Copyright Statement

The digital copy of this thesis is protected by the Copyright Act 1994 (New Zealand).

This thesis may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- you will use the copy only for the purposes of research or private study
- you will recognise the author's right to be identified as the author of the thesis and due acknowledgement will be made to the author where appropriate
- you will obtain the author's permission before publishing any material from the thesis.
Small farmer access to premium prices for copra in the Philippines:
A case study of the coconut oil chain in Camarines Sur province

A thesis
submitted in partial fulfilment
of the requirements for the Degree of
Master of Commerce (Agricultural)

at
LincolnUniversity
by
Maria Acela Katrina A. Padua

LincolnUniversity
2015

Abstract

Small farmer access to premium prices for copra in the Philippines: A case study of the coconut oil chain in Camarines Sur province

by

Maria Acela Katrina A. Padua

Coconut oil is a major industry in the Philippines. Apart from being the country’s largest agricultural export earner, it is also consumed almost as a food staple in the domestic market. Even so, small coconut farmers remain amongst the poorest farmers in the country. Coconut oil processors pay premium prices for high quality copra – the product delivered by coconut farmers. This study examines the coconut oil chain in Camarines Sur province, focusing on the ability of small farmers to benefit from premium prices. Evidence from other countries suggests that the ability of small farmers to capture quality premiums is often compromised by problems in the measurement and enforcement of standards, asymmetries in power and information along the value chain, and the non-trivial cost of collective action in lobbying and marketing activities. This research uses case studies to test for the presence of similar problems in Camarines Sur, and to identify effective ways of improving returns to small coconut farmers.

Keywords: small farmers, agricultural supply chain, coconut oil, copra, quality standards, power, information asymmetry, collective action
Acknowledgements

First, and foremost, I would like to thank the funder of my scholarship. It is the people of New Zealand, through the New Zealand ASEAN Awards Programme, who gave me this opportunity to study for a postgraduate degree. My gratitude also goes to Lincoln University (LU), through the Faculty of Agribusiness and Commerce, for the financial support that enabled me to undertake the field work to collect data for this thesis.

I would like to thank both my main supervisor, Associate Professor Ruppert Tipples, and my associate supervisor, Associate Professor Michael Lyne, not only for the academic and experiential knowledge they contributed to this research but also for their generous support, patience, understanding, and unending inspiration and guidance. As this is the first research I have done in my life, these two people bore all the headaches supervisors of first-time researchers encounter – the lack of discipline, the lack of focus and the plethora of errors. Needless to say, they also suffered the headaches of reading my “grammatically unstable” drafts as English is my second language. They taught me to be forbearing with the learning curve of research writing, and the value of hard work and time management, through setting a good example for me. Most of all, I thank them for choosing to work with me and risking an “adverse selection” when they signed up to be my supervisors; Mike, for the initial emails when I was still working on my application, and Rupert, for putting your hand up to supervise my research that gave me the opportunity to pursue postgraduate studies at Lincoln University.

I would also like to thank my second level supervisors, Dr. Kevin Old, Sharon Lucock and Dr. Mark Wilson for educating me about the theories needed for this research and for providing me with very useful academic resources. I also would like to thank former students in my discipline, Salil Bhattarai, Nguyen Trung and Truong Hieu, whose doctoral theses were excellent examples/references for the kind of research I undertook.

Special thanks go to my “informal supervisors”, also known as my research cheerleaders, Dr. Peter Nuthall, Fernando Garcia-Barrios, Ani Kartikasari, Hoda Ghazali Biglar, Azadeh Nilipour Tabatabaeei, Philippa Rawlinson, Jillian Greenhalgh, Melanie Bakema, Michael Magcamit, Arla Fontamillas, Natasha Wangidjaja, Jeremy Matthews, Ana Silvina Guerello, and Anna
Concepcion Narciso, who have, in one way or another, looked at my research or checked on my progress and offered valuable advice and/or comforting words. Thank you also to Janette Busch for providing suggestions to improve my grammar and composition.

I would like to thank the people I interviewed for this research for offering their valuable time and sharing their knowledge; this research would not have been possible without their cooperation. Special thanks to my friends who assisted me in the conduct of this research, Debbie and Reagan Pempeña and John Malone Sarcia; and the friends who helped me contact some of the informants, Channelle Allorde, Rechele Gonzales, Kaye Borja and Jerome Fernandez.

Several people in the university made my life easier by assisting me with my administrative and learning (library) concerns. I would like to thank Angela Williams, Mandy Buller, Sue Bowie, Bernadette Mani, Castriona Cameron, Eileen Seymour, Anne Welford, and Rochelle Mayes. Also, to the security personnel who kicks me out of my office at 1:00am, thank you.

I am very lucky to have been surrounded with non-family members who made me feel New Zealand, particularly Lincoln, as my home: the Hofmanns, the Matthews, the Latinos, the Bros, 61 Gerald flatties, CR-21 mates, Alpine building officemates, my LU Students Association and Southern Response family, Denise Pelvin and LU International Club, and my Wilson Lifegroup family, thank you for supporting me spiritually and emotionally and for being my family away from home.

To my mother and brother who suffered from all my tantrums when I could not figure out what I should do with this thesis; and for loving me unconditionally, a million thanks.

Finally, I express my gratitude to God who is my source of strength and my ultimate provider.

Lincoln University, January 2015

Maria Acela Katrina Aguado Padua, Master of Commerce (Agri)
# Table of Contents

Abstract ....................................................................................................................................... ii

Acknowledgements ..................................................................................................................... iii

List of Tables .............................................................................................................................. viii

List of Figures .............................................................................................................................. ix

Chapter 1 Introduction ................................................................................................................. 1
1.1 A brief history of the coconut industry in the Philippines ............................................................. 1
1.2 Coconut as the ‘tree of life’ in the Philippines .............................................................................. 3
1.3 Coconut oil ..................................................................................................................................... 5
1.4 Legal mandate ................................................................................................................................ 6
1.5 Value chain versus supply chain .................................................................................................... 7
1.6 Research objective ....................................................................................................................... 10

Chapter 2 Agricultural supply chains; quality standards; and small farmers ......................... 11
2.1 Rationale for the study ................................................................................................................ 11
2.2 Small farmer participation in agri-food supply chains ................................................................. 14
2.3 Power and information asymmetry in the supply chain .............................................................. 15
2.3.1 The exercise of power in a supply chain ......................................................................... 15
2.3.2 Effect of asymmetrical information in the supply chain .................................................. 17
2.4 Transaction costs and collective action ..................................................................................... 18
2.4.1 Transaction costs ............................................................................................................ 18
2.4.2 Collective action .............................................................................................................. 19
2.5 Food safety ................................................................................................................................... 20
2.5.1 Food safety defined ........................................................................................................ 20
2.5.2 Motivations for food safety programmes ....................................................................... 20
2.5.3 Food safety as a trade consideration and some predicted trends .................................. 20
2.6 Quality standards ....................................................................................................................... 21
2.7 Research questions ...................................................................................................................... 23

Chapter 3 Coconut growing in Philippines and Camarines Sur ................................................. 24
3.1 Bio-physical environment ............................................................................................................ 24
3.1.1 Geography ....................................................................................................................... 24
3.1.2 Climate ............................................................................................................................ 26
3.1.3 Natural hazards ............................................................................................................... 27
3.1.4 Prevalence of diseases ................................................................................................. 28
3.2 Demographic environment ........................................................................................................ 29
3.2.1 Population and ethnicity ................................................................................................. 29
3.2.2 Literacy, education and labour ...................................................................................... 31
3.2.3 Urbanisation .................................................................................................................... 32
3.3 Socio-cultural environment ..................................................................................................... 32
3.3.1 Social behaviour ............................................................................................................. 32
3.3.2 Cuisine ............................................................................................................................ 33
Chapter 4 Exploring Camarines Sur’s coconut oil supply chain

