VALUE CHAIN OF HORTICULTURE EXPORTS FOR RURAL DEVELOPMENT IN MYANMAR

CASE: ANALYZING MANGO AND POMELO VALUE CHAIN IN YANGON REGION

BY

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LIST OF ABBREVIATIONS

ASEAN	:	Association of South East Asian Nations
DOA	:	Department of Agriculture
FAO	:	Food and Agriculture Organization
GDP	:	Gross Domestic Product
GMM	:	Gross Marketing Margin
GVC	:	Global Value Chain
ICT	:	Information and Communications Technology
IHLCA	:	Integrated Household Living Condition Assessment
KII	:	Key Informant Interviews
LDCs	:	Least Developed Countries
MFVP	:	Myanmar Fruit, Flower and Vegetable Producer & Exporter Association
MNCs	:	Multinational Corporations
MOAI	:	Ministry of Agriculture and Irrigation
MT	:	Metric Ton
NGOs	:	Non-Governmental Organizations
R&D	:	Research and Development
TGMM	:	Total Gross Marketing Margin
UMFCCI	:	Union of Myanmar Federation of Chambers and Commerce and Industry
UNCTAD	:	United Nations Conference on Trade and Development
UNDP	:	United Nations Development Programme
UNIDO	:	United Nations Industrial Development Organization
VC	:	Value Chain
YCDC	:	Yangon City Development Committee

ABSTRACT

This study aims to expose ways to promote the value chains of two major fruits; Pomelo and Mango, and to overcome the challenges encountered by growers. Specifically, the main purpose is to explore the profitability of each actor, and to analyze the marketing channels of fruits to export market in Myanmar. In exploring the current value chain process, actors are classified into growers, fruit collectors, wholesalers, retailers, and exporters. Comparison of these two value chains in terms of market situation, technical structure, actors, governance, and profitability are made. The study explores the internal and external factors affecting the production and distribution of each stakeholder. The growers play the important role for development of a proper value chain in the Pomelo and Mango export markets in Myanmar, yet they still face high transport costs due to unfavorable regulations for distribution, high input costs, low availability of loans, lack of insurance and supports from government, and many other concerns. When comparing the value chain analysis between Pomelo and Mango market in Yangon Region, it is found that Pomelo market has greater competitiveness than that of Mango. For the Mango growers in Yangon Region, poor technical and market knowledge and research lead to low quality and profit margin. The Mango market also has huge rivals from Mandalay Region and Shan State. Therefore, accessibility to global market is largely limited. Another weakness in Mango market is its seasonal nature. Accordingly, availability of labor is also difficult in harvesting period. Due to its labor shortage and low competitiveness even within the local market, growers tend to stop the mango cultivation and plan to switch to other crops. In contrast, Pomelo market in

Yagon has great potential. Although Pomelo is grown in Mon State and other Regions of Myanmar, they can only enter the domestic market. For the growers from Yangon Region, they have potential in market access, and cost to reach the global market. By upgrading institutional supports, infrastructure, research activities and knowledge, greater competitiveness will achieve in global Pomelo market.

***Keywords**: Value Chain, Horticulture, Agriculture, Myanmar*

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Myanmar is a developing, agro and resource based Southeast Asian, country which is currently transforming to achieve greater openness. Rapid reforms in Myanmar economy within recent years and easing United States and European Union sanctions against Myanmar generate better economic climate for the future. With this positive trend, Myanmar needs to take chances to upgrade its economic sectors. In Myanmar, agricultural sector contributes 32% of the country's GDP and 31.8% of its exports (MOAI, 2014). Promotion and commercialization of the agricultural sector is crucial as more than 61.2% of the labor force is engaging in agriculture, mainly from rural areas. As stated in World Development Indicators, 75% of the total population is living in rural areas of Myanmar (MOAI, 2014). Recent transformation in Myanmar produces new policy measures to improve agriculture and develop rural areas.

Traditionally, rice is regarded as main staple and export item yet rice trading has been controlled by the State. Since the 1990s, pulses and beans started contributing as major export and cash crops for farmers. Besides, Myanmar has vast potentials in growing, trading, and exporting fruits which can enhance income of growers and support rural development. However, most of the horticulture produces are still intended for domestic market alone. Globally, demand for horticulture

produces, especially fruits is growing while access to export market by Myanmar growers is still low. Myanmar exports watermelon, mango, and pomelo to other countries out of hundreds of fruits. Mango and pomelo are mainly exported to Singapore through normal trade route while watermelon is exported to China via border trade. Export of mango started several decades ago whereas pomelo export was initiated in recent years (UMFCCI, 2013).

The value chain of horticulture exports is operated by various actors from input suppliers, growers, collectors, wholesalers, and retailers, exporters, business and financial service providers, to the final markets. Usually, fewer stakeholders may generate greater benefits for growers while larger chains generate low returns as a result of exploitation by middlemen. By improving value chain of fruit exports, the profitability of growers is expected to increase and help upgrading rural development which finally contributes to the economic development of the country. This study will explore the current value chains of Mango and Pomelo in Hmaw Bi and Teikkyi Townships of the Yangon Region, where most exported fruits are grown.

1.2 Research Questions and Purpose

As agriculture is still a major economic sector, upgrading the agriculture sector can help reducing poverty, especially in rural areas. After 2010, Myanmar initiates actions for poverty reduction and rural development. Although the fruit market in Myanmar has great potentials for export, lack of knowledge, higher transaction costs, and short of information impedes market expansion among growers. Bargaining power of growers in exporting fruits is also low due to a high dependence

on middlemen. Hence, analyzing current value chains of the selected exported fruits is a prerequisite and the following research questions are necessary to solve.

- What are major factors affecting production and marketing of mango and pomelo?
- What are the differences between mango and pomelo value chains?

Generally, this study aims to expose ways to promote the value chains of two major fruits; pomelo and mango, and to overcome the challenges encountered by growers. Specifically, the main purpose is to explore the current situation of growers, profitability of each actor in the chain, and to analyze the marketing channels of fruits to export market in Myanmar.

1.3 Scope and Limitations

Pomelo is mainly produced in the southern part of the country while mango is available in both upper and lower Myanmar. In this study, the value chains in export of selected fruits are studied in the Yangon Region. Although the Yangon Region is a major commercial area of Myanmar, both pomelo and mango are grown within the region and exported. Among the townships within the Yangon Region, Hmawbi and Teikkyi Townships are chosen to analyze the export value chain.

In exploring the current value chain process, actors are classified into growers, fruit collectors, wholesalers, retailers, and exporters. Key Informant Interviews (KII) are conducted to 16 growers (8 each from pomelo and mango), 6 fruit collectors (3 each for pomelo and mango), 2 wholesalers (1 each for each fruit) and 2 exporters.

Comparison of these two value chains in terms of market situation, actors, and profitability are made. Moreover, current situation of growers and share of Gross Marketing Margins (GMM) among stakeholders are emphasized.

1.4 Research Methodology

The aim of this study is to analyze the export pomelo and mango value chains in Yangon Region. With increasing foreign demand, production of these fruits is needed to promote. To meet the research objective, descriptive and analytic approaches are used based on primary and secondary data. In particular, gross marketing margin of each player is calculated and value chain mapping are explored for both pomelo and mango growers. Primary data obtained from interviewing all actors concerning costs, profit margins, their constraints, benefits, and governance. Key Informant Interview (KII) is made to responsible personnel and major exporters from the private sector in exporting mango and pomelo. Secondary analysis is made based on published sources from domestic and international sources. Survey and interviews were conducted in two selected townships in 2014.

1.5 Organization of the Study

This study will analyze the value chain of mango and pomelo in Myanmar export market based on five chapters. Chapter I is an introductory chapter including background of the study, research questions and purpose, scope and limitation, research methodology, and organization of this study. The literature review will be portrayed in Chapter II. In this chapter, the concept, and usefulness of value chains will be studied. Moreover, previous studies of value chain in horticulture will also be

included in this chapter. Chapter III explains the research methodology, background of Myanmar agriculture sector, horticulture, and profile of the selected townships. Chapter IV is the analysis of the value chains for mango and pomelo export in Yangon Region. Descriptive statistics are used based on Key Informant Interviews to all stakeholders in the value chain: growers, fruit collectors, wholesalers and exporters. Moreover, mapping for value chain of each fruit and comparison of marketing margin for each player at the chain are studied. Chapter V is concluded with findings from the empirical analysis and recommendations for the development of value chains for mango and pomelo in the Yangon Region and other parts of Myanmar.

1.6 Expected Outcome

From this study, market situation, profitability of each actor of the value chain, and current situation of growers can be studied for mango and pomelo. By figuring out their current value chains of two exported fruits, strengths and weaknesses faced by growers can be explored and able to suggest an improved value chain for exports as well as better approaches and policy implementations to improve the livelihoods of growers. Accordingly, growers can increase income, improve livelihoods, and help support rural poverty reduction. Moreover, this study can also contribute to achieve an efficient value chain for the export of other horticulture products and for uncovering the potential of new agriculture exports from Myanmar which finally help boost economic development at the macro level.

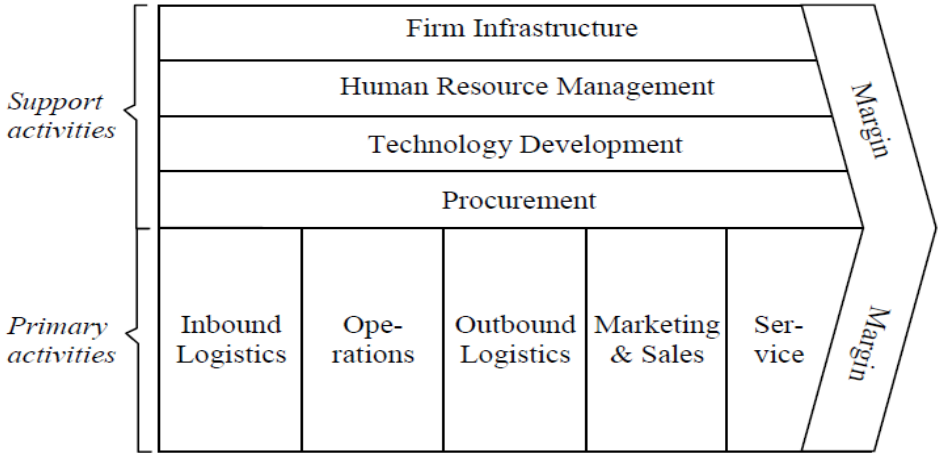
CHAPTER 2

LITERATURE REVIEW

2.1 Theory of Value Chain Analysis

The analysis of value chain was firstly implied in the realm of business management by Michael Porter in 1985 to work out for creating largest possible value for customers. According to Porter (1985), the value chain is regarded as internal processes of a firm to design, produce, promote, deliver, and support its products. In particular, the value chain analysis is used as a tool to identify the value in each stage of production. He stressed the analysis mainly on the achievement of competitiveness, i.e. cost advantage and distinctive capabilities. Generic value chain of Porter is shown in figure 2.1.

Figure 2.1 Generic Value Chain of Porter



Source: Porter (1985, p. 37)

The combination of primary and supportive activities from above figure generate greater profit margin at the firm level. Primary activities are grouped into five main areas including inbound logistics, operations, outbound logistics, marketing and sales, and service (Porter, 1985). Inbound logistics includes activities of receiving, storing, and distributing the raw materials used in the production process. Operations turn raw materials into the final product. Outbound logistics means distribution of products to consumers. Marketing and sales take into account activities of advertising, promotions, pricing, managing customer relationships of the final product and so forth. Service means installing, training, maintenance, after-sales services and so on for sustaining the performance of product after production.

In contrast, supportive activities help improving effectiveness and efficiency of the primary activities, which include firm infrastructure, human resource management, technology development, and procurement. Procurement contains easy to receive raw materials. Technology development includes improvement in research and development and the use of automation. The human resource development activities compose of hiring and keeping suitable employees for designing, building and distributing the goods. The final part of supportive activity; firm infrastructure is the structure and management of organization, planning, accounting, finance and quality control (Porter, 1985).

The main purpose of using value chain is to reduce delivery times, lessen inventories and augment customer satisfaction through integrate communication and collaboration between production chain. Chains include individuals and firms that

included in interact to supply goods and services to end users. Aung, M.L (2013, p. 6) referred that firm's product values can be increased through:

(i) Increase perceived benefits while holding price or cost constant,

(ii) Increase perceived benefits while reducing price or cost, or

(iii) Decrease price or cost while holding perceived benefits constant.

Various scholars termed value chain from different point of views. Kaplinsky and Morris (2001) describes value chain as *"Full range of activities which are required to bring a product or service passing through the intermediate phases of production to delivery to consumers and final disposal after use"*(Kaplinsky & Morris, 2001, p. 4).

Value chain includes a wide range of activities implemented by various actors from producers, processors, dealers and service providers, etc. to bring a raw material along the chain to sale of the final product (Kaplinsky & Morris, 2001). This starts from initial stage of production of raw material and move to other enterprises in linkages engaged in trading, assembling, processing, etc. According to Ponte and Gibbon (2005), value chain is a *"vertical relationship"* (Ponte & Gibbon, 2005, p. 5) between the producer and the consumer with the emphasis on the material resources, knowledge, finance and information flows.

2.2 Global Value Chain Analysis

The value chain analysis level can be the global, macro, meso or micro level (Gereffi et al., 2001). In the first case, the whole chain is taken into consideration, while in the last case we focus on the position of small scale producers in the value

chain. Macro-level analysis would refer to studying the chain at the national level, while meso usually refers to regional or city-level activities.

With the diffusion of globalization concept, the Global Value Chain (GVC) Concept has widely accepted and utilized by different academics and researchers. In general, the GVC relates local producers from third world countries to global markets, especially linking producers and the final consumers. Usual GVC producing final goods will involve activities across numerous sectors and industries along the chain. Gereffi (1994) states that the analysis of GVC derives from the commodity chain approach. Gereffi et al. (2001) defined Global Value Chain (GVC) as covering full range of value chain activities and final products.

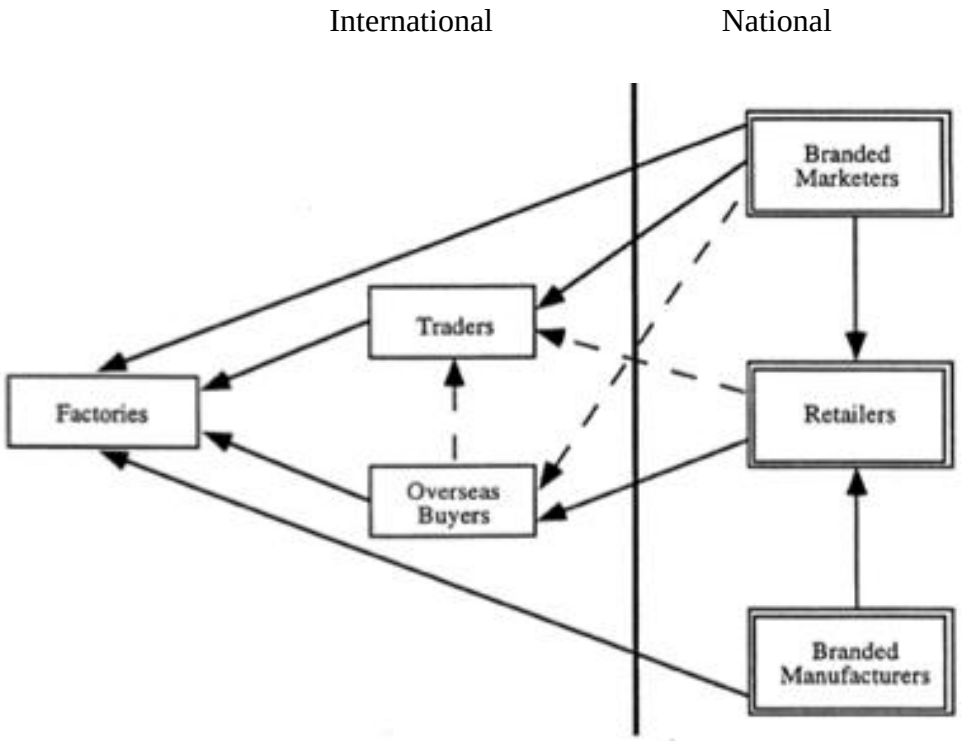
As stated by Bair (2005), there may be a large gap between local producers and global consumers. Local producers usually produce raw materials and primary products that generate low value added. Process, product, function and chain upgrading are indispensable for achieving successful value chain.

Within the late 20th century, GVC transformed the developing world through establishing labor intensive manufacturing in third world, diffusion of technology and fostering policy reforms (Elms, D. K. and Low, P., 2013). The GVC concept was officially accepted in early 2000s with the development of globalization conception in order to catch the interconnectedness among countries. Global value chain analysis gives helps identifying all stakeholders in production networks. The Global Value Chain (GVC) may be buyer- driven or producer- driven. Kaplinsky and Morris (2001) emphasized on differences in the two types of GVC.

