ACIAR Project ABG/2012/109

Regional Market Analysis

for

Mango

in the Southern Philippines Market of Davao

25 May 2016

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Definition of Terms

Term	Definition
Contractor / Collector (CC)	Contractor / Collector. A Collector collects mango from farmers and sells it, often to wholesalers. A Contractor rents farms and manages mango production. A Contractor / Collector engages in both activities.
Concessionaire	Business that displays and sells fruit and vegetables inside supermarkets.
Node	A group of businesses with similar business models operating in the distribution of vegetables used as the unit of analysis for this research.
SIMMCO	Samal Island Mango Marketing Cooperative

1. Executive Summary

The market for mangoes being supplied for retail, commercial (food service), industrial (processing) in Davao and export to Manila and to other countries from Davao has been investigated. Data was collected using exploratory research employing 28 face-to-face interviews with key informants who own or manage businesses operating in all parts of the supply chain excluding farmers and final consumers or customers outside Davao del Norte.

The total volume of mango supplied into Davao exceeds 70,000 tonnes per annum. Of this, approximately 2,000 tonnes is supplied from Samal Island. Mangoes are sold according to a quality grading system which classifies mangoes into one of six grades. The highest prices are paid for mangoes suitable for fresh export and approximately 10% of an average crop achieves this grade. Demand exceeds supply for fresh mangoes suitable for exporting but as minimum residue levels are being enforced in markets including Japan and the Republic of Korea, local mango producers will find meeting export requirements increasingly difficult. Processors pay a relatively low average price for mango but processing represents the largest single market segment for mangoes (43,000 tonnes per annum), and the existence of four processors in Davao, each seeking additional volumes, means that demand exceeds supply for processing. The increasing role of supermarkets in fresh fruit and vegetable distribution in the Philippines is well documented, and wholesalers and concessionaires supplying consumer demand through supermarkets is an emerging opportunity currently estimated at 8,000 tonnes per annum. The shipping of mangoes to Manila is an important segment representing more than 14,000 tonnes per annum. Hotels and Restaurants and Juice and Smoothie Bars are emerging markets but the volumes are very small; too small to be of interest as target markets in their own rights. Wet market retail is a segment that's being eroded by supermarkets and as there are more than 100 wet market retailers operating in Davao, it is difficult to identify this as an attractive segment.

Demand for mangoes of the classifications that attract premium prices exceeds supply. It should be a good time to be a mango producer! However, production areas are being reduced and the supply of mango is in decline. Opportunities appear to exist for mango producers and contractors including contractor/collectors (CC) to identify high priority market segments and then collaborate grade and sell specific quality grades. By doing this they will increase their bargaining power. Doing this coincidently with adopting farming and post-harvest practices that increase the quantity and percentage of higher quality grades, and establishing relationships with a small number of significant customers, should provide economic benefit to farmers and contractors who participate.

Subsequent to the initial primary data collection, a series of meetings were conducted with value chain participants including processors, fresh exporters, concessionaires and wholesalers. The larger of these organisations are technically sophisticated but frustrated in terms of supply. They are willing to participate in interventions focused on changing mango production and post-handling practices on Samal Island. As they are value chain partners seeking increased quantities of higher grade mangoes, they represent a market opportunity for mango growers and contractors.

This project is not the first to observe the gap between production supply and market demand. Value chain partners including fresh exporters and processors and Department of Agriculture have been trying to influence behaviour on farm and post-harvest for some years, but mostly their attempts have not resulted in behavioural change. It has been concluded that our project should not focus on working directly with mango farmers and contractors. Instead, our focus should be on facilitating the development of relationships between sophisticated value chain partners and Samal Island contractor/collectors and farmers. Activities should be focused on facilitating information exchange and trust between participants so that they collaborate to identify and act on opportunities for value creation. Department of Agriculture personnel should also be included in the activities as helping them to become more effective facilitators of change will assist in repeating the lessons learned from this project in other areas.

2. Introduction

This report is a Regional Market Analysis (RMA) for mango in Davao and is part of ACIAR Project ABG/2012/109 "Developing vegetable and fruit value chains and integrating them with community development in the southern Philippines".

Value chains are in fact complex systems that can be difficult to understand, perhaps particularly in developing markets where the primary basis of purchasing decision-making is price. As markets develop and become more sophisticated, decision-making increasingly may include other product and service characteristics such as convenience, semi-processing, packaging, safety, production methods such as organic, specifications and quality. As markets mature, specialist business entities become established to specialise in specific products and services. This creates opportunities for businesses to differentiate and satisfy the emerging needs of industrial, commercial and retail customers which may include businesses at any point in the distribution network.

This report describes the market opportunities and challenges for mango produced on Samal Island. It was developed primarily from data collected through semi-structured interviews with key informants who work in and are knowledgeable about mango marketing and distribution across the southern Philippines.

2.1. Significance of Mango in the Philippines

Mango is an important crop in the Philippines, and according to Briones et al. (2013) the area of production of mango in the Philippines was approximately 200,000 hectares producing some 800,000 – 1 million tonnes per annum, depending typhoons and damage from pests and diseases. Detailed production (tonnes) by region is provided in Figure 2-1. Despite the importance of the crop yields have been falling even though planted area is increasing, as illustrated in Figure 2-2.

Domestic consumption of mango increased from 5.74 kg in 1991 to 12 kg in 2007, and around 93% of the country's mango production is consumed locally either as fresh fruit (75%) or processed (25%) (Pinoy ME BDS Conference 2009).

Samal Island is in the province of Davao del Norte which is part of part of Davao Region XI in Mindanao. In 2013, the total production of mango in Mindanao was estimated at 247,605 tonnes which was 30% of the country's total production. As identified in the Results section of this report, production of mango on Samal Island is approximately 3,500

tonnes per annum which means it represents less than 1.5% of Mindanao production and less than 0.5% of all Philippine production. Mindanao is one of the only regions in the Philippines in which mango production is increasing, registering a 4.18% increase in 2011 compared with a national decline of 2.64% in production (Mindanao Development Authority 2011).

Island and Region	2009	2010	2011	2012	2013	Average Share in %
Luzon	**446,221.05**	**473,858.73**	**460,470.14**	**429,547.91**	**448,214.14**	**56.90%**
CAR	3,737.66	3,721.16	3,709.07	3,317.63	3,421.81	0.45%
Ilocos Region	293,992.66	290,974.95	276,661.11	265,162.89	260,524.22	34.98%
Cagayan Valley	37,910.26	58,781.20	46,438.53	34,744.83	47,782.39	5.66%
Central Luzon	58,453.04	64,400.82	64,052.85	59,828.34	70,500.44	7.99%
Calabarzon	42,385.22	44,913.89	58,627.81	55,215.19	54,291.28	6.44%
Mimaropa	8,332.67	9,551.19	9,582.30	9,805.12	10,161.65	1.19%
Bicol Region	1,409.54	1,515.52	1,398.47	1,473.91	1,532.35	0.18%
Visayas	**110,684.00**	**122,370.26**	**111,229.82**	**114,406.32**	**120,379.64**	**14.58%**
Western Visayas	44,486.74	50,446.50	45,343.94	45,868.50	47,948.54	5.90%
Central Visayas	65,293.00	71,021.32	65,001.16	67,655.09	71,583.58	8.58%
Eastern Visayas	904.26	902.44	884.72	882.73	847.52	0.11%
Mindanao	**214,536.39**	**229,447.07**	**216,373.60**	**224,280.26**	**247,605.35**	**28.52%**
Zamboanga Peninsula	57,809.36	74,024.63	78,410.58	80,865.66	92,445.04	9.65%
Northern Mindanao	35,869.17	37,592.67	35,520.63	38,169.19	44,694.58	4.83%
Davao Region	37,047.55	33,907.90	29,730.05	31,802.74	32,171.54	4.15%
SOCCSKSARGEN	53,654.90	56,263.54	52,329.83	53,404.63	55,051.89	6.82%
CARAGA	15,403.60	15,520.49	12,156.18	12,606.56	15,562.10	1.79%
ARMM	14,751.81	12,137.84	8,226.33	7,431.48	7,680.20	1.27%
Philippines	771,441.43	825,676.07	788,073.56	768,234.48	816,199.13	100 %
Source: BAS						

Figure 2-1: Philippines mango production (tonnes) by region CY 2009-2013 (Buguis 2014)

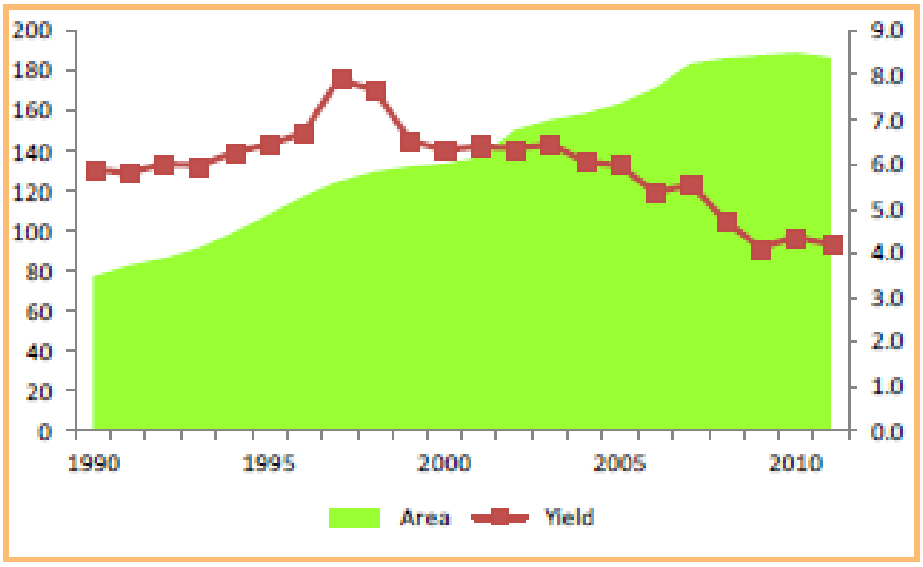


Figure 2-2: Area (000 ha) and yield (t/ha) of mango 1990-2010. (Briones et al. 2013, p. 4).

2.2. Mango Production and Marketing in Mindanao

Newspaper reports indicate that the mango industry in Mindanao has been suffering in recent years, and as a result growers are destroying trees. The problem, according to Sarian (2015) is *"While the prices of inputs like fertilizers and crop protection chemicals have continually become more expensive, the price that they get for their harvest has been erratic and mostly below production cost."* In Region XII, one response from growers was to establish the Region 12 Mango Industry Development Council (MIDC) and this demonstrates that producers can respond to difficult market conditions. Specific initiatives reported by Sarian (2015) include:

> *Mango growers were formed into clusters in the four provinces and two cities. There are three clusters in South Cotabato, for instance. The same with North Cotabato and the other areas. Why the clusters? Well, that simplifies the transfer of technologies, production strategies and coordination of activities. One activity is the training on good agricultural practices. Another is value-adding to increase incomes. Development of business entrepreneurship is another important program of the MIDC.*

In orchard management, the mango owners are taught proper pruning, fertilization, spraying against pests and diseases, irrigation and the like. By adopting the good agricultural practices, the farmers can produce higher yield of good quality fruits at a lower cost.

Another campaign being emphasized is the schedule of fruiting so that the harvest in Mindanao will not coincide with the peak season in Luzon which is April to early June. One reason why prices in the past had gone down to unprofitable levels was because the harvest in Mindanao coincided with the Luzon harvest. The only beneficiaries have been the mango processors because they could buy their requirements at a low price.

They have proven that by timing their production when it is off-season in Luzon, the mango owners in Mindanao can get a profitable price. One example that Bartocillo cited is the case of Lito Garcia of Valentine's Farm in Malanday, Malungon, Sarangani province. Last October, he was able to harvest 35 tons from his 300 trees that are 15 to 20 years old. Because it is off-season, he was able to sell his harvest at P50 per kilo. That was a very profitable crop.

According to Mindanao Development Authority (2011) Mindanao is situated outside the typhoon belt and has soils and climatic conditions suited to year-round production of mangoes, and that accounts for recent growth in production of mango in the region. On the other hand, recent climate changes including longer durations of rainfall and increasing input costs are having a negative impact on production costs and costs have increased by 37.5% in the three years to 2011. Issues and concerns noted by Mindanao Development Authority (2011) were:

1. *Diminishing annual production caused by natural disturbances in major producing areas; Changes on climatic condition such as longer duration of rain; and increasing cost of inputs pushing-up average production cost by about 37.5% during the last three years.*

2. *Meagre support in the development of industry groups associations.*

3. *Higher postharvest and handling losses contributing to a about 18% of the total cost and losing potential premium prices by about 125% from the export grade price of about PhP45/kg to processed grade price of about PhP20/kg due to inappropriate harvesting tools/systems; lack if not absence of handling, container and transport facilities in most areas.*

4. *High cost of inputs for processing of mango.*

5. *Reducing export performance due to higher freight and port handling costs representing 8% to12.5% of the total landed costs; high cost on VHT as phytosanitary measures for exported mango (Vapor Heat Treatment (VHT) cost of US$.60/kg as compared to irradiation treatment cost of only US$.05/kg. in the country, Irradiation as a cheap phytosanitary measure was not yet in place.); and constrain on supply.*

Opportunities identified by Mindanao Development Authority (2011):

1. *Organic mango production is one of avenue to consider in response to the pressing environmental issues to mango production such MRL (maximum residue level) requirement for exported mango which affects the export performance of the industry.*

2. *Due to limited number of processing plant, most of the fresh mango from Mindanao was shipped to Cebu and Manila for processing thus Mindanao needs additional processing plant to accommodate fresh mango from the island.*

3. *The mango seed from processing plant was not being utilized commercially and likely turn into waste. With the existing demand for mango seed oil, establishment of oil extraction plant is another potential avenue to consider.*

According to Buguis (2014), mango producers in the Davao region benefit by having access to exporters and processors because five of the seven processors and exporters in Mindanao operate from sites in Davao. The following is extracted from Buguis (2014, p. 36):

Contractors and consolidators has varied buying channels, first option among the channels are exporters who buy Class A mangoes for Php 55.00 to Php 60.00 per kilo. Of the volume delivered, about 10% are usually classified by SPPFC and Pro-Foods Southern Philippines as Class "A" or exportable quality. The Nakashin Davao International Inc from Panacan Davao on the other hand buys Class C mango at Php33.00 to Php35.00 per kilo, while processors of dried mangoes and mango purees and concentrates such as Martson and Pro-Foods buy fresh mango in a much cheaper price.

With respect to the relationship between farmers and contractors, Buguis (2014, p. 37) notes the following alternative arrangements:

1. Contract Growing – where the owner agrees to lease mango plantation to a producer, who undertakes the production from spraying, harvesting up to marketing. Typically it's a 2-5 year contract term at rate ranges from 20:80 to 30:70 in favor of the contractor. This kind of contract is the most common practice in all regions in Mindanao. The farmers opt to favor this contract because of the minimum risk they have to bear. In the case of the grower, advantages include cheaper cost of production due to the availability of equipment and input materials of the contractor who usually contracts at least 3 to 4 mango plantations; higher buying price due to its linkage to buyers and its consolidated volume. On the other hand, risk and disadvantages identified include abuses of contractor to mango trees by over-spraying during the contract term. This impact to the mango trees is solely burden by the owner. Other risk also is that contractors can keep the actual sale from the owners, since the latter have no direct linkage to buyers.

2. Output sharing – it's a kind of contract where the farmer agrees to share output with a contractor, where the latter provides inputs from spraying to harvesting. Farmers commonly enter into this kind of contract with processor, consolidators or with input providers. There are however cases of pole vaulting reported, where growers as complained by processors are

3. Contract buying – It is where the contractor is simply involve in purchasing of mango. In most cases, this kind of contract includes harvesting and sorting. Due to lack of financing, logistics, facility and equipment for harvest to post harvest and distribution, growers opt to sell mangoes to what they call the all-in purchasing.

Buguis (2014) notes the following with respect to marketing of mangoes from Mindanao:

Fresh Mangoes are finally sold to domestic and foreign market. Domestic market includes institutional buyers such as department stores, hotels, restaurants and public markets. This route of selling is usually done by wholesalers. Other domestic market includes processors of dried fruits, juices, jams, and purees either for local or export market. Usually, from grower it only passes either through contractor, wholesalers, or retailer and or all of the mentioned actors before the finale sale to processors. The major cities such as Manila, Cebu and Davao are the major local markets for mangoes. For export market, marketing channel is longer than that of domestic selling. Because of the required volume of quality grade supply by processors, contractors and or consolidators come in before the final sale.

The role of contractors and the control they have in the distribution of mangoes was noted by Buguis (2014, p. 96) as indicated in Figure 2-3.

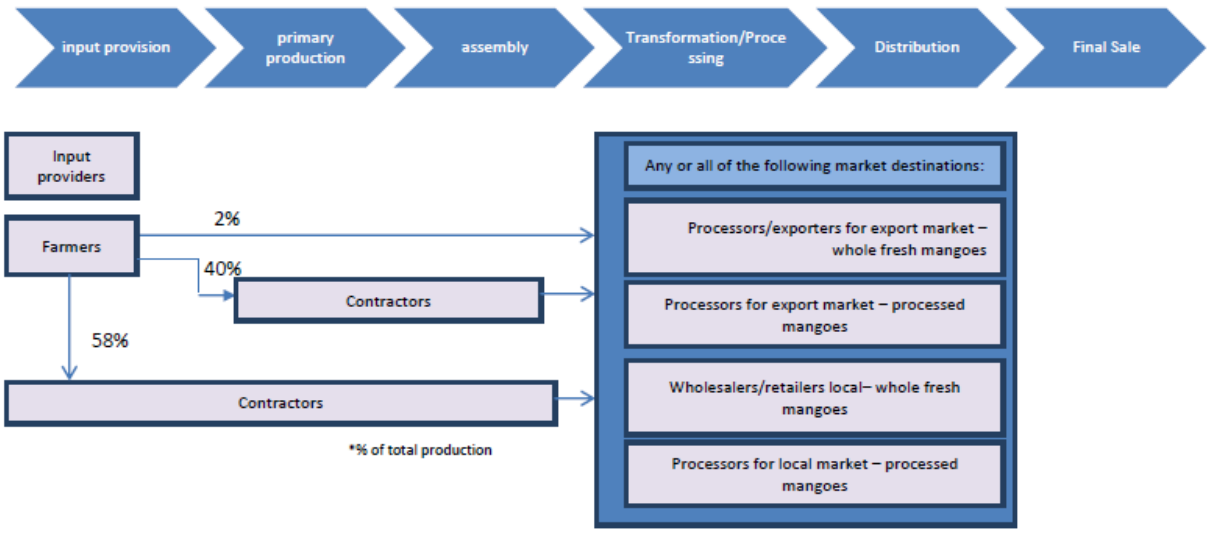


Figure 9.1 Mango Activity Flow

Figure 9.1 Graph shows concentration of activities in the contractors. While this may not be a problem in itself, therewith lies the challenge. And the challenge remains as to increasing not just the inclusion of the smallholders in the chain but quantifying how their plight is elevated vis-a-vis the guiding development objective of "inclusive economic growth" or increased household incomes and decreased poverty levels. There is no data available as to the improvement (or the lack of it) of the net revenue of the smallholders.