4.1 Research strategy
4.1.1 The case study method of research

4.2 Choice of research method

4.3 Method of data collection
4.3.1 How the interviews were arranged
4.3.2 Identification and sampling of informants
4.3.3 Actual method of interviews

4.4 Choice of subject area/location

4.5 Limitations and constraints

4.6 Analysis of data
4.6.1 Explanation building
4.6.2 NVIVO Software

4.7 Human ethics and health and safety

4.8 Summary of the chapter

Chapter 5 Description of the coconut oil supply chain

5.1 Structure of the supply chain of coconut oil in Camarines Sur
5.1.1 Production stage
5.1.2 Processing and trading stage

5.2 Supply chain actors
5.2.1 Producers
5.2.2 Consolidators
5.2.3 Miller
5.2.4 Dealers
5.2.5 Public market sellers
5.2.6 Supermarket sellers
5.2.7 Consumers

5.3 Supply chain supporting actors
5.3.1 Philippine Coconut Authority (PCA)
5.3.2 United Coconut Associations of the Philippines (UCAP)

5.4 Production of copra
5.4.1 Manual method of production
5.4.2 Drying process
5.4.3 Forwarding to the next stage
Chapter 6 The premium for high quality copra and the small farmers’ opportunity for advantage 90
6.1 Research synthesis ....................................................................................................................... 90
6.2 Is there a premium for high quality copra? ................................................................................. 91
6.3 How can small farmers of copra take advantage of copra quality premiums? ........................... 94

Chapter 7 Recommendations ...................................................................................................... 96
7.1 The role of the Philippine Coconut Authority .............................................................................. 96
7.2 Recommendations for future research........................................................................................ 97
7.3 Contribution to knowledge .......................................................................................................... 97

References ................................................................................................................................ 100

Appendix A ................................................................................................................................ 112

Tables .......................................................................................................................................112
A.1 Copra moisture discounts .......................................................................................................... 112
A.2 Coconut production area in the Philippines per region ............................................................. 113
A.3 Historical prices of Philippine coconut oil products ................................................................. 113

Appendix B Interview questions checklist ...................................................................................115
B.1 Informants: ................................................................................................................................ 115
B.2 Things to cover: .......................................................................................................................... 115

Appendix C Research information sheet ..................................................................................... 116

Appendix D Consent Form .........................................................................................................117

Appendix E Fieldwork Photos .....................................................................................................118
E.1 Instruments used to measure moisture content ..................................................................... 118
E.2 Types of transport used in the supply chain ......................................................................... 119

Appendix F ................................................................................................................................ 121

NVivo Screen shots .................................................................................................................... 121
F.1 Sources ....................................................................................................................................... 121
F.2 Nodes ......................................................................................................................................... 122
F.3 Reports ..................................................................................................................................... 123
List of Tables

Table 1 Demographical details of Camarines Sur Province (time series) ................................................................. 30
Table 2 Philippines top ten commodities by production quantity and production value ................................. 43
Table 3 Philippines top ten commodities by export quantity and export value .................................................. 45
Table 4 Number of informants interviewed and their location/representation ....................................................... 51
Table 5 Chain actors and their functions in the coconut oil supply chain, Camarines Sur ................................ 58
Table 6 Breakdown and classification of topics of coconut papers published in the Philippine Journal of Science between 1906-2005 .................................................................................................................. 98
List of Figures

Figure 1 Various coconut uses (Mercola.com, n.d.) ................................................................. 4
Figure 2 A comparison of a value chain with a supply chain (Feller et al., 2006) ....................... 8
Figure 3 Coconut Industry: Supply - Value Chain presented in the Experts’ Consultation on
   Coconut Sector Development in Asia and the Pacific by the APCC Executive
   Director (Arancon, 2013; FAO and APCC, 2013) ................................................................. 9
Figure 4 Price per litre of coconut oils sold in supermarkets and public market: public market sold
   at 22Php for a 250m L sachet (photos taken by the author during the course of research). 14
Figure 5 Geographical Map of the Philippines (Wikipedia, n.d.-a); ............................................. 25
Figure 6 Map of the Philippines with focus on Camarines Sur (Wikipedia, n.d.-b) ...................... 25
Figure 7 Map of Camarines Sur with interview areas from the 5 districts (Gutierrez, 2013) .......... 26
Figure 8 Left: Coconut trees affected by pests and diseases (Ranada, 2014) Right: Coconut trees
   affected by typhoons (Manila Bulletin, 2014) ................................................................... 29
Figure 9 Time series graph showing the share of agriculture in total employment in the Philippines
   (Philippine Statistics Authority, n.d.) .................................................................................. 32
Figure 10 Coconut harvesting in 1925; manual harvesting of nuts and use of farm animals to
   transport via land or the creation of a raft to transport by water (Rogge, 2012) .................... 39
Figure 11 Dehusking and deshelling of coconut (Rogge, 2012) .................................................. 40
Figure 12 Drying coconut meat and sacking dried copra (Rogge, 2012) ...................................... 40
Figure 13 Various Google images of coconut harvesting and copra producing in present times;
   same as 90 years ago. Presence of farm animals and simple machines used for dehusking
   and deshelling are still the same, as well as manual drying and sacking of copra (Google
   Images, n.d., photos taken by the author during the course of research) ............................ 41
Figure 14 World Map showing list of top ten countries by Coconut production in the world
   (mapsoftheworld.com, n.d.) ............................................................................................... 44
Figure 15 Top exporting countries of coconut (International Trade Centre, n.d.-b) ...................... 46
Figure 16 Overloaded transport vehicles (photos taken by the author during the course of
   research) ................................................................................................................................ 54
Figure 17 Flow chart illustrating the coconut oil supply chain in Camarines Sur (photos taken by
   the author during the course of research) ............................................................................ 59
Figure 18 Left: House of a medium scale consolidator; right: Warehouse of a large scale
   consolidator (photos taken by the author during the course of research) ........................... 64
Figure 19 Top images are examples of observable bad quality copra; Bottom images show the
   observable good quality copra (photos taken by the author during the course of research) .... 65
Figure 20 Copra delivery transaction sheet from the miller; MC and DF stand for moisture content and discount factor, respectively (photos taken by the author during the course of research)......................................................................................................................66

Figure 21 Labelled and unlabelled cooking oils in the supermarket (photos taken by the author during the course of research) .......................................................................................................................................74

Figure 22 A sample of copra with grey and yellow-green moulds (photos taken by the author during the course of research) .......................................................................................................................................77

Figure 23 Examples of two types of branded cooking oil sold in the market; the lauric oil is on the right (photos taken by the author during the course of research).................................................................80

Figure 24 Sun drying of copra outside a consolidator’s building (photos taken by the author during the course of research).......................................................................................................................................84

Figure 25 Left: the simple machine they use for de-husking coconut; Right: coconut husks used as fuel in smoking the coconut to loosen the coconut meat from the shell (photos taken by the author during the course of research) ......................................................................................................................86

Figure 26 Left: Coconut meat loosened from its shell; Right: One of the different types of smoking area for coconut (above ground) (photos taken by the author during the course of research).......................................................................................................................................88

Figure 27 Number of papers on coconut from year 1906 to 2005 (Dayrit, n.d., page 239). .................98
Chapter 1

Introduction

"Coconuts are the fruit of the palm trees. And as we have bread and wine, oil and vinegar, so they get all these things from the said trees. With two of these palm trees, a whole family of ten can sustain itself. The coconut trees last for a hundred years"

- written in the journal of Antonio Pigafetta (1491-1534), a nobleman from Venice who boarded one of Ferdinand Magellan’s 5 ships on their voyage to the Indies (Coconut Republic, 2007, p. 1, paragraph 6)

1.1 A brief history of the coconut industry in the Philippines

Coconut is a native of the Old World tropics, a species that spread to eastern Polynesia and was later introduced to the Pacific Coasts of Latin America, most likely by pre-Columbian Austronesian seafarers from the Philippines (Gunn, Baudouin, & Olsen, 2011). The history of the dispersal and cultivation of coconuts is intertwined with human history in the tropics because it played a vital role in the ability of humans to voyage, establish trade routes, and colonise lands in the Pacific Rim and nearby regions (Gunn et al., 2011).