2.2.1 The Buyer-Driven Global Value Chain

According to (Gereffi, 1994), buyer-driven GVCs have higher private sector governance with long-term vertical coordination between all stakeholders along the chain, from producer to retailers. These chains may have few barriers to entry (such as setting voluntary standards, codes, benchmarks, etc.) which can affect market accessibility of small producers. The nature and flow of the buyer-driven GVC is shown in the following figure 2.2.

Figure 2.2 Buyer-Driven Global Value Chain



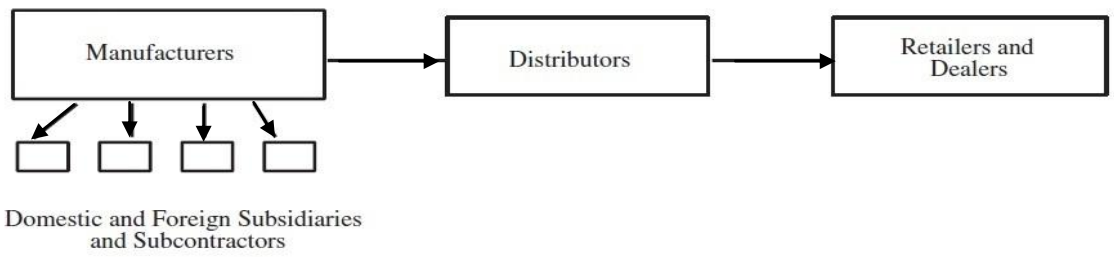
Source: Gereffi (2001, p. 1619)

Producers need to follow the different demand preferences of diverse buyers, from domestic and abroad, and direct and indirect linkages with the retailers, brand manufacturers and marketers. Hence, buyer-driven chains make producers to contract more actively with their processors and middlemen, to deliver differentiated products. Contracts cover such parameters as quality, quantity and price premium (Vorley and Fox, 2004). The significant examples of Buyer-driven GVC are agricultural products (such as pre-packed fresh vegetables, preserved foods, garments, footwear and toys.

2.2.2 The Producer-Driven Global Value Chain

In contrast, producer-driven GVCs are those in which Multi-National Corporations (MNCs) play the vital roles in coordinating production networks. With the development of Information and Communications Technology (ICT) and transportation technologies, production network of the world become integrated (Vernon, 1970). Figure 2.3 depicts the producer- driven GVCs.

Figure 2.3 Producer-Driven Global Value Chain



Source: Gereffi (2001, p. 1619)

Under this producer-driven GVC, greater barriers to entry exist as commodity chains require technology intensive production. Under producer-driven value chain, trust and control are vital and business transactions are carried out through branch offices of the MNCs. Accordingly, business relations in producer-driven chains are long-standing and intensive. Examples of producer- driven GVCs are automobile industries, aeronautical industries, etc.

2.3 Usefulness of Value Chain Analysis in Agriculture

Analysis of value chain is widely used in agricultural products such as grains, fruits and vegetables. Traditionally, the emphasis of development in agriculture sector is mainly for gaining food security. In the twenty-first century, increase in world population leads to higher demand for food and agricultural products all over the world. Though agriculture sector play as insignificant role in economies of the developed countries, it is still an indispensable one for developing world and rural society. Specifically, achieving economic development necessitates expansion of non-agricultural sectors. Yet, agricultural sector is still needed to provide food, labor, capital, and market to that expansion.

Many Least Developed Countries (LDCs) have relied on exports of agriculture commodities as their major source of foreign exchange. As income rise in agricultural production, the potential is increased for a substantial expansion of domestic demand for consumer goods and agriculture inputs.

In rural areas of developing world of Asia and Africa, majority of the people are relying on agriculture sector. Hence, improving agric economic development for population in rural area. With the development of international trade, enhancing the production and export of agricultural products can be an effective way of reducing rural poverty. If productivity is increased, farmers have significant benefits both through increased home consumption and through income generated from farm product sales.

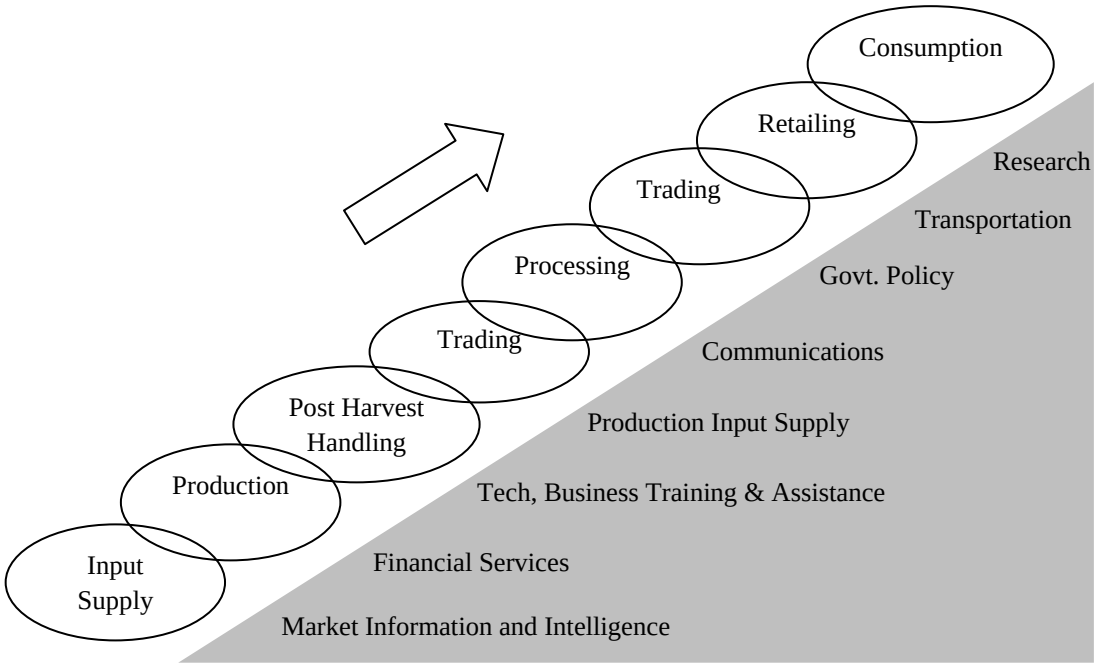
Nowadays, commercialization of farmers and the concept of value chain become widely used in developing countries. Markets for agricultural products become globalizing with new consumption and production patterns. However, farmers from developing countries are still striving for their livelihoods by emphasizing on staple crops through traditional production and distribution methods. Some farmers or growers rely mainly on middlemen for distributing their crops in domestic and international markets. Yet the effect of the middlemen's influence lead to higher prices which generate the product to become low competitiveness in market.

Good connection of all stakeholders (from farmers through middlemen to final consumers) along the chain of production and distribution of agricultural products become vital for upgrading the sequence of production and distribution. Nowadays, modern agricultural value chains in some countries developed due to industrialization and capacity building. Yet, poor institutional supports, low level of technical knowledge and lack of infrastructural development impede resource availability and efficient coordination in value chain. Value chain analysis is indispensable for

delivering value to customers, and reviewing the ways to maximize the value through analyzing the activities, and values.

Under agriculture sector, fruits and vegetables can be sort out as fresh fruit and vegetables, preserved, pulped and extracted products. The first category includes whole washed or unwashed fruits and vegetables and cut or prepared portions. Preserved products are canned and bottled fruits and vegetables, dried fruits, candied fruits, and frozen vegetables. Pulped products are juice, syrups, jellies, marmalades, jam, nectars, purees, and sauces. Extracted products compose of pectin, sugar, and starch. Figure 2.6 illustrates the typical supply chain for the production, processing, distribution and consumption of fruit and vegetables.

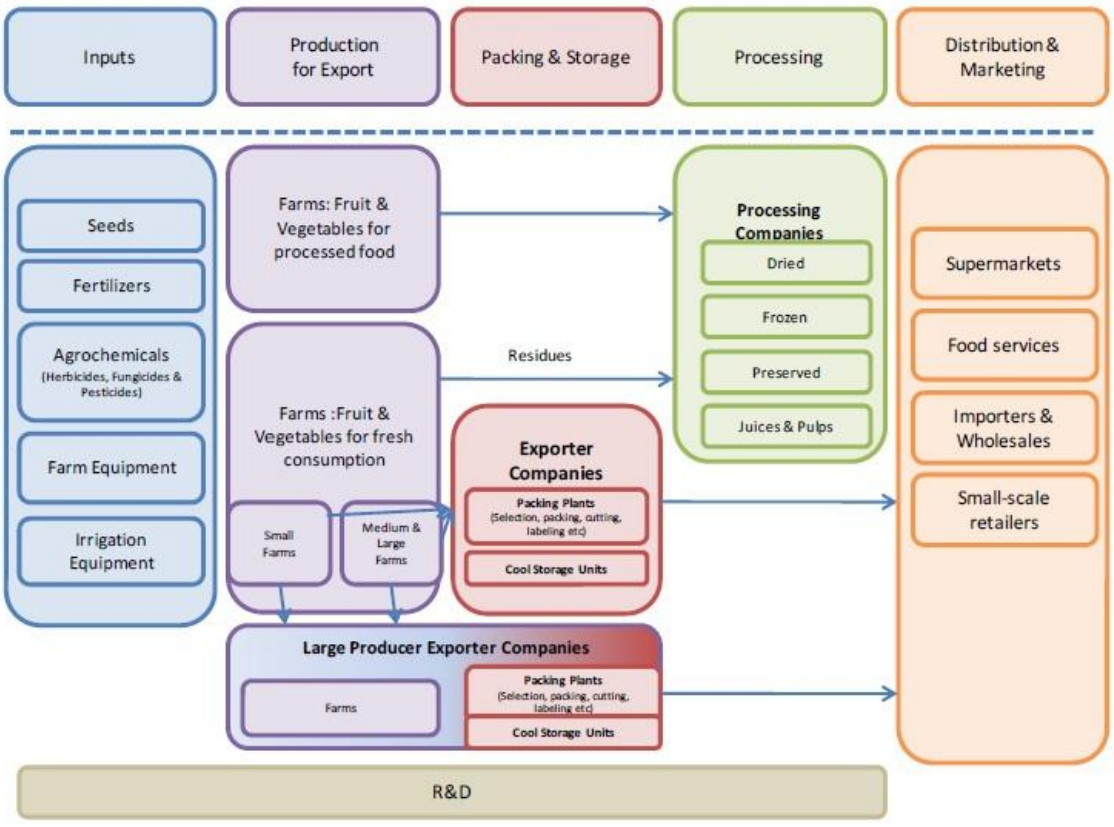
Figure 2.4 Typical Agricultural Value Chain and Associated Services



Source: Woldessenbet (2013, p. 23)

The analysis of value chain in horticultures provides useful tool in examining the activities of how farmers produced products to reach the final consumer, what are the threats along the value chain and how the economic relationships between all stakeholders in the value chain (Collier & Evans, 2009). Fruits and vegetable value chain can generally be divided into five main stages; the utilization of inputs, production, packaging and storage, processing and distribution (including marketing). At the global level, value chain is illustrated in the following figure.

Figure 2.5 Fruits and Vegetables Global Value Chain



Source: Fernandez-Stark et al. (2011, p. 16)

The value of agricultural products can be increased at the stage ranged from supply of inputs to production, post-harvest handling, trading, processing, retailing and consumption through availability of market information, financial services, business knowledge, transportation, communications, transport and research, etc. At the global level, *inputs* of horticulture production include the utilization of seeds, fertilizers, agrochemicals, farm and irrigation equipment and machineries. In p*roduction* stage, especially for export of fruits and vegetables, both small holders and large firms are taken into account. *Processing* depends on the types of products needed such as dried, reserved or juice. *Marketing* includes selling and promotion at retailing, wholesaling, and food service firms (Bryceson & Kandampully, 2004).

For small holder farmers, fewer stakeholders within the chain may generate greater profits yet cannot fulfill the market demand. In contrast, larger chains in marketing of pomelo can generate low returns for famers but it intends to fill the needs of demand from various parts of the country as well as from abroad. Therefore, it is necessary to keep balance between achieving high profits for growers as well as fulfilling the market demand and exports. For small holder farmers and growers, compliance with wide variety of standards and codes of conduct are needed if they access to export market and enter the GVC.

2.4 Reviewing Previous Studies on Agricultural Value Chain in Asia and Africa

Access to value chain by rural people is vital for agriculture sector of the developing countries. Thorbecke (1969) studied that if agricultural growth stimulates non-farm growth and employment, landless labor can also benefit from those employment opportunities. With the utilization of proper value chain approach, farmers can improve effective production methods, marketing techniques, access to updated information of the market and can be able to obtain the benefits of their attempts rather than depending on middle men and gain bargaining power within export market.

Baloyi (2010) stated that smallholder farmers in Limpop Province have a comparative advantage in vegetable growing yet they have lack of access to commercial farming and high value added markets. Most farmers in Africa are small holders with a lack of access to formal markets and better and cheaper inputs. Utilization of the value chain approach can solve this problem to a certain extent.

Banana value chains in Central Africa are studied by Ouma and Jagwe (2010). The study revealed that the coordination between and among value chain actors were characterized by weak linkages within the value chains due to poor coordination among stakeholders, less involvement with regional markets and high-value domestic chains. Collective marketing, penetration in to high-value chains and improved processing techniques may provide in increasing chain participation.

Value chain of fruits is analyzed by Muluken (2014) to describe important marketing channels and actors involved on fruit value chain, and identifying constraints in fruit value chain in Woreda, Ethiopia. The author found out that fruits pass through several intermediaries with less value added before reaching to final consumers. Farmers earn the low share of profit margin. Fruits producers faced low supply of inputs such as fruits seed, low irrigation facility, lack of technical training and lack of credit access.

Myat (2012) studied the export conditions of Myanmar Mango though hindrances and opportunities in the supply chain. He aims to identify problems within the current production, marketing and export of fresh mangoes. Exploratory research design was used to explore the mangoes value chain in two regions – the Mandalay Division and Southern Shan State of Myanmar. Myat (2012) analyzed growers' view on mango marketing and exporting, marketers' view on mango marketing and exporting, exporters' view on mango marketing and exporting, experts' view on mango marketing and exporting and the conceptual map of factors influencing on Myanmar mango export quantity and price. The study found out that factors influencing on Myanmar mango export quantities and price based on information given by the respondents. In contrast, factors hindering current mango exports of Myanmar include farm level, the marketing level, and the exporting level. Poor grading system, lack of knowledge among growers, and lack of technology lead to low productivity. Inadequate infrastructure, poor transport services, poor awareness of hygiene, and frequently changing trade policies and regulations generate low price and less competitiveness in export market than in local mango market.

Tchale and Keyser (2010) studied the quantitative value chain analysis of Malawi agriculture sector. In particular, tobacco, maize, cotton, and rice production through quantitative value chain method to assess the country's prospects. The study found that Malawi has some competitive advantage in the production yet not in rice and maize production for exporting. Major determinants of low competitiveness include the high cost of chemical fertilizer and other inputs, low productivity, and the higher trader margins and intermediation costs along the value chains. In addition, farm gate prices in Malawi are higher than in other countries, and this undercuts its trade competitiveness.

The above literatures summed up the fact that access to transport and other physical infrastructure, dissemination of knowledge, availability of inputs and modern technologies of production among small holder farmers are vital for reduction of costs and farm gate price as well as gaining higher added value throughout the value chain in most LDCs. Even with high level of competitiveness in production of horticulture products in studied areas, efficiency and effectiveness in channeling distribution is important. In most of the above studies, encouragement of horticulture investment, enhancement of PPP in horticulture and infrastructural development are inadequate. As all the value chains in the above studies are buyer- driven, connectivity to local, regional and global marketers and traders, compliance with market demand and sustainability of good practices along the chain is also indispensable for growers.

CHAPTER 3

RESEARCH METHODOLOGY AND BACKGROUND OF HORTICULTURE SECTOR IN YANGON REGION

3.1 Research Methodology

The value chain can help explaining the ways to pass through the products from producers to consumers, the relationships between stakeholders, the changing nature of the economic relationships, and major factors affecting profits and threats to the entire value chain. Major aim of this study is to expose ways to promote the value chains of two major fruits: mango and pomelo, and to overcome the challenges encountered by growers, profitability of each actor, in addition, to analyze the marketing channels of fruits to export market in Myanmar. Accordingly, descriptive analysis is used to explore the factors affecting the production and marketing of value chain and analyze and compare the value chains of mango and pomelo in Yangon Region. In order to explore the growers' condition in those two value chains, mapping and marketing margin of the growers are examined.