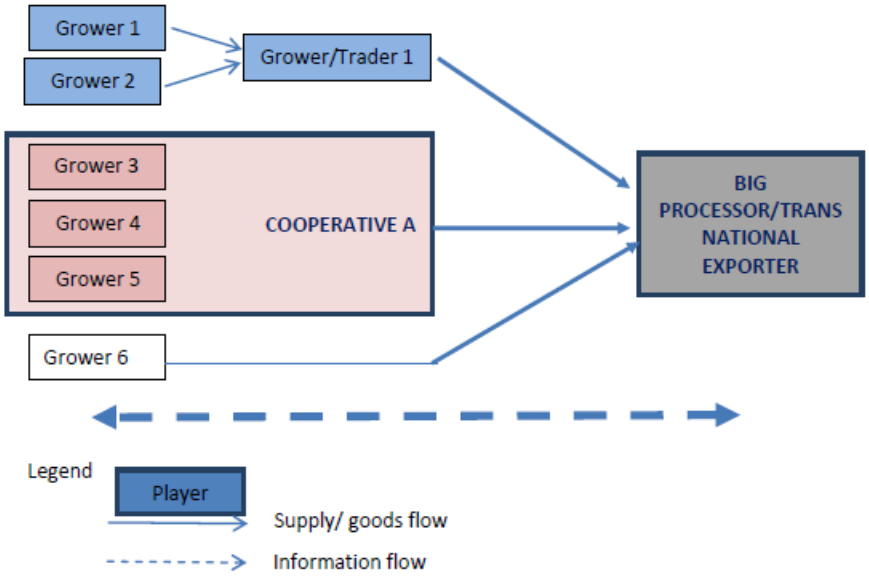
Figure 2-3: Mango activity map (Buguis 2014, p. 96)

As noted by Buguis (2014, p. 97), the contractors' power in the distribution is difficult to overcome, even when processors contract directly with farmers:

> *And while we see some attempt on the large exporters/processors (e.g. Nakashin, SPFFC) to link the individual growers to them in order to better control the production process and provide necessary technical assistance and capacity building trainings for consistent production of export-quality products, contractors still control the game, leaving behind the farmers. At best, under this requirement, GAP is being adopted. At the very least however, there is no real transfer of "culture" as to the use of GAP or sustainable agriculture that produces the best quality because by the end of the contract, growers go back to what they think would be the most profitable for them.*

And this, disregards the environmental impacts or the quality they produce, relying only on the processors that accept the lower-quality products or the local market that relatively does not impose quality standards.

Where there is a big processor present in the region (e.g. region XI), we recommend that the outgrower scheme be merged with the cooperative model (see featured box below). This is to guarantee, among others, a sure market, improved/market-compliant products (as to quality and quantity). This can also be elucidated from the key constraints identified in section 8 (fragmented producers, lack of access to market, low product quality) and the corresponding interventions recommended (enhancing the organization of producers, providing linkage to market) (Also refer to inter-firm relationships under Section 3) Figures (9.2) Enhancing the horizontal relationship between the growers and the vertical linkage with the big processors/exporter.



2.3. Role of Supermarkets

The role of supermarkets in the Philippines was investigated by Digal (2015) and identified that the number of supermarkets in the Philippines is increasing and that the share of groceries sold by supermarkets has also increased in recent years. Of particular interest in the research conducted by Digal (2015, p. 426) was the very significant increase in the sales of fruits and vegetables through supermarkets from 2000 to 2010, summarised in Table 2-1.

Table 2-1: Growth rate of fruit and vegetable sales in selected supermarkets in Philippines

Store	Sales in USDm			% Growth Rate	
	2010	**2005**	**2000**	**2010**	**2005**
SM	207	47	16	340	194
Puregold	56	3.4		1,547	
Robinsons	66	25	7	164	257
Rustans	58	30		93	
Makro		26	20		30
President Chain (7-11)	1	.4	.4	150	0
Others	25	15.4	75.8	62	(80)

Of course, the information in Table 2-1 represents supermarket sales across all of the Philippines including metropolitan Manila, and the primary data collected as part of this RMA provides additional insights into the status of mango sales in supermarkets in the regions of interest to this project.

Gulati et al. (2007) noted that growth in consumption of high value perishable products in developing nations is accompanied by:

- Increased consumer awareness of and demand for food safety and convenience.
- The development of effective cold chains and infrastructure for improved cold chain management.
- New forms of retailing including large-format supermarkets.

- Improved management of communications along the chain to better manage product requirements.

So, even though the existence of characteristics such as these may not be widespread in the region of interest to the current research, that they will become part of the future of mango marketing in the region appears to be assured.

This project is concerned with understanding how smallholder farmers can benefit financially by producing mangoes that meet customer needs. In a perfect scenario the quality attributes sought by consumers are communicated efficiently to growers who employ their skills and resources to ensure only mangoes that meet identified consumer requirements are supplied, and that all actors in the complex web that links farmers with consumers share information and handle mangoes appropriately. However, the role of non-consumer buyers is also of interest to this project, and this is particularly important in the case of mango because it is processed into many forms in which case it can be argued that the specifications and requirements of the processor are of more relevance than consumer desires.

2.4. Scope of the Regional Market Analysis

This is the report of a market investigation about the market and distribution channels for mango from Samal Island that satisfy the needs of industrial, commercial and retail customers in Davao or that are 'exported' outside Davao. This report does not include:

1. Information from farmers in the communities involved in this project as this information has been collected and reported by Community Development team members.

2. Information from consumers as this information is the subject of consumer surveys conducted and reported by others.

2.5. Project Aim

The aim of the ACIAR Project ABG/2012/109 is to improve smallholder net income, livelihoods and community wellbeing by developing fruit and vegetable value chains integrated with community development in the southern Philippines. The Regional Market Analysis contributes to the project aim by providing data on which evidence-based decisions about emerging attractive market segments can be made.

2.6. Project Objectives

The objectives for the ACIAR Project ABG/2012/109 are:

1. To identify opportunities for improving farmer-to-market chain performance, competitiveness and farmer net income; and associated opportunities for community development;

2. To develop value chain to improve the level and sustainability of smallholder net income and livelihoods;

3. To maximise community benefits from value chains and enhance community capacity to support value chain performance.

The Regional Market Analysis contributes to the project objectives by providing the data by which market opportunities can be identified and by prioritising the attractiveness of market segments which may be available for and accessible by smallholder mango farmers.

2.7. Research Questions

The questions which guide the ACIAR Project ABG/2012/109 project are as follows:

1. What are the market-led opportunities that will improve the competitiveness of targeted smallholder vegetable and fruit enterprise?

2. What chain-building strategies will engage smallholders and their communities to take advantage of these opportunities?

3. How can farmers and their communities identify, evaluate and adopt technical and organisational innovations that improve income and livelihoods?

4. What farm system, community-based and institutional processes can facilitate the communities to which smallholders belong and the value chains in which smallholders are involved, becoming mutually supportive?

5. How can approaches that lead to mutually supportive value chains and smallholder communities be sustained and scaled up?

The Regional Market Analysis contributes to the research questions by providing an evidence base to answer to RQ 1 and to allow decisions to be made with respect to RQs 2-5.

3. Methodology

The methodology employed for this research was guided by the project aim, objectives and research questions and the definition of sustainable value chains provided by Neven (2014, p. vii):

> *the full range of farms and firms and their successive coordinated value-adding activities that produce particular raw agricultural materials and transform them into particular food products that are sold to final consumers and disposed of after use, in a manner that is profitable throughout, has broad-based benefits for society and does not permanently deplete natural resources.*

To provide sufficient information about the distribution and marketing of mango in Davao in a manner consistent with the definition above it was necessary to gather data from stakeholders involved in mango distribution, financing and other services from the farm gate to the point of retail sale. As noted under the heading of scope data was not collected from farmers or consumers.

3.1. Justification for Exploratory Research

Fruit and vegetable distribution and marketing in developing countries is changing rapidly which means that secondary data, whilst useful, may not be as up-to-date as needed for this project. Consequently, primary data was collected prior to a fully completed review of existing literature and secondary data sources. This was consistent with the recommendation of Porter (1980, p. 371) to "get into the market early" to avoid a common problem in conducting industry analyses of spending too much time reviewing published sources.

Taking note that mango distribution channels may be changing it was decided to not assume that the distribution of mango would follow traditional distribution models. It was therefore agreed to adopt an exploratory research approach. Exploratory research has the primary objective of providing insights and comprehension of a situation and can be the major part of a research methodology in business to business research (Malhotra 2010). Exploratory research can include qualitative and qualitative data, and both were collected during this research. By adopting an exploratory research approach the investigators

were able to identify new business models of intermediaries. Had a more traditional approach of identifying known intermediaries and then interviewing them been adopted, the new business model intermediaries may have been overlooked. For the sake of this research the term used to define a group of businesses with a similar business model was 'node'.

3.2. Data Collection Methods

To ensure new and emerging nodes were identified a snowball sampling technique was employed which meant that interviewees were asked to identify large actors of potential interest to our research.

Primary data collection was by way of semi-structured interviews. The use of semi-structured interviews was important because this provided the researcher with more control than unstructured interviews and allowed interviewees to provide a wider range of responses than using closed-ended questions (Given 2008; Minichiello et al. 2008). The use of semi-structured interviews also provided the opportunity for interviewees to discuss broadly the issues and then, with probing and prompting from the researcher, for example, "how? why?" The use of a mailed survey questionnaire was deemed inappropriate because of the research team's previous experience of low return rates and because the investigators wanted to obtain answers to 'why and how' type questions which are difficult to obtain from written questionnaires.

Semi-structured interviews were guided by an interview guide which was developed by project personnel based on an understanding of the factors that would be important to the project and prior knowledge of mango distribution practices in the region. The interview guide is attached as Appendix I.

The use of a single interview guide for interviews provided a consistent set of data which facilitated its analysis. Although a single interview guide was employed, it was agreed that interviews were to be modified as opportunities to identify additional information presented themselves. It was noted that the interviewer was the instrument (Merriam 2002) and a skilled interviewer engages with the interviewee and creates and responds to opportunities for useful information not included in the interview guide.

The interviews were undertaken by Filipino team members and not by Australians because Australian team members were generally unfamiliar with terms such as locations and industry-specific terminology and because there is a significant translation loss due to 'Aussie' accent even with people who have a sound command of English language. Interviews were conducted in the language with which the interviewee was most familiar to allow them to be able to express meaning in the way with which they were most comfortable.

3.3. Selection of Participants

Participants to be interviewed were purposefully selected based on the following criteria:

1. Their business activities formed part of the value chain for mango being supplied for industrial, commercial or retail markets in Davao, or for distribution away from Davao by Davao-based distributors. Different business models employed by businesses were noted and grouped together.

2. Their businesses were larger than average. Whilst our preference was to interview the three largest businesses within each discrete group (node) this was not always possible.

It was agreed to interview just three businesses from each node initially and, as long as they were larger than average businesses, (preferably the largest three), and the information obtained was consistent, it was accepted that the data obtained was representative of the group of businesses represented by the interviewees. It should be noted that this research is not being represented as statistically valid quantitative research. Its purpose was to identify themes which represent opportunities and challenges for smallholder farmers which was why the research approach adopted focused on key informant interviews with key actors.

3.4. Number of Interviews

The number of interviews conducted is relevant because it affects the conference with which the data is presented. The number of interviews conducted is shown in Table 3-1.

Table 3-1: Number of interviews

Node	Number of Interviews
Contractors/Collectors	2
Primary Wholesalers	4
Secondary Wholesalers	2
Direct Manila Wholesalers	5
Hotels and Restaurants	4
Juice and Smoothie Bars	1
Davao-based Exporters	1
Processors in Davao	3
Wet Market Retailers	3
Supermarket Concessionaires	3
Total Interviews	28

Whilst the total number of interviews may be significant, the number per node is small and consequently no claims of generalisability of data to each node is possible from this research because of the sampling method employed and the number of interviews conducted, even though interviewees were purposefully selected as being the largest within each node.

3.5. Data Recording and Analysis

Interviews were recorded electronically. It was decided not to convert the recording to a full typed transcription because this would require too much effort for little benefit, but the recording was kept to provide a chain of evidence and for future reference if required.

An interview report was prepared for each interview. To maintain consistency the following was recorded in each report:

1. Contact details of interviewee and date of interview.

2. A brief description of the business eg relative size in the node, volume or value of mangoes handled and general description of the business model.

3. Bullet points of the information provided, in the same order as the questions.

Data collection as described above allowed a mango marketing and distribution diagram to be prepared and populated with data. Where information related to volumes, prices or other data related numbers have been provided the basis of the estimates made are included in the results section of this report.

Qualitative data analysis involves a process of data reduction to identify themes and patterns. Data analysis was undertaken for each node by summarising the information obtained from the interviews for each node into a single table which was included in the results section of this report. The data for each node was then assessed against the characteristics identified in Table 3-2. The characteristics identified in Table 3-2 were influenced by Thompson and Strickland (1987) which explains how to conduct an industry analysis and identify the relative attractiveness of market segments and strategies.

Table 3-2: Criteria used for assessing attractiveness of nodes

Characteristic	Why Important
Consumer and intermediary (eg. Processor, wholesaler, distributor, exporter, supermarket, restaurant) trends, desires, unmet and emerging needs.	Ultimately consumer and intermediary requirements drive demand upstream and by knowing consumer concerns, trends and desires, farmer groups can use that knowledge to guide their product selection, quality standards and value chain partners.
Quality characteristics sought but not being delivered consistently.	Identifying quality characteristics and product specifications that are sought but not being delivered, but that can economically be delivered by farmer groups is a very important possible source of competitive advantage.
Prices and value-add opportunities.	By knowing the buying and selling prices and estimating the costs of any value-adding that occurs at each node, farmer groups will be able to map out a strategy for their own value-adding which may develop progressively as they gain experience and resources.
Stage of product life cycle.	Selecting market opportunities and / or supply chains that are in a growth stage will provide better opportunities for farmer groups because it is usually easier to establish a position in a growing market than it is in a market that is mature or in decline as these are usually fiercely held by existing suppliers on the basis of long term relationships (which are normally impossible to break).
Sources and strength of competition.	Establishing and sustaining a profitable position requires that the farmer groups need to understand, predict and respond to all sources of competition including existing rivals, threat of new entrants, power of suppliers, power of customers and substitutes.
Willingness and capacity to provide support to farmer groups including finance for inputs, agronomic advice, market intelligence, other.	Willingness of supply chain partners to collaborate with farmer groups is especially important in the early stages of development because farmer groups have very limited resources and this will limit the marketing decisions they can make.
Volume of commodity traded.	Both the specific tonnages and relative scale of different supply chains compared with existing and future predicted supply capacity is important because matching the current and future production capacity of farmer groups with particular nodes / supply chains may be important so they are focused on the ones in which they can secure and defend a long term profitable position.

Adapted from Thompson and Strickland (1987)

3.6. Participation by Value Chain Partners

After the completion of the primary interviews for this research, project team members returned to a number of value chain partners being the firms listed in Table 3-3.

Table 3-3: Value Chain Partners Interviewed in April 2016

Brief Description
Frozen fruit processor.
Korean fresh fruit exporter using VHT.
Fresh exporter to HK, and VHT to China (direct), Japan, Korea.
Frozen fruit processor.
Supplier of mango ripening rooms.
Very large processor of frozen, dried, puree.
Digos based Manila trader and Contractor also supplying HK, Japan Korea traders.
Samal contractor.

The interview guide for these meetings was developed after reviewing the data collected from the initial primary data collection. The interview guide developed and used for these meetings is attached as Appendix II.

Transcripts from these meetings were not typed at the time of preparing this report, but the information obtained has been used in the development of conclusions, recommendations and next steps.

4. Results and Discussion

This section provides the results of the research undertaken. Results are presented in the following order. First, mango quality standards that apply in the Davao region are described. This is a very important first step because market demand and pricing is related to quality of fruit. Second, a series of diagrams and discussion introduce various attributes of the market for mangoes in the Davao region including details of groups of businesses referred to as nodes that operate in distribution channels for mango. Third, a summary describing each node is provided. These summaries are a reduction of the data obtained from the interviews of key informants. Finally a summary table is provided that represents a further reduction of data and provides a comparison of key information about each node.

4.1. Mango Quality Standards

Mangoes in the Philippines have formal grading and nomenclature for quality specifications and the market price varies depending on the grade. Whilst the naming of grades may vary among regions and buyers, the specifications described below are generally used. For example, some buyers prefer to user grade terms A – E to describe the different grades of mango they buy. The images and descriptions included in this section were provided by one of the interviewees.

Export Grade (0-0) – Mangoes in this class shall be of superior quality. Fruits shall be clean, well-trimmed well formed, smooth and free from mechanical, skin, and discolour defects. Size requirement depends on the importing country.

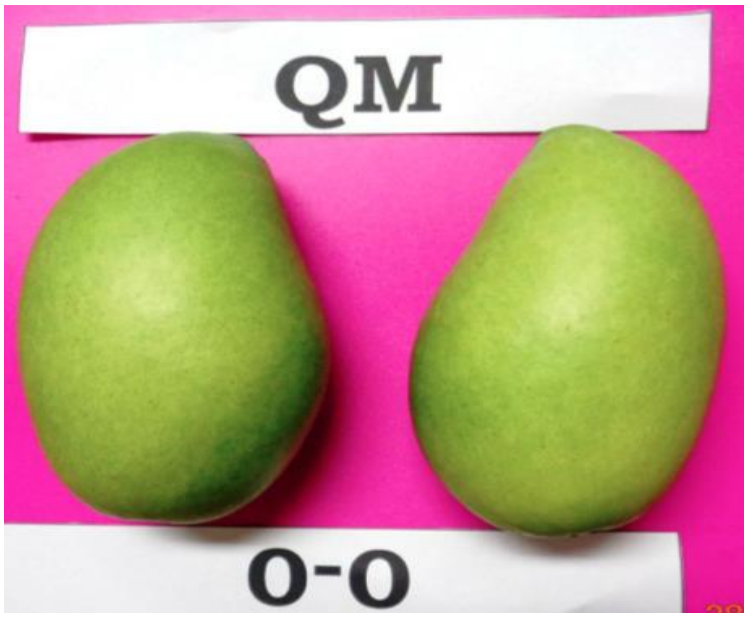


Figure 4-1: Export Grade 0-0

Export Grade (0-1) – Mangoes in this class shall be of good quality. Fruits shall be clean, well-trimmed, Well-formed, smooth and free from defects with the exception of very slight superficial defects, provided that these defects do not affect the general appearance. With slight/small scab, light latex (one part of mango face only), generally small/slight defects on side of fruit. Size requirement depends on the importing country.

Figure 4-2: Export Grade 0-1

Hong Kong Grade (0-2) – Mangoes in this class which do not qualify for inclusion in the higher classes. Light to medium skin defects like scab, ant urine, latex on both two sides of fruit.