Coconut growing in the Philippines started as a colonial crop that was forced on the natives by gubernatorial edict in 1642 when Spanish colonisers required each person (referred to as "indio") to plant two hundred coconut trees to produce fibre for galleon rigs from the coconut husks, and caulking for the hulls from the charcoal (Dayrit, n.d.; Philippine Coconut Authority, n.d.-d). By the 20th century, coconut had become an important commercial agricultural crop and it was being exported to Europe as raw material for soap and margarine (Dayrit, n.d.; Philippine Coconut Authority, n.d.-d). Almost 30 years later, from 1840 onwards, coconuts were traded to Chinese and/or Malay traders in small quantities. Coconut oil was used by the Spaniards for rigging the galleons plying the Manila-Acapulco galleon trade. In 1898, copra and coconut oil were exported to Europe as raw materials for soap and the newly-invented margarine (Borja, 1927). Copra exports were then five per cent of the total commodity exports of the Philippines (Philippine Coconut Authority, n.d.-d). Almost 30 years later,
during the colonisation of the United States of America, desiccated coconuts were exported to the US, and comprised more than 90 per cent of their demand for the product. The United States’ large import volumes and the duty-free export of coconuts to Europe encouraged further growth of the coconut industry. In 1935, there were huge investments made in coconut plantations and coconut oil mills, refineries and processing plants (Philippine Coconut Authority, n.d.-d). Commercial coconut oil production began in 1906 when the first oil mill was established in Manila (Dayrit, n.d.).

The US imposed a US$ 0.03 processing tax and as well as an additional US$0.02 excise tax per pound of copra and coconut oil imported to the US in the early 1930s (Philippine Coconut Authority, n.d.-d). The excise taxes collected from Philippine coconut products were returned to the Philippines Commonwealth treasury on condition they were to be used to develop or subsidise the production of copra, coconut oil and other allied coconut products (Philippine Coconut Authority, n.d.-d). During World War II, the US continued to buy more copra and coconut oil to extract the glycerin needed in the production of explosives (Philippine Coconut Authority, n.d.-d). Various fractions of oleochemicals were also derived from coconuts to be used as raw material for the manufacture of cosmetics, pharmaceuticals, emulsifiers, propellants, paints and insecticides – this heightened the demand for copra and coconut oil and established the foundation of the coconut manufacturing and export economy whose contributions were highly significant to the “golden years” of industrialisation in the Philippines (Philippine Coconut Authority, n.d.-d).

Export earnings from coconut products were among the country’s largest sources of foreign exchange during the 1960s (Food and Agriculture Organisation, 2011). In this period, the area planted in coconuts expanded to 1.60 million hectares, which increased to 2.3 million, or by 42 per cent, by 1975 (Philippine Coconut Authority, n.d.-d). The ‘70s and the ‘80s marked a new era of development with the imposition of the coconut stabilisation levy to harness the inflationary effect brought about by the high prices of copra and coconut oil in the world market (Philippine Coconut Authority, n.d.-d).

The growth of the American domestic vegetable oil industry in the ‘90s is one of the major causes of the decline in demand for coconut oil exports from the Philippines (Dayrit, n.d.).
1.2 Coconut as the ‘tree of life’ in the Philippines

A coconut is a fruit that grows on a coconut tree. It is actually the seed of the coconut tree. The coconut got its name in the 16th century from the word ‘coco’ which means ‘monkey face’ - from the coconuts’ appearance – there are three dark circles at the base of the coconut that resemble a monkey’s facial features (Nair, 1992). Its scientific name is Cocos nucifera L. (Chan & Elevitch, 2006).

Coconut is also known as the ‘tree of life’ because every part of the coconut tree is used in everyday life in the tropics (Harries, Baudouin, & Cardeña, 2004; Ohler, 1984). The coconut tree is referred to as “Kalpa Vriksha” in Sanskrit, which literally translates to “a tree that provides all the essentials for life” (Sinigaglia, Corbo, D’Amato, Campaniello, & Altieri, 2003). The trunks of the tree are often used to build houses, boats or furniture and are also used in all forms of infrastructure, such as roads and bridges, since trunks are naturally strong and straight (Foale, 2003). Coconut palm leaves provide material for the roofs of houses, known in the Philippines as “bahay kubo”, fibre for baskets, and can be stripped and tied together to make brooms (Chan & Elevitch, 2006). The roots of the coconut palm tree can be used as a mouthwash, a dye, and as medicine for diarrhoea (Cocofina, 2011). The fruit of the coconut when split in half and dried may be used to buff floors. Coconut fruit has many uses too. Aside from the juice/beverage drunk by itself, coconut juice can be fermented and becomes a spirit that resembles vodka. Coconut milk and coconut creams are extracted from the coconut meat (Foale, 2003; Ohler, 1984). Copra meal, the residue of the copra after oil extraction, is “used as a source of protein for cattle, sheep and deer, because it does not break down in the rumen” (Pacific Agribusiness Research & Development Initiative, n.d., p. 1). Aside from the natural uses of the coconut tree, there are more uses once the coconut parts are processed. For example, coconut oil, coconut charcoal, coconut peat, coconut coir, coconut twine, coconut geo-textiles, coconut mats, coconut pots, animal feed, coconut nets, phosphatic fertiliser and organic fertiliser.

The species of coconut that grows in the Philippines is “Tampakan Tall”; this starts flowering five to six years from the time it is planted (Chan & Elevitch, 2006). The ‘Talls’ are grown for the production of copra for oil extraction and coir for fibre (Gunn et al., 2011). There uses are in addition to the natural uses of the coconut tree already mentioned.
Figure 1 Various coconut uses (Mercola.com, n.d.)
1.3 Coconut oil

The most common use for coconuts is as source of vegetable oil rich in lauric acid (Harries et al., 2004). Coconut oil, an edible oil derived from copra, the dried meat of the coconut, is a major industry in the Philippines (Borja, 1927). It belongs to the group of vegetable oils named lauric oils derived from seeds of species of palms (Petrauskaitè, De Greyt, & Kellens, 2000; Young, 1983). Other known lauric oils are palm kernel oil, babassu, cohune, and cuphea (Petrauskaitè et al., 2000).

According to the International Trade Centre Statistics, the Philippines has been the largest coconut oil (HS Codes 151311 and 151319) exporter in the world over the last five years (International Trade Centre, n.d.-a). The Philippine Coconut Authority reports that the average annual production for the period 2008-2012 was 2.647 million metric tons, of which an average of 0.869 million metric tons (33% of total production) was consumed domestically (Philippine Coconut Authority, n.d.-a). Coconut oil accounts for the largest share of oil product consumed domestically in the Philippines. An average Filipino household consumes one litre of coconut cooking oil per week. This consumption varies with changes in personal economic status. Despite this level of significance to the economy, small coconut farmers are amongst the poorest farmers in the country (National Statistics office, 2009).

Refined, bleached and deodorised (RBD) coconut oil is the most common form of coconut oil sold in domestic retail markets. The two most common markets are public markets and supermarkets. In a public market, consumers can buy a bottle of coconut oil, one fourth of a litre, for 22 Philippine pesos and, in a supermarket; they can buy a litre for approximately 123 Philippine pesos (see Figure 4). Coconut oil is used in almost all types of Filipino dishes and snacks (fried banana, fried sweet potato, fried quail eggs, fried processed foods, fried meat dishes, etc.), which are consumed daily. In other words, coconut oil is almost a staple Filipino food. Coconut oil is, therefore, important to both small domestic producers for their livelihoods and to domestic consumers, as a food staple.
The quality of copra has been a matter of concern for agencies such as the Philippine Coconut Authority (PCA). One of the major constraints confronting the coconut oil industry is poor copra quality (Shepherd, Cadilhon, & Gálvez, 2009, p. 19). With rising incomes in the Philippines (National Statistical Coordination Board, n.d.), consumer preferences are expected to shift in favour of high quality food (Hicks & Allen, 1999, p. 123). Products that are certified, traceable, and packaged presentably are perceived as quality products and often attract a premium price. However, these attributes impose compliance and transaction costs on producers. Since these costs are largely fixed costs that do not vary much with the volume produced, they tend to prevent smallholders from accessing premium markets (Bhattarai, Lyne, & Martin, 2013).