Both primary and secondary data are used. Primary data obtained by conducting survey and interviewing all the main actors (growers/ farmers, collector, wholesalers, retailer, exporter) concerning costs, profit margins, their constraints, benefits, and governance. Key Informant Interviews (KII) is made to responsible personnel and major exporters from the private sector in exporting mango and

pomelo. The questionnaires were administered through visiting the two selected townships, and business firms and conducted face to face interviews. Moreover, value chain mapping of pomelo and mango are illustrated to visualize networks between all stakeholders and processes in a value chain. Interviews were conducted in two selected townships in 2014.

The value chains in export of mango and pomelo from the Yangon Region are studied. In the Yangon Region, Hmawbi and Teikkyi Townships are chosen to analyze the export value chain. Comparison of these two value chains are made based on their market situation, profitability of each actor of the value chain, and current situation of growers. When interviewing all stakeholders, challenges are faced in making appointment with each group of stakeholders in pomelo and mango value chain. In addition, when asking business information such as income, profit margin, taxation, and cost conditions, stakeholders are unenthusiastic to answer those questions. Yet efforts have been made to achieve the needed data and information.

For questions related to business, operations, types of fruits grow and practices are explored. These questions include their use of inputs, potentials for expansion, and availability of supports from public sector and NGOs. For the financial aspects, their total assets, capital, availability of loans, source and their intention for using the loans are taken into consideration. For the market information, access to market place, the role of middlemen in operations of growers, marketing channels to Domestic and Export Markets are asked.

Secondary analysis is made based on published sources from domestic and international sources. Domestic sources include data and publications from the Ministry of Agriculture and Irrigation, the Union of Myanmar Federal of Chambers of Commerce and Industry, UMFCCI, and Myanmar Fruit, Flower, Vegetable Producer and Exporter Association, MFVP.

As the main purposes are to explore current market situation, profitability of each actor, and to analyze the marketing channels of fruits to export market from the Yangon Region, close and open ended questionnaires are asked to growers and all other stakeholders mentioned above. In addition, I have got a chance to attend the regular meeting of the Mango and Pomelo Cluster at the UMFCCI during my stay in Yangon. To explore the growers' condition in the mango and pomelo value chain, mapping and marketing margin of the growers are examined. For the secondary analysis, descriptive study based on the reports and publications collected from the UMFCCI and the Ministry of Agriculture and Irrigation of Myanmar are conducted.

To explore and analyze the growers' current situation, challenges and strengths, questionnaire is divided to four sections. These are socioeconomic conditions, business information, financial aspect and market information about their production and supply. Under the socioeconomic questions, their family background, and experiences concerning the horticulture business are asked. Under operation/ production of fruits, types of ownership, landholding, labor, inputs used, possession of farm implements, and constraints faced by growers are asked. Moreover, assessment of production of pomelo and mangoes in past five years by growers is also asked. To explore the financial conditions of growers, startup capital, source of

credit for growers, and their preferred source of finance are asked. Concerning the market condition, access to market information, impeding factors for access to financial resources by growers and challenges are examined. Moreover, growers share of margin in the chain, and value chain mapping are studied.

For collectors and wholesalers, their views on current market condition, type of costs incurred, strengths and weaknesses in distributing within the domestic market, and external challenges faced by these two middlemen are studied. For exporters, strengths and weaknesses in distributing within the international market, external challenges, major costs of exporters, types of procurement from growers and their views on government policies are studied. The survey data were collected via using KII approach in August and September 2014. Altogether 26 players in pomelo and mango value chains are interviewed, which include 16 growers, 8 middlemen and 2 exporters.

3.2 Value Chain Mapping and Calculation of Margin

In this study, value chain mapping was used to illustrate the connections between growers and other market players in exporting and marketing pomelo and mango in Yangon Region. Flow diagrams, showing the core transactions of the two fruits value chains, were utilized. These mappings not only show the connections between players, and their activities, also take into account the supporting markets in each step of the chain. For the simple value chain, there are very few supporting industries. As the chain grows, more product and money flows along the chain and increased demand for support services, demand for supporting market (inputs, capital,

technological assistance, and capacity building, etc.) will become larger. Mapping can show how the values changes throughout the chain, and types of business services feeding into the chain.

Although mapping have some drawbacks such as low ability to illustrate the changing nature of the chains, inability to show and explain the needs of end market requirements, mapping is widely used as one of the useful tools of measuring value.

Another type of analysis used in this study includes financial indicators calculations for growers. The aims of analyzing the financial aspects of the value chain are to identify how operational and investment costs, and revenues are distributed among the players, to explore how costs and margins in a chain are changing over time in order to forecast the future. Moreover, this analysis can compare profits of one chain with profits in another chain and thus to see whether it may be worthwhile to set the best chain and to switch from one chain to another.

Indicators are revenue, total costs, fixed costs, variable cost, net profit, Intermediate cost, added value, gross profit, net profit, income, return above variable cash cost, return above variable cost, return per unit of capital invested, return per unit cash cost. For growers, major costs include

Total cost = Variable cost + Fixed cost
Fixed cost = Maintenance cost + Depreciation cost + Management cost + Tax + Interest
Variable cost = Fertilizers cost + Pesticides cost + Workers' wage + Fuel cost
Gross Marketing Margin = Average Selling price – Average Buying price
Profit = Gross Marketing margin - Total Marketing cost

For each stakeholder along the chain, marketing margins for the various stakeholders were estimated using the following formulas (Tefera, 2014).

Total Gross Marketing Margin TGMM =

$$\frac{\text{Consumer Price} - \text{Growers Price}}{\text{Consumer Price}} \times 100$$

where Consumer Price = Urban Retail Price

Share of gross marketing margin received by Rural Collectors GMM_{RC} =

$$\frac{\text{Rural Collector Price} - \text{Growers Price}}{\text{Consumer Price}} \times 100$$

Share of gross marketing margin received by Rural Retailers GMM_{RR} =

$$\frac{\text{Rural Retail Price} - \text{Rural Collector Price}}{\text{Rural Retail Price}} \times 100$$

Share of gross marketing margin received by Urban Wholesalers GMM_{UW} =

$$\frac{\text{Urban Wholesalers Price} - \text{Rural Collector Price}}{\text{Urban Retail Price/ Consumer Price}} \times 100$$

Share of gross marketing margin received by Retailer GMM_{UR} =

$$\frac{\text{Urban Retail Price} - \text{Urban Wholesalers Price}}{\text{Urban Retail Price/ Consumer Price}} \times 100$$

Share of gross marketing margin received by Retailer GMM_{EX} =

$$\frac{\text{Export Price} - \text{Growers}}{\text{Export Price}} \times 100$$

Growers Gross Marketing Margin GMM_P = 100% –TGMM

3.3 Overview of the Agriculture Sector in Myanmar

In Myanmar, agriculture is the main source of livelihood for people as well as the basis for all round sectorial development of the economy. It contributes 32% to GDP, account for 31.8% of export earnings and employ 61.2% of total labor force in 2013-2014 (MOAI, 2014). In addition, more than 75% of the total population residing in the rural areas is principally engaged in agriculture. Therefore, it is essential to upgrade the agriculture sector for the country. By rising the income and livelihood of rural area, all round development of nation could be achieved through raising agricultural production and export. Agriculture is as a source of employment and income for many small farmers, and of foodstuffs and raw materials. By raising selected crops production, substantial positive effects would be brought for nationwide development of agro-based industry, nutrition of people, and livestock breeding.

According to UNDP and Planning Department joint survey of Integrated Household Living Condition Assessment (IHLCA), poverty in Yangon was 15.1 % in 2005 and 16.1% in 2010. In addition, 56.4% of the total land area is still utilizing for agriculture sector. Urban poverty has declined from 14.4% in 2005 to 11.9% in 2010 yet rural poverty has increased from 17.4% to 28.7%. Due to the high poverty in rural, the overall poverty has increased in 2010 (UNDP, 2013).

After the economic transition from planned economic system to market oriented economic system in 1988, agricultural policies of Myanmar pay attention on boosting production and promotion of agricultural exports. The Government

considers agriculture as the base for all-round development of other economic (MOAI, 2014).

Yet, Myanmar still needs to enhance the development of horticulture products in local as well as export markets though it can produce diversified and good quality with large numbers. Seasonal fruits, vegetables and flowers can grow well in all parts of Myanmar. Aside from rice and pulses, horticultural crops in general play as important role in economic development and nutritional status of its population. In Myanmar, horticultural crop growing area is about 17% of the total agriculture land (MOAI, 2014). However, production of horticultural crops is mostly consumed internally with a few proportion exported to neighboring countries. Marketing and exports of horticultural crops, particularly fruits, is complex and risky unlike rice and pulses due to their highly perishable nature, seasonality, weight and the need for special attention (Gandhi and Namboodiri, 2002). It is evidenced that the core challenge for the development of agriculture commercialization in developing world is the absence of a network of functional value chains. In order to make this value chain effective and functional, key deficient and constraining factors have to be identified and addressed as a priority.

3.4 Pomelo Production in Myanmar

Pomelo is a subtropical evergreen tree, grows in warm climates. It is a type of the citrus fruit which possess numerous health benefits for people. The fruit has fairly thick skin and able to keeps for months. Myanmar has favorable climate to grow pomelo for exporting purpose. Three major types of pomelo mostly grown in

Myanmar are White, Pink, and others. Pink pomelo has the highest quality among three. Beforehand, there are about 18 species of pomelo based on regions. Since 2012, the pomelo growers committee decided to identify three main types of pomelo lead by the Myanmar Fruit, Flower and Vegetable Producer & Exporter Association (MFVP).

Generally, pomelo is grown in most States and Regions of the lower part of Myanmar, especially in Yangon Region, Bago Region, Ayeyarwady Region, Taninthayi Region, Mon State and Kayin State.

Figure 3.1 Pomelo Growing Zones in Myamar

Source: Google Map (2014)

This study stresses on pomelo production and exports of the farmers in selected townships of the Yangon Region. The Region is selected as it is the main center for both trading and doing business (MOAI, 2014). The top three growing areas are Mawlamyine, Bago, Yangon and among them Mawlamyine is the best geographical area for pomelo cultivation. However, the local people in this area use

the traditional method and they cannot carry out mass production. Another reason is that they are not much interested in export process since they have so many hindrances such as difficulties in transportation, poor infrastructure, and lack of access to market and higher cost of production and export. Due to these reasons, the selected area for this paper is chosen to be as Yangon.

Total estimated area of pomelo cultivation is 15,093 acres in the Myanmar with total estimated production is 132,000MT per year. In Yangon, there are 214 acres of pomelo harvested area and estimated production about 1,883MT per year (DOA, 2011).

Table 3.1 Production of Pomelo in Myanmar (2010-2011)

State/ Region	Cultivated Area (Acre)	Yield/ Unit/ Acre	Yield/ Tons/ Acre	Total Production in Tons
Yangon Division	214	5,865	8.8	1,883
BagoDivison	2,236	5,650	8.5	19,006
Mon State	2,264	5,960	8.9	20,150
Other	10,379	5,897	8.8	91,335

Source: Department of Agriculture and Irrigation (2010-2011)

By studying the value chain of pomelo in Yangon Region, current conditions of growers and other stakeholders within the chain can be examined. Being a potential exported fruits, examining the challenges and hindrances of pomelo value chain can help contributing the future development of pomelo export as well as value adding processes.

3.5 Mango Production in Myanmar

Mangoes are a popular fruit tree among fruit growers and can grow well in various climate conditions in Myanmar. Mango is an origin of Indo- Burma Region. It has grown since ancient time in Myanmar. Mango can be grown on various soil types from temperate to tropical regions. In Myanmar, about 200 species of mangoes can be grown. Mango season in Myanmar is in summer and rainy seasons, from April to July, based on types.

Among the major type of mango, Sein Ta Lone is the origin of Kyauk Se, Mandalay Region, upper Myanmar yet grown all over the country. It was famous among local and foreign consumers after 1990s. Harvesting period depends on Region. In Lower Myanmar, Sein Ta Lone can be harvested in last week of April while May first week in upper Myanmar and June second week in Hilly Regions of Shan State. The main advantage of the Sein Ta Lone is its long lasting. It is mainly exported to China via border trade route.

Mya Kyauk is originated from Bago Region. Its large size and good taste attract consumers yet perishable nature impedes popularity in both local and export markets. Shwe Hin Thar is the Mandalay origin and grown mostly in central Myanmar and Shan State. Although it is grown in Yangon Region, Shwe Hin Thar is less popular among local consumers. However, it has huge export market, China. Yin Gwe mango can be grown in every parts of Myanmar, yet prefer more in lower Myanmar and Rakhine State. It is also used for Mango Leather and puree. Ma Chit

Su is the most favorite among Myanmar consumers. It can be consumed at both stages, green and ripe. However, it has no export market at all.

Figure 3.2 Mango Growing Zones in Myamar

Source: Google Map (2014)

Main mango producing areas are observed in the southern regions; Ayeyarwaddy, Bago and Yangon Division, and in the central region; Mandalay and Sagaing Division. The total planted area for mango was 79,908 hectares and the area

of fruit harvest was 70,084 hectares with total production of 503,676 metric tons in 2010-2011 (DOA, 2011). Exportable quality cultivars are mainly produced in the central and east region, and the remaining planting areas produce mango for local consumption. The following table shows the gross planted and harvested areas of mangoes in all States and Regions of Myanmar.

Table 3.2 Mango Growing Area and Harvesting Area in Myanmar (2010-2011)

No	State/ Region	Gross Area Planted (hectare)	Gross Area Harvested (hectare)
1	Ayeyarwaddy	18,041	15,999
2	Bago (East)	10,448	10,445
3	Mandalay	7,552	5,320
4	Yangon	7,458	7,365
5	Sagaing	6,030	6,029
6	Shan (South)	5,742	3,275
7	Bago (West)	5,230	5,069
8	Rakhine	4,032	3,333
9	Kachin	3,560	2,946
10	Mon	3,212	2,658
11	Magway	2,422	2,393
12	Tanintharyi	2,332	2,051
13	Shan (East)	1,297	989
14	Kayin	1,163	1,030
15	Chin	697	623
16	Shan (North)	573	440
17	Kayah	121	121
	Total	79,910	70,086

Source: Department of Agriculture and Irrigation (2010-2011)

In 2010-11, gross planted area of Mango is 7458 hectares. Among them, 7365 hectares are harvested. Myanmar mango has already got export market. By studying

the current value chain and margins of growers, global value chain for mango can be improved in future (DOA, 2011).

3.6 Description of the Study Area (The Yangon Region)

Yangon is the main center for trading and business in Myanmar. The city ispreviously the capital city of Myanmar and now regarded as main trading hub for allkinds of merchandise in Lower Myanmar. The international banking system is onlyavailable in Yangon which is one of the best cities for commerce. Both Air-way and sea-freight for trading are available in only Yangon. Nowadays, one more international airport in Mandalay affected to upper Myanmar traders (YCDC, 2012).

There are three main ports for sea-freight in Yangon, Thilawa (Thanlyin), Bo AungKyaw (Yangon) and Asia World (Yangon). Much of the country's normal trade go through Thilawa Port, the largest and busiest port in Myanmar (YCDC, 2012). Thus, Yangon is recognized as highly potential in agricultural production with main products including pomelo with other fruits, vegetables and ornamental plants.

Within the Yangon Region as a whole, there are 33 townships. Among these 33 townships, only 3 townships (Hlegu,Hmawbi and Taikkyi) are mainly cultivated and the other areas have some. In this research, the main cultivated area of Yangon; Hmawbi and Taikkyi are selected area. Hmawbi township is located in northwest of the city of Yangon. In Hmawbi Township, the 1,016 acres (4.11 km2) of Myaung Dagar Industrial Zone is located. The zone is mainly intended for steel factories. Hmawbi Township is also subdivided into 40 Village Tracts. Taikkyi Township is also in Northern District of Yangon Region, Myanmar. Taikkyi Township is

subdivided into 3 Towns include Taikkyi Town, Oakkan Town, and Ahpyauk Town. Taikkyi Township is also subdivided into 75 Village Tracts (YCDC, 2012).

Figure 3.3 Map of the Yangon Region

Source: Google Map (2014)

In Hmawbitownship, Tar Gwa Village, GonHnyin Tan Village, and Shan Taw Gyi Village from Tar Gwa Village Tract is selected. Tar Gwa Village Tract is situated in Hmawbi Township of Yangon (North) District. From Tekkyi Township, Tat GyiKone Pay Ta Yar Village, YwarThitKone Village and SarHpyu Su Village are selected for asking information about the challenges and strengths faced by pomelo and mango growers.

As this study aims to find out ways to promote value chain of pomelo and mango, survey was conducted in 16 growers from selected Townships in Yangon Region. Generally, Pomelo is largely produced in southern part of Myanmar while mango is available in both upper and lower Myanmar. In this study, value chains in export of selected fruits are studied in Yangon Region. Although Yangon Region is the major commercial area of Myanmar, both pomelo and mango are grown within the region and exported. Among the townships within Yangon Region, Hmawbi and Teikkyi Townships are selected to examine export value chain. After 2011, together with the open door policies of Myanmar and increasing foreign demand for horticulture products, production of these fruits is needed to promote. For the empirical analysis, primary data obtained from interviewing all actors concerning costs, profit margins, their constraints, and benefits. In this study, actors include growers, fruit collectors, wholesalers, and exporters.