Figure 4-3: Hong Kong Grade 0-2

Local Manila Grade 0-4 – Mangoes in this class which do not qualify for inclusion in the higher classes. With medium to heavy skin defects like scab, ant urine, latex on both two sides of fruit. Specific size requirements are >300grams for Extra Large and 250-300grams for Large. The Export Grade (0-1) and Hong Kong Grade (0-2) can also be sold as Local Manila Grade.

Figure 4-4: Local Manila Grade 0-4

Local Market Grade (0-4) – Mangoes in this class which do not qualify for inclusion in the higher classes. With medium to heavy skin defects like scab, ant urine, latex on both two sides of fruit. Specific size requirements are >300g for Extra Large, 250-300g for Large, 220-250g for Medium and 180-220g for Small. Note: the photos is the same for Local Market Grade and Local Manila Grade but the size requirements differ.

Figure 4-5: Local Market Grade 0-4

Process Grade (0-5) – Mangoes in this class which do not qualify for inclusion in the higher classes. With the heaviest skin defects like scab, ant urine, latex on both two sides of fruit. Fruit should not have bruises, bumps, and cracks. Minimum size ranges from 150-180g to a maximum of 400-500g. The image for this grade is labelled 'Dried' because the processor that provided it specialises in dried mango, but the specification applies to all processing mango. Note: the photos is the same for Local Market Grade and Local Manila Grade but the size requirements differ. Maturity – 110 to 120 days.

Figure 4-6: Process Grade 0-5

4.2. Market segments involved in mango value chain in Davao

The types of businesses referred to as nodes in this research that were identified as having an involvement in the mango distribution in Davao City are shown in Table 4-1. These estimates were bases on the data gathered from key informant interviews. During the data collection, institutional buyers such as hospitals and government institutions were included in the key informant interview but it was found out that they don't purchase mango because it's an expensive fruit. This is also true for the case of budget hotels in Davao City.

Table 4-1: Relative significance of distribution channel partners for mango in Davao City

Name of Node	Number of Participants	Annual Quantity of Mango (tonnes)
Processors in Davao	4	43,000
Contractors/Collectors	25	18,000
Direct wholesalers to Manila	20	14,400
Supermarket Concessionaires	4	8,000
Primary Wholesalers	4	4,000
Wet Market Retailers	100	3,600
Davao-based Exporters	2	3,400
Secondary Wholesalers	20	576
Hotels and Restaurants	10	120
Juice and Smoothie Bars	3	100

The sources of production of mango for Davao are identified in Table 4-2.

Table 4-2: Sources of production of mango supplied into Davao

Type of Producer	Number of Participants	Annual Quantity of Mango (tonnes)
Farmers and Contractors in Davao Provinces other than Samal Island		46,200
Farmers and Contractors in other regions of Mindanao		24,600
Contractors / Collectors managing farms on Samal Island	41	1,700
Farmers on Samal Island	3,170	300
Total		72,800

The information contained in the above tables is provided graphically in Figure 4-7

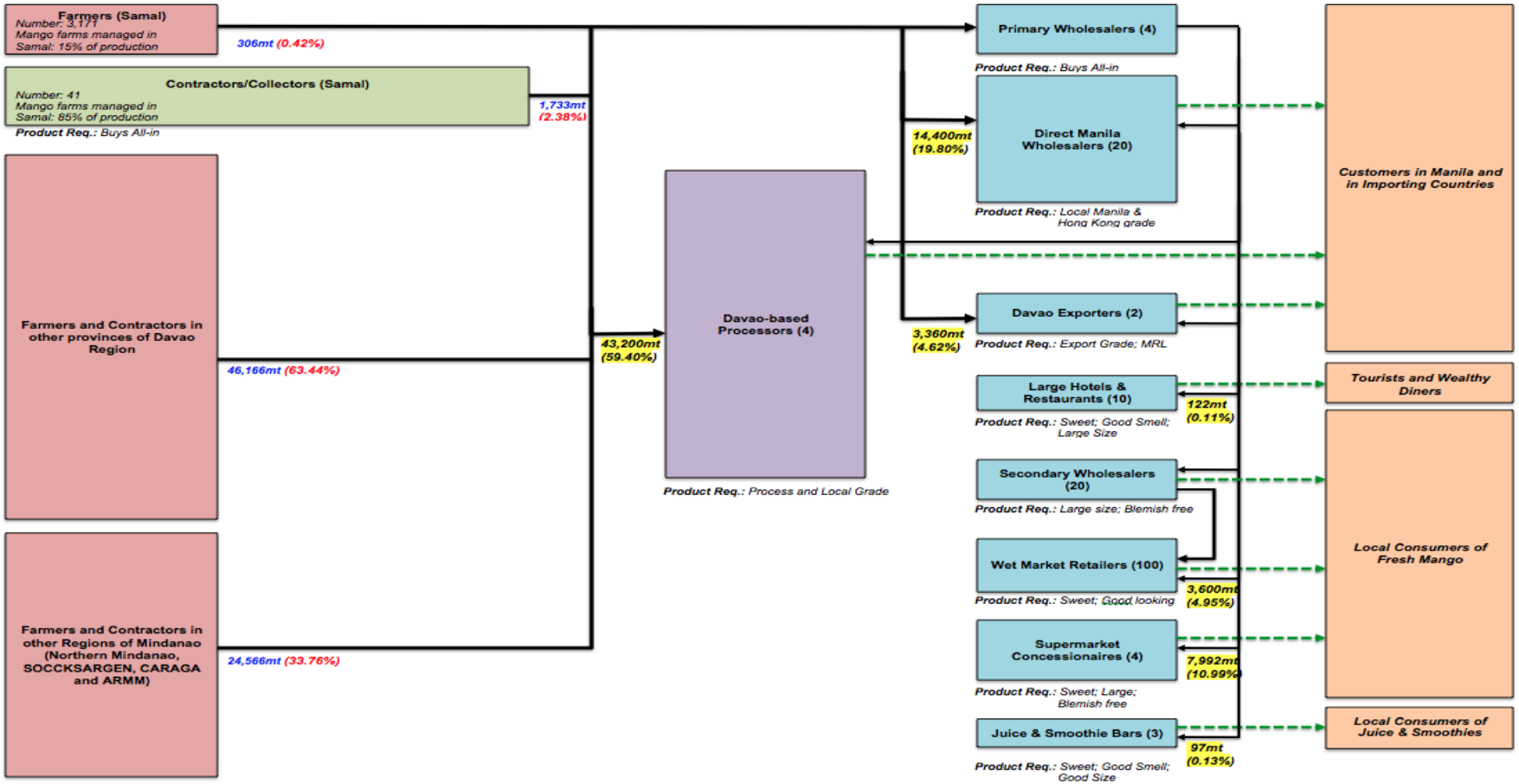


Figure 4-7: Mango distribution in Davao

4.3. Summary of data collected

A summary of data collected for each node is provided in Table 4-3 which spans several pages. This table concludes with an assessment of relative attractiveness of each node.

Table 4-3: Summary of each node involved in mango distribution in Davao

Characteristics	Contractor/ Collectors	Primary Wholesalers	Secondary Wholesalers	Direct Manila Wholesalers	Processors in Davao	Davao-based Exporters	Hotels & Restaurants	Wet Market Retailers	Supermarket Concessionaires	Juice & Smoothie Bar
Node Description	Contractors buying mangoes on production site	Large wholesalers buying mangoes from Contractor / Collectors and mango farmers	Secondary wholesalers buying mangoes from primary wholesalers and selling to wet market retailers	Wholesalers selling to Manila buyers	Firms that process mango mostly into dried, frozen cuts, and puree	Firms exporting fresh mango to Japan, Korea, and other importing countries	Privately owned and managed hotels and restaurants	Retailers selling mangoes in traditional wet markets	Concessionaires selling mangoes in supermarkets	Privately owned and managed enterprises that process fresh mango into juice and smoothies
Product Requirements	Buys all grades (All-in)	Buys all grades (All-in)	Local market grade but preferably large size and blemish free	Predominantly buying Hong Kong grade and Local Manila grade but may also buy All-in	Buys process grade and local Davao grade	Buys export grade and Hong Kong grade	Sweet; large size; blemish free; insect-damage free	Sweet smell; large size; minimal blemishes, spots, and skin damages	Sweet; large size; blemish free	Buys large size local market grade only
Emerging Need	More supply of mango during lean season	More supply of mango during lean season	More supply of mango during lean season	More supply of better quality mangoes (HK and Local Manila grades)	More supply of mango during lean season	More supply of high quality mango year-round; mangoes that adhere to MRL	Nothing in particular	Nothing in particular	Good quality mangoes during wet season; blemish free	More supply of large size mango during lean season
Quality characteristics sought but not delivered consistently	Greater proportion of harvested mango classified as Export, HK, and Local Manila grades.	Greater proportion of harvested mango classified as Export, HK, and Local Manila grades.	Mangoes with less incidence of stem end rot and anthracnose when ripened	Greater proportion of output that can be classified as Hong Kong Grade and Local Manila Grade	Mature mangoes with no bruises and cracks	Superior quality mangoes with no insect bites, latex burns, blemishes, etc.; MRLs	Sweet mangoes (rarely)	Nothing specific, they can choose what to buy	Good quality mangoes which are blemish free, no dark spots and bumps (rarely)	Large size mangoes during lean season; consistent quality of all mangoes inside the purchased basket (sometimes)

Characteristics	Contractor/ Collectors	Large Wholesalers	Secondary Wholesalers	Direct Wholesalers	Processors	Exporters	Hotels & Restaurants	Wet Market Retailers	Supermarket Concessionaire	Juice & Smoothie Bar
Volume of Requirement/ month	60mt/month (average)	40 to 80mt/month (average)	1.4 to 3.4mt/month	60mt/month (average)	600 to 1,200mt/month	120 to 140mt/month	450 to 900kg/month	2.4 to 3.6mt/month	108 to 225mt/month	Did not disclose information on volume requirement
Buying Price (PhP/kg)	Farmgate price (P22.50, All-in)	Farmgate price (P30.28, All-in)	Wholesale price: (P42.90, local market grade; large size and blemish free)	Farmgate price (P45.00, HK and Local Manila grade)	Processor Price (P28.00, Process grade)	Export price (P68.50,Export grade)	(P52.50, sweet, large-size, blemish free mangoes)	Small wholesaler price (P57.28, sweet, large-size, minimal blemishes, spots, and skin damages)	(P55.00, sweet, large-size, blemish free)	(P57.00, large size local market grade)
Support Services Provided to Farmers	(3) Produce preparation and packaging; Product handling; Transportation	(4) Produce preparation and packaging; Product handling; Transportation; Input financing	(0) None, they only buy from wholesalers	(3) Produce preparation and packaging; Product handling; Transportation	(3) Transportation; Tech. support on farm management; Input financing through contract growing	(3) Transportation; Tech. support on farm management; Input financing	(0) None	(0) None	(0) None, they buy mangoes from wholesalers)	(0) None, they buy mangoes from wholesalers)
Stage of product life cycle	Maturity	Maturity	Maturity	Maturity	Growth	Growth	Growth	Maturity	Growth	Growth

Characteristics		Contractor/ Collectors	Primary Wholesalers	Secondary Wholesalers	Direct Manila Wholesalers	Processors in Davao	Davao-based Exporters	Hotels & Restaurants	Wet Market Retailers	Supermarket Concessionaires	Juice & Smoothie Bar
Sources and strength of competition	Threat of new entrant	Moderate	Low	Moderate	Moderate	Low	Low	Ø	High	Low	High
	Bargaining power of suppliers	Low	Low	High	Moderate	Low	Moderate	Low	Low	Moderate	Low
	Bargaining power of buyers	Moderate	Low	Low	Low	Ø	Low	Low	Moderate	Low	Low
	Threat of Substitute Nodes	Moderate	Moderate	Low	Moderate	Low	Low	Moderate	High	Low	Moderate
	Rivalry of firms	Low	Moderate	Moderate	Low	Low	High	Ø	Low	Ø	High
Willingness to support farmer groups		Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Capacity to support farmer groups		Moderate	High	Low	Ø	Very high	Very high	Very low	Very low	Low	Low
Relative Attractiveness		**3.1**	**3.5**	**2.2**	**3.6**	**3.4**	**4.4**	**2.5**	**2.6**	**3.1**	**2.7**

In assessing the relative attractiveness of the various nodes in the mango supply chain, a Node Attractiveness Evaluation (NAE) Matrix (Table 4-4) was constructed. This matrix follows the concept of *External Factor Evaluation (EFE) Matrix,* which is a strategic-management tool often used for assessment of current business conditions (David 2007). In this case, the NAE Matrix is used to summarize and evaluate the relevant node characteristics that were identified. It is used as a tool to visualize and prioritize nodes that are most attractive to mango farmers/farmer groups. The steps used in constructing the NAE Matrix were as follows:

a. List key node characteristics that can be quantified. The suggested node characteristics are (a) volume of requirement; (b) buying price; (c) support services provided to farmers and; (d) stage of node life cycle. Be as specific as possible, using tonnes/month for volume, PhP/kg for buying price, and number of support services provided.

b. Assign to each node characteristic a weight that ranges from 0.0 (not important) to 1.0 (very important). The weight indicates the relative importance of that factor to being successful in the production and marketing of mangoes. Appropriate weights can be determined by reaching a group consensus among mango producers and industry experts. The sum of all weights assigned to the node characteristics must be equal to 1.0. It is important to note though that weights can be farmer/farmer group specific, depending on the node characteristic they find more important in being successful on the production and marketing of mango.

c. Assign a rating between 1 and 5 to each key node characteristic to indicate the level of attractiveness, where 5 = *Very Attractive*, 4 = *Attractive*, 3 = *Neutral*, 2 = *Unattractive*, and 1 = *Very Unattractive*. Ratings given should be based on the quantitative data for each node characteristic.

d. Multiply each node characteristic's weight by its rating to determine a weighted score.

e. Sum the weighted scores for each variable to determine the total weighted score for the node.

Regardless of the number of node characteristics included in the NAE Matrix, the highest possible total weighted score for a particular node is 5.0 and the lowest possible total weighted score is 1.0. The average total weighted score is 3.0. A total weighted score of 5.0 indicates that a node is very attractive. In other words, the farmer/farmer group should prioritize this node as a potential market channel for mango. A total score of 1.0 indicates that the node is very unattractive for the mango farmer/farmer group. The summaries of NAE Matrix for all mango nodes are shown in Table 2a and Table 2b.

Note that the most important node characteristic is the "Buying price (PhP/kg)" as indicated by the assigned weight of 0.40. This is mainly because profits in mango production and marketing are highly dependent on the buying price of mango during the particular time of transaction. This is followed by the capacity to support farmer groups (number of support services that can be provided to farmer groups), which has an assigned weight of 0.30. This is also a very important node characteristic since success in mango production and marketing rely heavily on these support services, especially for farmers who lack sufficient working capital. The volume of requirement per month is also an important node characteristic (0.20 weight) since profit can also be increased by reducing transaction costs in negotiating with many small buyers of mango. On the other hand, ratings are carefully evaluated based on the stated quantitative terms for each node characteristic. Finally, note that the most attractive node is the Exporter with a total weighted score of 4.4. This is then followed by the direct wholesalers (3.6), large wholesalers (3.5), processors (3.4), etc.

Table 4-4: Relative attractiveness of node calculations (Node Attractiveness Evaluation (NAE) Matrix)

Characteristics	Weight	Contractor Collectors		Primary Wholesalers		Secondary Wholesalers		Direct Manila Wholesalers		Processors in Davao		Davao-based Exporters		Hotels & Restaurants		Wet Market Retailers		Supermarket Concessionaire		Juice & Smoothie Bar	
		Data	Rating	Data	Rating	Data	Rating	Data	Rating	Data	Rating	Data	Rating	Data	Rating	Data	Rating	Data	Rating	Data	Rating
Volume of Requirement /year	0.2	18,000mt/yr	4	3,840mt/yr	3	576mt/yr	2	14,400mt/yr	4	43,200mt/yr	5	3,360mt/yr	4	81mt/yr	1	3,600mt/yr	2	7,992mt/yr	4	97mt/yr	2
Buying Price (PhP/kg)	0.4	Farmgate price (P22.50, All-in)	2	Farmgate price (P30.28, All-in)	3	Wholesale price (P42.90, large and blemish free mangoes)	3	Farmgate price (P45.00, HK and Local Manila grade)	4	Processor Price (P28.00, Process grade)	2	Export price (P68.50,Export grade)	5	(P52.50, sweet, large-size, blemish free mangoes)	4	Small wholesaler price (P57.28, sweet, large-size, good appearance)	4	(P55.00, sweet, large-size, blemish free)	4	(P57.00, large size local market grade)	4
Capacity to support farmer groups	0.3	(3) Produce preparation and packaging; Product handling; Transportation	4	(4) Produce preparation and packaging; Product handling; Transportation; Input financing	4	(0) None, they only buy from wholesalers	3	(3) Produce preparation and packaging; Product handling; Transportation	3	(4) Transportation; Product handling Tech. support on farm management. Input financing through contract growing	4	(4) Transportation; Product handling; Technical support on farm management; Input financing	4	(0) None	1	(0) None	1	(0) None, they buy mangoes from wholesalers)	1	(0) None, they buy mangoes from wholesalers)	1
Stage of product life cycle	0.1	Maturity	3	Maturity	3		3	Maturity	3	Growth	4	Growth	4	Growth	4	Maturity	3	Growth	4	Growth	4
Relative Attractiveness Weighted Score		3.1		3.3		2.2		3.6		3.4		4.4		2.5		2.6		3.1		2.7	

4.4. Characteristics of nodes

To better understand the relative attractiveness of nodes and opportunities for producers, a series of characteristics have been analysed. It should be noted that the information provided in this section represents recent history and that several segments, particularly fresh exporting and processing are actively seeking to increase the volume of mango that they purchase.

4.4.1. Average volume of requirement per customer

In Davao City, the mango supply chain node with the highest average volume of requirement (43,200mt/yr) is processing. Processors have a huge requirement due to the minimum efficiency scale of their processing plants and the quantity demanded for processed mangoes of importing countries such as Japan, South Korea and Hong Kong. This is followed by contractors/collectors (18,000mt/yr), direct manila wholesalers (14,400mt/yr), supermarket concessionaires (7,992mt/yr), primary wholesalers (3,840mt/yr), and so on. Supermarket concessionaires based in Davao City also require significant volume of mangoes because these concessionaires also deliver mangoes to similar malls in nearby provinces within the Davao Region. Exporters can eventually increase their volume of requirement but they are still having problems securing supply for export grade mangoes. The nodes with the lowest average volume requirement are wet market retailers and hotels & restaurants. The relative volume required by individual businesses in each node is illustrated in Figure 4-8.