While coconut oil sold at supermarkets earns a premium of approximately 19 Php per litre, it is not clear if this translates into a premium for better quality copra. One of the very few studies of the Filipino coconut oil chain suggests that copra does not attract a quality premium (Pabuayon & Medina, 2009). However, there could be multiple explanations for this finding. It is possible that all producers, including small growers, produce copra of similar quality for the domestic market (minimum standards have been established by a working group representing the Philippine Coconut Authority (PCA), the United Coconut Association of the Philippines (UCAP), Bureau of Agriculture & Fisheries Products Standards (BAFPS), the University of the Philippines (UP) and the Bureau of Food and Drugs (BFAD). It is also possible that these standards are difficult to enforce as the quality attributes may not be easy to observe and measure (Hobbs, 2004; Young & Hobbs, 2002). Other explanations could include the presence of information and power asymmetries in the coconut supply chain (Akerlof, 1970).

### 1.4 Legal mandate

In 1991, the Philippine Coconut Authority, in recognition of the continuing concern of both producers and end users regarding the threat of Aflatoxin contamination and undesirable substances in copra and copra meal, promulgated an administrative order that covers the New Copra Classification Standards (Philippine Coconut Authority, 2003). This was in conjunction with their programme to improve copra quality and prevent the occurrence of Aflatoxin which arises naturally from moulds in improperly dried copra. This is based on regulations formulated by the European Union for the export of copra and copra meal that sets limits for Aflatoxin contamination (Punchihewa & Arancon, 2006).
Aflatoxin is a toxin that contributes to the deterioration of coconuts and certain agricultural produce after harvest (Goldblatt, 2012). Given that mould spores have different minimum water requirements at different temperatures, research points to moisture or relative to humidity of the surroundings as the factor that promotes Aflatoxin growth (Goldblatt, 2012). The Aflatoxin level is measured in parts per billion (ppb). In 2002, the European community issued a directive that the maximum tolerance limit for Aflatoxin B1 in copra meal used as feed ingredient was 20 ppb (Philippine Coconut Authority, 2003). To meet this requirement to promote the quality and marketability of Philippine coconut oil and copra, the Philippine Coconut Authority amended the executive order of 1991. They devised and prescribed a method of measuring the moisture content of copra at the first domestic sale and set a scale of price deductions based on the percentage of the moisture content, which is still being followed by coconut farmers, copra dealers and traders, copra exporters, and oil millers as well as their buying stations and their agents – for both for export and domestic use (Philippine Coconut Authority, 2003).

1.5 Value chain versus supply chain

According to Feller, Shunk, and Callarman (2006), the concept of a value chain was developed and popularised by Michael Porter, in 1985, who defined value as the amount buyers were willing to pay for what the firm provides. Feller et al. (2006) emphasised the following components of value chains; the benefits that accrue to customers, the independent processes that generate value, and the resulting demand flows that are created. They concluded that value chains and supply chain flow in opposite directions (see Figure 2).

The supply chain was defined by Waters (2011, p. 37) as a “series of activities and organisations that materials move through on their journey from initial suppliers to final customers.” As the name implies, the primary focus in supply chains is on the costs and efficiencies of supply, and the flow of materials from their various sources to their final destinations. Efficient supply chains reduce costs (Davis, 1993; Feller et al., 2006).
“Supply chain is a term to encompass every effort involved in producing and delivering a final product or service, from the supplier’s supplier to the customer’s customer” - (Feller et al., 2006, p.4).

This research studied both supply chains and value chains. These two terms will be used interchangeably.

![Figure 2 A comparison of a value chain with a supply chain (Feller et al., 2006)](image)

The Asian and Pacific Coconut Community (APCC) produced a supply-value chain of the coconut industry that looked at the larger picture how production inputs translated into market sales or income. Figure 3 shows the different parts of the coconut used and the process it undergoes to produce a primary product. Primary products undergo further processing or value-adding in order to be consumable. This research is focused on one product stream, cooking oil streaming from copra.
Figure 3 Coconut Industry: Supply - Value Chain presented in the Experts’ Consultation on Coconut Sector Development in Asia and the Pacific by the APCC Executive Director (Arancon, 2013; FAO and APCC, 2013)
1.6 Research objective

One objective of this research is to identify and describe the activities and participants involved in the Philippines domestic coconut oil supply chain. By understanding the roles of stakeholders in the supply chain, it is possible to explain the entire production-to-consumption system and the perceptions of producers about their access to markets. Efficient value chains that link farmers to the market can raise farm incomes and encourage higher farm productivity (Niraj Kumar & Kapoor, 2010). This research will also guide further research aimed at benefitting small coconut producers and poor consumers in the Philippines.

The next section of this thesis synthesises the relevant literature. This followed by a theoretical analysis using a six dimensional framework (Miller, 1998) to assess the agribusiness supply chains.
Chapter 2
Agricultural supply chains; quality standards; and small farmers

“The challenge is you have very poor peasants and farmers from underdeveloped countries for whom this is lifetime experience for which there are no words. They have been saving money their entire lives. They’re now in their 50s and 60s. They think fervour will get maximum reward.”
(Syed, n.d., p. 1, paragraph 3)

2.1 Rationale for the study

As mentioned in Chapter 1, supply chains are groups of organisations that move through a journey from the initial suppliers to the final customers and, collectively, they process raw materials into finished goods (Crook & Combs, 2007; Waters, 2011). The application of supply chain management concepts are increasingly applied in agribusinesses because of factors such as increased demand for, and availability of, differentiated products, advances in technology, sensitivity of consumers to food quality, safety, and non-food values, and globally competitive markets (Bhattarai et al., 2013).

Agricultural supply chains are different from other supply chains, such as, the industrial manufacturing and service supply chains. Sporleder and Borland (2011) analysed the differences by looking into seven fundamental economic characteristics of agricultural food supply chains. There are biological risks to agricultural food supply chains due to changing weather conditions, production cycles or seasonality of the product, and perishability (Sporleder & Boland, 2011). The quantity and the quality of the products are exposed to these biological risks. Quantity risk is a supply shortage due to factors such as disease and pest infestations (Sporleder & Boland, 2011). Quality risk is the downgrading of a product that may affect its acceptability in the next stage of the production process (Sporleder & Boland, 2011). An example of this is the quality of copra that will be accepted for processing into coconut oil.

These risks (Sporleder & Boland, 2011) emphasise the unequal market power between farmers, processors, and other first-handlers in agribusiness value chains. Sporleder and Boland (2011)
contend that food chains are complex and market power shifts from producers to a relatively small number of retailers who become ‘channel captains’ capable of influencing the entire chain. The power of a channel captain is ideally used to coordinate the supply chain. Benton and Maloni(2005) argue that use of power is beneficial for the holder of power and, if exploited, may lead to dissention and the underperformance of the supply chain. Food chains are complex because producers and processors bear significant levels of both behavioural risks and environmental risks (Bhattarai et al., 2013).

The coconut supply chain is unique because all the parts of coconuts are raw materials to a particular product stream. A coconut value chain review conducted by the Pacific Agribusiness Research & Development Initiative (n.d.) showed that the greatest economic benefit to coconut producers was from copra, which was further processed into copra oil (also known as coconut oil). Copra sold to processors is the main source of cash income for smallholders (Warner, Quirke, & Longmore, 2007). Smallholders dominate the harvesting and primary processing of coconuts; “Papua New Guinea, Fiji, Solomon Islands, Marshall Islands, Vanuatu and Kiribati have substantial exports of copra and copra oil for further refining. In contrast, India, Indonesia and the Philippines produce three quarters of the world’s coconuts, much of this in plantations, and fully process it locally” (Pacific Agribusiness Research & Development Initiative, n.d., p. 2).

