Lavender, Lipstick plant, Orchids, Petunia, Miniature rose, New Guinea impatiens, Spathiphyllum, Verbena.</p> <p>Foliage pot plants: Aglaonema, Alocasia, Begonia, Codiaeum, Dracaena, Ferns, Palmae, Peperomia, Philodendron,</p>

	Rubber plant, Sansevieria; Others: Cactus.	Dracaena, Ferns, Peperomia, Philodendron, Poinsettia, Syngonium, ZZ plant; Fruiting pot plants: Citrus, Strawberries, Ornamental peppers; Others: Bonsai, Cactus.	Caladium, Codiaeum, Dracaena, Ferns, Palmae, Peperomia, Philodendron, Poinsettia; Fruiting pot plants: Citrus; Others: Bonsai, Cactus.	Poinsettia, Polyscias, Rubber plant, Schefflera, Yucca, ZZ plant; Fruiting pot plants: Citrus, Strawberries; Others: Bonsai, Cactus, Carnivorous plant.
Which pot plants is the most popular?	Cyclamen , Chrysanthemum, Gerbera, Miniature rose, Orchids (Dendrobium, Oncidium), Petunia, Aglaonema, Codiaeum, Dracaena, Fern (Bird's nest fern Boston fern, Cycad fern, Staghorn fern)	African violet, Anthurium, Bougainvillea, Bromeliads (Tillandsia and Vriesea), Chrysanthemum, Gerbera, Gloxinia, Hydrangea, Petunia. Aglaonema, Alocasia, Ferns and Peperomia Citrus	African violet, Anthurium, Bougainvillea, Chrysanthemum, Cyclamen, Hibiscus, Hydrangea, Kalanchoe, Orchids, Aglaonema, Alocasia, Caladium, Codiaeum, Ferns, Peperomia, Cactus, Citrus	African violet, Anthurium, Bougainvillea, Bromeliads, Chrysanthemum, Gerbera, Gloxinia, Hydrangea, Kalanchoe, Orchids, Aglaonema, Alocasia, Begonia, Codiaeum, Ferns, Peperomia, Carnivorous plant, Citrus
What are the selling prices?	See annex 7.			

What services do you offer to your customers?	Free transportation if high volume or short distance, Selling landscaping trees and shrubs	Selling flower bouquets; horticultural materials	Selling landscaping tree and shrubs; garden use tools and horticultural materials.	Selling landscaping tree and shrubs; garden use tools and horticultural materials.
When is the high demand season for the pot plants?	December to February; August	December to February; July to September.	December to February; August to October.	December to February; July to September.
How do you order the pot plants?	From local/low land: order and picking regularly; From highland: By phone and delivered by suppliers	Order by phone and the growers will deliver it	Pick up themselves irregularly from local growers and high land growers; High land growers deliver the order to him as well.	All the growers deliver the products to them.
Where do you buy the pot plants?	60% from the company owned nursery and 25% are from high land growers and 15% from other low land growers in Muar district.	50% from high land growers; 30% from low land growers in Muar district, 10% from Yong Peng district, 10% from others.	40% from high land growers; 20% from Yong Peng district, 20% from Muar district, 10% produce themselves, 10% from others.	50% from high land growers; 20 % from Muar district, 20% from Sungai Buloh, 10% from others.

ANNEX 6: THE PRODUCTION COST OF TAPAK SEMAIAN HONG SENG SDN. BHD.

Cost calculation (per hectare, per year)

	Item	Units	Amount (RM)	Amount (Euro)
Fixed costs	Labour	2 persons x RM 25/days x 350 days	RM 17,500	€4,375
	Energy (Electricity and fuels)	RM 150/ per month x 12 months	RM 1,800	€450
	Plastic film and shading net replacement (Every 5 years)	Depreciation: RM 30,000 x 20%	RM 6,000	€1,500
Variable costs	Media	4 tonnes top soil x RM 150 800 bags Coco husks x RM 3	RM 3,000	€750
	Plastic pots	10,000 pieces (15 cm diameter) x RM 0.50	RM 5,000	€1,250
	Fertilizers	25 bags granular fertilizers (50 kg) x RM 100 10 bags Liquid fertilizer (25kg) RM 200	RM 4,500	€1,125
	Pesticide and Fungicide	12 bottles x RM 100	RM 1,200	€300
Others cost	Repairing (Filter, Engine)	RM 3,000	RM 3,000	€750
Total cost			RM 42,000	€10,500