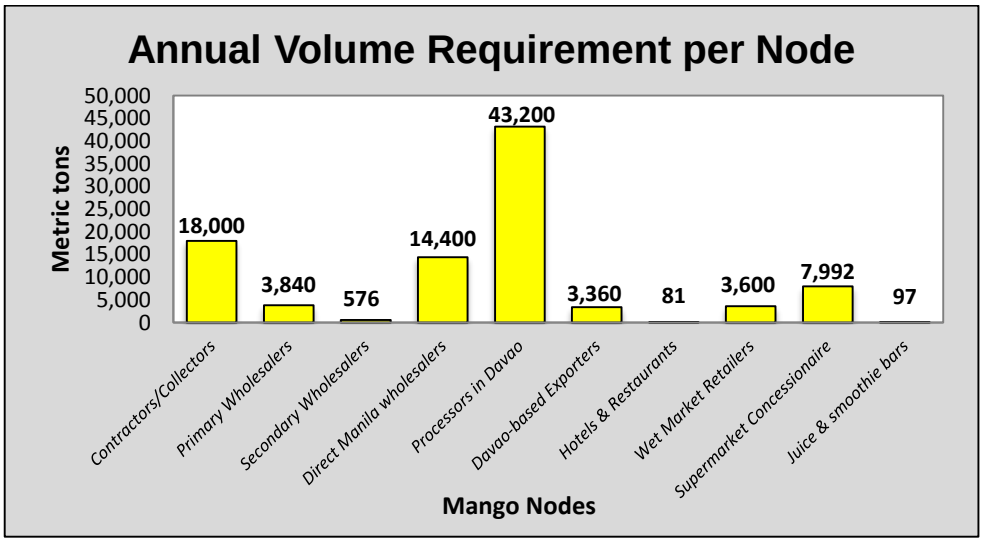


Figure 4-8: Average annual volume of mangoes by operator per segment

4.4.2. Prices paid

The prices paid by participants in different segments (nodes) is important for farmers / farmer groups in deciding the appropriate market channels for mango. Among the nodes in the mango supply chain, fresh exporters offer the highest average buying price of P68.50/kg. They can pay higher price premium because they only buy Export grade mangoes and international consumers are prepared to pay the prices required to justify the premium prices offered for premium grade mangoes. The buying price of wet market retailers (P57.28/kg) and juice & smoothie bars (P57.00/kg) are also high since they buy mostly from small wholesalers and they get to pick mangoes with specific attributes that they prefer. These nodes are followed by supermarket concessionaires (P55.00/kg) and hotels & restaurants (P52.50/kg) that buy mostly from large wholesalers in Bankerohan wet market. Nodes that have the lowest buying prices are processors (P28.00/kg) and Contractor / Collectors (P22.50/kg). Processors only buy the process grade mango, which is a lower classification and usually the highest account (about 60% of harvested mangoes) in terms of classification distribution. Lastly, Contractor/collectors pay the lowest buying price because they buy all-in and they usually pay for the harvesting cost, produce preparation & packaging and transportation cost.

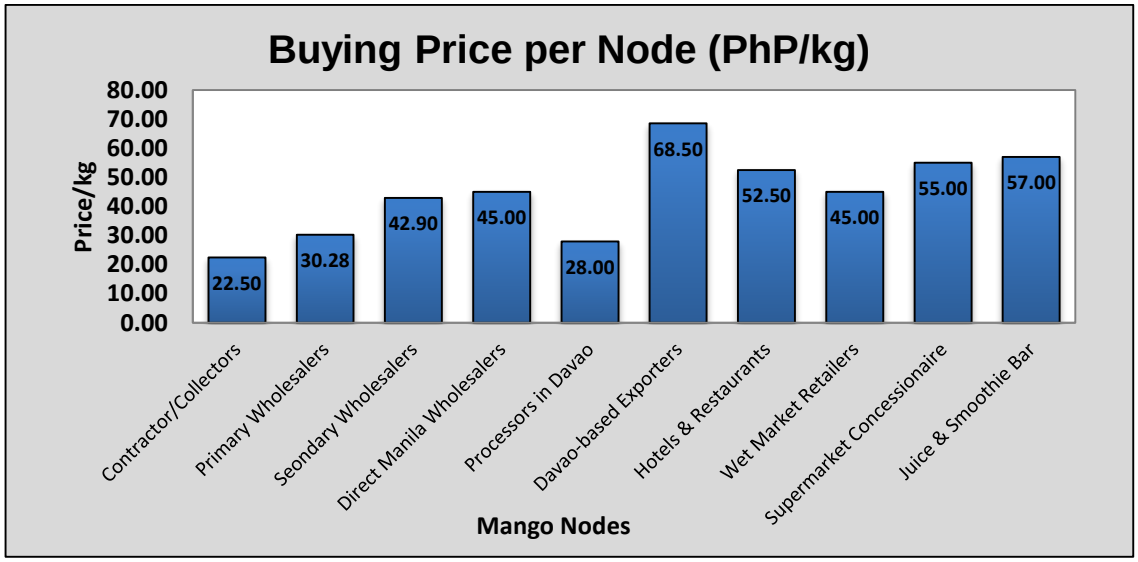


Figure 4-9: Prices paid by node

4.4.3. Support services provided to farmers

The attractiveness of a node can also be evaluated on the basis of the support services that it can provide to farmers / farmer groups. There are 5 different support services that

various nodes can provide to farmers/farmer groups – (1) produce preparation & packaging; (2) product handling; (3) transportation services; (4) input financing and; (5) technical support on farm management. Among the different nodes, only the exporters, processors, and large wholesalers can provide 4 out of 5 of these support services. Moreover, these 3 nodes can be very attractive since they can provide input financing. Mango production requires sufficient capital to buy the appropriate amounts of chemical inputs and farmers/farmer groups find it a big plus to find a buyer who can extend financing support. The fact that most farmers/tree owners lack financial capital is the reason why most of them resort to have their farms contracted to sprayers/collectors. It is important to note that some nodes that can pay a higher price for mango do not offer any support services to farmers/farmer groups. The number of support services available and provided to farmers by buyers in each node is illustrated in Figure 4-10.

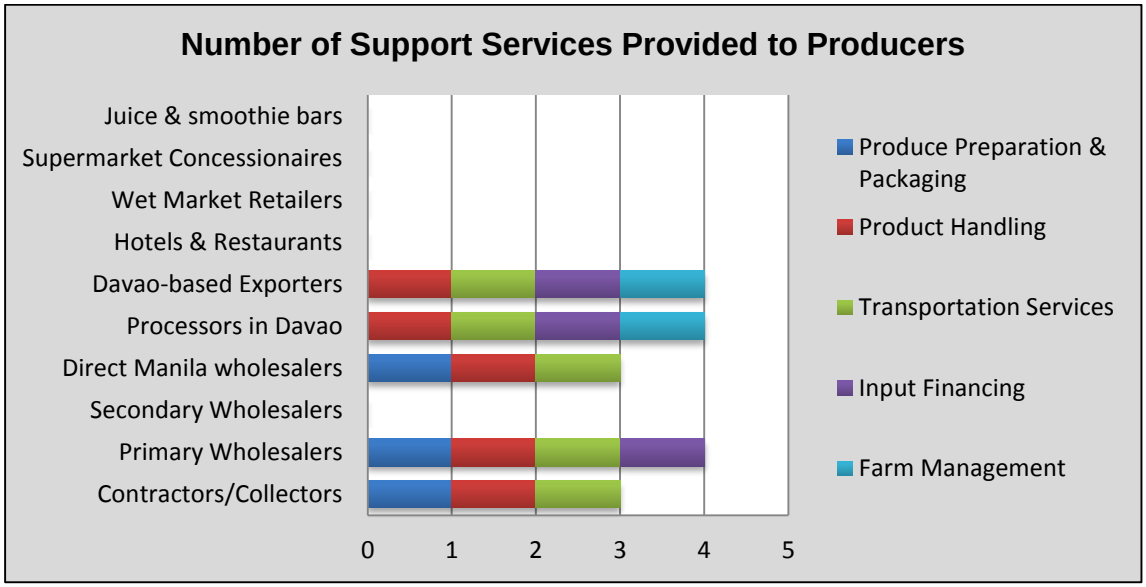


Figure 4-10: Support services generally available and provided by buyers

4.4.4. Stage of segment (node) life cycle

It is also relevant to assess the stage of business life cycle for the different nodes in order to assess relativeness opportunities for growth and stability in business transactions. In assessing the attractiveness of the nodes, it is highly preferred to market mangoes in nodes that are under growth stage since volumes will increase and competition may not be as fierce. Nodes that are under the growth stage are hotels & restaurants, juice & smoothie bars, supermarket concessionaires, exporters, and processors. These nodes are

characterized with increasing number of operators and rapid expansion on the scale of operations. In other words, the demand for mangoes of these nodes is expected to increase in the following years. On the other hand, Contractor / Collectors, direct wholesalers, large wholesalers, and wet market retailer nodes are assessed as being in the mature stage due to their long existence in the industry and declining number of players. Similar to other fresh produce, share of wet market sales compete with the rise of supermarkets. As for the intermediaries, development organizations and local government institutions are now encouraging direct marketing solutions. As such the number of players performing aggregation and distribution functions tend to decrease. The stage of segment life cycle per node is illustrated in Figure 4-11.

Introduction	Growth	Maturity	Decline
	Processors in Davao	Contractor/Collectors	
	Dava-based Exporters	Primary Wholesalers	
	Supermarket Concessionaires	Secondary Wholesalers	
	Juice & Smoothie Bars	Direct Manila wholesalers	
	Hotels & Restaurants	Wet Market Retailers	

Figure 4-11: Stage of segment (node) life cycle

4.5. Node Analysis

This section provides a summary of data collected from interviews from each node that are involved in the distribution of mango in Davao City.

4.5.1. Contractor/Collectors (CC)

This node is represented by mango contractors on production sites, which are also buying mangoes from smallholder farmers to increase the volume of mangoes they are selling to wholesalers, processors, and exporters. These actors take ownership of the product and they pay the suppliers with cash. They usually know the smallholder mango farmers in the areas where they operate. Mango Contractor / Collectors and wholesalers are selling to a wide portfolio of buyers and they normally sell their mangoes to buyers who can offer the highest price (especially during lean season).

This is the preferred market for mango farmers who do not have a wide variety of buyers and lack sufficient capital to pay for the harvesting cost, produce preparation and packaging, handling cost, and transportation cost.

Customer requirements and emerging needs

Contractor / Collectors buy mangoes all-in with the help of a quality grading expert sent by the downstream buyer. They also require suppliers to sell their mangoes after 110 to 120 days from the flowering stage to ensure that mangoes are mature enough to produce a sweet taste.

Table 4-5: Quality requirements for Contractor Collectors

Classification	Maturity
All in (Export grade, Hong Kong grade, Local Manila grade, Local Market grade, Process grade, etc.)	After 110 to 120 days from the flowering stage

Buying requirements & support services offered

Contractor / Collectors pay their supplier in cash before or during the harvesting of mangoes. The ability of buyers to pay in cash is a plus for farmer suppliers since most farmers immediately need the cash to pay for unpaid farm labour and borrowed capital used in mango production.

Contractor / Collectors pick up mangoes on farm and they mostly shoulder the cost of harvesting, grading, packaging, product handling and transportation. These support services make this node more attractive for farmers who lack the additional capital to pay for harvesting and marketing costs.

In terms of the buying practice, Contractor / Collectors follow the all-in buying system wherein they pay a similar price per kilogram regardless of the proportion of mango grades that can be obtained from the harvest. They also provide support services to farmers such as produce preparation & packaging, transportation, and product handling.

Table 4-6: Terms of payment, mode of delivery, buying practice and support services offered by Contractor / Collectors

Terms of Payment	Mode of Delivery	Buying Practice	Support Services
Pays cash to suppliers before or during the harvesting of mangoes	Pick-up mangoes from the farm	"All in"	Produce preparation & packaging; Product handling; Transportation

Emerging needs

As observed by mango Contractor / Collectors, supply of mango has actually decreased over the past years especially during lean season when mango prices are high. In addition, Contractor / Collectors also perceived that the demand of mango from downstream buyers has also increased. As such, they recognize that it would be relevant to get a good supply of mango especially during the lean season, from August to November.

Node trends

Based on the key informant interviews, there are specialized mango collectors in the past but these specialized mango collectors realized that they should also be keen about mango farming in order to thrive well in the mango aggregation business. There were also instances when mango farmers offer their mango trees to be managed by the collector. As such, specialized collectors also became contractors or mango farmers themselves. This led to an increasing volume of transaction that these mango collectors are handling.

Volume of commodity traded

Based on the key informant interviews, Contractor / Collectors normally trade 100 tonnes of mangoes per month during peak season and as low as 0 to 20 tonnes/month during the lean season. Some Contractor / Collectors may have higher volume of requirement but it depends on the supply of mango during that month of transaction.

Quality characteristics sought but not being delivered consistently

Mangoes classified under Export Grade, Hong Kong Grade, and Local Manila Grade attract price premiums. Consequently, Contractor / Collectors want to get a greater proportion of output that can be classified as Export Grade, Hong Kong Grade, and Local Manila Grade. At present they have problems achieving this due to crop damage from pests & diseases, bad weather and poor farm management of some mango farmers in Samal Island.

Prices and value-adding activities

The buying price is greatly influenced by the supply of mango during a particular season, month, and week. During peak season, the farmgate price for mango can go as low as PhP7.00 to PhP15.00. During lean season, the farmgate price for mango normally ranges from PhP 20.00 to PhP30.00.

The selling price is determined by the buyers (processors, wholesalers, and exporters) and the price that these buyers set is also greatly influenced by their assessment of supply and demand of mango in the region and in Luzon. As an example, during the month of September 2015, a Contractor / Collector recorded these prices set by different buyers for different grades of mango:

a. Exporter – PhP65.00/kg for Export grade mango

b. Wholesaler – PhP52.00/kg for Hong Kong grade mango

c. Wholesaler – PhP48.00/kg for small Hong Kong grade mango

d. Wholesaler – PhP45.00/kg for local Manila grade

e. Processors – PhP 30.00/kg for process grade

Value Adding Activities

1. Produce preparation and packaging – this marketing activity includes the harvesting, cleaning, sorting, grading, and packaging of mango using corrugated carton boxes or plastic crates provided by the downstream buyer

2. Product handling – this mainly involves the loading and unloading of packed mangoes on the transportation vehicle at the farm and buyer's area

3. Transportation – this activity refers to the transportation of packed mangoes from the farm to the buyer's area. The Contractor / Collector may use his own vehicle and pay for the fuel cost, hire a rental truck for a certain fee, or rely on downstream buyers for transportation services

Stage of product (node/business) life cycle

This distribution channel is in the mature stage since it has existed ever since the mango industry started and volumes and / or number of actors does not appear to be increasing. The market share of this channel is still perceived to be relevant considering that there are 3,171 registered mango farmers in Samal and there are only a number of (about 2 to 4 large) wholesalers in Davao City.

Sources and strength of competition

The following section shows Porter's five competitive forces which may affect the node's ability to compete in a given market. The node's profit potential can be largely determined by the intensity of competitive rivalry within the industry. Nodes that are in growth stage are normally characterized with an intensive rivalry of firms.

Threat of new entrant (Contractor / Collectors)

The capital requirement to be a Contractor / Collector is high due to the pay in cash practice. Access to distributional channels is also high if the price is right and the quality of mango is good. However, there is very limited product differentiation and there is no sufficient economies of scale. As such, the barrier to entry is perceived to be moderate.

Bargaining power of suppliers (farmers)

There are 3,171 mango suppliers in Samal and there is no product differentiation in the mangoes produced by farmers. Moreover, the Contractor / Collectors are important customers to suppliers because they perform the value adding activities mentioned above. As such, the bargaining power of suppliers is perceived to be low.

Bargaining power of buyers (wholesalers, processors, and exporters)

There are only 2 to 4 large wholesalers, 5 processors and 1 operating fresh mango exporter in the region buying significant volume of mango. Since there is no product differentiation among mangoes produced by Contractor / Collectors, they become vulnerable to market power if their supply account is relatively small. Moreover, downstream buyers have considerable information and linkage with a wide variety of mango suppliers. As such, the bargaining power of buyers is perceived to be moderate.

Threat of substitute products (Node)

The threat of substitute node is perceived to be is moderate since farmers can sell to other downstream buyers if they have access to downstream buyers and sufficient capability to transact with them.

Rivalry of firms (Contractor / Collectors)

The rivalry of Contractor / Collectors is perceived to be low since most transactions with mango farmers are based on personal relations so competition is very minimal. Most Contractor / Collectors also have limited capital to engage in intense rivalry.

Willingness and capacity to provide support to farmer groups

The key informants from this node indicated that they are willing to source mangoes from farmer groups since it would lessen the transaction cost of looking for mango suppliers when there is a great need to get mango supply. This node also has a moderate capacity to support farmer groups since they can pay cash on delivery and can provide transportation services with the help of downstream buyers.

4.5.2. Primary Wholesalers

This node is represented by Primary Wholesalers selling to (a) secondary wholesalers in Davao City, other cities, provinces and regions in Mindanao; (b) secondary wholesalers in Metro Manila selling to local market, Hong Kong , and South Korea; (c) processors; and (d) exporters of fresh mango i.e. wholesalers buying mangoes from Wholesalers and mango farmers. They grade the mangoes that they buy and then sell them to various buyers of mango such as wholesalers, processors, and exporters. Some wholesalers provide financing services to their key suppliers and they don't charge any interest rate. They actively look for alternative sources of mango and they also provide financing services (without any interest) just to make sure that they get ample supply. They mostly transport the product to their buyers.

Customer requirements and emerging needs

Primary wholesalers buy mangoes all-in with the help of a quality, grading expert sent by the downstream buyer. They require the suppliers to sell their mangoes after 110 to 120 days from the flowering stage to ensure that mangoes are mature enough to produce a sweet taste.

Table 4-7: Primary wholesalers' buyer specifications

Classification	Maturity
All in (Export grade, Hong Kong grade, Local Manila grade, Local Market grade, Process grade, etc.)	After 110 to 120 days from the flowering stage

Primary wholesalers pay their supplier in cash before or during the harvesting of mangoes. The ability of wholesalers to pay in cash is a plus for farmer suppliers since most farmers immediately need the cash to pay for unpaid farm labour and borrowed capital used in mango production.

In most transactions, the primary wholesalers are the ones who pick up mangoes on farm and they can provide support services such as produce preparation & packaging, product handling, transportation and input financing. Amongst the support services they provide, input financing is very attractive to mango farmers since mango production requires sufficient capital to purchase chemical inputs. Similar to contractors/collector, wholesalers

also buy mangoes from farmers following the all-in buying system wherein they pay a similar price per kilogram regardless of the proportion of mango grades that can be obtained from the harvest.

Table 4-8: Terms of payment, mode of delivery, buying practice and support services offered by primary wholesalers

Terms of Payment	Mode of Delivery	Buying Practice	Support Services
Pays cash to suppliers before or during the harvesting of mangoes	Pick-up mangoes from the farm	"All in"	Produce preparation & packaging; Product handling; Transportation; Input financing

Emerging needs

As observed both by Contractor/collectors and primary wholesalers, supply of mango has actually decreased over the past years especially during lean season when mango prices are highly favourable. As such, they recognize that it would be relevant to get a good supply of mango during the lean season (August to November).