CHAPTER 4

ANALYSIS OF THE VALUE CHAINS FOR MANGO AND POMEL EXPORT IN YANGON REGION

In this chapter, descriptive analysis is used based on Key Informant Interviews (KII) to main stakeholders in the value chain: farmers or growers, fruit collectors, wholesalers and exporters. Mapping for value chain of both fruits to local and global markets are studied. In addition, cost and net profit margins of the growers on both mangoes and pomelo are calculated. Through this analysis, needs and challenges of growers can be assessed and able to find out ways to solve the challenges.

4.1 Socioeconomic Conditions of the Growers

Socioeconomic condition of the respondents includes demographic aspects, and experience in horticulture production and involvement in cooperatives or clusters. Demographic factors are age, sex, marital status and number and ages of family members. All the 16 growers are male and being the members of Pomelo and Mango Cluster under UMFCCI, which provides them with technical and operational supports. Socioeconomic conditions of the growers are shown in table 4.1.

Table 4.1 Socioeconomic Condition of the Growers

Sr.	Factors	Respondents	Percentage
1	**Age Distribution (Years)**		
	18-25	0	0
	26-35	2	12
	36-45	6	38
	Above 45	8	50
Total		**16**	**100**
2	**Education**		
	Primary School	4	25
	Middle School	6	38
	High School	4	25
	Bachelor	2	12
Total		**16**	**100**
3	**Family size**		
	Less than 5 Numbers	0	0
	5 and 10 Numbers	4	25
	11 and 15 numbers	8	50
	15 numbers and above	4	25
Total		**16**	**100**
4	**Number of working persons (age 16-59 Years) in family**		
	Less than 5 Numbers	1	6
	Between 5 and 10 Numbers	5	31
	Between 11 and 15 numbers	10	63
Total		**16**	**100**
5	**Experience in Horticulture Business**		
	Less than 5 years	0	0
	Between 5 and 10 years	4	24
	Between 10 and 15 years	6	38
	15 years and above	6	38
Total		**16**	**100**

Source: Survey Data by Author, 2014

According to the survey data, most of the respondents, i.e. 50%, are above the age of 45 years while the second largest group composes of 36 and 45 years. Age between 26 and 35 years are the lowest age group among growers. In terms of the educational qualification of the respondents, majority of them, i.e. 38 % are the middle school level followed by 25% each for primary and high school level respectively. Bachelor degree holders constitute only 12% among the respondents.

Half of the respondents have family member between 11 and 15 numbers. Among the families of 16 growers, 6% have less than 5 numbers of working age people within family. Yet majority of the growers, 63%, have 11 and 15 numbers of working age people within their family. Majority of the respondents, i.e. 38%, have more than 15 years of experience in horticulture production. Another 38% also have experience between 10 and 15 years in horticulture business. Only 24% of the respondents have experience between 5 and 10 years.

4.2 Business Information (Operation) of the Growers

In this section, studying the year of establishment of the plantation, type of business ownership, number of operated acres, number of full time and part time workers, source of labor are studied.

From the survey, it was found that half of the growers have operated their orchard more than 15 year, while 38% have experience between 10 and 15 years. The rest, 12% of the respondents have experience between 5 and 10 years in operating the orchard. 76 % of the growers are operated as family business. Sole proprietorship constitutes 12% among total respondents. Other 12% runs their orchard with local

partners. All the operations of responding businesses are based on local based businesses rather than joint venture or collaboration with foreign investors. In terms of the land holding, majority 38% are operating on 20 and 30 acres while other 38% run between 10 and 20 acres. 24% of the growers have less than 5 acres of land. It can be said that all the responding growers are small holder farmers. These are shown in table 4.2.

Table 4.2 Business Operation and Ownership of the Growers

Sr.	Factors	Respondents	Percentage
1	**The year of operation of the plantation**		
	Less than 5 years	0	0
	Between 5 and 10 years	2	12
	Between 10 and 15 years	6	38
	15 years and above	8	50
Total		**16**	**100**
2	**Type of Ownership**		
	Sole proprietorship	2	12
	Family Business	12	76
	Domestic Partnership	2	12
	Partnership with foreign company	0	0
Total		**16**	**100**
3	**Number of Acre Operated by Growers**		
	Less than 5 Acres	4	24
	Between 5 and 10 Acres	6	38
	Between 10 and 20 acres	6	38
	Between 20 and 30 Acres	0	0
	30 Acres and Above	0	0
Total		**16**	**100**

Source: Survey Data by Author, 2014

Being a labor intensive industry, horticulture growers need large numbers of workers especially during planting, growing, and harvesting. As some of the fruits and vegetables are seasonal in nature, majority of the unskilled laborers are reluctant to wait and join the horticulture farming. Some migrate to neighboring countries and others to large cities and border areas of Myanmar for better income. Therefore, only few laborers are available in these areas.

Table 4.3 Number of Labor, Availability and Sources

Sr.	Factors	Respondents	Percentage
1	**Number of Total Workers**		
	Less than 10	4	24
	Between 10 and 20	7	45
	Between 20 and 30	3	19
	Above 30	2	12
Total		**16**	**100**
2	**Source of Labor**		
	Family	2	12
	Local Villages	4	25
	Out of the township	4	25
	Out of the Region (migrant)	6	38
Total		**16**	**100**

Source: Survey Data by Author, 2014

In these areas, most of the workers are from rural areas of central Myanmar where they have poorer working environment and livelihoods. Therefore, number of workers, availability and their sources are shown in table 4.3. 45% of the growers run their business with 10 and 20 workers. However, not all workers are permanent. In

both plantations, permanent laborers are around 3 to 7 numbers for each grower. Majority of the labor force is still relying on family workforce.

From the interview, it was found that access to laborers is more difficult especially for mango growers year by year due to its seasonal nature. As mango usually harvests in May to August, during the rainy season, workers are being idle in summer and winter. They need to find jobs in other areas and faced hardships. Finally, they left the study areas and migrate to other places. Growers tried to persuade workers by changing the type of fruits as both can earn income. As pomelo can grow all year round, growers expand pomelo plantation within the areas. As the nature of horticulture plantation is labor intensive, some of the growers are now switching to other non-seasonal fruits such as guava, dragon fruit and industrial crop such as rubber. Yet for guava, foreign market is still limited, unlike mango.

Another important aspect of operation in horticulture business is the use of other inputs. These include equipment for cultivation and spraying and large machineries, high quality plants, chemical and natural fertilizers, pesticides, insecticide, and fungicide. Following table shows the use of farm implements and machineries by growers.

Table 4.4 Utilization of Farm Implements and Machineries among Respondents

Growers	Ploughs	Harrows	Other Equipments	Water Pumps	Tractors
Pomelo	6 (38%)	6 (38%)	7 (44%)	7 (44%)	3 (19%)
Mangoes	4 (25%)	3 (19%)	5 (31%)	6 (38%)	1(6%)
Total	**10 (63%)**	**9 (57%)**	**12 (75%)**	**13 (82%)**	**4 (25%)**

Source: Survey Data by Author, 2014

From table 4.4, it can be seen that not all growers can use all farm equipments. Utilization of ploughs, harrows, and tractors by respondents are lower comparing to the use of water pump, and other small equipment. As most growers are small holder farmers, their affordability is low on spending large and expensive machineries and vehicles. However, as the water is indispensable for their plantations, 81% of the growers use water pump. At the same time, 75% of the respondents use small farm implements. When comparing the utilization of farm implements, pomelo growers have relatively higher percentage than that of mango growers.

Another important farm inputs for growers include seeds, plants, fertilizers, pesticides, insecticide and fungicide. The use of farm inputs by growers is illustrated in table 4.5.

Table 4.5 Utilization of Farm Inputs among Respondents

Growers	Local Seeds	Imported Seeds	Local Plants	Imported Plants	Chemical Fertilizers	Natural Fertilizers	Pesticides, Insecticide Fungicide
Pomelo	0 (0%)	0 (0%)	8 (50%)	0 (0%)	2 (13%)	6 (38%)	2 (13%)
Mangoes	8 (50%)	0 (0%)	8 (50%)	0 (0%)	0 (0%)	8 (50%)	0 (0%)
Total	**8 (50%)**	**0 (0%)**	**16(100%)**	**0 (0%)**	**2 (13%)**	**14 (88%)**	**2 (13%)**

Source: Survey Data by Author, 2014

All 16 growers use domestic plants and seeds. Moreover, the 88% of the growers use natural fertilizers. Only 13% of the growers use chemical fertilizers, pesticides, insecticide and fungicide while the rest use natural fertilizers. When

comparing between pomelo and mango growers, mango growers use only local seeds, plants, and natural fertilizer. Those using chemical fertilizers and pesticides are pomelo growers. Mango can be grown in any place especially in lower Myanmar. Mango growers need lesser efforts for growing mango than that of pomelo. However, availability of quality plants and seeds are also important for high yield and export quality.

Availability of inputs is easy for both growers yet the situation depends on financial condition of the growers. As most of the growers are small holders, their input costs rely on profit margin of the previous year and availability of financial capital. Only 4 pomelo growers and 6 mango growers can be able to resell the plants commercially. Other growers depend only on selling fresh fruits to collectors and local sellers. With opening up of the economy, export of fruits become increasing. However, there still have challenges for growers. Following table shows the growers' views towards production of pomelo and mangoes in local and export markets during the past five years.

Table 4.6 Assessment of Pomelo and Mangoes Production in Past Five Years

Growers	Local			Exports		
	Better	**Unchanged**	**Worse**	**Better**	**Unchanged**	**Worse**
Pomelo	4 (25%)	4 (25 %)	0 (0%)	5 (31%)	2 (13%)	0 (0%)
Mangoes	5 (31%)	3 (19%)	0 (0%)	2 (13%)	1 (6%)	2 (13%)
Total	**8 (50%)**	**7 (44%)**	**0 (0%)**	**7 (44%)**	**3 (19%)**	**2 (13%)**

Source: Survey Data by Author, 2014

From table 4.6, altogether 50% of the growers thought of their production in past 5 year period is better for local market while 44% thought as steady market. In contrast, export market is the better for 31% of pomelo growers and 13% of mango growers. Yet, totaled of 19% thought of as remain unchanged and 13% of mango growers thought of as worsened export potential. For export market of both fruits, potential for pomelo has increased in recent years while mango market has declined. Although there were collectors and an exporter for mango market, insufficient labor force in harvesting and low level of profitability led growers to move to other crops rather than improving the production and marketing of mango.

From KII, growers mentioned their major constraints as poor accessibility of modern technology, poor risk management (such as risks of climate, market, labor shortage, etc.), lack of proper storage facilities and techniques, lack of research and development, and deficient in innovation, underdeveloped value added process (such as processing or preserving fruits). Therefore, they rely mainly on fresh fruits market, locally and internationally. Yet, the study area still possesses benefits of potential for exports, appropriate geography and climatic condition, availability of inputs and able to expand the area of cultivation. The following table describes the level of constraints faced by growers from selected Townships.

From the table 4.7, it can be illustrated that major constraints for pomelo growers are managing climate risks, market risks, poor R and D, lack of innovation, low value added processes, and high costs of transport. Access to modern technology and labor shortages are only regarded as medium level. For the mango growers, managing climate risks, market risks, labor shortage, poor innovation, R and D, and

transport costs are the most affected constraints. Inbound and outbound logistics and transportation of inputs are also important. Major costs incurred by most growers are for transport, pesticides, insecticide, and fungicide.

Table 4.7 Level of Constraints Faced by Growers

Sr	Constraints	No. of Pomelo Growers			No. of Mango Growers			No. of Growers
		Low	Med-ium	High	Low	Med-ium	High	
1	Low Availability of Farm Inputs	4	4	0	2	5	1	**16**
2	Short of modern technology	3	5	0	7	1	0	**16**
3	Climate risk	0	1	7	0	0	8	**16**
4	Market risk	0	2	6	0	0	8	**16**
5	Labor Shortage	0	6	2	0	0	8	**16**
6	Poor storage facilities	1	5	2	2	5	1	**16**
7	Short of R and D	0	3	5	0	2	6	**16**
8	Poor Innovation	0	2	6	0	1	7	**16**
9	Low Value Added Process	0	0	8	1	3	4	**16**
10	Remoteness to Market	5	3	0	6	2	0	**16**
11	High Transport Costs	0	0	8	0	0	8	**16**
12	Poor Quality and Standard	1	4	3	0	4	4	**16**
13	Government Technical Supports	8	0	0	8	0	0	**16**
14	Technical Supports from NGOs	7	1	0	8	0	0	**16**

Source: Survey Data by Author, 2014

Government supports for horticulture farms still low for both mango and pommel. Growers usually rely on traditional approaches. When they try to increase

yield or quality, they need to attempt trial an error approach. As they have lack of knowledge in using proper type and quantity of fertilizers and pesticides, they try for several times. Accordingly, waste of time, energy, money and resources occur. Only the UMFCCI, Myanmar Fruit, Flower and Vegetable Producer & Exporter Association (MFVP) and respective clusters are the major supporters for providing technical assistances to these growers.

One of the major challenges among growers, especially by pomelo growers is the low bargaining power in export market. Within last 2 years, growers needed to incur cost of storing pomelo in Singapore until fruits were sold out. Therefore, they face extra amount of transaction costs. Since 2014, some of the supermarket chains in Myanmar started linking the growers directly and pay the price comparable to retail price. Therefore, growers have gained benefits and have low interest on exports. Yet the numbers of growers who can contact directly with these supermarket chains are still low. Receiving higher price in domestic market create favorable situation for growers yet pomelo and mango have potential demands in international market. Giving low attention on exports may lead to low level of competitiveness at international level in future comparing to other Asian developing fruit producing countries. Consequently, this will reduce welfare among Myanmar growers.

4.3 Financing and Costs incurred by the Growers

Being small holder growers, financing is the most important inputs for the respondents. Access to low interest credit is still difficult for growers. Table 4.8 show the startup capital of the growers.

Table 4.8 Startup Capital of the Respondents

Growers	Startup Capital (Myanmar Kyats)				Total
	Less than 1,000,000	1,000,000-5,000,000	5,000,000-10,000,000	Above 10,000,000	
Pomelo	2 (13%)	4 (25%)	1 (6%)	1 (6%)	**8 (50%)**
Mangoes	3 (19%)	3 (19%)	2 (12%)	0 (0%)	**8 (50%)**
Total	**5 (32%)**	**7 (43%)**	**3 (19%)**	**1 (6%)**	**16 (100%)**

Source: Survey Data by Author, 2014

Most of the establishments of horticulture business by the responding growers were above 15 years. Nowadays, land prices in Teikkyi and Hmawbi townships are rising due to the establishment of industrial zones and expansion of urban Yangon. Main component of startup capital for pomelo and mango growers include price of land. During the past decades, the land and prices of other facilities in selected townships are low. Therefore, their startup capital is mostly (43% of the despondence) between Ks 1,000,000-5,000,000 and less than Ks 1,000,000 for 32% of the respondents. Only for those who established in later years have higher startup capital.

Financing of growers is indispensable as availability of inputs is based on financial accessibility of these growers. Especially, access to credit by growers in selected townships is mainly from informal sources. Majority of the growers (56%) obtained needed finance from traders, i.e. mainly the fruit collectors or agent. In both townships, these traders/ collectors play as vital role in pricing and market access of the fruits. Then, the second largest group, 25% of the growers, gets financial

resources from friends and relatives and other 19% from informal sector money lenders. Banks (public and private banks), micro financing programs and NGOs rarely offer credits for horticulture growers. Therefore, growers face high interest rate and being exploited by the middlemen and money lenders. This led the welfare and progress of the growers. These are shown in table below.

Table 4.9 Source of Credit for Growers

Growers	Bank	Friends/ Relatives	Informal Sector	Micro-finance	NGOs	Traders	Total
Pomelo	0 (0%)	3 (19%)	1 (6%)	0 (0%)	0 (0%)	4(25%)	**8 (50%)**
Mangoes	0 (0%)	1 (6%)	2 (13%)	0 (0%)	0 (0%)	5 (31%)	**8 (50%)**
Total	**0 (0%)**	**4 (25%)**	**3 (19%)**	**0 (0%)**	**0 (0%)**	**9 (56%)**	**16 (100%)**

Source: Survey Data by Author, 2014

Although there are Agricultural Development Banks, Rural Development Banks, and NGOs supporting agriculture sector in Myanmar, availability of formal loans and credits are still impeding due to various reasons. The main reasons for poor availability of finance among horticulture growers include lack of required collateral, lack of contact with banks, lack of information, lack of proof for profitability, complex and lengthy procedures to apply for banks' credits, poor accounting standard, and others. Major constraints of growers' access to proper financial sources are described in table 4.10.