Average production cost for all species per pot $RM42,000/8,000 \text{ pots} = RM 5.25$ (€1.31) per pot

ANNEX 7: POT PLANT PRICES

Items	Tapak Semaian Hong Seng Sdn. Bhd. Retail store		Best Bonsai		Riverview flora		Phoenix Ocean Sdn. Bhd.	
	Buying Price	Retail Price	Buying Price	Retail Price	Buying Price	Retail Price	Buying Price	Retail Price
African violet (125 mm \emptyset)	RM 5.00 (€1.25)	RM 8.00 (€2.00)	RM 5.00 (€1.25)	RM 8.00 (€2.00)	RM 5.00 (€1.25)	RM 10.00 (€2.50)	RM 5.00 (€1.25)	RM 10.00 (€2.50)
Aglaonema (147 mm \emptyset)	RM 6.50 (€1.63)	RM 10.00 (€2.50)	RM 6.50 (€1.63)	RM 10.00 (€2.50)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 12.00 (€3.00)
Alocasia (147 mm \emptyset)	-	-	RM 6.50 (€1.63)	RM 10.00 (€2.50)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 12.00 (€3.00)
Anthurium (147 mm \emptyset)	-	-	RM 6.50 (€1.63)	RM 10.00 (€2.50)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 12.00 (€3.00)
Bougainvillea. (147 mm \emptyset)	-	-	RM 2.50 (€0.63)	RM 5.00 (€1.25)	RM 3.00 (€0.75)	RM 6.00 (€1.50)	RM 3.00 (€0.75)	RM 8.00 (€2.00)
Bromeliads (147 mm \emptyset)	-	-	RM 6.50 (€1.63)	RM 10.00 (€2.50)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 12.00 (€3.00)
Cactus (55 mm \emptyset)	RM 1.80 (€0.45)	RM 3.50 (€0.88)	RM 2.00 (€0.50)	RM 4.00 (€1.00)	RM 2.00 (€0.50)	RM 4.00 (€1.00)	RM 1.80 (€0.45)	RM 4.00 (€1.00)
(80 mm \emptyset)	RM 3.50 (€0.88)	RM 6.00 (€1.50)	-	-	RM 4.00 (€1.00)	RM 7.00 (€1.75)	RM 3.50 (€0.88)	RM 7.00 (€1.75)
(125 mm \emptyset)	RM 5.00 (€1.25)	RM 10.00 (€2.50)	RM 5.00 (€1.25)	RM 10.00 (€2.50)	RM 5.00 (€1.25)	RM 10.00 (€2.50)	RM 4.50 (€1.13)	RM 10.00 (€2.50)
(147 mm \emptyset)	RM 7.00 (€2.00)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 7.00 (€2.00)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 12.00 (€3.00)
Caladium (147 mm \emptyset)	RM 6.00 (€1.50)	RM 10.00 (€2.50)	RM 6.00 (€1.50)	RM 10.00 (€2.50)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 12.00 (€3.00)
Carnivorous plant (147 mm \emptyset)	-	-	-	-	-	-	RM 18.00 (€4.50)	RM 32.00 (€8.00)
Chrysanthemum (147 mm \emptyset)	RM 4.50 (€1.13)	RM 8.00 (€2.00)	RM 4.00 (€1.00)	RM 8.00 (€2.00)	RM 4.50 (€1.13)	RM 10.00 (€2.50)	RM 4.00 (€1.00)	RM 10.00 (€2.50)