Node trends

Primary wholesalers are maintaining a number of different downstream buyers to take advantage of the all-in buying practice and they do the grading themselves. Due to the perceived diminishing supply of mangoes and competition with Korean buyers visiting farms and directly buying from farmers, wholesalers are now performing the aggregation function by directly searching for farmer suppliers or relying on agents/brokers.

Volume of commodity traded

On a regular basis, wholesalers buy and sell about 40 to 80 tonnes of mango per month. They have higher volume of requirement because they have a lot of buyers but they cannot purchase more due to limited supply.

Quality characteristics sought but not being delivered consistently

Mangoes classified under Export Grade, Hong Kong Grade, and Local Manila Grade have higher price premiums. As with Contractor / Collectors, wholesalers want to get a greater proportion of output that can be classified as Export Grade, Hong Kong Grade, and Local Manila Grade for every mango farmer or Contractor / Collector they have negotiated with. At the moment, they have problems attaining this due to the emergence of pests & diseases, bad weather conditions, and poor farm management of some mango farmers in Samal Island.

Prices and value-adding activities

The buying price is greatly influenced by the supply of mango during a particular season, month, and week. During peak season, primary wholesalers noted that the farmgate price for mango can go as low as PhP8.00/kg. During lean season, the farmgate price for mango can reach PhP 80.00/kg.

Primary wholesaler respondents did not indicate a specific selling price since they make adjustments depending on the supply of mango. There are a few large wholesalers in Davao City and they have huge volume of transaction so they are normally perceived by upstream suppliers and downstream buyers to influence price depending on the level of supply during a particular time.

Value Adding Activities

1. Produce preparation and packaging – this marketing activity includes the harvesting, cleaning, sorting, grading, and packaging of mango using corrugated carton boxes or plastic crates

2. Product handling – this mainly involves the loading and unloading of packed mangoes on the transportation vehicle at the farm and at buyer's area in Bankerohan

3. Transportation – this activity refers to the transportation of packed mangoes from the farm to the buyer's area. Large wholesalers have their own trucks that they used for getting the mango supply at the farmer's area.

Stage of product (node/business) life cycle

Primary wholesalers play the important supply chain function of distribution and this node has already existed ever since the mango industry started so it is considered to be in maturity

stage. The market share of this channel is still perceived to be relevant considering that a single wholesaler can buy up to 20 tonnes of mangoes per week.

Sources and strength of competition

The following section shows Porter's five competitive forces which may affect the node's ability to compete in a given market. The node's profit potential can be largely determined by the intensity of competitive rivalry within the industry. Nodes that are in growth stage are normally characterized with an intensive rivalry of firms.

Threat of new entrant (wholesalers)

High Barrier to Entry – the capital requirements to be a wholesaler is high due to the pay as you buy practice and the high volume of transaction. Although there is limited product differentiation, economies of scale is high due to the requirement of having a wide network of suppliers and buyers and huge volume of transaction.

Bargaining power of suppliers (farmers and Contractor / Collectors)

Low – there are 3,171 mango suppliers in Samal and 41 contractors; there is no product differentiation; and the wholesalers are important customers to suppliers because they perform a number of value adding activities.

Bargaining power of buyers (secondary wholesalers, exporter and processors)

Low – there are a few (4) large wholesalers in Davao and most buyers depend on their supply particularly during lean season. Wholesalers have considerable market information on various buyers and the prices they offer.

Threat of substitute products (Node)

Moderate – Farmers or farmer groups and Contractor / Collectors can also do sorting and grading and distribute to different downstream buyers if they have established a linkage with them.

Rivalry of firms (wholesalers):

Moderate – Most transactions with suppliers and buyers are based on personal relations and some wholesalers are also turfing based on input financing arrangements. However, there is a

huge demand for mangoes which cannot be supported by the current production and product quality so the intensity of rivalry among wholesalers is moderate.

Willingness and capacity to provide support to farmer groups

Wholesalers signified that they are willing to source mangoes from farmer groups as long as the price is right and they can follow the rules set by the wholesaler. This node also has a high capacity to support farmer groups since they can pay cash, provide transportation and other value added services. They can also provide financial and input services trusted suppliers.

4.5.3. Secondary Wholesalers

This node is represented by secondary wholesalers who mostly purchase local quality mangoes from primary wholesalers. They ripen the mangoes in a rattan basket (covered by newspapers) using calcium carbide and sell it to various buyers. They sell the mangoes in bulk or per basket weighing approximately 30 kilograms. Some of these actors purchase mangoes in credit and also sell it on credit to known buyers, commonly wet market retailers. Small wholesalers also do retailing of mangoes at the wet market.

Customer requirements and emerging needs

The product requirements for this node follow the mango classification discussed in Chapter 1 – Introduction. Secondary wholesalers preferably purchase and sell local quality mangoes but they also buy the local Manila grade and Hongkong grade. They also require the suppliers to sell their mangoes after 110 days from the flowering stage to ensure that mangoes are mature enough to produce a sweet taste. Also, they prefer large size and blemish-free mangoes.

Table 4-9: Secondary wholesalers' buying requirements

Classification	Maturity	Quality Specifications
Local Market grade mangoes	After 110 to 120 days from the flowering stage	Large size, blemish-free

Table 4-10 shows the buying requirements/conditions and support services offered by this particular node. If farmers/farmer groups decide to supply mangoes to this particular node, they must be fully aware of these buying conditions and the support services that they can offer to farmers. Secondary wholesalers pay their supplier cash, but also pay in terms to their known buyers.

Mangoes are either picked up or delivered to the secondary wholesalers. Picked up mangoes incur Php10 hauling cost per box. They pack the mangoes in the rattan basket with old newspapers and use calcium carbide for ripening. In terms of the buying practice, secondary wholesalers only purchase local market grade mangoes from primary wholesalers. They swap baskets with their buyers in the purchase. In some cases, poor quality mangoes are returned to them by their buyers for replacement.

Table 4-10: Terms of payment, mode of delivery, buying practice and support services offered by secondary wholesalers

Terms of Payment	Mode of Delivery	Buying Practice	Support Services
In terms or cash (it depends on the agreement with the supplier)	Picks up or mangoes should be delivered to their stall or selling area	Only buys local market grade mangoes from known primary wholesalers in Bankerohan and other areas	None (they only buy from wholesalers)

Emerging need

Secondary wholesalers also noticed the declining supply of mango especially during the lean season. Since the small wholesalers are also doing retail, they also expressed the need to develop a technology that can extend the shelf life of mango.

Node Trends

Aside from distributing mangoes to wet market retailers, most secondary wholesalers are also performing the retailing function. They also perform this role since there are also consumers that go to the wholesale area to buy fresh fruits.

Volume of Commodity Traded

Based on the key informant interviews, on the average secondary wholesalers trade 850 kilograms of mangoes per week during peak season and as low as 360 kilograms/week during lean season. Some of the secondary wholesalers' volume of requirement depends on the available capital at the week of transaction. It is estimated that there are 20 secondary wholesalers in Bankerohan.

Quality characteristics sought but not being delivered consistently

Majority of the problems faced by the secondary wholesalers are diseases which are prevalent in ripe mangoes such as stem end rot and anthracnose. They also experience damages due to bumps.

Prices and value-adding activities

The buying price is greatly influenced by the supply of mango during a particular season, month, and week. During peak season, the price for local grade mango is PhP22.00/kg. During lean season, the price increases to PhP48.00/kg.

When selling mangoes, they add Php10 or 50% of the buying price as mark-up. The mark-up price covers all the operating expenses incurred in the transaction. These expenses include packaging and labor expenses.

Value Adding Activities

a. Produce preparation and packaging – this marketing activity re-packaging of mango using rattan baskets and old newspapers. Secondary wholesalers also perform the ripening process of the mangoes by using calcium carbide.

Stage of product (node/business) life cycle

This distribution channel is in maturity stage since it has existed for a long period of time. Most of the secondary wholesalers in Bankerohan have established relationships with their suppliers and various buyers.

Sources and strength of competition

The following section shows Porter's five competitive forces which may affect the node's ability to compete in a given market. The node's profit potential can be largely determined by the intensity of competitive rivalry within the industry. Nodes that are in growth stage are normally characterized with an intensive rivalry of firms.

Threat of New Entrant (secondary wholesalers)

In general, selling mangoes is costly for secondary wholesalers. Aside from the capital needed to purchase mangoes, secondary wholesalers need to purchase materials use in the ripening process of mangoes. As such, the threat of new entrant is perceived to be moderate.

Bargaining Power of Suppliers (primary wholesalers)

Base from the interviews, secondary wholesalers purchase mangoes from primary wholesalers. In most cases, transactions do not require cash on delivery with known buyers.

Purchased mangoes by the secondary wholesalers will be paid on the next transaction. As such, the bargaining power of suppliers is perceived to be high.

Bargaining Power of Buyers (wet market retailers, hotels and restaurants, etc.)

Some of the buyers purchase mangoes in low quantity and pay in credit terms. As such, the bargaining power of buyers is perceived to be low.

Threat of Substitute Products (Node)

The threat of substitute node is perceived to be low since this node particular buys the local market grade mangoes that are large in size and blemish free.

Rivalry of Firms (secondary wholesalers)

The rivalry of secondary wholesalers is perceived to be moderate since most transactions with their buyers are based on personal relations so competition is very minimal. However, there are 20 estimated secondary wholesalers in Bankerohan wet market that compete in wholesale distribution and retailing.

Willingness and capacity to provide support to farmer groups

The key informants from this node indicated that they are willing to source mangoes from farmer groups given that the transaction agreement will be followed strictly. However, they do not have enough capacity support farmer groups since most of them are availing mango supply on credit terms.

4.5.4. Direct Manila Wholesalers

This node is represented by wholesalers selling mangoes directly to Manila during off season in Luzon. These direct Manila wholesalers buy mangoes from farmers in Davao del Sur, Davao del Norte, and Cotabato and large wholesalers in Bankerohan. They depend on hired agents that search for mango farmers in various provinces in Mindanao. They mostly transport the product to their buyers via shipping or airfreight.

Customer requirements and emerging needs

These direct Manila wholesalers mostly buy the Hong Kong (HK) grade and local Manila grade but some are also buying all-in. They require the suppliers to sell their mangoes after 105 to 120 days from the flowering stage to ensure that mangoes are mature enough to produce a sweet taste.

Table 4-11: Direct Manila wholesalers' buyer specifications

Classification	Maturity
Mostly buy the Hong Kong (HK) grade and local Manila grade but some are also buying all-in.	After 105 to 120 days from the flowering stage

Wholesalers selling mangoes to Manila pay their suppliers in cash before or during the harvesting of mangoes. These wholesalers can pick up mangoes on farm but they also transact with suppliers who can deliver the mangoes at Bankerohan.

Most of these direct Manila wholesalers do not follow the all-in buying system since they only prefer getting the Hong Kong grade and local Manila grade. Some who practice all-in buying system visit the farm to check whether they can get a good proportion of HK and local Manila grade. These direct wholesalers also provide support services such as produce preparation & packaging, transportation, and product handling.

Table 4-12: Terms of payment, mode of delivery, buying practice and support services offered by Wholesalers selling to Manila

Terms of Payment	Mode of Delivery	Buying Practice	Support Services
Pays in cash to suppliers before or during the harvesting of mangoes	Pick-up mangoes from the farm or transact with suppliers who can deliver the mangoes at Bankerohan	Prefers Hong Kong grade and local Manila grade.	Produce preparation & packaging; Product handling; Transportation

Emerging needs

These direct Manila wholesalers only operate during off-season of mango in Manila. These direct wholesalers observed that supply of mango has actually decreased over the past years especially during lean season when they need mangoes the most. As such, they recognize that it would be relevant to get a more supply of mango during the lean season, from June to December.

Node trends

Direct Manila wholesalers are keeping a number of different downstream buyers to take advantage of the all-in buying practice and they do the grading themselves. Due to the perceived diminishing supply of mangoes and competition with Korean buyers visiting farms and directly buying from farmers, wholesalers also perform the aggregation function by directly searching for farmer suppliers or relying on agents/brokers.

Volume of commodity traded

Two direct Manila wholesalers said that they ship about 15 metric tons of mango per week. They have higher volume of requirement because they have a lot of buyers in Manila during off-season there but they cannot purchase more due to limited supply.

Quality characteristics sought but not being delivered consistently

Mangoes classified under Export Grade, Hong Kong Grade, and Local Manila Grade have higher price premiums. These wholesalers want to get a greater proportion of output that can be classified as Hong Kong Grade and Local Manila grade if they are buying all-in from farmers. At the moment, they have problems attaining this due to the emergence of pests &

diseases, bad weather conditions, and poor farm management of some mango farmers in Samal Island.

Prices and value-adding activities

One of these direct Manila wholesalers recorded a price data during December at PhP60/kg for Class C mangoes. Two other wholesalers said that the buying price greatly depends on the season. As an example they have recalled that the buying price in June was P9-15/kg and by September 2015 it was P75/kg.

These direct Manila wholesalers normally search for Manila buyers who can offer a better price or set a certain mark-up based on the buying price.

Value Adding Activities

a. Produce preparation and packaging – this marketing activity includes the harvesting, cleaning, sorting, grading, and packaging of mango using corrugated carton boxes or plastic crates

b. Product handling – this mainly involves the loading and unloading of packed mangoes on the transportation vehicle at the farm and at buyer's area in Bankerohan

c. Transportation – this activity refers to the transportation of packed mangoes from the farm to the buyer's area. Large wholesalers have their own trucks that they used for getting the mango supply at the farmer's area.

Stage of product (node/business) life cycle

Maturity Stage – This distribution channel has existed ever since the mango industry started since inter-regional trade from Davao to Manila are normally being done during off-season of mango in Manila. The market share of this channel is still perceived to be relevant considering that 1 wholesaler can ship 15 metric tons of mango/week to Manila.

Sources and strength of competition

Threat of new entrant (wholesalers)

Moderate – the capital requirements to be a wholesaler supplying to Manila is high due to the pay as you buy practice and the high volume of transaction. Although there is limited product

differentiation, economies of scale is high due to the requirement of having a wide network of suppliers and buyers and huge volume of transaction.

Bargaining power of suppliers (farmers and Contractor / Collectors)

Moderate – there are many mango suppliers in different regions of Mindanao but few can provide the good quality mangoes for HK and Local Manila grade; these suppliers can call for a bidding and they sell the mango to those who can offer the highest price.

Bargaining power of buyers (secondary wholesalers in Manila)

Low – there are a few wholesalers in Davao selling to Manila and there are lots of Manila buyers depending on these wholesalers for supply particularly during lean season. Wholesalers also have considerable information on various buyers and the prices they can offer.

Threat of substitute products (Node)

Moderate – Farmers can also do sorting and grading and distribute to different downstream buyers. Some buyers also go directly to mango farmers.

Rivalry of firms (wholesalers selling to Manila)

Low – Most transactions with suppliers and buyers are based on personal relations; there is a huge demand for mangoes which cannot be supported by the current production and product quality

Willingness and capacity to provide support to farmer groups

Direct wholesalers signified that they are not willing to source mangoes from farmer groups because they think that they are self-serving and they just want to monopolize the market.

4.5.5. Hotel, Restaurants and Institutions

Hotels and Restaurants selling to tourists and wealthy diners are privately owned and managed hotels and restaurants mostly buying high quality mangoes from dedicated wholesalers. They actively look for alternative sources of mangoes that can be bought at a cheaper price but they prefer key suppliers that have business permits.

Budget hotels do not purchase mango because it is more expensive compared to other fruits such as banana, pineapple, and watermelon.

Customer requirements and emerging needs

Hotels and restaurants only buy local grade mangoes that are large in size, blemish free, and with no indication of insect damage. They highly prefer mangoes that are sweet since customers would normally complain if they find the mangoes sour Table 4-13.

Table 4-13: Hotel and restaurant buyer specifications

Classification	Attributes
Local Market Grade mangoes	Large size; Blemish-free; Insect damage-free; Has sweet taste

Table 4-14 shows the buying requirements/conditions and support services offered by this particular node. Hotels and restaurants pay in credit terms following the hotel policy for procurement. They prefer mangoes to be well packed when delivered to their establishments to avoid any physical damage from product handling and transportation. They only buy the local grade mangoes which are sweet and having good physical appearance following the attributes mentioned earlier.

Table 4-14: Terms of payment, mode of delivery, buying practice and support services offered by Hotels and Restaurants

Terms of Payment	Mode of Delivery	Produce Preparation and Packaging	Buying Practice	Support Services
Credit terms according to the policy of the hotel.	Deliver mangoes at the hotel or restaurant	Mangoes should be well packed to prevent damage upon arrival	Only buy local grade mangoes that are sweet and have good physical appearance	None

Emerging needs

Hotels and restaurants did not indicate any emerging need. They rarely get any complaints related to the mango dishes and fruit shakes that they serve. Customers of the hotel do not also show any indication of concern for pesticide residues or method of growing.

Node trends

There are no significant trends that can be observed since the sale of mango dishes and fruit juice in hotels and restaurants is not their main line of business.

Volume of commodity traded

The volume of mango that hotels and restaurants buy is very minimal (ranging from 15 to 30kgs per day). The key informants also cannot indicate significant changes on the volume of mangoes purchased over the years since it would be highly dependent on the number of occupants and tourists arriving in their establishments.

Quality characteristics sought but not being delivered consistently

Hotels and restaurants complain that sometimes the mangoes delivered to them are not sweet. When customers get to taste the mango dishes and fruit shake that they prepare and they find them sour, they would normally complain about it. To avoid any complaints, they prefer to consistently get mangoes that are sweet.

Prices and value-added opportunities

The buying price is greatly influenced by the supply of mango. During peak season, a hotel in Davao buys mangoes at PhP40-45/kg and Paradise buys it at PhP10.00/kg; During lean season, the same hotel buys mangoes at P50-60 and Paradise buys it at PhP40-45/kg. Selling price of mango dishes and other food preparations were not specified by Hotels and Resorts.

Value Adding Activities

Semi-processing of mango into various dishes and food preparations such as desserts and fruit shakes/juices.

Stage of product (node/business) life cycle

The volume of mangoes that goes into this distribution channel is still relatively low since the demand is limited to the number of tourists and wealthy consumers that are entering/residing in Davao. As such, this node is still considered to be in *Growth Stage.*

Sources and strength of competition

The following section shows Porter's five competitive forces which may affect the node's ability to compete in a given market. The node's profit potential can be largely determined by the intensity of competitive rivalry within the industry. Nodes that are in growth stage are normally characterized with an intensive rivalry of firms.

Threat of new entrant (Hotels/Resorts)

Barrier to Entry is not significant since the hotels and resorts primarily compete with accommodations and as tourist destinations and not in the procurement of mangoes.