The coconut industry is an important industry in the Philippines (Dy & Reyes, n.d.). Coconut farms are present in almost 90 per cent of Philippine provinces and cover nearly 30 per cent of Philippine farmlands (Dy & Reyes, n.d.; Warner et al., 2007). Coconut products contribute nearly half of the national agriculture exports (Dy & Reyes, n.d.). The Philippine Coconut Authority reports that the annual average production for the period 2008-2012 was 2.65 million metric tons; an average of 0.89 million metric tons (33 per cent of total production) is consumed domestically (Philippine Coconut Authority, n.d.-a). Moreover, it has been reported that the coconut industry supports about one-third of the Filipino population (Food and Agriculture Organisation, 2011; Warner et al., 2007).

This research was conducted in Camarines Sur, one of the Philippines’ largest coconut producing provinces. The Author found no literature about the coconut market chain in this province. However, some research has been done in Quezon province, which is located in Region 4. Pabuayon and Medina (2009) claim that a typical coconut market chain in Quezon has the following agents:
farmers, traders, oil miller, desiccated coconut processor, wholesalers and retailers. They describe the supply chain for coconut oil as farmers drying the coconut meat to copra and selling it to the town trader who then sells the copra to the nearest mill where the copra is crushed into oil. Coconut oil is the major product traded and consumed in the domestic and export markets (Pabuayon & Medina, 2009). Pabuayon and Medina (2009) found that much of the value-adding occurs at the distributor and retailer levels which account for 53 per cent and 36 per cent of the share of the value of branded and unbranded coconut oil, respectively. Branded coconut oil is sold in supermarkets whereas unbranded coconut oil (Figure 4) is sold in public markets. According to Pabuayon and Medina (2009), the farmers were not affected by value added in processing because farmers receive the same price for copra regardless of whether the coconut oil is sold in supermarkets (branded) or public markets (unbranded). Whether this information is correct or not will be answered in this research.

This research will focus on one coconut industry product stream - coconut oil from copra. The Philippines supply 80 per cent of the world’s coconut oil exports. Buschena and Perloff (1991, p. 1000), who studied the coconut oil export market in the 90s stated, that, “The Philippines has been and is by far the largest producer and exporter of coconut oil.” According to International Trade Centre statistics (n.d.), the Philippines has been the world’s largest coconut oil (HS Codes 151311 and 151319) exporter over the past five years (International Trade Centre, n.d.-a). Coconut oil is the most important way to consume coconuts (United Nations Conference on Trade and Development) and it is the product stream that has the highest monetary value (Dy & Reyes, n.d.; Warner et al., 2007). Coconut oil prices in the world market have been increasing over the last few years (United Nations Conference on Trade and Development, 2012). Coconut oil producers are price takers because the world market price dictates the price for coconut oil (Vinay Chand Associates, n.d.). Five to six thousand coconuts are required to produce a ton of copra; between 55 to 65 per cent of the copra weight yields oil (Vinay Chand Associates, n.d.). With this in mind, around ten thousand coconuts would yield one ton of oil and, if the price of the oil is one thousand US dollars for one ton, each coconut is valued at ten cents (Vinay Chand Associates, n.d.).

Coconut oil is the main commercial product used internationally as a cooking oil (Warner et al., 2007). The crude copra oil is refined, bleached and deodorised (RBD) to become a principal ingredient for culinary oil (also known as cooking oil) and other beauty products, such as soaps, shampoos, etc. (Pacific Agribusiness Research & Development Initiative, n.d.). Both copra and coconut oil are traded as commodities and rising market standards for quality and consumer safety
have severely affected the viability and competitiveness of copra producers (Pacific Agribusiness Research & Development Initiative, n.d.). The global market supply of coconut oil is threatened by production problems, such as, pests and diseases, ageing plantations, and harvesting problems (United Nations Conference on Trade and Development, 2012). These production problems affect the quality of the coconut oil being produced in the Philippines. Whether this is a problem for coconut oil that is supplied for domestic consumption is a question for this research.

2.2 Small farmer participation in agri-food supply chains

Coconut oil in the Philippines is sold to consumers through supermarkets and public markets. The price of coconut oil sold in supermarkets is higher than the price in public markets, at approximately 123 Philippine pesos and 88 Philippine pesos per litre, respectively (observations by the author during fieldwork in 2014; see Figure 4). Blandon, Henson & Cranfield (2009) suggested that many smallholders may be excluded from supply chains serving supermarkets that imposed stringent quality standards. They argued that transaction costs constrain the participation of smallholders in the supply chain and suggest that, “Collective efforts can help small-scale farmers to pool resources in order to access the specific assets needed for production, achieve economies of scale and/or scope and gain bargaining power to negotiate with buyers” (Blandon et al., 2009, p. 974).

Figure 4 Price per litre of coconut oils sold in supermarkets and public market: public market sold at 22Php for a 250m L sachet (photos taken by the author during the course of research)

Blandon, Henson & Cranfield (2009) stated that smallholders in Honduras were aware of the premium paid by supermarkets for meeting exacting requirements from buyers about quality
standards. However, they found that the quality difference between products sold in supermarket chains and spot markets was not so large as to explain the price difference; the difference in price can be attributed to differences in transaction costs associated with the product, such as, reliability of supply, consistent quality and the need for collective action. Even if collective action is an avenue to reduce high transaction costs (Markelova, Meinzen-Dick, Hellin, & Dohrn, 2009), there is still a cost to act collectively. Blandon, Henson & Cranfield (2009) concluded that the participation of smallholders in the supply chain is determined by their appreciation of the economic benefits in doing so, i.e. there must be offsetting benefits for the transaction costs of collective action. Collective action alone does not guarantee that smallholders are better off accessing discerning consumers (Blandon et al., 2009; Fischer & Qaim, 2012).

2.3 Power and information asymmetry in the supply chain

2.3.1 The exercise of power in a supply chain

As defined in the previous chapter, supply chains are series of activities that have members or participants that coordinate with each other to move through a channel from the suppliers to the consumers. The relationships among members in a supply chain are rarely symmetrical (Munson, Rosenblatt, & Rosenblatt, 1999). In a supply chain, there may exist a “channel captain” or “channel leader” who is commonly associated with powerful firms who acts as the dominant/controlling member of the chain (Munson et al., 1999).

Power is the ability of a firm to get another firm to do something that it would not do otherwise do (Dahl, 1957). The existence of power among human beings is an ancient concept (Dahl, 1957). Dahl (1957) points out that one of the facts most evident of human existence is that some people have more power than others. Hunt and Nevin (1974)said that the measurement of power was the perceived notion of the receiver about the power rather than an objective ability of one firm to control the behaviour of another. Terpend and Ashenbaum (2012) were able to present a table of definitions for the sources of power. There are two basic types of power, coercive and non-coercive power (Munson et al., 1999). Coercive power represents the negative use of power while non-coercive (non-mediated) power is more relational (Benton & Maloni, 2005).
Benton and Maloni (2005) stated that a judicious use of power was beneficial for the holder of power but if exploited, may lead to dissention and underperformance of the receiver of such power. Having this in mind, the holder of such power must forbear/withhold it, if it might lead to conflict that would prevent coordination within the chain (Crook & Combs, 2007) when exercised. The threat of a larger firm to the smaller members of the chain is when they use the coercive power for their own economic gains. Coercive power is defined as, “A power that stems from the expectation on the part of the power recipient that he will be punished by the power holder if he fails to conform with the influence attempt” (Terpend & Ashenbaum, 2012, p. 54).