Among the major impeding factors that affect financial access, lack of required collateral is the main causes for the respondents. 31% of the respondents faced the insufficient collateral problem. Another cause is the poor accounting

standard among growers, which represents 24% of the growers. Lack of contact with banks, lack of information and complex banking procedures contribute 13% each. Lack of proof of profitability of the borrower constitutes 6% among respondents.

Table 4.10 Impeding Factors for Access to Financial Resources by Growers

Growers	Lack of Required Collateral	Lack of Contact With Banks	Lack of Infor-mation	Lack of Proof For Profit-ability	Complex Banking Procedures	Poor Accounting Standard	Total
Pomelo	2 (13%)	2 (13%)	1 (6%)	0 (0%)	1 (6%)	2 (12%)	**8 (50%)**
Mangoes	3 (19%)	0 (0%)	1 (6%)	1 (6%)	1 (6%)	2 (12%)	**8 (50%)**
Total	**5 (31%)**	**2(13%)**	**2 (13%)**	**1 (6%)**	**2 (13%)**	**4 (24%)**	**16(100%)**

Source: Survey Data by Author, 2014

From the KII, major reasons for utilizing the financial supports are for working capital and cash flow, buying capital equipment, and expanding business. The growers rarely use loans and credits for buying land, marketing, Research and Development, training workforce. Growers preferred sources of finance are shown in table 4.11 below.

Table 4.11 Preferred Source of Finance by Growers

Growers	Comm-ercial Banks	Venture Capital	Friends And Relatives	Government Assisted Funds	Informal Financial Market	Traders	Other Sources	Total
Pomelo	2(13%)	2 (13%)	1 (6%)	0 (0%)	0 (0%)	0 (0%)	3 (19%)	**8 (50%)**
Mangoes	1 (6%)	2 (13%)	1 (6%)	1 (6%)	0 (0%)	0 (0%)	3 (19%)	**8 (50%)**
Total	**3(19%)**	**4 (25%)**	**2 (13%)**	**1 (6%)**	**0 (0%)**	**0 (0%)**	**6(37%)**	**16(100%)**

Source: Survey Data by Author, 2014

Among the financing, preferred type or source of finance by both growers includes commercial banks, venture capital, from friends and relatives, government assisted funds, informal financial market and other sources. From the table, it can be noticed that majority of the growers (37%) prefer other source of finance. When looking at their reasons, it was seen that they have no idea about the institutions yet only the source with low interest rate. Being small holder farmers with poor knowledge of financing, they also prefer venture capital. Although majority of the growers obtained loans from traders (rural collectors), all of the growers do not want financial supports from traders as well as informal sector due to undesirable impacts on their profitability.

4.4 Assessment on Middlemen and Exporters of Pomelo and Mango Value Chains

In this section, two major aspects for middlemen are studied, including their current market condition and impact of government policies on their businesses. Under the current market condition, type of costs incurred by middlemen, their strengths and weaknesses in distributing within the domestic market, and external challenges for collectors, urban wholesalers and exporters are studied.

4.4.1 Rural Wholesalers/ Collectors/ Traders

Fruit collectors for mango and pomelo carry out the initial task of from rural growers. They buy fruits in advanced from growers with low price or borrowed needed money to growers. More than half of the growers deal with rural fruit collectors as they are the main agents to distribute fruits to regional, urban and export

markets. For Mango collector, they also resell mangoes to producers of mango leather and other finished goods producers.

Collectors mainly incur costs of management, i.e. assessing the quality and setting price of fruits, inbound and outbound logistics, and storage costs along the chain. Among them, fuel costs for transportation of fruits from growers and transportation to urban markets are the highest. Arrangement of proper storage facilities is also important. It needs warehouse, wooden boxes and straw for storing mangoes while cleansing and naturally shady and dry place is needed for pomelo. Moreover, costs of containers and labors are necessary to transport to urban market.

4.4.2 Urban Wholesalers

Urban wholesalers play as crucial role in distributing fruits in urban wholesale and retail markets. Moreover, distribution to other States and Regions are possible through urban wholesale markets. Within the Yangon Region, New Thiri Mingalar Fruits and Vegetables Market is the wholesale center of mango and pomelo as well. From the market, pomelo and mango are distributed to nearby towns and townships. Urban wholesalers buy fruits mostly from rural collectors while very few of them have direct linkages with farmers. Wholesalers from New Thiri Mingalar Fruits and Vegetables Market, Yangon incur labor costs, shop tax, electricity and storage facilities (at the shops). In this study, 2 wholesalers from New Thiri Mingalar Fruit Market are interviewed. They have experienced in urban fruit market for at least two decades.

Urban retailers directly deal with final consumers. Since 2014, supermarket chains in Yangon pay export quality pomelo and mango with prices close to retail prices. Growers can connect directly to these retail chains and gain benefits. As the number of urban retailers is numerous, KII for urban retailers are skipped in this study. Yet, retail prices are taken into account in value chain of both fruits.

4.4.3 Exporters

Since the export of horticulture products initiated, exports role become important. They act as linkages between foreign markets and growers. However, to reduce risks, they share risks burden on growers who are small holder producers of pomelo and mango. Until now, only 2 exporters, 1 each for pomelo and mango exists within the market. Therefore, growers have no choice if they intend to export their products to international markets.

Scores for Perception of Middlemen on Current Market Condition of Pomelo and Mango in Domestic Market are ranged as 1 for Strongly Agree, 2 for Agree, 3 for Neutral, 4 for Disagree, and 5, Strongly Disagree.

Table 4.12 Perception of Middlemen on Current Market Condition of Pomelo and Mango in Domestic Market

Sr	Questions	1	2	3	4	5	Total
1	Competition in domestic market is rising	0	2	6	0	0	**8**
2	Relationship with growers is important	6	2	0	0	0	**8**
3	Relationship with competitors is important	0	0	1	7	0	**8**
4	Collection is based on cultivation	0	3	5	0	0	**8**
5	Collection is based on local customer demand	6	2	0	0	0	**8**
6	Collection is based on foreign export	0	2	5	1	0	**8**
7	Export volume becomes increasing	0	5	2	1	0	**8**
8	Return on investment is high	0	1	6	1	0	**8**
9	Profitability is high	0	1	5	2	0	**8**
10	Costs are high	4	4	0	0	0	**8**

Source: Survey Data by Author, 2014

From the table 4.12, the perceptions of domestic fruit markets by middlemen are shown. Majority of the middlemen thought of the domestic competition as neutral, yet they regarded the relationship with growers as important. Accordingly, they usually maintain good and close relationship with growers through supporting financial needs in advanced. However, they thought that relationship among traders is not so important. According to traders, collection of fruits is based on demand of customers rather than production and export, as share of export is insignificant among total distribution. Volume of exports for pomelo is increasing in past 2 years while mango export from Yangon Region is declining. According to middlemen,

return on investment and profitability of fruit marketing is neutral while costs are high.

The next part is to assess the views of middlemen on changing policy initiatives regarding agriculture production and exports. Scores are given as 1 for Strongly Agree and 5, Strongly Disagree. Table 4.13 shows the impact of government policies on trading process of middlemen in pomelo and mango value chain.

Table 4.13 Impacts of Government Policies on Middlemen

Sr	Questions	1	2	3	4	5	Total
1	Government policies have positive impact	0	0	3	5	0	**8**
2	Collaboration from Government ministries	0	0	0	5	3	**8**
3	Government Provision of Market Information	0	0	4	4	0	**8**
4	Reduction of Restrictions in Distribution	0	0	4	4	0	**8**

Source: Survey Data by Author, 2014

From the table 4.13, middlemen perceptions on government policy changes and collaboration with government ministries have low positive impact on their activities. This is because, government mainly emphasizes on staples (rice) and cash crops (pulses and beans) and low attention on potential horticulture industry. Accordingly, government provision of better and quick market information and reduction of restrictions on distribution of fruits are neutral and low. Therefore, it can be said that government emphasis on improvement of fruit market is still insufficient.

Middlemen strive to achieve their profitability through buying low price from growers and adding greater profits when selling.

Middlemen face major weaknesses of high taxation on transportation, and distribution. Moreover, they face high fuel costs due to distance and insufficient infrastructure. In some villages, only earth roads are available so that they use farm tractors to transport to main road firstly. This kind of transaction costs makes increase in prices of fruits.

Assessment on exporters' view towards pomelo and mango exports is presented in table 4.14. Intensity of strengths and weaknesses faced by exporters are ranged as 1 for Strongly Agree and 5, Strongly Disagree. The following table reveals the current pomelo and mango exports market conditions in Yangon Region. Exporters face external challenges and high competition in both pomelo and mango markets. From Yangon Region, Myanmar, pomelo is exported to Singapore while mango is exported to China via border trade. In Singapore market, pomelo from Vitenam and Thailand are importing extensively. They already have high market share in Singapore market. Their quality is also in line with the international standards. Accordingly, market penetration of Myanmar fruits is still weak. Exports are mainly based on foreign customer demand. Within Myanmar, export of pomelo and mango has increased yet Myanmar still requires inspection, standard and certification in line with international standards. Although policy initiatives are carried out to enhance exports of agricultural products, exporters still face high cost and low profitability in pomelo and mango exports.

Table 4.14 Exporters' Perception on Current Market Condition of Pomelo and Mango

Sr	Questions	1	2	3	4	5	Total
1	Competition in International market is growing	2	0	0	0	0	**2**
2	Relationship with suppliers is important	0	2	0	0	0	**2**
3	Relationship with growers is also important	0	2	0	0	0	**2**
4	Export is based on Suppliers' Production	0	0	1	1	0	**2**
5	Collection is based on foreign customer demand	2	0	0	0	0	**2**
6	Export Quality standard should be upgraded	2	0	0	0	0	**2**
7	Inspection, standard and certification are in line with international standard	1	1	0	0	0	**2**
8	Export volume becomes increasing	2	0	0	0	0	**2**
9	Export price is satisfactory	2	0	0	0	0	**2**
10	Return on investment is high	0	0	2	0	0	**2**
11	Profitability is high	0	0	2	0	0	**2**
12	Costs are high	2	0	0	0	0	**2**

Source: Survey Data by Author, 2014

At the border trade route, sudden changes in trade procedures and regulations affect fruit exporters. Moreover, on border trade route, mangoes from upper Myanmar have higher market than those from Yangon. Therefore, exports of mango from Yangon Region were declined tremendously in 2013. Exporters procure fruits from growers on consignment basis. Therefore, exporters can reduce risks yet make burdensome on growers.

Then, exporters' views on government policies are also studied in table 4.15. Ranges are set as 1 for Strongly Agree and 5 for Strongly Disagree.

Table 4.15 Impacts of Government Policies on Export of Pomelo and Mango

Sr	Questions	1	2	3	4	5	Total
1	Government policies have positive impact	0	1	1	0	0	**2**
2	Government provide effective information	0	0	2	0	0	**2**
3	Collaboration With Government Ministries are Efficient and Effective	0	0	1	1	0	**2**
4	Better and Quick Exporting Procedures are arranged by the Government	0	0	1	1	0	**2**
5	Reduction of Restrictions in Exporting	0	0	1	1	0	**2**

Source: Survey Data by Author, 2014

From exporter's views, current initiations of policies and implementations on export of horticulture is better than previous regime yet still need improvements for reaching international markets, and greater competitiveness.

4.5 Value Chain Mapping and Analysis of Gross Marketing Margin

From growers to final consumers, both mango and pomelo have different distribution channels. These channels depend on types of consumers, ranged from local village to regional and urban consumers and also from foreign countries. From Yangon Region, both of the fruits have value chain reaching to global level, i.e. to neighboring countries and those from ASEAN. Therefore, along the different channels, rural fruit collectors (traders), rural wholesalers, urban wholesalers, urban retailers, and exporters are included for each fruit.

Gross marketing margin of pomelo and mango can be calculated for each stage in the marketing chain. In calculating the gross margin of pomelo and mango growers, difference between their gross income and the variable expenses is used. The gross margin is expressed on a per unit basis, and it provides growers in deciding the choice of growing current fruits and vegetables or new one. Following table shows the average costs of growers in pomelo and mango production.

Table 4.16 Costs of Producing Pomelo and Mango in a Year

Items	Mango	Pomelo
	Kyats per Hector	Kyats per Hector
Fixed Cost	**430,000**	**550,000**
i. Interest	250,000	220,000
ii. Management cost	100,000	250,000
iii.Tax	80,000	80,000
Variable Cost	**1,000,000**	**1,140,000**
i. Raw Material	900,000	1,000,000
ii. Labor Costs	100,000	140,000
Total Costs	**1,430,000**	**1,690,000**

Source: Survey Data by Author, 2014

From the table 4.16, total costs per hector can be calculated for both mango and pomelo producers. Under fixed costs, interest per year, cost of managing the orchard, and amount of tax are included. Costs of depreciation and Maintenance costs usually included in the fixed costs calculations yet due to poor accounting system and recordings, only three items are taken into consideration in cost calculation. For

variable costs, material costs and labor costs are calculated. Material costs include costs for seedling, natural fertilizers, chemical fertilizers, pesticide, and fuel costs per hector are included. Among these costs fuel costs is the highest among all variable costs. This is due mainly to the insufficient electrification in selected villages. Growers use fuel for operating generators, and pumping water, etc.

Labor is also an important variable costs. Labors are used mainly for trimming trees, fertilizing, spraying, watering plants and harvesting fruits. When comparing the costs of mango and pomelo production, mango has fewer costs, in both fixed and variable costs. In general, mango trees can grow naturally in every space within the Yangon Region. Accordingly, management cost is also low. Costs of raw materials and labor for pomelo are higher than mango as pomelo needs proper cultivation and appropriate use of fertilizer and pesticide continuously. Tax amount per hector is the same for both growers per year. For mango, per hector production cost is about Ks. 1,430,000 in 2013-14. Among them, fixed costs include Ks. 430,000 while variable costs compose of Ks. 1,000,000. Total per hector production costs of pomelo is Ks. 1,690,000. Both fixed and variable costs of producing pomelo are greater than that of mango, which include Ks. 550,000 and Ks. 1,140,000 respectively.

Next stage of analysis is to examine the grower's revenue. For both mango and pomelo growers, different varieties are produced. For instance, one mango grower mainly produce Sein Ta Lone for export market while another grower produce 2 or 3 varieties. Among 8 respondents who grow mango, 4 of them grow various types. Accordingly, total revenues can be obtained from adding their diverse

pricing and selling sources. Majority of them use single entry accounting system. Then Total Profits for mango and pomelo producers are calculated. Total profit is also termed Net Margin which can be obtained from subtracting total costs from total revenue.

Table 4.17 Total Profit/ Net Margin of Mango and Pomelo per Year

Items	Mango	Pomelo
	Kyats per Hector	Kyats per Hector
Total Revenue	1,965,000	2,712,300
Total Costs	1,430,000	1,690,000
Total Profits/ Net Margin	**535,000**	**1,022,300**

Source: Survey Data by Author, 2014

For mango growers, total revenue per hector is Kyats 1,965,000 while total revenue of pomelo is about Kyats 2,712,300. Total Profits are Kyats 535,000 for mango producers and Kyats 1,022,300 for Pomelo producers respectively. When comparing annual total profits among two grower groups, pomelo growers are far greater than mango. According to the growers' justification, major reason is the access to foreign market, less perishable nature of fruits, and seasonality. The life of harvesting mango is short, i.e. between April and August (5 months) while Pomelo can be harvested between August and March (8 months). Even after harvesting, pomelo can be stored for at least 2 months. However, the favorable situation cannot maintain every year. When there is low foreign demand or low market price (due to bumper crop), revenues will not cover the costs of production. At that time, fruit

growers do not pick fruits from trees in order to save labor costs, especially the pomelo growers.

4.6 Channels of Pomelo Value Chain in Yangon Region

For pomelo, there are 7 channels in pomelo value chain given below. Percentage in each Channel is the share of production volume from the 8 growers in 2013, i.e. a year prior to survey. In 2013, total volume of pomelo produced by 8 respondents from the Yangon Region is 600 Metric Tons.