Bargaining power of suppliers (farmers, collectors and wholesalers)

There are alternative sources of mango supply and hotels & restaurants can easily find new ones because they can offer a higher price. As such the bargaining power of suppliers is perceived to be low

Bargaining power of buyers (tourists/diners)

Tourists/diners are perceived to have low bargaining power since prices for food items on the menu are normally fixed and there is no bargaining/haggling for prices.

Threat of Substitutes (Node)

This node can offer higher prices but the volume of requirement is low. If mango suppliers are handling significant volume of mangoes, this particular node will not be very attractive due to the transaction costs involved. As such, this node can be moderately substituted for other nodes which have higher volume of requirement.

Rivalry of firms (Hotels/resorts)

Rivalry in sales for mango dishes and fruit shakes is not significant since the hotels and resorts primarily compete with accommodations and as tourist destinations.

Willingness and capacity to provide support to farmer groups

Hotels and restaurants have signified that they are willing to support farmer groups as long as they can offer reasonable prices. This can also be part of their Corporate Social Responsibility. However, this node has no capacity to provide support to farmer groups since they do not provide any support services.

4.5.6. Juice and Smoothie Bars

Juice and Smoothie Bars are privately owned and managed juice and smoothie bars mostly buying mangoes from wholesalers in Bankerohan. They process fresh mango into purees and fruit juice and sold them in various retail outlets located in malls and other areas with huge traffic of people.

Only one respondent was interviewed for this node. Considered as the largest, the business (open for franchising) operates nationwide with more than 100 carts. They preferred large mangoes to extract more percentage of juice for the mango puree production. Purchased mangoes (have undergone ripening process) are packed in a basket with newspapers.

Customer requirements and emerging needs

Juice and smoothie bar operators only buy the local grade mangoes which are sweet, large and with minimal blemishes. The most important attribute that they consider would be the sweet taste since they are processing the fresh mangoes into juices and smoothies. Having a large size mango is also a good thing since they could process more mango puree per piece.

Table 4-15: Juice and Smoothie Bar buyer specifications

Classification	Attributes
Local Market grade mangoes	Has sweet taste; Large size (3 to 4 pieces in a kilogram); With minimal blemishes

Juice and smoothie bar operators require suppliers to pack the mangoes using newspapers and put them inside baskets or carton boxes when they pick them up at the wholesale area. They only buy the local grade mangoes from a preferred supplier which can be paid in cash or in credit terms depending on the agreement of the supplier.

Table 4-16: Terms of payment, mode of delivery, buying practice and support services offered by Juice and Smoothie Bars

Terms of Payment	Mode of Delivery	Produce Preparation and Packaging	Buying Practice	Support Services
Pay in cash or credit terms	Picks up mangoes from Bankerohan wet market	Mangoes should be packed in newspapers and placed inside baskets	Only buys local market grade mangoes from one preferred supplier	None (they buy mangoes from wholesalers)

Emerging Needs

Based on the key informant interview, Juice and smoothie bar operators need more supply of mangoes (preferably large in size) during lean season when there is more shipment of mangoes to Manila.

Node trends

Aside from selling in malls, juice and smoothie bars have also put up stalls in public places such as schools and bus terminals. This implies that there is an increasing demand for this node's products.

Volume of commodity traded

Information about their volume requirement is strictly confidential. However, the key informant have mentioned that mango is the most in-demand flavour among all their fruit shakes products. As such, they purchase more mango as compared to other fresh fruits.

Quality Characteristics sought but not being delivered

Preferably, they require mangoes that are large in size for mango puree production. But during lean season, only small size mangoes are available in the market. There are also instances of having purchased mangoes with good physical appearance but has rotten meat inside. Hence, mangoes with very poor quality will be returned to the supplier for replacement.

Prices and value-added opportunities

The buying price of juice and smoothie bars for local grade mangoes that are sweet, large and blemish free is at P57.00/kg. The selling price for mango shakes, juices and smoothies would vary depending on the size and mixed flavors.

Value Adding Activities

a. Processing – this activity includes processing of fresh mangoes into mango puree for the mango shakes and smoothies production.

b. Retail distribution – this mainly involves the sale of mango juice, shakes and smoothies in different stands located inside the mall, near the schools and along bus terminals or places with huge traffic of people.

Stage of the Node Life Cycle

This node is considered to be on the growth stage since the number of juice and smoothie bars in Davao City is observed to be increasing. Also, these juice and smoothie bars started operating inside the malls but now they are also selling near schools, bus terminals or places with huge traffic of people.

Sources and Strengths of Competition

The following section shows Porter's five competitive forces which may affect the node's ability to compete in a given market. The node's profit potential can be largely determined by the intensity of competitive rivalry within the industry. Nodes that are in growth stage are normally characterized with an intensive rivalry of firms.

Threat of new entrants (juice and smoothie bars)

This node has low barriers to entry since the required start up capital is not that much. It is evident in the number of enterprises venturing in the business and the number of juice and smoothie bars found in Davao City.

Bargaining power of suppliers (wholesalers in Bankerohan)

With the high buying price that the juice and smoothie bar operators can tolerate, there are several suppliers of mango in the wet market that are willing to supply their requirement.

Most likely, the management indicated that they can easily shift to other mango suppliers that can offer a lower price. As such, the bargaining power of suppliers is low.

Bargaining power of buyers (juice and smoothie customers)

The bargaining power of buyers is also low since the prices of the products that juice and smoothie bars sell are fixed and cannot be haggled.

Threat of Substitutes (juice and smoothie bars)

This node has a moderate substitutability because Juice and Smoothie bars do not offer any support service to farmers/ farmer groups and their volume of requirement is not that much.

Rivalry of firms (juice and smoothie bars):

Competition is relatively high between the different juice and smoothie bar operators. The number of juice and smoothie bar businesses that serves mango shakes (and other flavors) are operating in malls, and other public sites are also increasing.

Willingness and capacity to provide support to farmer groups

They are willing to source mangoes from the farmers given that mangoes have good quality and the price should be lower compared to their existing suppliers. However, they have low capacity to provide support to farmer groups.

4.5.7. Davao-based Exporters

This node is represented by firms exporting fresh mango to Japan, South Korea, Hong Kong and other importing countries. Exporters buy fresh mango from wholesalers, Contractor / Collectors, and mango farmers and they pay a relatively higher price (80% to 100% higher than process grade) for high quality mangoes.

Exporters adjust their buying price based on the buying price set by processors and their operation also stops if the processors are not buying because only 10% of the output of mango farmers can be classified as export grade.

Customer requirements and emerging needs

Exporters only buy Export grade and Hong Kong grade mangoes. They require the suppliers to sell their mangoes after 110 to 120 days from the flowering stage to ensure that mangoes are mature enough to produce a sweet taste.

Table 4-17: Fresh Exporter buyer specifications

Classification	Maturity
Export grade and Hong Kong grade mangoes	After 110 to 120 days from the flowering stage

Exporters normally pay in credit which usually takes at least 3 days to process. They can also pay in advance depending on the request of a key supplier. Suppliers are required to deliver mangoes at the warehouse/office of the exporter. Delivered mangoes should be packed in corrugated carton boxes to minimize rejects from any transport and handling damage. As a buying practice, exporters only buy the export grade mangoes and the rejects are returned to suppliers.

Table 4-18: Terms of payment, mode of delivery, buying practice and support services offered by Fresh Exporters

Terms of Payment	Mode of Delivery	Produce Preparation and Packaging	Buying Practice
Pays in credit (3 days); can also make advance payment depending on the request of key supplier	Suppliers should deliver the mangoes at the warehouse/office	Mangoes should be packed in carton boxes to minimize rejects from any transport and handling damages.	Exporters only buy the export grade mangoes; rejects are returned to suppliers.

Emerging needs

Exporters need more supply of superior and good quality mango year-round. As observed, about 10% of farm harvest can only be classified as Export grade. Moreover, exporters are also getting concerned with importing countries' perspective on MRLs. They would want suppliers to use the appropriate chemicals that will allow them to pass the MRL restrictions.

Node trends

Due to the very limited supply of high quality mangoes, exporters are also starting to manage their own mango plantation in order to get the supply that they need.

Volume of commodity traded

The volume of mango that Exporter's trade depends on the supply of high quality mango being delivered to them. The volume of requirement of 1 exporter based in Davao City is 30 to 35 metric tons/week. This node would be larger if fruit of the required quality specification was available.

Quality characteristics sought but not being delivered consistently

Some suppliers deliver mangoes that are not of good or superior quality, with insect bites, latex burns, etc. (30-40% rejection for Samal mangoes).

Prices and value-added opportunities

The buying price is greatly influenced by the price set by processors and wholesalers buying Hong Kong grade. Exporters usually add PhP10.00 on the buying price that they set. In a year, the lowest buying price is PhP 30.00 and the highest would be PhP 107.00/kg.

Through ocean shipment, they charge the Korean market at $17/box (30kg/box). They have indicated that Japan has the highest premium price but did not specify how much.

Value Adding Activities

a. Transportation (procurement) – exporters can also provide transport services to some suppliers

b. Produce preparation and packaging – exporters have different packaging boxes for different buyers

c. Distribution – this requires shipping of packed mangoes to buyer destinations

Stage of product (node/business) life cycle

Exporters are only getting 10% of the output of mango farms due to strict quality requirements. There is an opportunity for growth if volume of export grade mangoes can be increased. This node is considered to be in Growth stage.

Sources and strength of competition

The following section shows Porter's five competitive forces which may affect the node's ability to compete in a given market. The node's profit potential can be largely determined by the intensity of competitive rivalry within the industry. Nodes that are in growth stage are normally characterized with an intensive rivalry of firms.

Threat of new entrant (exporters)

Exporting of mangoes requires significant investments for the packing plant, vapor heat treatment facility (VHT), and working capital for purchasing and delivering mangoes to various buyers from importing countries. The potential entrant should also secure a considerable supply of good quality mangoes and a network of buyers globally. This means the barrier to entry for mango exports is relatively high.

Bargaining power of suppliers (farmers, Contractor / Collectors and wholesalers)

There are 3,171 mango suppliers in Samal, 41 contractors, and a few large wholesalers but only a few can produce good and superior quality mangoes. Those that can meet the quality requirements can bargain to exporters since they are greatly in need of mango supply. As such the bargaining power of these mango suppliers is moderate.

Bargaining power of buyers (wholesalers and distributors of fresh mango in importing countries)

In the sale of exported mangoes, transactions are mostly based on customer relationships so buyers' bargaining power is perceived to be low. Buyers have huge unmet demand and they pay good prices and usually in advance just to get the supply. Based on the key informant interview, the only operating mango exporter in Davao is only exporting 1.5 to 2 tonnes of mango per week to Korea when in fact their demand is about 30 to 35 tonnes/week.

Threat of substitute products (Node)

Sellers of mangoes who can get significant volume of Grade 0-0 will really sell to mango exporters because they pay the highest price per kilogram for good quality mangoes. As such, this node cannot be substituted for anything else.

Rivalry of firms (exporters)

Most transactions with suppliers and buyers are based on personal relations but there is a huge demand for export mangoes that cannot be supported by the current production. Since there is more than one exporter that's competing with the low supply of good quality mangoes and there are Korean buyers going directly to farmers, the rivalry of these firms is considered to be high.

Willingness and capacity to provide support to farmer groups

Exporters really need supply of high quality mangoes so they are very willing to support farmer groups who have the capability to do so. Their capacity to provide support is very high because they can provide financial, input, transportation and other technical support services.

4.5.8. Processors in Davao

This node is represented by firms that process mango (frozen cuts, dried mangoes, and mango puree) for importers in Japan, North America, South Korea and other importing countries. Processors have a finite list of key suppliers, which are wholesalers, Contractor/collectors, and mango farmers. Some processors provide support services such as input financing and transportation.

Farmers and exporters perceive that processors possess market power in terms of setting the market price for mango. Most of the harvested mangoes (around 60%) in Samal are classified as processing grade and so farmers will not harvest their produce if the processors are not buying.

Customer requirements and emerging needs

Processors only buy local market grade and process grade mangoes. They require the suppliers to sell their mangoes after 110 to 120 days from the flowering stage to ensure that mangoes are mature enough to produce a sweet taste with a required Brix Level of at least 15.

Table 4-19: Processor buyer specifications

Classification	Maturity	Brix Level
Local Market grade and Process grade mangoes	After 110 to 120 days from the flowering stage	Minimum of 15

Processors pay suppliers in credit, payable after 3 days to 1 week. In some instances, they can also pay in advance depending on the request of the key supplier.

Suppliers are required to deliver mangoes at the processing plant. Delivered mangoes should already be packed, mostly in corrugated carton boxes to prevent bumps and cracks during transport.

As a buying practice, processors perform a floating test on delivered mangoes to check for maturity upon arrival of delivery at the processing plant. If the sample doesn't pass the floating test, the entire delivery is rejected. The processors can also provide support services

to farmers/farmer groups such as transportation, technical support on farm management and input financing through a contractual growing scheme.

Table 4-20: Terms of payment, mode of delivery, buying practice and support services offered by Processors

Terms of Payment	Mode of Delivery	Produce Preparation and Packaging	Buying Practice	Support Services
Pays in credit (3 days to 1 week); can also make advance payment to key suppliers	Suppliers should deliver the mangoes at the processing plant	Mangoes should be packed, mostly in corrugated carton boxes	Perform floating test to check for the maturity of mangoes	Transportation; Technical support on farm management; Input financing

Emerging needs

As observed by processors, supply of mango has actually decreased over the past years and they're not as sweet as they used to be 5 years ago. As such, they recognize that it would be relevant to get a good supply of sweet mangoes, especially during wet season when mango quality drops down.

Node trends

Aside from providing input supplies to a number of mango growers through a contract growing scheme, some processors are also managing their own plantations in order to get ample supply especially during lean season.

Volume of commodity traded

The volume of mango that processors trade would depend on the supply of mango being delivered to them. One processor in Davao has a volume requirement of 20-30metric tons/day and another one has a 30 to 40metric tons/day requirement.

Quality characteristics sought but not being delivered consistently

Some suppliers deliver mangoes that are not mature enough so they fail the floating test and the delivered mangoes are rejected. Processors also reject mangoes with physical damages such as bruises and cracks (accounting up to 20% reject). As such, they strictly require that the mangoes delivered should consistently be mature and damage free.

Prices and value-added opportunities

The buying price is greatly influenced by the supply of mango. During peak season, the farmgate price for mango can go as low as PhP10.00. Nakashin sets a floor price of P20.000 when buying mangoes. Processors did not disclose the selling price of their processed mangoes.

Value Adding Activities

a. Processing – processing of mangoes into dried mango, frozen cuts, puree, etc.

b. Distribution– this mainly involves packaging of processed mango, transportation to buyer destination and product handling.

c. Transportation (procurement) – processors can also provide transport services to some suppliers

d. Technical support – processors also send agronomists that can aid farmers under contract growing scheme in farm management.

Stage of product (node/business) life cycle

Growth Stage – The market share of this channel is perceived to be high since a single processor can have a maximum processing capacity of 20-40 tons per day. There are only 5 known mango processors in Davao region. The growth is limited by the supply of mangoes available in the region and it is reasonable to expect that further growth can be achieved if supply of mangoes can be increased.

Sources and strength of competition

Threat of new entrant (processors)

Barrier to Entry – the capital requirements to be a processor is very high due to the required capital outlay. This limits entry to organizations that do not have access to sufficient capital; There is also product differentiation and economies of scale is necessary to lower cost/unit of output and gain higher profit margins.

Bargaining power of suppliers (farmers, Contractor / Collectors and wholesalers)

Low – there are 3,171 mango suppliers in Samal, 41 contractors, and a few large wholesalers relative to only 5 mango processors in the region; the processors are important customers to suppliers because they buy large volume of mango and can also provide value added services;

Bargaining power of buyers (wholesalers and distributors of processed mango in importing countries)

Low – transactions are based on customer relationships; buyers have huge unmet demand and they pay good prices

Note: Include government regulations in importing country; minimal regulations for processed products as compared to fresh

Threat of substitute products (Node)

Low – There are no other direct substitutes for processed mango since it is specifically bought by importers; buyers have huge unmet demand; most of farmers' output are classified under process grade

Rivalry of firms (processors):

Low – Most transactions with suppliers and buyers are based on personal relations. There is also a huge demand for mangoes which cannot be supported by the current production. Processors are also perceived by exporters and farmers to engage in collusion in order to set lower buying prices for mango.

Willingness and capacity to provide support to farmer groups

Wholesalers signified that they are willing to source mangoes from farmer groups as long as the price is right and they can honour the signed contract. This node also has a very high capacity to support farmer groups since they can pay cash, provide transportation and other value added services. They can also provide financial and input services trusted suppliers.

4.5.9. Wet Market Retailers

Retailers selling mangoes in traditional markets are retailers selling mangoes in traditional markets which are publicly managed. Wet market retailers vary in size and volume of transaction.

Interviews were conducted to three retailers selling variety of fruits (including mango) in Bankerohan wet market. They purchase good quality mangoes at a reasonable price and they pay in cash. Mangoes delivered to these retailers should be well packed to prevent damage upon arrival at the retail store.

Customer requirements and emerging needs

Retailers in Bankerohan wet market only buy the local grade mangoes that have sweet scent because consumers who buy from the retail stores normally smell the mangoes as a way to gauge the sweetness of the fruit. These retailers also prefer mangoes that are large in size and having minimal blemishes, spots, and skin damages.

Table 4-21: Wet Market Retailer buyer specifications

Classification	Attributes
Local Market grade mangoes	Sweet smell and taste; Large size; With good physical appearance (minimal blemishes, spots, and skin damages.)

Wet market retailers require their suppliers to deliver the mangoes at their retail stores. These mangoes should be well packed to prevent any damage during handling and delivery. They only buy the good quality mangoes at a reasonable price and they can pay supplier in cash.

Table 4-22: Terms of payment, mode of delivery, buying practice and support services offered by Wet Market Retailers

Terms of Payment	Mode of Delivery	Produce Preparation and Packaging	Buying Practice	Support Services
Pays in cash to suppliers (small-scale wholesalers)	Prefer delivery of mango at the retail store	Mangoes should be well packed to prevent damage upon arrival	Only buys the good quality mangoes at a reasonable price	None

Emerging Needs

This node has no significant emerging needs at the present. Retailers did not recognize any changes in the product attributes that the buyers at the wet market are looking. Specifically, consumers do not ask regarding the method of growing for mangoes or anything that has something to do about chemical applications and pesticide residues.

Node trends

There are no significant trends observed in this node. Most wet market retailers have always been focusing on the retail distribution function and some are also engaged in small scale wholesaling distribution.

Volume of commodity traded

On the average, retailers need 20 to 30 boxes of mango per week. They only require that much because it has been estimated based on rapid reconnaissance that there are more than 100 wet market retailers of mangoes and other fruits in different wet markets of Davao City.

Quality Characteristics sought but not being delivered

Wet market retailers can purchase mangoes with the above mentioned qualifications from any wholesaler in Bankerohan so they could not indicate any specific quality characteristics that cannot be delivered to them by suppliers.