Citrus (147 mm \emptyset)	-	-	RM 12.00 (€3.00)	RM 18.00 (€4.50)	RM 12.00 (€3.00)	RM 20.00 (€5.00)	RM 10.00 (€2.50)	RM 20.00 (€5.00)
(310 mm \emptyset)	-	-	RM 25.00 (€6.25)	RM 38.00 (€9.50)	RM 28.00 (€7.00)	RM 38.00 (€9.50)	RM 22.00 (€5.50)	RM 38.00 (€9.50)
(465 mm \emptyset)	-	-	RM 55.00 (€13.75)	RM 88.00 (€22.00)	RM 58.00 (€14.50)	RM 98.00 (€24.50)	RM 55.00 (€13.75)	RM 108.00 (€27.00)
Codiaeum (147 mm \emptyset)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 13.00 (€3.25)
Cyclamen (147 mm \emptyset)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 13.00 (€3.25)
Dracaena (147 mm \emptyset)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 12.00 (€3.00)
Ferns (147 mm \emptyset)	RM 4.50 (€1.13)	RM 8.00 (€2.00)	RM 5.00 (€1.25)	RM 8.00 (€2.00)	RM 5.00 (€1.25)	RM 10.00 (€2.50)	RM 4.50 (€1.13)	RM 10.00 (€2.50)
Gerbera (147 mm \emptyset)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 12.00 (€3.00)
Gloxinia (147 mm \emptyset)	-	-	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 12.00 (€3.00)
Hibiscus (147 mm \emptyset)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 8.00 (€2.00)	RM 15.00 (€3.75)	RM 8.00 (€2.00)	RM 16.00 (€4.00)	RM 6.50 (€1.63)	RM 13.00 (€3.25)
Hydrangea (167 mm \emptyset)	RM 12.00 (€3.00)	RM 18.00 (€4.50)	RM 15.00 (€3.75)	RM 25.00 (€6.25)	RM 15.00 (€3.75)	RM 28.00 (€7.00)	RM 15.00 (€3.75)	RM 30.00 (€7.50)
Kalanchoe (147 mm \emptyset)	-	-	RM 4.50 (€1.13)	RM 10.00 (€2.50)	RM 4.50 (€1.13)	RM 8.00 (€2.00)	RM 4.50 (€1.13)	RM 10.00 (€2.50)
Peperomia (125 mm \emptyset)	-	-	RM 4.50 (€1.13)	RM 8.00 (€2.00)	RM 4.00 (€1.00)	RM 8.00 (€2.00)	RM 4.50 (€1.13)	RM 10.00 (€2.50)
Petunia (147 mm \emptyset)	RM 4.50 (€1.13)	RM 8.00 (€2.00)	RM 4.50 (€1.13)	RM 8.00 (€2.00)	RM 4.00 (€1.00)	RM 8.00 (€2.00)	RM 5.00 (€1.25)	RM 10.00 (€2.50)
Miniature rose (147 mm \emptyset)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.50 (€1.63)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 12.00 (€3.00)	RM 6.00 (€1.50)	RM 12.00 (€3.00)

" \emptyset ": Pot's diameter; "-": Data unavailable

ANNEX 8: JOHOR STATE FLOWER ASSOCIATION INTERVIEWS SUMMARY

Question	Answer
What is role of the association?	The association plays a role to express their opinions and feelings when the government carry out unfavourable rules and law to the growers.
What are the functions of the association?	The purpose of this association is to unite all flowers producers. Maintaining or enhancing the relationship instead of being competitors between each other.
What are the advantages in association?	The members could join the parties and activities which are held by the association. The association also organise visiting tour to horticulture related exhibition overseas.
What are the challenges/ restrictions/ unfavourable conditions for the pot plants industry developments?	<ol style="list-style-type: none"> 1. The young generations are unwilling and uninterested in agricultural works. 2. Malaysian government restricts and limits the entry of the foreign workers to Malaysia in recent year. Therefore, shortage of manpower problem is serious. 3. Production cost is higher than neighbour countries such as Thailand and China. 4. The assistant or research from Agricultural department is too limited. 5. The growers are mostly low educated. They do not know how to search useful information for improving their product quality and their business. 6. There is no standard criterion for the pot plants. Therefore, pot plants from different growers are not the same (size, plant height, quality). 7. The market in Malaysia is not big enough. It is very difficult that one grower produce one to two products. They have to produce different kind of varieties in order to be able to stay in the industry.

ANNEX 9: SPSS OUTPUT DATA

I. Participants gender distribution

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	122	36.2	36.2	36.2
	Female	215	63.8	63.8	100.0
Total		337	100.0	100.0	

II. Participants age distribution

		Age			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 and under 20	20	5.9	5.9	5.9
	21-30	72	21.4	21.4	27.3
	31-40	46	13.6	13.6	40.9
	41-50	125	37.1	37.1	78.0
	51 and above	74	22.0	22.0	100.0
	Total	337	100.0	100.0	

III. Participants monthly income distribution

		Monthly_Income			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	RM 0 to RM 1000	56	16.6	16.6	16.6
	RM 1001 - RM 2000	94	27.9	27.9	44.5
	RM 2001 - RM 3000	114	33.8	33.8	78.3
	RM 3001 - RM 4000	57	16.9	16.9	95.3
	RM 4001 and above	16	4.7	4.7	100.0
	Total	337	100.0	100.0	