Channel 1: Growers ➔ Rural Consumers (4 %)

Channel 2: Growers ➔ Rural Retailers ➔ Consumers (9 %)

Channel 3: Growers ➔ Rural Collectors ➔ Rural Retailers ➔ Consumers (22 %)

Channel 4: Growers ➔ Rural Collectors ➔ Urban wholesalers ➔ Urban Retailers ➔ Consumers (47 %)

Channel 5: Growers ➔ Urban Wholesalers ➔ Urban Retailers ➔Consumers(12%)

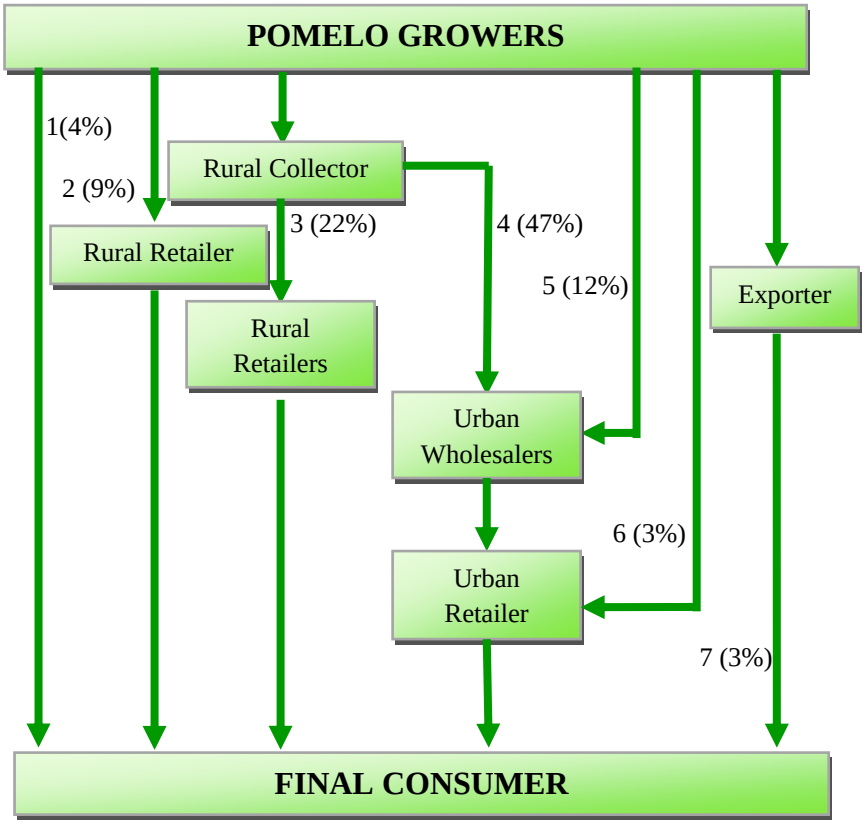
Channel 6: Growers ➔ Urban Retailers ➔ Consumers (3 %)

Channel 7: Growers ➔ Exporters ➔ Consumers (3 %)

From the above channels of pomelo value chain, the highest share of pomelo from the 8 respondents, i.e. 47% is distributed through Channel 4. In Channel 4, growers sell firstly to rural collectors most of their produces. Through rural collectors, urban wholesalers from Thiri Mingalar Fruit Wholesale Market buy pomelo and then sell to urban retailers from various parts of the Yangon City. In contrast, Channel 5 is

the direct route from growers to urban wholesalers yet it contributes relatively lower than Channel 3. This is due mainly to the low level of market accessibility and contacts in urban areas. Another reason of selling through rural collectors is the high transport costs (including fuel, labor, taxes and toll charges) when distributing to Yangon Wholesale Market. The costs will be too high for growers and can be able to reduce by selling to rural collectors. Hence, although they even know the price of pomelo given by rural collectors is low, growers sell most of their products through Channel 4. Different Pomelo value chain channels are shown in figure 4.1.

Figure 4.1 Channels of Pomelo Value Chain in Yangon Region



Source: From Author's Survey Data (2014)

Total volume of pomelo production by 8 respondents in selected townships of the Yangon Region is around 600 MT. Channel 1, 2 and 3 are mainly linked with rural, local and regional markets nearby producing areas while Channel 4, 5 and 6 intended for markets in Yangon City. Channel 7 is the connection with export market, which has great potential in the future. All 8 responding growers use channel 1, 2 and 3, yet the volumes are differed based on their quality, size and intention.

When making detail assessment of the pomelo mapping in Yangon Region, 4% of the total volume (24 MT) of Pomelo produced by 8 respondents use Channel 1, i.e. from growers to final consumers. This consumer group is mainly from rural areas. Accordingly, price received by growers in this channel is relatively low. Rural retailers are included in Channel 2 that contributes 9% (about 54 MT) of the total volume of pomelo produced by growers. This channel is also linked with the rural retail market in Yangon Region.

Channel 3 consists of one more stakeholder, rural collector. They collect pomelo from growers which constitute 22% (around 132 MT) of the total value chain. From rural collectors, rural retailers distributed mainly to rural and surrounding areas' markets. These surrounding regional market include markets in nearby Townships as well as nearby States and Regions including Bago and Ayeyarwady Regions. Especially for Ayeyarwady Region, pomelo market is larger than Bago Region and other townships of the Yangon Region due to their preferences and spending power.

Channel 4 includes the most number of stakeholders in value chain, i.e. rural collectors, urban wholesalers, and urban retailers in distributing pomelo. This channel is the most widely used channel among growers in value chain of pomelo in Yangon Region. Majority of the volume of pomelo produced by growers (47% or 282 MT) are collected firstly by rural collectors and resell them to urban wholesalers at the New Thiri Mingalar Fruits and Vegetables Market at Yangon City. Then, wholesalers distributed to urban retailers who sell fruits to final consumers. In this channel, urban retailers sell pomelo with market price around Kyats 2100. This is the average per unit retail price of pomelo and can vary depending on quality, size and locations of retail outlets within the city.

This Channel 4 is the largest among all channels of pomelo value chain in Yangon city due to its advantages, including no need to incur the costs of transport to urban market, and no need to find contact and market directly by growers. Growers can sell fruits to rural collectors and then earn their income. Some weaknesses of this channel is that it creates lack of bargaining power among growers as well as poor linkages with the wholesale and retail markets in long- run due to relying excessively on collectors by growers. The larger the number of middle men or stages of distribution channels, the greater the price of goods incur by consumers and lower the price received by growers. 6 pomelo growers (75%) use this Channel for distributing their fruits.

Channel 5 and 6 constitute the direct linkages between Growers, urban wholesalers and urban retailers. In Channel 5, some (but not all) responding growers sell 12% of their total volume of pomelo (72 MT) to urban wholesalers from New

Thiri Mingalar Market rather than linking through collectors. Then, wholesalers resell pomelo to urban retailers. This can make greater benefits for growers to achieve better prices for their fruits. Only 3 growers can access directly to urban wholesale market. Channel 6 is the direct link between growers and urban retailers which means the least middlemen and the most promising market. In this channel, urban retailers include supermarket chains and fruits/ pomelo specialty shops in Yangon City. Only 3% (around 18 MT) of the volume of pomelo was distributed in this channel. In this case, only 2 growers can gain linkages with these renowned urban retailers.

Channel 7 is the new and promising export market chain. Only 3% (18 MT) of the total volume of pomelo produced by respondents are exported through exporter. Currently export of pomelo is mainly to Singapore market yet China will be the new export market in the future. In this export value chain, exporters directly come to buy from growers. Yet they give low price to growers as well as distributed through consignment basis. Therefore, growers can earn money only after all exported pomelos are sold out in Singapore market. Only 3 growers can connect with export market for pomelo since 2012. The rest of 5 growers are attempting to meet the export quality of pomelo through upgrading their production techniques as well as certification issues via Myanmar Fruit, Flower and Vegetable Producer and Exporter Association (MFVP) under UMFCCI.

4.7 Type and Determinants of Pomelo GVCs

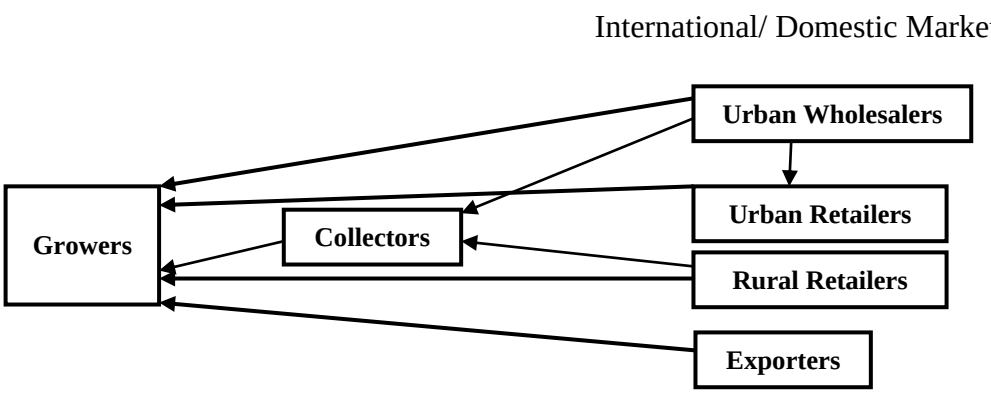
Horticulture value chain is differed from GVC of garment and other light industries. When categorizing the Value Chain of two horticulture products, Mango and Pomelo, they are in the realm of buyer-driven GVCs as there is no manufacturing and processing industries in pomelo and mango value chain. Fruit growers in the study area are very small in size, they have low access to different markets. Therefore, traders play as key role in value of both fruits, and in particular, rural collectors play as main role in distributing within the local market and exporter in international market.

In pomelo value chain, growers have low level of access to customers and urban retail outlets, i.e. 4% and 3% through channel 1 and channel 6. 47% of the total production from selected growers (282 MT) is collected by rural collectors. Through these rural collectors, pomelo is selling at urban wholesale and retail markets in Yangon City. During the low demand year for pomelo, growers cannot sell majority of their fruits. Accordingly, growers minimize loss through reduction in labor and transportation costs by leaving pomelo fruits unpicked from trees. This situation distressed growers and wasted pomelo. As the processing technology is poor, high value added products such as juice, marmalade and other food products cannot be produced from surplus fruits.

Unlike fruit value chains in other countries, direct demand from major urban retail outlets is still low. Yet the one and only retail chain, City Mart Supermarket, buy pomelo directly from growers and determined the standard of pomelo through

size, quality, and low chemical contents. Similarly, in export market, exporters play as essential role although the share of export is only 3%. As an exporter has monopoly power on rural growers, growers have to incur storage and other costs even at the foreign market until fruits are sold abroad. Based on Gereffi (2001), buyer driven GVCs of the pomelo from Yangon Region can be illustrated as below.

Figure 4.2 Buyer-Driven Global Value Chain of Pomelo from Study Area



Source: From Author's Survey Data (2014)

From the above figure, there are four direct linkages and three indirect linkages between buyers and growers. Growers respond to various demands from domestic and abroad. With all linkages, main item is the fresh pomelo rather than processed one. In this buyer- driven GVCs, volume of the growers' supply depend on market demand.

Yet, there are other major factors that affect the supply of pomelo among growers from Yangon Region. Based on information from table 4.7 and 4.9, these factors include shortage of R and D, high transport costs, low level of supports from public sector and NGOs and poor access to financial resources. Although growers

wish to expand the pomelo cultivation, limited access to required financing, new techniques of production and high transaction costs impede their potentials.

According to the interviews with growers, climate change and labor shortage become potential challenges for the pomelo production yet their impacts are still low. The reason is that workers can get job all year round in pomelo orchards comparing to other seasonal fruits and there is no severe climate change in Yangon Region except high temperature in summer that needs water and special attention by growers.

For the middlemen, government regulatory framework, access to market information and profitability play as key determinants of distributing or selling pomelo (Table 4.12 and 4.13). Restrictions on container trucks for using express ways, high fuel costs, and high tax during transportation and regulating the standard of transport trucks lead to low profitability among middlemen. Similarly, deregulations of government trade policies, standardization of fruits and horticulture products in importing countries and access to information of foreign market affect pomelo exporters.

4.8 Comparison of GMM for Stakeholders in Pomelo GVCs

For each stakeholder along the chain, Marketing Margins for the various stakeholders were estimated using the following formulas. Marketing margin is the price paid by final consumers minus the growers' price or farm gate price. In calculating the Gross Marketing Margin, GMM, growers' price and farm gate price are assumed to be the same. It is the net value of the product when it leaves the farm, after marketing costs have been subtracted. As many farms do not have noteworthy

marketing costs, it is the price of the product at which it is sold by the farm. Retail Price and Consumer Price are also regarded as the same. Gross marketing margins (GMM) for each stakeholder can be calculated and these were presented as percentages of the retail price.

Total Gross Marketing Margin TGMM =

$$\frac{\text{Consumer Price} - \text{Growers Price}}{\text{Consumer Price}} \times 100$$

Share of gross marketing margin received by Rural Collectors GMM_{RC} =

$$\frac{\text{Rural Collector Price} - \text{Growers Price}}{\text{Consumer Price}} \times 100$$

Share of gross marketing margin received by Rural Retailers GMM_{RR} =

$$\frac{\text{Rural Retail Price} - \text{Rural Collector Price}}{\text{Rural Retail Price}} \times 100$$

Share of gross marketing margin received by Urban Wholesalers GMM_{UW} =

$$\frac{\text{Urban Wholesalers Price} - \text{Rural Collector Price}}{\text{Urban Retail Price/ Consumer Price}} \times 100$$

Share of gross marketing margin received by Retailer GMM_{UR} =

$$\frac{\text{Urban Retail Price} - \text{Urban Wholesalers Price}}{\text{Urban Retail Price/ Consumer Price}} \times 100$$

Share of gross marketing margin received by Retailer GMM_{EX} =

$$\frac{\text{Export Price} - \text{Growers}}{\text{Export Price}} \times 100$$

Growers Gross Marketing Margin GMM_P = 100% –TGMM

Marketing margin is the difference between the price received by producers and paid by consumers (Tomek and Robinson, 1990). In above equations, Consumer Price is equal to Urban Retail Price of Pomelo. The producers' share in consumer price throughout the complete distribution channel is shown as TGMM. By using above formulas, TGMM and GMM for each stakeholder including Growers in each channel of vale chain are calculated for channel 1 to 7 in following table.

Table 4.18 Gross Marketing Margin of Stakeholders for Pomelo

Per Unit Sales Price of Stakeholders (Ks)	**Channels and Market Share (%)**						
	1 (4%)	**2 (9%)**	**3 (22%)**	**4 (47%)**	**5 (12%)**	**6 (3%)**	**7 (3%)**
Grower/ Producer	**800**	**500**	**500**	**500**	**800**	**1000**	**1000**
(GMMp)	100%	45.4%	45.4%	23.8%	38.1%	40%	33.3%
Rural Collector	-	-	**1000**	**1000**	-	-	-
(GMM_{RC})		-	45.6%	23.8%	-	-	-
Rural Retailer	-	**1100**	**1100**	-	-	-	-
(GMM_{RR})		54.6%	10%	-	-	-	-
Urban Wholesalers	-			**1700**	**1700**	-	-
(GMM_{UW})				33.3%	42.9%		
Urban Retailer	-			**2100**	**2100**	**2500**	-
(GMM_{UR})				19.1%	19%	60%	-
Exporter	-						**3000**
(GMM_{Ex})							66.7%
TGMM	0	54.6%	54.6%	76.2%	61.9%	60%	66.7%

Source: Based on Survey Data by Author, 2014

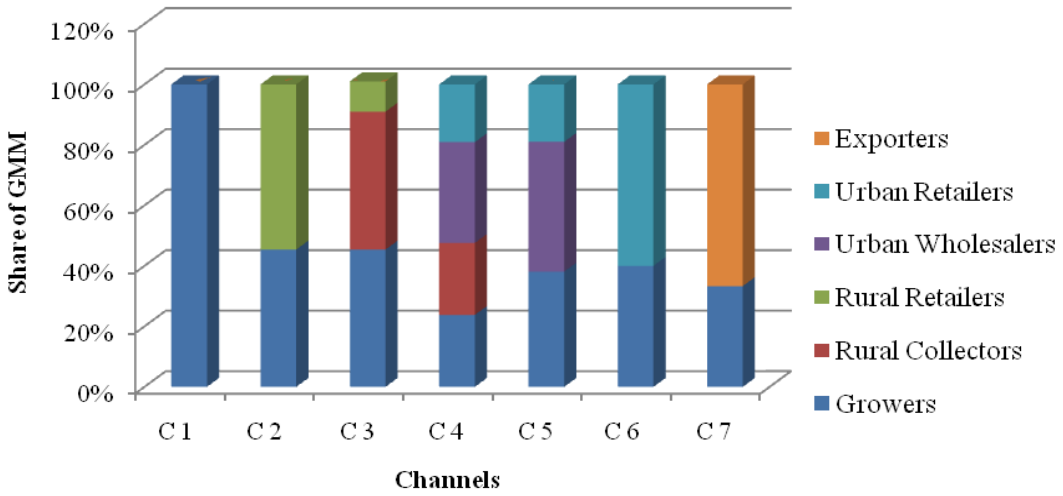
In table 4.18, prices received by each stakeholder in various channels are illustrated. In addition, consumer prices or retail prices are shown for calculating the Gross Marketing Margin (GMM) of each stakeholder. The first row of the table portrays the different prices received by growers in different channels are illustrated. For instance, growers receive Ks 500 per pomelo from rural collectors and retailers, Ks 800 when selling directly to rural consumers and urban wholesalers though their price become Ks 1000 when they sold to exporters and urban retailers (supermarket) directly. The differences occur due to the size and quality of pomelo as well as volume and bargaining power of the growers. When dealing with rural collectors and rural retailers, the selling price of growers is lower than other chains. As rural collectors are main actors in linking growers with large urban market, they have high bargaining power.