Channel captains are large and powerful enough, to the extent that other members of the supply chain depend on their resources and these resources create dependencies (Crook & Combs, 2007; Munson et al., 1999; Pfeffer, 1992). Having control on these resources gives them leverage over smaller members of the supply chain. With this dependency comes a high risk of opportunism. Opportunism is defined as the “self-seeking interest with guile” (Williamson, 1979, p.234) where guile is described as “lying, stealing, cheating, and calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse” (Wathne & Heide, 2000, p.38). Mitigating a channel captain’s opportunistic behaviour can be done through enhancement of the “social contract” (John, 1984). A social contract promotes a social relationship wherein long-term transactions outweigh the short-term gains from opportunism (John, 1984). When channel captains realise that the smaller firm would be beneficial for them to keep on a long-term basis, they would think twice about behaving opportunistically.

The channel captain may not always behave opportunistically even if conditions allowed such behaviour (John, 1984). Contrary to what is believed, although channel captains may have the ability to take advantage of smaller members of the supply chain to favour themselves, they are aware that it may not be the wisest thing (Nirmalya Kumar, Scheer, & Steenkamp, 1995). Even when the channel captains benefit from the power that they have against the smaller members of the supply chain, failure to withhold power when interdependence was necessary may arouse conflict and a reduction in cooperation among members of the supply chain (Crook & Combs, 2007). The members of the supply chain depend on each other for effectiveness and efficiency and powerful firms seek to enhance their power position rather than exploit it (Boyle & Dwyer, 1995; Munson et al., 1999). It has been said repeatedly that the strongest firm in a supply chain is only as good as the weakest firm in the chain (Crook & Combs, 2007). The downside of having powerful firms lies in the interdependence of trust and power. Ireland and Webb (2007) stated that trust and power were
complementary and in opposition both at the same time. This is true in the context that as the amount of trust increases, the extent to which power could be exerted to act opportunistically magnifies.

Trust is defined by Ireland and Webb (2007, p.484) as, “The decision to rely on a partner with the expectation that the partner will act according to a common agreement.” They added that trust is viewed as a relational factor that allows benefits from sharing the risk and costs that come with exploiting opportunities. Further, Ireland and Webb (2007) argue that trust in another (supply chain) member is a function of success. Kumar (1996, p.1, paragraph 21) suggests that “trust strategy works only with those partners that are willing to play the trust game”. Evidence has it that people are more likely to yield to legitimised entities and rules rather than obeying powerful actors who are wanting exert an influence (Weber, Henderson, & Parsons, 1964). There is an element of trust that is given to a business or an individual with authority. The implication of having a trusted firm or member in the supply chain, in this case the channel captain, is that transaction costs will be reduced. Powerful firms or large firms usually have a reputation to maintain and will do all they can to avoid ruining their good name by behaving in a distrustful manner through exploitation of power.

2.3.2 Effect of asymmetrical information in the supply chain

Francis Bacon, an English statesman once said, “Knowledge is power.” In saying this, he meant that knowing information, which is a sort of knowledge, constitutes power. In context of business transactions (of cars, insurance, and lemons) among buyers and sellers, asymmetric information exists when one of the actors holds more information than the others (Akerlof, 1970; Spence & Zeckhauser, 1971).

According to Akerlof (1970) in his seminal paper entitled The Market for Lemons, the lemon model could be used to make assumptions about information asymmetry. For a market where the quality of goods could be misrepresented, the problem is that the task of identifying quality vests with the buyer (Akerlof, 1970). Information asymmetry, in this case, will translate into buyers’ risks and costs in conducting transactions.
In agricultural supply chains, the actors all bear information risks. If a producer is confronted with imperfect information and opportunism (as discussed in the previous section) he will be reluctant to invest in specific assets and, as a result, consumer demands may not be met. Similarly, if a buyer is confronted with information risks, he will be reluctant to buy a particular product at its market price unless the actor can alleviate the problem by entering into an enforceable contract with the buyer (Lyne, 2013). Contractual arrangements are one method of achieving coordination between agents in the supply chain. Contracts establish the responsibility, risk and rewards for each party (Lyne, 2013). Contractual arrangements increase the complexity of transactions (Bhattarai et al., 2013).

2.4 Transaction costs and collective action

2.4.1 Transaction costs

Transaction costs are deemed important in discussions pertaining to smallholders’ participation in markets. Transaction costs, as described by Coase (1937) in his seminal paper, *The Nature of the Firm*, refers to the costs incurred when economic activities, such as marketing and organising, are undertaken by more than a single firm. Recent researchers have defined it as “the cost of carrying out an exchange” (Hobbs, 1996, p.15). Transaction costs are characterised by three dimensions, namely: uncertainty, frequency of occurrence and transaction-specific investments (Williamson, 1979). These transaction costs could range from household-level costs to market-level costs of reaching international markets, and they could be discreet or relational in nature (Barrett, 2008; Williamson, 1979).

Evidence from eastern and southern Africa shows that smallholders could increase their farm profits if transaction costs, are lowered or can be avoided (Barrett, 2008). Most smallholders in these countries do not sell directly to markets because of barriers, such as transaction costs relating to transport (Barrett, 2008). In the case of Nepal, smallholders are able to trade in informal markets where transaction costs are low and less complex (Bhattarai et al., 2013).

Contracting is a word that cannot be avoided when discussing transaction costs because transactions are made through contracts, be they written (conventional) or unwritten (relational). Bhattarai et al. (2013) developed a model to explain the dyadic relationships between smallholders and their buyers...
and, in their case study in Nepal, found that the contracts between smallholders and their buyers are characterised by relational contracting. Neo-classical contracting suggests that employing a third-party arbitrator can substitute for an effective legal system in resolving disputes and evaluating performance, while introducing greater flexibility in contracts (Williamson, 1979). Employing an arbitrator does not necessarily reduce transaction costs but makes them more visible (Bhattarai et al., 2013).

### 2.4.2 Collective action

The concept of collective action has been defined as an action that requires the involvement of a clearly defined group of people that take part in pursuit of a shared interest (Meinzen-Dick, DiGregorio, & McCarthy, 2004). The authors added that what differentiates collective action from hired, or corvee labour, is that it is voluntary in nature (Meinzen-Dick et al., 2004). Types of such action include the development of institutions, resource mobilisation, coordination activities and information sharing (Meinzen-Dick et al., 2004).

“The opportunity for smallholders to raise their incomes increasingly depends on their ability to compete in the market; yet there are many failures in rural markets in developing countries that make it difficult for them to do this” (Markelova et al., 2009, p.1). Narrod et al. (2009) supports this claim by stating that it is more attractive to buyers who are looking for ways to ensure traceability and reduce transaction costs if organised producer groups monitor their own safety standards through collective action. Evidence from countries such as Uganda, Thailand, Tanzania, Peru, Kenya, India and Ethiopia suggests that collective action could enable smallholders to address inefficiencies in coordination problems or barriers to market access (Barham & Chitemi, 2009; Bernard & Spielman, 2009; Devaux et al., 2009; Fischer & Qaim, 2012; Markelova et al., 2009). Acting collectively, such as in farmer groups, could enable smallholders to reduce transaction costs (such as market information, new technologies, and information to direct them to high value markets) and improve their bargaining power in the value chain (Barrett, 2008; Devaux et al., 2009; Markelova et al., 2009). Collective action can transform market relation in favour of small farmers.
2.5 Food safety

2.5.1 Food safety defined

Akkerman, Farahani, and Grunow (2010) define food safety as the prevention of illnesses resulting from the consumption of food that is contaminated. They note that governments are imposing laws that enforce the traceability of food products during all stages of their production, processing and distribution. Food safety goes hand in hand with food quality, which is described by Akkermam et al. (2010) as not only the physical properties of food products but also the perception of the final consumer, and includes not only the microbial aspects but also flavour and texture. At present, systems such as HACCP, originally designed to control food safety, are also being used to increase product quality throughout the supply chain (Akkerman, et al., 2010).