Prices and value-added opportunities

Based on the key informant interviews, the buying price of wet market retailers follows the prevailing selling price set by small wholesalers, which is around P57.28/kg on the average.

Wet market retailers normally set a selling price which is P10.00 to P20.00/kg higher than the buying price of mangoes from small wholesalers.

Value Adding Activities

a. Produce preparation and packaging – this value adding activity includes ripening of mangoes, cleaning, and packing them for retail distribution

b. Retail distribution – wet market retailers normally rent a small space inside the wet market and hire a storekeeper who is in charge of the sale of mangoes and other fruits being sold

Stage of the Node Life Cycle

Retailing of mangoes at the wet market has existed for a very long time (on its mature stage). The share of this node may decline along with the rise of supermarkets and change in consumer purchase behaviour.

Sources and Strength of Competition

The following section shows Porter's five competitive forces which may affect the node's ability to compete in a given market. The node's profit potential can be largely determined by the intensity of competitive rivalry within the industry. Nodes that are in growth stage are normally characterized with an intensive rivalry of firms.

Threat of new entrant (retailers)

Barrier to entry is perceived to be low due to minimal capital requirements in starting retail business at the wet market and there is no product differentiation among retailers of mango.

Bargaining power of suppliers (small wholesalers)

There are many secondary wholesalers that operate in the Bankerohan market. This may imply that they may have low bargaining power over the wet market retailers.

Bargaining power of buyers (wet market buyers of mango)

Buyers have low bargaining power. Prices of mango are normally fixed and bargaining / haggling for prices is possible but only to loyal customers.

Threat of Substitutes (Node)

There is a high threat of substitutes since this node requires small volume and transaction cost will be very high if mangoes are sold to a lot of individual retailers.

Rivalry of firms (retailers)

Rivalry is not intense since there are so many mango retailers in Bankerohan public market as well as in other wet markets of Davao City.

Willingness and capacity to provide support to farmer groups

In general, retailers are willing to source mangoes directly from the farmers if they can offer better prices and good quality mangoes. However, they have low capacity to provide support for the farmers for they only purchase in small quantities.

4.5.10. Supermarket Concessionaires

This node is represented by concessionaires selling mangoes in supermarkets inside city malls which are privately managed. Concessionaires normally manage the procurement and sale of mangoes along with other fruits in supermarkets. They buy mangoes only from large wholesalers who can give them huge volume of the right product requirement. Supermarkets can also do outright purchase and are willing to transact with producer organizations.

Three interviews were conducted for this node – one concessionaire and two supermarkets. Mangoes sold in supermarkets are under concessionaire operation. The interviewed concessionaire sells mango and other fruits and vegetables to one of these supermarkets.

Customer requirements and emerging needs

Concessionaires buy mangoes that can be classified as Local Manila grade. These mangoes should be sweet (harvested after 105 to 115 days from the flowering stage), large in size (3 to 4 pieces in a kilogram) and with minimal blemishes.

Table 4-23: Supermarket (Concessionaire) buyer specifications

Classification	Maturity	Attributes
Local Manila grade	After 105 to 115 days from the flowering stage	Sweet taste; Large size (3 to 4 pieces in a kilogram); With minimal blemishes

Concessionaires require suppliers to pack the mangoes well when they pick it up from the wholesaler's selling area or when mangoes are delivered to them. These Concessionaires only buy the local Manila grade with the abovementioned product attributes and they normally pay the supplier in credit terms (30 days). They only buy from large wholesalers so they do not provide any support service to farmers/farmer groups.

Table 4-24: Terms of payment, mode of delivery, buying practice and support services offered by Supermarket Concessionaires

Terms of Payment	Mode of Delivery	Produce Preparation and Packaging	Buying Practice	Support Services
In credit terms (30 days)	Can be picked up by concessionaires at the buying area or delivered to them by wholesalers	Well packed to prevent damage from transport and handling	Only buy Local Manila grade mangoes that are sweet, large, and with minimal blemishes	None (they buy from large wholesalers)

Emerging Needs

Concessionaires observed that the quality of mangoes during wet season are not good anymore. As such, they felt the need to secure a supply of good quality mangoes (with only minimal blemishes) during wet season.

Node trends

It has been a trend for supermarkets to shift their operations from outright purchase of mangoes to concession. These changes in node practices are mainly due to the management issues faced by supermarket management in the past, particularly on procurement of supply and handling of bad orders.

Volume of commodity traded

Supermarkets can also be classified based on their target markets (income classes). The key informant interview for the supermarket node covered 2 types of supermarket – Supermarket AB and C. Table 4-25 highlights the volume requirement of these 2 types of supermarket.

Table 4-25: Volumes of mango traded by different classes of supermarkets in Davao

Type of Supermarket (Target income class)	Volume of commodity traded
Supermarket AB (under concessionaire operations)	a. 15 kg/ week
Concessionaires in Supermarket C	a. 60 to 100 boxes/day to supermarket C b. 20-50 boxes/day to other supermarkets in Davao City and supermarkets in other areas (Davao del Sur, Davao del Norte, and Kidapawan). c. 5-80 kg/day to a beach resort

Quality Characteristics sought but not being delivered

Based on the key informant interviews, this node prefers large size mangoes (3 or 4 pieces in 1 kilo) with minimal blemishes. However, in some cases, purchased mangoes have many blemishes and dark spots as well as bumps.

Prices and value-added opportunities

The buying price of concessionaires for local Manila grade mangoes that are sweet, large and blemish free is at P55.00/kg, on the average.

The selling price for these mangoes sold at the supermarket normally ranges from P100.00 to P140.00/kg depending on the season. The price is way above the buying price because concessionaires shoulder the cost of sales and the supermarket gets a certain percentage of their sales as payment for the space and concession agreement.

Value Adding Activities

a. Produce preparation and packaging – this marketing activity includes ripening of mangoes using calcium carbide, newspaper wraps, and wooden baskets. Ripened mangoes are then specially packed in 3 to 4pcs per pack to be sold at supermarkets

b. Retail distribution – this mainly involves the sale of mangoes to various buyers in supermarkets.

Stage of the Node Life Cycle

The volume of mangoes that goes into this distribution channel is still relatively low. However, supermarket share of fresh fruits and vegetables sale is increasing. Hence, the node is on its growth stage.

Sources and Strength of Competition

The following section shows Porter's five competitive forces which may affect the node's ability to compete in a given market. The node's profit potential can be largely determined by the intensity of competitive rivalry within the industry. Nodes that are in growth stage are normally characterized with an intensive rivalry of firms.

Threat of new entrants (concessionaires)

Different concessionaires are already operating in different supermarkets. This means that the access to market is a relevant entry condition. Being a concessionaire also requires sufficient capital for the procurement and sale of mangoes in supermarkets. As such, the barrier to entry is perceived to be high.

Bargaining power of suppliers (wholesalers)

The bargaining power of suppliers is moderate since concessionaires only buy from large wholesalers and there are only few large wholesalers of mango in Davao City.

Bargaining power of buyers (consumers)

Buyers have low bargaining power since prices for food items on the supermarkets are fixed and they cannot bargain or haggle for prices.

Threat of Substitutes (Node)

This node has low substitutability since it requires huge volume of mangoes and can offer relatively high prices. Hence, this node is also attractive if there are suppliers who will/can cater to its demand requirements.

Rivalry of firms (concessionaires)

Rivalry in sales is not significant since different supermarkets have their own key concessionaires; S&R has UBM and Mother's Produce, Angel Prince supply to NCCC and Gaisano Grand.

Willingness and capacity to provide support to farmer groups

The concessionaire has a preferred supplier but they are willing to source mangoes from the farmers. Having the same response, the supermarket requires the future suppliers to submit a letter of intent indicating the list of prices. However, both the supermarket and concessionaire have low capacity to provide support to farmer groups. The supermarket also purchase in low volume and selling mangoes is not their main line of business.

5. Conclusions and Recommendations

This research has demonstrated the complex nature of distribution channels for mango supplying Davao and for export from Davao. It provided insights into elements of attractiveness of market segments for mango which may be used to assist mango contractors and farmers make decisions about future marketing activities. The key conclusions from this research are:

1. The number of actual farmers on Samal Island is large (3,170) for a very small tonnage of mango production (300). The majority of mango produced on Samal Island (1,700 tonnes) is produced by 41 Contractor / Collectors. Developing a plan for community development that will be beneficial to farmers is going to be challenging.

2. The quantity of Samal Island mango (2,000 tonnes per annum) is very small compared with the more than 70,000 tonnes of mango that supply demand in the Davao region.

3. Supply of mango is decreasing at the same time as demand is increasing, particularly for export grade mango for which the highest price premium is available, and for processing grade which represents the largest volume segment. It should actually be a profitable industry for growers and value chain partners who can collaborate to understand markets and coordinate their efforts to satisfy demand.

4. Whilst processors take the largest volume of mangoes, they do not pay the highest prices, and farmers may benefit by grading mangoes and selling different quality classes to buyers specialising in each grade.

5. The increasing significance of supermarkets should not be overlooked. Secondary data supports the primary data that supermarkets are increasingly representing an important retail segment. Establishing relationships with wholesalers and concessionaires that service the needs of supermarkets and consumers who buy fruit from supermarkets is likely to be a sound long-term strategy.

6. The existence of at least one fresh mango exporter plus several international mango processors in and near Davao means that demand exists for a range of quality classes of mango and that all grades can be sold. Mango growers who operate in regions

without access to processors and fresh exporters would be in a much less favourable position in terms of opportunities to produce for specific market segments.

7. The significance of MRLs for fresh mango being enforced in export markets is important and growers need to consider the cost of compliance when evaluating the financial benefits of producing for fresh export. This is an industry-wide consideration because unless there is sufficient mango produced for fresh export, it is unlikely that exporters will continue to operate. Samal Island could consider being a 'fresh export mango' zone and target the premium prices available from export fruit if all producers could agree on and commit to the protocols required.

8. Value can be created by farmers who can:

    a. Combine production so that a sufficient volume of mango can be marketed through a single desk. By collaborating to have a sufficient quantity of product available to market value can be created by increasing the power that farmers would have because of the volume of mango they would control.

    b. Collaborate to grade their crop so that mangoes of various grades can be sold to customers that seek each grade. At present this activity is largely undertaken by wholesalers who buy 'all in' and earn their profits by grading and selling specific grades to specific customers. If farmers can collaborate and vertically integrate to undertake this activity themselves they can create value.

    c. Manage their horticultural and post-harvest activities in a manner that increases the percentage of harvest that is graded for export as a means of income maximisation for the whole crop.

    d. Develop a reputation for reliability and quality so that long term relationships can be built with specific customers including exporters, processors and wholesalers to ensure 100% of the mango crop is sold for the highest possible prices.

9. Research on the subject of market orientation since 1990 demonstrates the organisational benefits of adopting a market orientation (Kohli & Jaworski 1990;

Narver & Slater 1990; Beverland & Lindgreen 2007). However, research also provides evidence that farmers traditionally do not adopt a market orientation, in spite of the benefits available (Grunert et al. 1996; Lewis et al. 2001; Grunert et al. 2005). Market orientation is achieved when an organisation regularly obtains market intelligence through formal and informal processes, shares that information with stakeholders and allows stakeholders to be genuinely involved in deciding how to respond to the threats and opportunities identified from the intelligence so that responses are timely and coordinated. Research by Currey (2015) identified that the beliefs of founders, owners and managers of horticultural enterprises influenced the degree to which their firms were market oriented, and concluded that organisational development starting with changing the beliefs of business leaders with respect to marketing and leadership was necessary before adoption of market oriented practices could be expected. If farmers in the Philippines are the same as others around the world, education about organisational leadership, marketing and market orientation as part of the community development being provided by this project may be appropriate.

5.1. Possible interventions

This section presents possible value chain interventions based on the findings of the Rapid Market Assessment.

Table 5-1: Summary of findings and possible interventions

Node Characteristics	Key Findings	Possible interventions
Product requirements & buying prices	Different nodes have different product (mango classification) requirements; Higher mango grades/classification gets higher buying prices – Exporters buy export grade mangoes at P68.50/kg, supermarket concessionaires buy large size and blemish free mangoes at P55.00/kg, direct wholesalers to manila buy Hong Kong grade and local Manila grade at P45.00/kg, large wholesalers buy mangoes all-in at P30.28, processors buy process grade mangoes at 28.00/kg	**Increase the overall quality of mangoes produced at the farm** by adopting an **Integrated Crop Management (ICM) farming system** **Possible Impact:** A 100% increase in the current proportion of output that can be classified as Export (20%), Hong Kong and Local Manila grade (30%) can increase income by 18.91% (Table 5-2)
Node buying requirements /conditions	Collectors, large wholesalers and direct wholesalers practice the all-in buying system wherein they shoulder the cost of harvesting, sorting and grading and they get the benefits of selling high grade mangoes to various downstream buyers.	**Farmers should perform the sorting and grading activities** to be able to sell to different nodes and acquire the benefits of higher buying prices for higher grade mangoes **Possible Impact:** Sorting and grading of mangoes and selling them to different nodes can increase the income by 39.61% (Table 5-3)
Quality characteristics sought but not delivered constantly	Post-harvest damages from harvesting, product handling and transportation contribute to losses accounting up to 20% reject (due to bruises and cracks) for process grade mangoes and 30-40% for export grade mangoes (due to insect bites and latex burns)	**Farmers should adopt a cost effective postharvest management technology** that can reduce the post-harvest losses from product handling & transportation and damages from insect bites and latex burns **Possible Impact:** Adopting a postharvest management technology that can reduce postharvest losses can increase the farmers revenue by (Table 5-4)
Emerging need	The collectors, large wholesalers, direct wholesalers, processors and exporters node have all indicated that they need more supply of mangoes during the lean season and year-round for the exporter. These nodes had observed the declining supply and quality of mangoes in the lean season.	**Develop a cost effective off-season production farming system for mangoes** **Possible Impact:** Adopting a cost effective off-season production technology allows the farmer to produce mangoes during lean season and take advantage of the high prices.

High quality grade mangoes represent a small proportion of the total output of an average mango farm. Since high quality grade mangoes can achieve a price premium, there may be sufficient incentive to motivate farm level intervention such as an Integrated Crop Management farming system, which can increase the overall quality of mangoes and improve the proportion of mangoes that can be classified as export grade, Hong Kong grade, and local Manila grade. Based on the data on buying prices and the output distribution of mango classification, an income calculator is shown in Table 5-2 to compute for the perceived benefits of improving the quality grades of mango. This computation is based on a 4-hectare mango farm with an average yield of 1,840 tonnes per hectare (*Production and Area*

Harvested of Mango 2014). It is also assumed in this computation that there are no postharvest losses for any of the mango grades. It is apparent that income can be increased by 9.46% and 18.91% if the proportion of top quality grades can be improved by 50% and 100%, respectively.

Table 5-2: Improvement in quality graded mangoes and effect on income

Mango Classifications	PhP / Kg	Baseline		With improvement in top grade (50%)		With improvement in top grades (100%)	
		% of Crop	Income (PhP)	% of Crop	Income (PhP)	% of Crop	Income (PhP)
Fresh Export Grade A	68.5	10.00%	50,416	15.00%	75,624	20.00%	100,832
Manila local B	45	15.00%	49,680	22.50%	74,520	30.00%	99,360
Processing C	28	60.00%	123,648	47.500%	97,888	35.00%	72,128
Fresh local	30	12.00%	26,496	12.00%	26,496	12.00%	26,496
Reject	30	3.00%	6,624	3.00%	6,624	3.00%	6,624
Income		100.00%	256,864	100.00%	281,152	100.00%	305,440
Benefit from Baseline (PhP)					24,288		48,576
Benefit from Baseline (%)					9.46%		18.91%

Following the farm scenario in Table 5-2, farmers who perform the sorting and grading activities can sell to different nodes and take advantage of the higher price premium for high-grade mangoes. By grading the mangoes at the farm level, farmers can realize a 39.60% increase in income as compared to just selling the mangoes all-in to collectors, large wholesalers, and direct wholesalers. Although farmers may incur additional cost for labour and marketing to different nodes, the increase in income is very significant.

Table 5-3: Sorting and grading of mangoes and effect on income

Mango Classifications	PhP / Kg	Sell 'All-In'		With Grading	
		% of Crop	Income (PhP)	% of Crop	Income (PhP)
Fresh Export Grade A	68.5			10%	50,416
Manila local B	45			15%	49,680
Processing C	28			60%	123,648
Fresh local	30			12%	26,496
Reject	30			3%	6,624
All-in	25	100%	184,000		
Income		100%	184,000	100%	256,864
Benefit from Grading (PhP)					72,864
Benefit from Grading (%)					39.60%

Following the farm scenario in Table 5-2, farmers who supply to exporters and processors incur rejects from post-harvest losses with an average of 35% for export grade and 20% for process grade mangoes. If farmers can adopt a postharvest management technology that can reduce these losses up to 50%, the farmer can realize a 10.19% increase in income. This increase in income can be significant especially for farmers who are supplying higher volume of mangoes to exporters and processors. It should also be noted that the cost of adopting the postharvest management technology should not exceed this increase in income.

Table 5-4: Adopting a postharvest management technology and effect on income

Mango Classifications	PhP / Kg	Baseline		With Postharvest Management technology reducing losses by 50%	
		% of Crop	Income (PhP)	% of Crop	Income (PhP)
Fresh Export Grade A	68.5	10%	50,416	10%	50,416
Manila local B	45	15%	49,680	15%	49,680
Processing C	28	60%	123,648	60%	123,648
Fresh local	30	12%	26,496	12%	26,496
Reject		3%		3%	
LESS: Rejects					
Fresh Export Grade A	68.5	35%	17,646	17.5%	8,823
Processing C	28	20%	24,730	10%	12,365
Total Revenue		100%	**207,865**	100%	**229,052**
Benefit from Baseline (PhP)					21,188
Benefit from Baseline (%)					10.19%

6. Next Step

Whilst an agreed plan for facilitating change in Samal Island mango production, post-harvest handling and marketing behaviour is yet to be confirmed, the following principles have been discussed by ACIAR project team members and generally agreed:

1. As most mangos on Samal Is are produced on trees managed by contractors, intervention should be directed at contractors and farmers who manage farms with the objective of increasing income per tree. Increasing income per tree can be achieved by increasing the percentage of premium grades that are harvested, by ensuring that crops are not sold 'all in' and of course by increasing the harvested quantity so that higher prices for superior quality grades are received.

2. Interviews with processors, fresh exporters, concessionaires, Manila traders and contractors have identified that, in general, larger mango value chain participants are sophisticated but frustrated in terms of supply. This confirms the market potential that can be realised by Samal Is mango farmers and contractors by investing in technologies to improve the quantity and quality of mangoes. Mango chain participants also confirmed their willingness to collaborate in programs to facilitate on-farm and post-harvest improvements.

3. The Department of Agriculture has been working with a group of farmers and contractors (not limited to Samal Island) but to date appears to be frustrated that attempts to facilitate behavioural change in production and post-harvest practices have achieved the desired outcomes. Similarly, attempts at establishing a Samal Is Mango Marketing Cooperative (SIMMCO) for marketing mangoes continue to be frustrated.