To get the growers' share in each value chain, Growers Gross Marketing Margin GMM_P is calculated which can be obtained by subtracting TGMM from 100. From the table, TGMMs in each channel show the share of different middlemen in different chains of pomelo. Among 7 channels, TGMM is the highest (76.2%) in Channel 4, which comprises 3 tiers of middlemen followed by exporters in Channel 7 (i.e. 66.7%). The higher the TGMM, lower the share of GMM received by growers.

Channel 1 links between growers and rural consumers, which contributes 4 % of the total pomelo GVCs in this study. In this channel, growers obtain full amount of the Gross Marketing Margin as there is no middle men in this channel. In Channel 2, pomelo is sold to final consumers through Rural Retailers, where GMM for growers is 45.4%. Similarly in Channel 3, which comprises 22% of the total market has high

Growers GMM, i.e. 45.4%. In Channel 4, growers received only 23.8% of the GMM yet this channel contribute the largest distribution route of pomelo in Yangon Region. Growers gain GMM of 38.1% under Channel 5 while Channel 6 and 7 generate 40% and 33.3% of GMM respectively for growers. The share of GMM for each stakeholder can be seen in following figure.

Figure 4.3 Share of GMM for Each Stakeholder in Different Channels



Source: From Table 4.18

From the above study, the highest GMM for Growers can be achieved only in low marketed channels of pomelo GVCs, i.e. in Channel 1, 2, 3 and 6. Channel 1, 2 and 3 are the conventional marketing channels with stable demand within the rural areas. Among them, Channel 6 and 7 has the highest potential for the future.

4.9 Channels of Mango Value Chain in Yangon Region

Next part is the value chain channels of mango in Yangon Region. For mango, it has 6 channels as mango is not only consumed as fruit, also use in producing preserved foods and snacks in Myanmar. Mango value chain channels are shown in following mappings. Percentages shown in following mapping are the share of volume produced by responding growers in this study. Total volume of mango produced by respondents is about 3000 Metric Tons, i.e. in 2013.

Channel 1: Growers ➔ Rural Retailers ➔ Consumers (3%)

Channel 2: Growers ➔ Rural Collectors ➔ Urban wholesalers ➔ Urban Retailers ➔ Consumers (55 %)

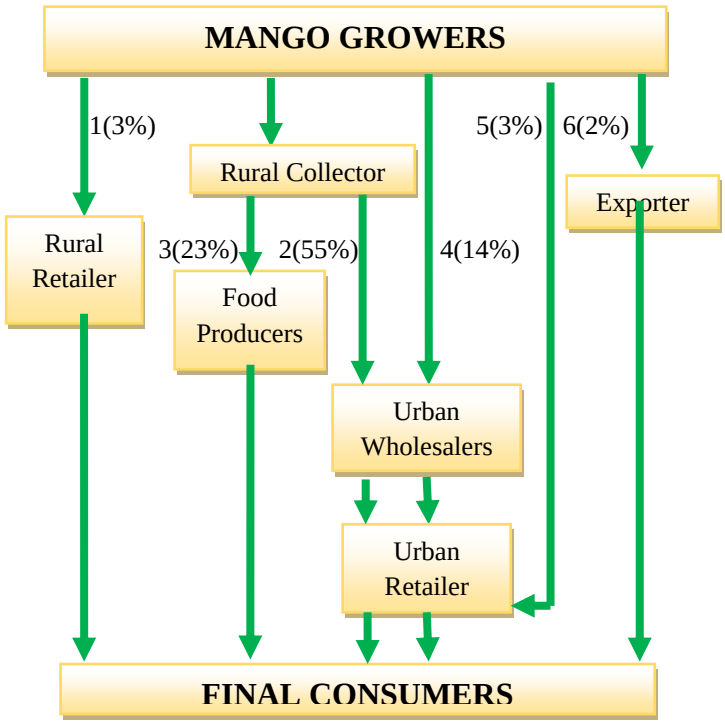
Channel 3: Growers ➔ Rural Collectors ➔ Food Producers ➔Consumers (23 %)

Channel 4: Growers ➔ Urban Wholesalers ➔ Urban Retailers ➔Consumers (14%)

Channel 5: Growers ➔ Urban Retailers ➔ Consumers (3%)

Channel 6: Growers ➔ Exporters ➔ Consumers (2%)

Figure 4.4 Channels of Mango Value Chain in Yangon Region



Source: From Author's Survey Data (2014)

From the mango value chain mappings, Channel 1 is mainly sold for rural market, while Channel 3 for both rural and urban food producers through rural collectors. Channel 2, 4 and 5 are distributed for urban consumers. Channel 6 is the export value chain of mango.

In Channel 1, growers link with rural retailers who usually sell mangos about 3%, i.e. 90 MT to final consumer in rural and local markets. Under this channel, a wide variety of mango types are sold. In local market, especially in rural areas, there are no strict standards and preferences on mangoes as they consume different types of mangoes in both ripe and unripe conditions. Sometimes, rural people consume

mangoes as one of their side dishes in their meals. There is no direct selling of mangoes to final consumers by growers as, in most villages; mangoes are grown in almost all houses. They usually sold to rural retailers to distribute in nearby markets. All 8 growers use this channel.

Among the channels, channel 2 constitutes the largest share of distribution, i.e. 55% of the total volume of production or 1650 MT of the mangos is distributed under this Channel. All respondents use channel 2 for the value chain process of mango in the study area. This channel includes middle men of rural collectors, urban wholesalers and urban retailers. Like pomelo, by passing large number of middle men, price received by growers become low and price paid by consumers become high. Yet, growers have very choice to avoid this exploitative chain due to their financial constraints and labor shortage problems. Under Channel 2, 50% of the fruits are harvested by rural collectors themselves as some growers do not want to spend harvesting costs. However, this procedure makes them reducing the growers' return.

Channel 3 passes through rural collectors to food producers. Apart from consuming fresh and green mangos, Myanmar people prefer mango pickle, mango jam, mango juice, mango leather, and use dried mango in cooking some curries. Accordingly, mango market for food production is also existed. In this study, only 23% of the total volume of mango produced by respondents, i.e. 690 MT was distributed as inputs for food production in Yangon and Bago Region. The market covers only 2 Regions as other regions and states also have their own mango cultivation that headed towards food processing market.

Channel 4 is nearly the same with Channel 2 yet the role of rural collectors are excluded. Growers can directly link to urban wholesale markets under this channel. Then, urban wholesalers distribute to numerous retailers in Yangon City. Only 4 growers can link with urban wholesalers directly. Other growers cannot link them directly yet even linkages available; some growers are reluctant to spend transport charges to distribute directly from their orchard to Yangon wholesale market (New Thiri Mingalar Market). 14% of the volume or 420 MT of mangoes are distributed direct to urban wholesalers.

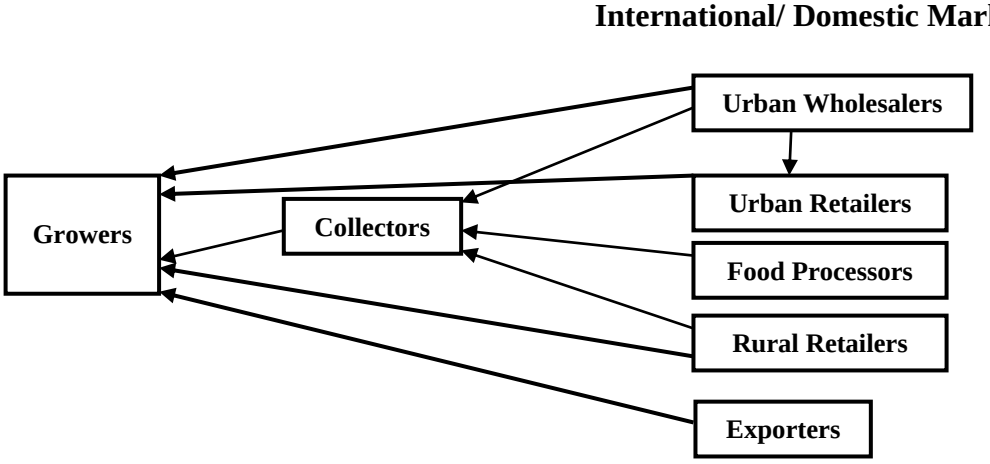
In Channel 5, even the urban wholesalers are skipped in the mapping. However, only 3%, 90 MT, are distributed to renowned urban retail chains and fruit shops. In this channel, transport and some labor costs are incurred by the growers yet they can gain higher prices from these retailers. Only 4 growers can link with this market with very low volume. Channel 6 is the export value chain of mangoes. Mango is exported to China and Singapore decades ago. Share of export among growers through value chain is the lowest, 2% or 60 MT from respondents. 4 growers are linked with export markets yet low volume for each grower. The share of export is low in this mango value chain as Mandalay Region and Shan State have the largest share of mango exports.

Unlike pomelo, rural consumers do not buy mango directly from growers as almost all households have mango trees in these villages. One more chain differing to pomelo is the selling of mango to food processing firms. Export share of mango is lower than that of pomelo as producers from upper Myanmar have huge market share to export China.

Under mango GVC, mango leather and other processed foods are produced from mango yet these are only in small scale. Therefore, similar to pomelo value chain, mango value chain can said to be buyer- driven GVCs. Mango growers can directly access to urban wholesalers (14%) and urban retail outlets (3%) through channel 4 and 5. 55% of the total production from selected growers are collected by rural collectors. Through these rural collectors, mangoes are distributed in urban wholesale and retail markets of the Yangon City. Similar to pomelo GVC, the one and only retailer buyer, City Mart Supermarket Chain from Yangon, determined the standard of mango through size, quality, and low chemical contents of fruits.

In export market, exporters play as essential role. Unlike pomelo, mango is mainly exported through border trade routes and growers do not need to incur additional transaction costs rather than transport costs. Growers do not need to incur storage and other additional costs for exporting mango. Based on Gereffi (2001), buyer driven GVCs of the mango from Yangon Region can be illustrated as below.

Figure 4.5 Buyer-Driven Global Value Chain of Mango from Study Area



Source: From Author's Survey Data (2014)

From the above figure, there are both direct and indirect linkages between buyers through which growers sell mango both domestically and internationally. Although the major product in these channels is fresh mango, processed fruits market is included under mango GVC. Yet processing firms are mainly from upper Myanmar, producing dried mango and mango leather. In this study, their share of buying fresh mange is taken into account. However, due to the diverse nature of food products, price received by different food producers is assumed to be Kyats 180 per mango.

Volume of the mango growers' supply is mainly determined by market demand, labor availability, R and D, transport costs, supports from public sector and NGOs and access to financial resources (Based on information from table 4.7 and 4.9). Among these factors, labor shortage, poor R & D, low level of technical and financial supports impeded the supply of mango though demand for mango is higher. Natural disasters seldom affect the supply of mango in Yangon Region, such as the incidence of Cyclone Nagis in 2008, which destroyed more than half of the mango trees.

For the middlemen, access to market information and profitability play as key determinants of distributing or selling mango (Table 4.12 and 4.13). Similar to pomelo, government restrictions on container trucks for using express ways or high tax during transportation lead to low level of profitability among middlemen. Similarly, deregulations of government trade policies, access to information of foreign market and changes in import policies of the foreign countries affect exporters to sell mango abroad.

4.10 Comparison of GMM for Stakeholders in Mango GVCs

For each stakeholder along the chain, Marketing margins for the various stakeholders are estimated via TGMM and GMM formulas. Marketing margins of the Mango in all channels are illustrated in following table.

In table 4.19, the first row describes different prices received by growers in different channels are illustrated. Growers receive Ks 60 per mango from rural retailers, Ks 40 from rural collectors, and Ks 80 from urban wholesalers. When selling directly to urban retailers and exporters, their prices become Ks 150 and Ks 200 respectively. Prices received by mango growers differ due to the size, quality, and volume of mango. From this price differential, TGMM and GMM of growers (GMM_P) also varied in each channel.

Table 4.19 Gross Marketing Margin of Stakeholders for Mango

Per Unit Sales Price of Stakeholders (Ks)	Channels and Market Share					
	1 (3%)	**2 (55%)**	**3 (23%)**	**4 (14%)**	**5 (3%)**	**6 (2%)**
Grower/ Producer	**60**	**40**	**40**	**80**	**150**	**200**
(GMMp)	46.2%	8%	22.2%	16%	30%	25%
Rural Collector	**-**	**120**	**120**	**-**	-	**-**
(GMM_{RC})		16%	44.5%	**-**	-	**-**
Rural Retailer	**130**	**-**	-	**-**	-	**-**
(GMM_{RR})	53.8%	**-**	-	**-**	-	**-**
Urban Wholesalers	**-**	**200**	**-**	**200**	**-**	**-**
(GMM_{UW})	-	16%	-	24%	**-**	**-**
Urban Retailer	-	**500**	-	**500**	**500**	-
(GMM_{UR})	-	60%	-	60%	70%	-
Food Producers	-	-	**180**	**-**	-	**-**
(GMM_{FP})	-	-	33.3%	**-**	-	**-**
Exporter	**-**	-	**-**	**-**	-	**800**
(GMM_{Ex})	**-**	-	**-**	**-**	-	75%
TGMM	53.8	92%	77.8%	84%	70%	75%

Source: Based on Survey Data by Author, 2014

According to the calculations form table 4.19, TGMMs in channel 2 (92%) is the largest among different chains of mango. TGMM for Channel 4 (84%) and 3

(77.8%) are also high, which mean low growers' GMM. Exporters in Channel 6 also gained 75% of the GMM.

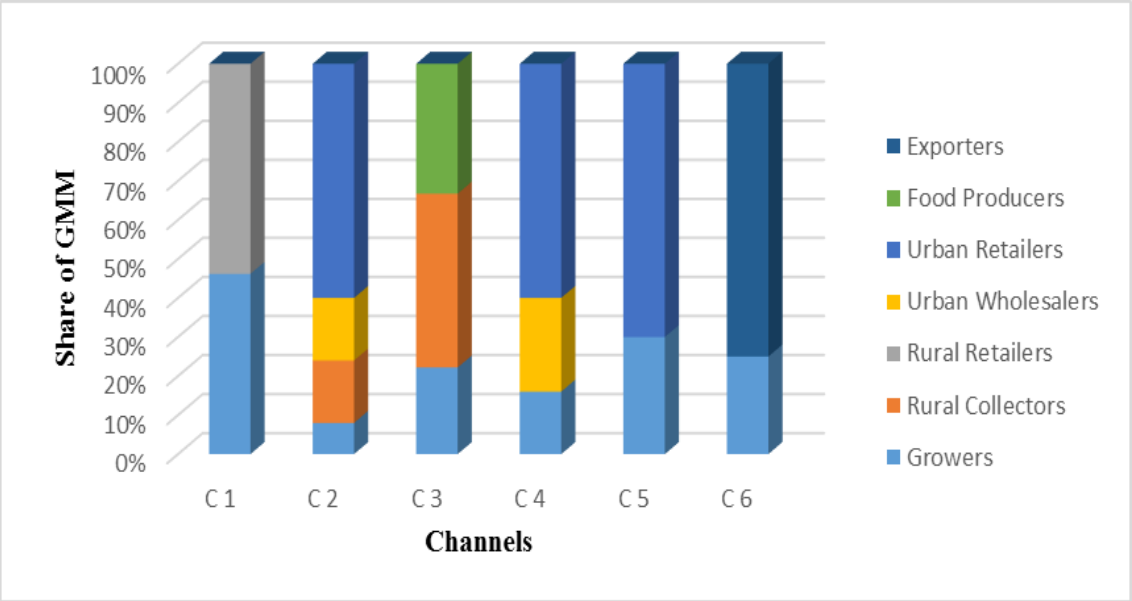
In mango marketing chain, Channel 1 links between growers and rural retailers which contribute 3 % of the total GVCs in this study. In this channel, growers obtain 46.2% of the Gross Marketing Margin.

In Channel 2, mango is sold to final consumers through different layers of middleman, Rural Collectors, Urban Wholesalers and Urban Retailers, where GMM for growers is only 8%. However, Channel 2 contributes the largest among all mango chains in this study.

Channel 3 comprises 23% of the total market in which Growers GMM is 22.2%. In Channel 3, collector gains the highest share of GMM (44.5%) followed by food producers (33.3%).

In Channel 4, growers received only 16% of the GMM whereas Urban Retailer receive 60% of the total GMM. Under Channel 5 and 6, growers gain only 30% and 25% while Urban Retailers and Exporters get 70% and 75% respectively. The share of GMM for each stakeholder is illustrated in figure 4.6.