2.5.2 Motivations for food safety programmes

The FAO Committee on Agriculture (2003) states that, traditionally, the focus of food safety is on enforcement mechanisms to remove unsafe food and does not have a mandate for preventing food safety problems. In effect, many food safety systems tend to be reactive (defined by enforcement criteria) rather than being preventive and holistic in their approach to risk assessment and reduction (Brundtland, 2001).

This reactive approach to food safety is evidenced by the triggers for the enforcement of food safety measures. In the United States of America, food safety concern was triggered by two occurrences in the spring of 1989: The Alar Scare and Chilean grapes laced with cyanide (Friedland, 1994). The trigger for Europe was the outbreak of Bovine Spongiform Encephalopathy (BSE), commonly known as Mad Cow Disease, in 1993. This was connected to its human counterpart, Creutzfeldt-Jacob disease, which is a terrible disease and fatal to humans (Hill et al., 1997).

2.5.3 Food safety as a trade consideration and some predicted trends

There is an increasing quantity of food in the supermarket shelves that is produced in countries other than where it is purchased (Burch & Lawrence, 2005). As Brundtland (2001) posits, “We always have to remember that food chains are international.” Globalisation means that foods are purchased
from suppliers operating under a diverse range of food safety and quality regulations (Burch & Lawrence, 2005).

According to some studies, a significant portion of trade technical barriers are related to food safety measures (Crutchfield, Buzby, Roberts, Ollinger, & Lin, 1997). The differences in different countries’ food safety measures could have ill effects on trade. These ill effects pertain to the market access of the product. Some countries may have a stricter and more complex set of standards compared to others (Cao, Maurer, Scrimgeour, & Drake, 2004; Crutchfield et al., 1997). In regard to this, while food safety programmes and the standards developed from them have reduced the risk from foods, it has created a problem for small farmers (Narrod et al., 2009). Small farmers could be excluded from the supply chain because they bear the increased costs of compliance and this is especially so for small farmers from developing countries who bear the risk of import bans (Narrod et al., 2009).

“Small farmers face four distinct problems: (1) how to produce safe food; (2) how to be recognised as producing safe food; (3) how to identify cost-effective technologies for reducing risk; and (4) how to be competitive with larger producers”(Narrod et al., 2009, p.8)

2.6 Quality standards

Standards and grading are meant to reduce information costs between producers and consumers. Hobbs and Young (2001, p. 46) make the point that, “Sellers (producers) face additional uncertainty in finding a buyer, particularly if their product has idiosyncratic qualities” in Canada and the USA. Trading products that possess credence attributes in spot markets does not address this risk even in the presence of standards and grading. However, stringent quality standards intended to differentiate such products can be detrimental to small farmers who, individually, cannot cover the fixed costs associated with compliance (Bhattarai et al., 2013). Whether or not small farmers stand to benefit from quality standards depend on several factors, including the likelihood of earning quality-related premiums, and the size of those premiums relative to the costs of compliance. This study examines the perceptions about quality standards for copra sold to coconut oil processors by small farmers in the Bicol region of the Philippines.
“Standards are agreed criteria by which a product or the performance of a service, its technical and physical characteristics, and/or the process, and conditions, under which it has been produced or delivered, can be assessed” (Nadvi & Waltring, 2004, p. 56). The international standards for coconut oil are set mainly by two organisations: the Codex Alimentarius, and the Asian and Pacific Coconut Community (APCC) (Dayrit et al., 2007). The local standards for copra are set by the Bureau of Agricultural, Fisheries and Production Standards – a bureau under the Philippines’ Department of Agriculture. There is no existing standard for the RBD coconut oil or cooking oil. There is a standard for virgin coconut oil (VCO) but this is not included in this research because it is a coconut oil that does not stream from copra.

According to Giovannucci and Ponte (2005) there are four factors that must be assured for standards to work in a developing country setting. The first one is that the standards and their requirements should be clear and transparent (Giovannucci & Ponte, 2005). One of the objectives of this research is to find out whether the smallholders are aware of the quality standards for their produce and whether they see any benefit from complying with those standards. Another question is whether the smallholders are aware that a high quality product earns a premium and, if they are not aware, could it be that the supply chain structure is not conducive to delivering this type of information to them? If the smallholders are aware of the standards, is there a difficulty in understanding them? What challenges do they encounter? According to Trienekens and Zuurbier (2008), the lack of awareness and adequate information by producers makes it difficult for small and medium-sized enterprises from developing countries and emerging economies to comply with standards.

The second factor stated by Giovannucci and Ponte (2005, p. 298) is the, “Effective participation by developing country producers in key decisions over standard setting and monitoring procedures.” According to a report published by the United Nations Industrial Development Organisation, powerful and large firms increasingly dominate the agrifood sector in driving product differentiation based on quality assurance (Humphrey, 2006).

The third and fourth factors are “reasonable access” and “just compensation for the efforts required of producers to meet and monitor elevated standards” (Giovannucci & Ponte, 2005, p. 298). The research aims to gain an understanding of whether the standards are easily measurable and if their quality can be gauged from tangible attributes. Trienekens and Zuurbier (2008) pointed out that the
total cost for not complying with standards could be higher than the cost of complying and that the certification process would be offset by the benefits. However, this may not hold true in the Philippine setting where institutional and infrastructure facilities are lacking.

2.7 Research questions

These issues raise three important questions that the author intends to answer through this research. Answers to the following questions should lead to a raft of valuable recommendations aimed at assisting small growers of copra improve their access to premium markets:

RQ1: How are the public market and supermarket coconut oil supply chains organised?
   - Who are the main participants of the chain from copra to consumers?
   - How do they interact?

RQ2: Is there a premium for high quality copra?

If yes, do smallholders perceive that they can share in this premium by delivering high quality copra?

If no, what is the reason?

   - Is it because there are no easily measurable standards for copra?
     - Is this because the quality of copra cannot be gauged from its tangible attributes?
     - Is it because farmers do not perceive any benefit in applying such standards?
       - Why don’t they perceive benefits?
     - Is it because the cost of compliance and collective action exceed the perceived premiums?
   - Is it because they are not aware of the price premium?

RQ3: How can smallholder growers of copra take advantage of such premiums, if any?
Chapter 3
Coconut growing in Philippines and Camarines Sur

“If the farmer is poor, then so is whole the country” (Polish Proverb, n.d. p. 1, paragraph 1).

In analysing an agribusiness supply chain, an in-depth study of the agribusiness industry is necessary to provide context to the analysis. There are two levels of environmental analysis: one is the general environment and the other is the competitive environment. This chapter describes the area of the research based on Miller’s (Miller, 1998) framework for external analysis. The framework consists of six broad dimensions: demographic environment, sociocultural environment, political/legal environment, technological environment, macroeconomic environment, and global environment. The bio-physical environment was added to the six dimensional framework by Miller who deemed it necessary to study this as well.

3.1 Bio-physical environment

3.1.1 Geography

The Philippine archipelago is made up of 7,107 islands. It is located in Southeast Asia, between the Philippine Sea and the South China Sea (also known as the West Philippine Sea), east of Vietnam (Central Intelligence Agency, n.d.-b).

The Philippines consists of seventeen (17) administrative regions geographically combined into three major island groups: Luzon, Visayas and Mindanao. The first major island, Luzon, is divided into eight regions: National Capital Region (NCR), Cordillera Administrative Region (CAR), Ilocos Region (Region I), Cagayan Valley (Region II), Central Luzon (Region III), CALABARZON, short term for Cavite, Laguna, Batangas, Rizal, and Quezon (Region IV-A), MIMAROPA (Region IV-B) and Bicol Region (Region V). Bicol Region is home to six provinces comprising four provinces on Luzon Island: Camarines Norte,
Camarines Sur, Albay, Sorsogon; and two separate island provinces: Catanduanes and Masbate (Akin, Griffin, Guilkey, & Popkin, 1986).