IV. Main purpose of purchasing pot plants

Purpose

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	As a gift	24	7.1	7.1	7.1
	Decorate your house	179	53.1	53.1	60.2
	Decorate office/ working place	56	16.6	16.6	76.9
	As a hobby (Collection)	76	22.6	22.6	99.4
	others	2	.6	.6	100.0
	Total	337	100.0	100.0	

V. Channel preference on buying pot plants

Channel

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Garden centre and flower shops	230	68.2	68.2	68.2
	Supermarket (IKEA, Carrefour.....)	31	9.2	9.2	77.4
	Traditional market (night market, open market)	76	22.6	22.6	100.0
	Total	337	100.0	100.0	

VI. Consumer preference on pot plants types

Types

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Foliage plants	93	27.6	27.6	27.6
	Flowering plants	225	66.8	66.8	94.4
	others	19	5.6	5.6	100.0
	Total	337	100.0	100.0	

VII. Consumers' considering factors when purchasing pot plants.

Considering_factors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Quality	30	8.9	8.9	8.9
	Price	289	85.8	85.8	94.7
	Novelty (New variety, special)	18	5.3	5.3	100.0
	Total	337	100.0	100.0	

VIII. Consumers' perspective on pot plants.

Perspective

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Necessity goods	266	78.9	78.9	78.9
	Luxury goods	71	21.1	21.1	100.0
	Total	337	100.0	100.0	

IX. Amount of money spending on pot plants

Spend_per_month

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	under RM 10	101	30.0	30.0	30.0
	under RM10 - RM 50	186	55.2	55.2	85.2
	RM 51 - RM 100	35	10.4	10.4	95.5
	RM 101 and above	15	4.5	4.5	100.0
	Total	337	100.0	100.0	

X. Consumer preference on pot plants features.

Stimulate_Features

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Air purification	166	49.3	49.3	49.3
	Edible	45	13.4	13.4	62.6
	Fragrance	116	34.4	34.4	97.0
	Others	10	3.0	3.0	100.0
	Total	337	100.0	100.0	

XI. Consumer preference of extra adding value on pot plants.

Extra_Addition

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A plant tag (introduction of plant and caring instruction)	68	20.2	20.2	20.2
	Beautiful design and presentation	114	33.8	33.8	54.0
	With quality ceramic pot	155	46.0	46.0	100.0
	Total	337	100.0	100.0	

XII. Consumers' perspective on current pot plants prices

Price

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly disagree	1	.3	.3	.3
Disagree	9	2.7	2.7	3.0
Neutral	224	66.5	66.5	69.4
Agree	95	28.2	28.2	97.6
Strongly agree	8	2.4	2.4	100.0
Total	337	100.0	100.0	

XIII. Consumer's perspective on current pot plants quality.

Quality

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly disagree	1	.3	.3	.3
Disagree	12	3.6	3.6	3.9
Neutral	281	83.4	83.4	87.2
Agree	42	12.5	12.5	99.7
Strongly agree	1	.3	.3	100.0
Total	337	100.0	100.0	

XIV. Consumer preference on pot plants features between two age classes.

Ageclass * Stimulate_Features Crosstabulation

			Stimulate_Features				Total
			Air purification	Edible	Fragrance	Others	
Ageclass	below 41	Count	97	11	23	7	138
		Expected Count	68.0	18.4	47.5	4.1	138.0
	41 and above	Count	69	34	93	3	199
		Expected Count	98.0	26.6	68.5	5.9	199.0
Total		Count	166	45	116	10	337
		Expected Count	166.0	45.0	116.0	10.0	337.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	50.948 ^a	3	.000
Likelihood Ratio	52.892	3	.000
Linear-by-Linear Association	29.398	1	.000
N of Valid Cases	337		

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 4.09.

XV. Consumer preference on extra value adding between two age classes.

Ageclass * Extra_Addition Crosstabulation

			Extra_Addition			Total
			A plant tag (introduction of plant and caring instruction)	Beautiful design and presentation	With quality ceramic pot	
Ageclass	below 41	Count	59	64	15	138
		Expected Count	27.8	46.7	63.5	138.0
	41 and above	Count	9	50	140	199
		Expected Count	40.2	67.3	91.5	199.0
Total		Count	68	114	155	337
		Expected Count	68.0	114.0	155.0	337.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	132.593 ^a	2	.000
Likelihood Ratio	148.051	2	.000
Linear-by-Linear Association	130.361	1	.000
N of Valid Cases	337		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 27.85.