Figure 4.6 Share of GMM for Each Stakeholder in Different Channels



Source: From Table 4.19

From the above study, the highest GMM for Growers can be achieved only in low marketed channels of mango GVCs, i.e. in Channel 1. However, mango growers have potential for Channel 5 and 6 in the future. Yet in comparison with pomelo GVCs, growers can gain lower GMM in all Channels.

4.11 Similarities and Differences between Pomelo and Mango Value Chains

From the above studies, pomelo and mango value chains are more or less differed based on their flow of chains and demand condition. Both fruits are under perennial group, with buyer- driven GVCs. Within the domestic market, Myanmar people buy fruits not only for consumption, also for offering to Buddha. Especially in holy months, on full moon days, and during festivals, demand for fruits is too high.

Apart from some similarities, their nature of the supply is varied. Pomelo can be bought all year round while mango can be accessed only in rainy season. From the supply side, i.e. for pomelo growers, large amount of capital is needed. Continuous care and assessment is prerequisite for growing pomelo throughout the year. But the demand and price of pomelo become higher in urban area and in foreign market due to long lasting nature and rich vitamins and nutrients. The export of mango has initiated two decades ago while pomelo was exported only from 2012.

In contrast, mango is a traditional fruit for Myanmar people and able to grow in almost every places within Yangon Region. Growers do not need much attention all year round. Therefore, cost of cultivating mango is comparatively lower than pomelo. However, a major challenge faced by mango growers nowadays is the shortage of labor during harvesting. Being a seasonal fruit, workers from mango orchards need to find alternatives in off seasons. Moreover, the heights of mango trees need skilled workers to harvest good condition mangoes for selling in market.

From the survey, there are 7 channels under the pomelo value chains ranging from direct selling to final consumers through export market. Pomelo is sold in rural retail market as it is regarded as delicacy among consumers. In each market, the number of pomelo retailers is relatively lower than other fruit sellers in retail market. Until now, high value-added products cannot be produced under pomelo GVCs as yet. Therefore, only fresh pomelo is marketed.

Among mango growers, GMM is lower comparing to Pomelo. At present, mango growers start changing their cropping pattern towards non-seasonal fruits such

as Guava, Dragon Fruits and so forth in place of low value added fruits, mango. This practice would gain potential for mango growers yet the role and future potential of famous tropical fruit of Myanmar, mango, may decline.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

As the nature of horticulture products are highly perishable (fruits, vegetables and flowers), their marketing chains should be as short as possible to attain greatest returns if they are distributed without processing. If growers directly sell their produce to the consumers, it will not only reduce losses but also increase the share of GMM. Therefore, shortest value chain by the growers is being encouraged as more preferable channel. In Yangon Region and Myanmar as a whole, above 60% of the labor force is engaged in agriculture. Hence, it is essential to uncover and encourage horticulture products, especially fruits, for domestic and export markets and need to find out the production of higher value added products.

Under pomelo and mango value chains, determinants of the production of both fruits include availability of labor inputs, physical inputs (machineries, equipment, etc.), financial inputs (loans and subsidies), technological advancement and supports. Among these factors, labor shortage problem becomes greater especially for mango growers due to its short seasonal nature of fruit. Access to modern technology is also difficult for both growers. At present, growers still use traditional approaches in growing fruits. Post-harvest handling techniques and infrastructure for storage is also low. Poor educational qualifications, small land holding, lack of knowledge about market, lack of job stabilization, deficient

financing abilities and low level of farm mechanization impede expansion in production as well as marketing of horticulture products.

In terms of input utilization, majority use water pumps, natural fertilizers, domestic species and family workers. Modern machineries and equipment are difficult to use due to their low level of affordability. Inputs are available yet most mango growers use natural fertilizers and pesticides only. Availability of inputs is easy yet depending on financial condition of the growers. 50% of the growers thought of their production in past 5 year period is better for local market while only 31% thought of better exports. Moreover, poor risk management, lack of proper storage techniques, deficient in research and development, and innovation, underdeveloped value added process.

Among growers, access to low interest credit is still difficult for growers. Majority of the growers obtained needed finance from trader, i.e. mainly the fruit collectors or agent. Traders/ collectors play as vital role in pricing and market access of the fruits. Availability of formal loans and credits are still impeding due to various reasons in Myanmar. The major causes of low financing for farmers include lack of required collateral, poor accounting standard among growers, lack of contact with banks, lack of information and complex banking procedure, lack of proof of profitability of the borrower Majority of the growers prefer other source of finance with low interest rate.

By studying the value chain of pomelo and mango, pomelo growers gained better margin than mango growers. However, comparing with other players along

each value chain, growers earn lower margin. As all 16 growers are the members of Pomelo and Mango Cluster under the Union of Myanmar Federation of Chambers of Commerce and Industry, UMFCCI, they sometimes access technical supports from UMFCCI, yet not from government and NGOs. Although majority of the growers have experience in horticulture business, they rely mostly on traditional distribution approaches and middlemen for marketing. Even with high productivity in some year, bumper crop reduced prices and led to unfavorable conditions for growers. Therefore, access to new and wider market is essential.

In each value chains, collectors mainly incur costs of management, i.e. assessing the quality and setting price of fruits, inbound and outbound logistics, and storage costs along the chain. Fuel costs for transportation of fruits from growers to urban markets are the highest. Wholesalers incur labor costs, shop tax, electricity and storage facilities. Collection of pomelo and mango is based on demand of local customers. Within the last 2 years, volume of exports for pomelo is increasing while mango export from Yangon Region is declining. Even for middlemen, high taxes on transportation, and distribution, high fuel costs and other transaction costs still impede efficient marketing and distribution.

For exporters, external challenges of high competition in both pomelo and mango are still high. Market penetration of Myanmar fruits is still weak due to the fulfillment of international standards and quality. Myanmar's pomelo and mango still need inspection, standard and certification in line with international standards. Hence, low competitiveness and bargaining power hamper growers' benefits and market accessibility.

Value chains of pomelo and mango are differed in Yangon Region. Pomelo has 7 channels of distributions, while mango has 6. Major differences are from growers to rural retailers and consumers for pomelo. For mango, there is no separate retailer selling mango at the village due to plentiful amount of mango trees. For mango value chain, there is one stage that flows from growers and collectors to food processors which finally lead to consumers.

Among the channels, channel 4 constitutes the largest share of distribution of pomelo, i.e. from growers, rural collectors, urban wholesalers, urban retailers to consumers Export value chain is only 3% of the total production of pomelo. Among the mango channels, channel 2, the largest share of distribution, i.e. from growers, rural collectors, urban wholesalers, and urban retailers to consumers. Export value chain is only 2% of the total production of mango. Higher the numbers of middlemen, the lower benefits can be gained by growers and consumers. Mango export share is lower than that of pomelo. Yet, both exporters gain high level of profit margin as they can influence the export market of pomelo and mango for Myanmar, especially from Yangon Region.

Particularly, prices received by each stakeholder and consumer/ retail price in various channels of both pomelo and mango are varied. The reason is the difference between size and quality of pomelo as well as volume and bargaining power of the growers. For both growers, selling price is lower than other chains when dealing with rural collectors who act linkages between growers and large urban market. Pomelo growers receive Ks 500 per unit from rural collectors and retailers, Ks 800 when selling directly to rural consumers and urban wholesalers though their price become

Ks 1000 when they sold to exporters and urban retailers (supermarket) directly. Mango growers get Ks 60 per unit from rural retailers, Ks 40 from rural collectors, and Ks 80 from urban wholesalers. When selling directly to urban retailers and exporters, their prices become Ks 150 and Ks 200 respectively.

Out of the 7 pomelo channels, TGMM is the highest (76.2%) in Channel 4, which comprises 3 tiers of middlemen followed by exporters in Channel 7 (i.e. 66.7%). For mango chain, TGMMs in channel 2 (92%) is the largest among different chains of mango. TGMM for Channel 4 (84%) and 3 (77.8%) are also high, which mean low growers' GMM. The higher the TGMM, lower the share of GMM received by growers.

When comparing the situation of two group of chains, pomelo growers gain higher than mango in each channel. In channel 1 of pomelo growers, growers obtain full amount of the Gross Marketing Margin. Even in channel 4, pomelo growers gain 23.8% which is the lowest among all channels. For mango, the lowest GMM is only 8%, i.e. in channel 2 that contributes the largest among all mango chains.

5.2 Recommendations

From the study, it can be seen that both pomelo and mango growers from Yangon region relied mainly on middlemen to reach the urban and foreign market. The two selected townships, Hmawbi and Taikkyi are only 44 km and 77.7 km distance from Yangon City with about 1 and a half hour drive. If growers in these areas face such limitations, those from other States and Regions may have more difficulties in access to both urban and export markets.

From the value chain study of pomelo and mango in Yangon Region, it was found that improvement in rural infrastructure including horticulture markets, transportation, and information, upgrading financial supports schemes, enhancement of technical transfer to rural people, and provision of environmental friendly inputs are urgently in need for growers. By doing so, primary activities of value chain: inbound and outbound logistics, operation/ cultivation, and marketing and sales become more efficient. Moreover, fulfilling the above needs can enhance support activities of fruits value chains as well.

In order to upgrade the value added in agriculture, not only the staple, also the horticulture activities are needed to support. Being possess favorable background, improvement in horticulture can support not only the local economy, but also upgrade regional and national development. Through the initiation of value adding processes rather than selling and exporting raw fruits, marketing margin for rural farm and nonfarm industries will develop and help reducing migration of workers.

By analyzing the value chains of both fruits, current market condition is mainly rely on domestic raw fruit market. There still have potential for expanding value adding products and foreign market. Effective supports from government departments and their collaborations, i.e. between Ministry of Agriculture and Irrigation, Ministry of Commerce and Ministry of National Planning and Economic Development, etc. are indispensable. Government encourage of each fruit clusters is also essential. Accordingly, required standards of horticulture products can be met and able to access global market without any difficulties. Moreover, better collaboration among growers can improve their bargaining power in both local and

international markets and able to avoid exploitation by middlemen. If more retail chain stores from urban directly procure pomelo from growers, highly developed domestic market can be obtained by growers. At the same time, growers bargaining power in export market can be achieved through better collaboration among growers with proper government initiatives.

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APPENDICES

QUESTIONNAIRES FOR GROWERS (MANGO AND POMELO)

Socioeconomic Condition of Growers

1. Gender □ Male □ Female

2. Age of the respondent _____ years

3. Educational Qualification □ Primary □ Secondary □ University
□ Master and Above

4. Family size Male _____No. Female _____ No.

5. Number of working persons (Between 16-59 ages) in family:
Male ____ Female ____

6. Number of children in school in family ____

7. Number of dependents (< 16 and > 59 ages)in family: Male _____ Female _____

8. Experience in Horticulture Business _____ Years

9. Are you a member of any cooperative or cluster? □ Yes □ No

10. If your answer is Yes, what is the name of the cooperative/ cluster _____

Business Information (Operation) of Growers

11. Year of Establishment of this plantation _____

12. Type of Fruits Grown □ Mango □ Pomelo □ Both □ Other _____

13. Type of Your Business Ownership □ Sole proprietorship □ Family Business
□ Domestic Partnership □ Partnership with foreign company

14. Number of Acres _____

15. Number of full time workers _____

16. Number of part time workers _____

17. Source of Labor □ Family □ Local □ Out of the township □ Out of the region (migrant)

18. Other Type of Inputs used in Cultivation

_____

19. Machineries used in cultivation

_____

20. Type of seeds/ plants used □ Local □ Improved □ Both

21. Type of problems faced concerning with seeds/ plants _____

22. Type of cultivation system do you adopt? □ Sole cropping □ Mixing different vegetable crops □ Mixing with other crops □Others_____

23. Able to sell/ distribute plants to others □ Yes □ No

24. The trend of crops production during past 5 years □ Increasing □ Decreasing □ Same

25. If the production increases, please describe the reasons?

_____

26. If the production decreases, please describe the reasons?

_____

27. Would you like to expand fruit production? □ Yes □ No

28. If your answer for Q.27 is Yes, why?

_____

29. If your answer for Q.27 is No, why?

_____

30. Level of Constraints Faced by Growers

Constraints	**Low**	**Medium**	**High**
Low Availability of Farm Inputs			
Short of modern technology			
Climate risk			

Market risk			
Labor Shortage			
Poor storage facilities			
Short of R and D			
Poor Innovation			
Low Value Added Process			
Remoteness to Market			
High Transport Costs			
Poor Quality and Standard			
Government Technical Supports			
Technical Supports from NGOs			

31. Mention the types of government supports for Horticulture Farms

_____

32. Mention the types of NGOs supports for Horticulture Farms

_____

Financial Aspect

33. Total assets of your farm _____ Kyats

34. Startup Capital _____ Kyats

35. Annual Sales _____ Kyats

36. Average Growers' Price Last Year _____ Kyats

37. Access to Credit by farmers from □ Bank □ Relatives and Friends □ Money Lenders □ Microfinance □ NGOs □ Traders □ Others _____

38. Interest rate _____

39. Main obstacles in access to credit are (please mention by rank)

□ Lack of required collateral ( ) □ Lack of contact with banks ( )

□ Lack of information ( ) □ Lack of proof for profitability ( )

□ Complex and lengthy procedures to apply for banks' credits ( )

□ Poor accounting standard ( ) □ Other _____

40. What is that finance intended for?

□ Working capital and cash flow □ Buying capital equipment

□ Upgrading building □ Buying land or building □ Marketing

□ Research and Development □ Training HR □ Starting new business

□ Expanding Business □ Other _____

41. Your preferred type or source of finance □ Commercial Banks

□ Venture Capital □ From Friends and Relatives □Government assistance funds □ Informal Financial Market □ Other Financial Institutions _____

42. Reason for your preferences in Q. 41 _____

Market Information

43. Distance from residence to nearest market center (____) hrs walk

44. Distance from residence to the nearest to all weather road (____) hrs walk.

45. Source of access to market information

□ From friends and relatives □ From Radio □ From TV □ Newspaper

□ From market □ Other sources _____

46. Marketing channels of your product (Domestic Market) through

□ Direct Selling □ Collectors □ Brokers □ Wholesalers □ Retailers □ Other _____

47. Marketing channels to Export Market through

□ Direct Selling □ Collectors □ Brokers □ Wholesalers □ Retailers

□ Other _____

48. Please feel free to add any additional comment you may want to add:

_____

_____

Thank You So Much for your Cooperation.

QUESTIONNAIRES FOR COLLECTORS/ WHOLESALERS

(MANGO AND POMELO)

1. Type of costs incurred

   _____

2. Strengths in distributing within the domestic market

   _____

3. Weaknesses in distributing within the domestic market

   _____

4. External Challenges faced by middleman

   _____

5. Average Rural Collectors' Price Last Year

   _____

6. Average Rural Retail Price Last Year

   _____

7. Average Urban Wholesalers Price Last Year

   _____

8. Average Urban Retail Price/ Consumer Price Last Year

   _____

Perception on Current Market Condition

Sr	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Competition in domestic market is intensifying					
2	Relationship with growers is					

	important					
3	Relationship with competitors is also important					
4	Collection is based on cultivation					
5	Collection is based on local customer demand					
6	Collection is based on foreign export					
7	Export volume becomes increasing					
8	Return on investment is high					
9	Profitability is high					
10	Costs are high					

Impacts of Government Policies

Sr	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Government policies have positive impact					
2	Collaboration from Government ministries					
4	Government Provision of Market Information					
5	Reduction of Restrictions in Distribution					

Thank You So Much for your Cooperation.

QUESTIONNAIRES FOR EXPORTERS (MANGO AND POMELO)

1. Strengths in distributing within the international market

   _____

2. Weaknesses in distributing within the international market

   _____

3. External Challenges

   _____

4. Major Costs of Exporters

   _____

5. Types of procurement from growers

   _____

6. Types of procurement from suppliers

   _____

7. Average Exporters Price Last Year

   _____

Perception on Current Market Condition

Sr	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Competition in International market is intensifying (sizing, packaging, quality)					
3	Relationship with suppliers is important					
4	Relationship with growers is also important					
5	Export is based on Suppliers' Production					

6	Collection is based on foreign customer demand					
7	Export Quality standard should be upgraded					
8	Inspection, standard and certification are in line with international standard					
9	Export volume becomes increasing					
10	Export price is satisfactory					
11	Return on investment is high					
12	Profitability is high					
13	Costs are high					

Impacts of Government Policies on Export of Pomelo and Mango

Sr	**Questions**	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
1	Government policies have positive impact					
2	Government provide effective information					
3	Collaboration With Government Ministries are Efficient and Effective					
4	Better and Quick Exporting Procedures are arranged by the Government					
5	Reduction of Restrictions in Exporting					

Thank You So Much for your Cooperation.