4. If value chain participants, the Department of Agriculture and SIMMCO stakeholders have been frustrated in their attempts to create behavioural change by Samal Is contractors and farmers, then perhaps our community development facilitation can focus around helping Department of Agriculture and Value Chain participants to become more effective in their endeavours to facilitate change. In other words, we would be working directly with a group of technical personnel and training them to become effective facilitators of change. By doing this we will be developing the group facilitation skills of commercially-oriented Filipino advisors who are actively involved in the mango value chain. By working with commercial value chain partners

we will also be facilitating direct communication linkages and commercial relationships between Samal Is contractors and farmers.

5. Assuming the above, interventions by the ACIAR Project Team may include:

    a. Facilitating an agreement of invited participants including technical and management personnel from value chain partners (processors, fresh exporters, Manila exporters, concessionaires etc), Department of Agriculture Technical Extension Advisors and perhaps SIMMCO executives to confirm the scope, terms and objectives of the intervention program, identify frequency of meetings and program of training activities.

    b. Facilitating plans (made by the team we are facilitating; not by us) for improving the way mangos are grown, harvested and handled and deciding the physical channels and methods through which they will pass and locations of key operations such as sorting and grading, to optimise benefits to all participants.

    c. Facilitating the creation of demonstration and experimental activities so farmers and contractors can participate in and see first-hand the consequences of various initiatives.

    d. Facilitating involvement of ACIAR technical teams that can make a contribution to improved mango production and post-harvest handling.

    e. Facilitating the implementation of plans that are developed from the above as appropriate.

7. Limitations and Future Research

Whilst this research provided insights into markets for mango in and from Davao, the capacity to generalise the results is limited by the research methodology and the small number of interviews completed within each node. Whilst the objective was to interview the three largest actors from within each node this was not possible when requests to participate in interviews were rejected. Even where the three largest firms from a segment (node) were interviewed, they were purposefully selected and consequently it cannot be assumed that the information provided by interviewees is representative of other actors or can be generalised to each node. However, the insights provided did allow conclusions to be drawn about relative attractiveness of nodes and recommendations to be presented about how to proceed in the attractive nodes.

It should also be noted that the distribution of fruit and vegetables is changing in the Philippines and that the role of supermarkets is becoming increasingly important. Consequently, the information contained within this report may become outdated quickly. Supermarkets generally were reluctant to be interviewed and supermarket-specific research to better determine the current and future role of supermarkets and the role of concessionaires is recommended.

Farmers and others relying on this research should validate the information contained within this report by conducting their own research and by establishing commercial relationships with potential customers within selected nodes and using those relationships to develop deeper understandings of each market segment.

8. References

Beverland, MB & Lindgreen, A 2007, 'Implementing market orientation in industrial firms: A multiple case study', *Industrial Marketing Management*, vol. 36, no. 4, pp. 430-42.

2013, *Market Structure And Distribution of Benefits from Agricultural Exports : The Case of the Philippine Mango Industry*, by Briones, R, Turingan, P & Rakotoarisoa, M, vol. FAO Commodity and Trade Policy Research Working Paper No. 42, Food and Agriculture Organisation.

Buguis, M 2014, *Value chain analysis and competiveness strategy: fresh mango in Mindanao*

Currey, P 2015, 'Beliefs of senior managers and their influence on market orientation: an Australian owner-managed, vertically-integrated horticultural enterprise perspective', Dissertation/Thesis thesis, The University of Queensland, School of Agriculture and Food Sciences

David, FR 2007, *Strategic management: concepts and cases*, vol. 11th, Pearson Prentice Hall, Upper Saddle River, N.J.

Digal, LN 2015, 'Modern retail food sector in the Philippines: dominance of large domestic retailers and their effects on the supply chain', *The International Review of Retail, Distribution and Consumer Research*, vol. 25, no. 4, pp. 407-24.

Given, L 2008, *Semi-Structured Interview in The SAGE Encyclopedia of Qualitative Research Methods*, Online Book, Sage Publications.

Grunert, K, G., , Jeppesen, LF, Jespersen, KR, Sonne, A-M & et al. 2005, 'Market orientation of value chains: A conceptual framework based on four case studies from the food industry', *European Journal of Marketing*, vol. 39, no. 5/6, p. 428.

Grunert, KG, Baadsgaard, A, Larsen, HH & Madsen, TK 1996, *Market orientation in food and agriculture*, Kluwer Academic Publishers, Boston.

Gulati, A, Minot, N, Delgado, C & Bora, S 2007, 'Growth in high-value agriculture in Asia and the emergence of vertical links with farmers', in CABI, Wallingford, UK, pp. 91-108.

Kohli, AK & Jaworski, BJ 1990, 'Market Orientation: The Construct, Research Propositions, and Managerial Implications', *The Journal of Marketing*, vol. 54, no. 2, pp. 1-18.

Lewis, C, Pick, P & Vickerstaff, A 2001, 'Trappings versus substance - Market orientation in food and drink SMEs', *British Food Journal*, vol. 103, no. 5, pp. 300-12.

Malhotra, NK 2010, *Marketing research: an applied orientation*, vol. 6th, Globaliton., Pearson Education, Upper Saddle River, N.J;London;.

Merriam, SB 2002, *Qualitative research in practice: examples for discussion and analysis*, Jossey-Bass, San Francisco.

Mindanao Development Authority 2011, *Industry Profile: Mango*.

Minichiello, V, Aroni, R & Hays, T 2008, *In-depth interviewing: principles, techniques, analysis*, Pearson Education Australia, Sydney.

Narver, J & Slater, S 1990, 'The effect of a market orientation on business profitability', *The Journal of Product Innovation Management*, vol. 8, no. 3, pp. 20-35.

2014, *Developing sustainable food value chains – Guiding principles*, by Neven, D, FAO.

Pinoy ME BDS Conference 2009, *Understanding the value chain, the mango industry perspective*, PinoyME BDS Conference, viewed 22/12/15, <http://www.scribd.com/doc/32883148/Mango-Distribution-Flow-Presentation#scribd>.

Porter, ME 1980, *Competitive strategy: techniques for analyzing industries and competitors*, Free Press ; London, New York.

Bureau of Agricultural Statistics 2014, *Production and Area Harvested of Mango*.

RBOI-ARMM date unknown, *Mango Industry*, viewed 22nd December 2015, <https://www.google.com.au/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#>.

Sarian, Z 2015, 'Reviving the mango industry in Mindanao ', *Manila Bulletin*.

Thompson, AA & Strickland, AJ 1987, *Strategic management: concepts and cases*, vol. 4th, BPI/Irwin, Illinois.

I Interview Guide Used for Primary Data Collection

25th August 2015

Semi-Structured Interview Guide for Mango Interviews

We will introduce ourselves, thanking interviewees for their time and reminding them about our project and why we are meeting. We will confirm it is OK to ask them some questions. Questions will be deliberately open-ended where possible as we are seeking to understand the issues as perceived by interviewees. Being a semi-structured interview, we will guide the general direction by our questions, but be willing to follow other themes that are relevant to the research as they are presented.

Topics for Discussion	Rationale and what we're really seeking
1. Could you please provide us with an overview of the market for mangos in this region including, for example: a. Main areas of supply. b. Principle markets including local, wider domestic, export, processing. c. Seasonality issues including availability, quality and price variations. d. Main supply channels. e. Imports from other parts of Philippines or other countries. f. Who buys the various grades of mangos, the factors that influence the grading, the prices received by farmers for each grade and approximate % of the total supply that might go into each grade. (draw a value chain diagram and populate it with detail)	What we are looking for here is a detailed overview of mango flows, distribution channels into and out of the region plus within the region. A diagram if possible. Probe for quantities or % of the total crop that flows through the various channels. We need to understand the markets for all grades of mango from the very best to the very worst.
2. How is the mango industry in Mindanao and the Philippines changing, if it is?	Trends that are important in our evaluation of alternative marketing strategies.
3. Could you please explain your business and its use of mangos?	Probe to identify the relative size of this interviewee compared with others in their category. Try to obtain details of the quantity of mango they handle.
4. Can you please tell us if your business is seeing increase or reduction in supply or demand for mangos? a. How much? b. Why do you think that is?	Consumption trends. Probe for detail.
5. Could you please tell us what 'quality' means to you? a. In other words, what are the characteristics of mangos that are important for your use? b. How important is it that suppliers of mangos provide 'quality' consistently? c. If they do not include any of the following, ask specifically whether they are important, how and why each would apply to them and how they measure each characteristic: i. organic production ii. no chemical residues iii. physical damage from handling, transport and packaging iv. consistency of ripeness v. consistency of size vi. consistency of colour vii. shape viii. taste. ix. shelf life	This is a very important question and we need to fully understand the characteristics of mangos that are used to differentiate between grades. Probe to identify the market value (price) advantage of 'better' quality. Ask for copies of specifications if they exist. Take photos where you can.

6. Have you seen any evidence that consumers or anyone in the supply chain for mangos is concerned about chemical residues or are actively seeking what might be called 'safe' mangos? Probe further: a. Do you think consumers perceive a difference in safety of mangos purchased in the supermarket compared with the wet market? b. Please tell me what you believe different types of consumers or commercial users (restaurants etc) might think in relation to mango safety.	Genuine concerns being expressed anywhere in the market (producers, distributors, retailers consumers) about chemical residues, unhygienic handling or any other practices that may mango safety.
7. What supply challenges does your organisation experience? In relation to the items listed above, or to consistency of quality or availability, seasonality or anything else. a. How do you manage those issues?	Any problems encountered by their organisation that prevents them from sourcing what they need or being able to deliver what their customers are seeking.
8. How are purchase decisions for mangos made? a. Can you please describe the process of who makes the decision of what to purchase and who makes the decision about where and from whom to source? b. On what basis are mango purchase decisions made (if necessary, prompt with size, colour, freshness, shape, packaging, price, other) c. How are orders placed? d. How frequently are they placed? e. How much lead time is required before they are filled?	A detailed understanding of how they made decisions about what to purchase, from whom and when.
9. We would like to understand how information flows along distribution channels: a. Please help me to understand how and what information is passed from farmers to consumers or from consumers to farmers or along any part of the supply chain with which you are familiar. If not discussed, ask: b. How do you obtain customer requirements from your customers? c. How do you communicate your requirements to your suppliers?	A detailed understanding of how and what information flows up and down the supply chain.
10. Do you provide a specification for quality required for mangos? a. Please explain why / why not. b. Would you like it if a supplier collaborated with you to prepare a quality specification for your business and then adhered to it? c. Does this happen now? d. If a documented specification exists, ask for a copy.	An understanding of the importance and potential value associated with product specifications.
11. Can you please tell us about the condition in which mangos arrive? a. We'd like to know about the method of transport, the form of packaging and the quality condition. b. We'd particularly like your assessment of the damage that occurs from packaging and transport. c. What measures, if any, have you or other in the industry, taken to minimise damage and losses from packaging and transport?	Whether opportunities to reduce damage or wastage from packaging and transport exist, and if they do, to quantify them. Photos of packaging and damage if possible.

12. Could you please tell us about seasonal fluctuations in availability and price and how you manage these? a. Where do you source mangos when local production is not available?	We need to be able to plot average seasonal price variations (or actual prices) for each of the mangos at each point of distribution.
13. What problems with quality or availability of mango do you experience? a. How do you handle problems? b. Would you be interested in a supply chain that reduced these problems?	Their interest in better quality product, whatever 'better quality' means.
14. Can you please tell me who your main supplier/s of mango are? a. Do you buy all your mango from a single supplier? b. Which other suppliers do you use? c. How do you select from alternatives? d. Would you consider purchasing from a new supplier if they had a superior product?	How significant relationships are in the purchase of mangos, and how difficult it is for a different supplier (with a superior product) to be considered.
15. Other than the mangos we have been asking about, are there other mangos you would like to source?	Opportunities.
16. If a group of small farmers could demonstrate the capacity to supply consistent quality mangos would your business be willing to consider them as an alternative supplier? a. Why or why not? b. If they needed to be paid cash on delivery, would that be a problem? c. If they supplied your existing supplier and credit arrangements remained the same, would that be acceptable?	If there's reluctance to deal directly with a group of 'small farmers'
17. How does your business compare, in terms of size, to others in its category? a. Can you name others that are larger and help us to understand their relative significance within the industry?	
18. We would like to understand the commercial relationship your business has with its customers and with its suppliers. For example: a. Are agreements formalised by written agreements? b. Are commercial arrangements flexible and you are free to source where and from whom you wish on a daily / weekly basis? c. What about arrangements with customers?	The nature of commitment that's made to suppliers and customers so farmers can understand the nature of commercial arrangements that are in place at various stages along the supply chain.
19. Can you please tell us the prices you pay for mangos? a. How are these prices negotiated and set? b. How are fluctuations negotiated? c. Do prices include freight? d. How significant is the cost of freight?	To understand how prices are negotiated because this provides insights into 'power' and will help farmers decide whether they can consider selling to different points in the supply chain.
20. Finally, can you please tell us about payment terms for mangos? a. For example, does your supplier offer a credit facility which you pay weekly, monthly or other? b. Or is it cash on delivery? c. Other? d. Would you consider cash on delivery?	So farmers can understand the cash flow implications of selling to different points in the supply chain.

21. Can you tell us who else you think would be able to contribute to our knowledge of this industry? a. Individuals or companies? b. Government agencies? c. Membership organisations? d. Industry experts, journalists, consultants or specialists?	This question is an example of 'snowball' sampling; if anyone provides additional contacts you can also ask if you can use their name to increase the chances of being granted a meeting if you believe the named company / individual is worth it.
22. Can you think of anything else that we should know about mangos that you think we need to understand?	Always a useful last question which sometimes gets a useful response.

Thank them for their time and information. Ask them if they can give you suggestions and contact details of others you should call to better understand mango supply channels in their industry.

II Interview Guide for Value Chain Partners (Second Meeting)

April 2016

Interview Guide for Mango Value Chain Partner Meetings

Meeting Objective

The objective of the meeting is to gain a commitment to entering into an information-sharing relationship with us as a means of facilitating improved mango supply to them.

Suggested Approach / Meeting Structure

The following approach could be adopted:

1. Thank the participants for their time.

2. Explain the agenda of the meeting and confirm the expectation that it may require 1 ½ hours or so:

    a. A few minutes to explain the project.

    b. Introduce Ian and his experience in mango production in Australia and Asia.

    c. A discussion about the challenges being faced by the company and how its participation with us might contribute to solving some of the issues being experienced.

    d. Ask if there's anything else they'd like to discuss (add to the agenda)?

3. Very briefly (less than 5 minutes) explain the project, how it's funded, each partner's role and that the overall objective of the project is to improve the financial returns to mango value chain members. Be brief, we don't want them to lose interest here, but it's important to explain this up front and succinctly. Introduce Nikko, Roxanne and Jillian and their roles in the project.

4. Introduce Ian and his experience. I'd like to see Ian take some photos to use to explain his Australian and international experience. It would be great if Ian could talk about some successes in technical improvements that he has seen in Asia or elsewhere, particularly if they are relevant to the issues Ian has seen on Samal Is. 10 minutes maximum; less if they appear not to be really absorbed. Whet their appetite for more…

5. Ask them to explain how they source mangoes and problems they experience during each year and from year to year. As they speak and identify problem (opportunities for us) I think it is best not to interrupt or break their flow, but Ian should note the problems they mention so they can be addressed after all issues have been explained by the company personnel.

6. After the issues have been identified Ian should briefly repeat the list and then work through the list, one item at a time, to discuss possible interventions to help overcome the problems identified. During this time it is important to take note of the responses of the company personnel, because their responsiveness to each suggestion may be an indication of their willingness to invest time to work with us to solve each problem. We won't be able to solve all their issues so we need to identify the ones that Ian believes we can impact, and the ones the company wants solved and believes we can. This discussion should be allowed to take as long as needed, but please don't try to solve the problem in this meeting! (Keep focused on the meeting objective.)

7. The result of the previous discussion should be summarised into a proposed action plan identifying:

    a. Each specific problem identified that has been agreed justifies our joint attention.

    b. The specific UQ/UPM/ACIAR actions that might be possible to help solve the problem.

    c. Investment that the commercial partner is willing to make.

    d. The potential value of each problem if it is solved.

Please note that this step is very much 'closing the deal' and by summarising the potential value of solving each problem it should allow the company to appreciate that, if successful, their participation is worth the effort. It should increase the likelihood of reaching an agreement and achieving the meeting objective.

8. Confirm whether an agreement has been reached or whether they need to think about it, and if they need to think about it, how much time they need and whether we can provide any additional information.

9. Agree to summarise the main points of the meeting in an e-mail and make sure all contact details are obtained of relevant personnel. Confirm who to contact in the company.

What we can offer commercial partners

We can offer:

1. Ian's technical expertise. (this is our strongest card). The value of this to commercial partners is that access to Ian's technical expertise may help solve problems that could save or make them money.

2. Information flow and introductions to related ACIAR project personnel so that the issues being experienced by the commercial partners are communicated to technical project teams. This increases the likelihood that production and handling problems that result in costs to the commercial partner might get the attention they deserve.

3. Our facilitation to enhance information flow between commercial partners and mango growers and contractors. Increased communication in the supply chain can help to increase access to the grade of mangoes required by the commercial partner.

4. Increased access to mango growers, particularly growers and contractors involved in ACIAR projects who are likely to be producing superior quality mangoes in the future as a consequence of their participation.

5. Domestic and international market data, information and contacts that we obtain during the course of the project that may provide them with opportunities for additional income and customers.

6. Introductions to other chain members know to us and even us to accompany them on field visits aka 'walk the chain'. (This is likely to be of more value to less sophisticated commercial partners)

Ian has prepared a draft offer document and clearly Ian understands the technical issues, possible interventions and benefits of interventions better than anyone else in the team. I believe that the interventions identified by Ian in the document should not be provided to commercial partners prior to or during the meeting, but components could easily be incorporated into the discussion and confirmatory e-mail after each meeting.

Dangers

1. Speaking too much. It is important to create a meeting environment where the company personnel do most of the talking.

2. Offering too much.

3. Moving ahead of the commercial partner. It is important that we only proceed at the rate at which the partner is comfortable, and we need to appreciate that the people in the meeting may not be the ultimate decision-makers and may not be in a position to make commitments on the spot, and may be reluctant to reveal that they do not have the authority.

What we need from commercial partners

Whilst the contribution to be made by each commercial partner will vary, the following list is provided to facilitate the discussion in each meeting:

1. Sharing of information. The type of information may vary from commercial partner to commercial partner, but is likely to include:

    a. Details of specific problems being experienced, interventions that have been attempted and results that have been achieved.

    b. Market intelligence. We are keen to collect data over the next 2 years to better understand mango supply chains.

2. Access to facilities. It would be good to discuss what access we, mainly Ian, can expect to have during the course of the project.

3. Access to personnel. How much time of which personnel is reasonable and acceptable to the commercial partner?

It should be emphasised that all and any data shared will be treated with the degree of confidentiality requested by the commercial partner.