Among these six provinces, Camarines Sur is the largest both in terms of population and land area, at 548,703 hectares (Province of Camarines Sur, n.d.). Camarines Sur has two cities; one chartered city (Naga) and one component city (Iriga), thirty-five municipalities and 1,063 barangays (Philippine Statistics Authority, 2014a). Figure 7 shows the map of Camarines Sur that is colour-coded based on the five legislative districts. The encircled towns are the towns where data were collected.

Figure 5 Geographical Map of the Philippines (Wikipedia, n.d.-a);
Figure 6 Map of the Philippines with focus on Camarines Sur (Wikipedia, n.d.–b)
Coconut trees occupy approximately 3.4 million hectares in the Philippines, making it the major crop in 35 of the nation’s 79 provinces (Food and Agriculture Organisation, 2011). Major coconut producing areas are Southern Mindanao, Southern Luzon and Western Mindanao (FAO, n.d.). Camarines Sur, located in the Bicol region (which has the highest coconut producing area in the country) which is located in Southern Luzon, the area this research is confined to, is one of the Philippines’ largest coconut producing provinces and the top coconut producing province in the Bicol Region (FAO and APCC, 2013; Philippine Coconut Authority, n.d.-b).

![Map of Camarines Sur with interview areas from the 5 districts (Gutierrez, 2013)](image)

**Figure 7** Map of Camarines Sur with interview areas from the 5 districts (Gutierrez, 2013)

### 3.1.2 Climate

Philippines’ climate is tropical marine. In countries with this type of climate, there are only two seasons: the northeast monsoon, which is from November to April, and the southwest monsoon, which is from May to October (Central Intelligence Agency, n.d.-a).
The climate in Camarines Sur is like the rest of the country, very tropical. It has a dry season from March to May, a wet season from June to October and a cool season from November to February (Province of Camarines Sur, n.d.). The average temperature is 27 degrees Celsius with a relative humidity of 25.8 per cent.

A coconut tree requires humidity and a stable temperature to bloom (Cocofina, 2011). It prefers areas with sandy soil, regular rainfall, and lots of sunlight, it requires temperatures above 24 degrees Celsius and thrives in high-humidity areas (Cocofina, 2011). Camarines Sur has the perfect climate for coconuts because of its tropical marine climate with frequent rainfall and highly humid temperatures.

3.1.3 Natural hazards

As a country astride the typhoon belt, the Philippines, on average, is hit by 25 typhoons of varying intensities per year (Central Intelligence Agency, n.d.-a; FAO, n.d.). This hazard becomes a major problem in growing agricultural crops, including coconuts, which take about four years to recover from a typhoon. The impacts from typhoons on coconut trees are severe. In 2014, it was reported that there were 33 million coconut trees affected by typhoon Haiyan alone (FAO, 2014). Figure 8, below, shows an example of what the trees look like after a natural disaster.

“Coconut farmers are replanting, but what makes the situation so dire is that newly planted trees take between six to eight years to reach maturity and return to full production,” said Rajendra Aryal, acting FAO Representative in the Philippines (FAO, 2014)

“Coconut farming is my main source of income, and when the typhoon hit I lost all my trees,” said Domingo Brivia, a small-scale coconut farmer (FAO, 2014)

Camarines Sur is one of the provinces in the Philippines that frequently gets hit by tropical storms due to its location on the east side of the country, near the equatorial trough in the Pacific Ocean; this is where typhoons are usually formed as a consequence of instability of the Northern Hemisphere trades (Riehl, 1948). All of producers and consolidators (buyers and sellers of copra)
interviewed mentioned that the occurrence of typhoons was their greatest challenge in coconut farming. According to them, it decreased their production tremendously. In their own words:

“From history, we are able to get 20,000 kilos in a day, but nowadays the average is only around 6,000, not even half of what we get before” – Consolidator 2

“The most severe challenge is typhoon...also extreme heat. It makes the production lower. Before we can produce 1500 to 2000 kilos but now only 500 (kilos)” – Producer 7

3.1.4 Prevalence of diseases

There are various pest and diseases in coconut palm trees; they come from the Orders of Orthoptera, Phasmida, Isoptera, Rhynchota or Hemiptera, Lepidoptera, Coleoptera, Hymenoptera, and Diptera (Lever, 1969). The damage caused by these pests can be related to the conditions of the environment such as the vegetation associated with the palm and the soil and weather factors (Lever, 1969). The effects of climate and weather, such as the combined effects of wind and rain in the insects tend to terminate the outbreaks of pests, which always begin in the dry season (Lever, 1969).

Recently, the Philippines has been infested with the coconut scale insect (Aspidiotus rigidus), known locally as “cocolisap”- a wasp-like native insect considered as a parasite from the Comperiella species (Encytidae, Hymenoptera) that kills coconut trees by covering the underside of the leaves, blocking their openings and preventing them from producing food for the tree (Maslog, 2014; Ranada, 2014). After the strong typhoon called “Rammasun” blasted through Southern Luzon, the dying coconut trees in the five provinces turned green four months later (Maslog, 2014). The fact that the strong typhoon saved the coconut industry from the stubborn pest has been backed by a three-week rapid ground assessment of the Philippine Coconut Authority (PCA) and two agricultural scientists from the University of the Philippines Los Baños (UPLB)(Maslog, 2014). According to reports:

“Strong winds and rain swept away the coconut scale insects and reduced their population. As a result, the new leaves are able to grow green normally,” Romulo Davide, an entomologist at the UPLB (Maslog, 2014, p. 1, paragraph 4)
Prevention and treatment of severe infestation of pests and diseases such as *cadang-cadang* (disease) and *Brontispa longissima* (pest) is a major concern of the Philippine Coconut Authority and the Bureau of Plant and Industries, both of which are under the Ministry of Agriculture (FAO and APCC, 2013; Ranada, 2014). The PCA addressed these issues through replanting and rehabilitation programs (FAO and APCC, 2013).

In the case of coconut oil from copra, moisture content and meat surface cleanliness of the stored copra influenced the occurrence, growth and abundance of fungi (Morantte, Palomar, & Lim, 1986). *Aspergillus niger, A. oryzae, A. tamarii, A. flavus var. columnaris, Penicillium nigricans and P. bialoweinzense* were found to infect sun-dried copra (Morantte et al., 1986).

### 3.2 Demographic environment

#### 3.2.1 Population and ethnicity

The Philippines’ population was estimated at 107,668,231 in July 2014, making it the 13th most populated country in the world (Central Intelligence Agency, n.d.-a). The majority of the population is aged 15-64 years (the working age class), making the country’s workforce really strong (Philippine Statistics Authority, 2014b). Filipinos have a life expectancy is 72 years, which implies that the people have long years of productivity (Central Intelligence Agency, n.d.-a).
Camarines Sur’s population is approximately 1.7 per cent of the national population of which 57 per cent belong to the working age class (details are shown in Table 1 below) (Philippine Statistics Authority, 2014a). The population growth rate is 0.6 per cent, which is lower than the national rate of 1.8 per cent (Central Intelligence Agency, n.d.-a; Province of Camarines Sur, n.d.).

The majority of the Philippine population belong to the Tagalog ethnic group, which is also home to the country’s official language – Tagalog (Central Intelligence Agency, n.d.-a). Camarines Sur belongs to the sixth largest ethnic group, the Bikol ethnicity, who usually use the Bikol dialect (Central Intelligence Agency, n.d.-a). The Bikol ethnic group is divided further into smaller ethnicities depending on the province. Each province uses different languages for communicating. The Camarines Sur province also uses several Bikol dialects. In this research alone, there were at least three Bikol dialects used. As mentioned in the previous section of this chapter, all five districts of Camarines Sur was covered which means there were informants who spoke the Rinconada, Partido and “Bikol Naga” dialects.

Table 1 Demographical details of Camarines Sur Province (time series)

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2007</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>1,822,371</td>
<td>1,693,821</td>
<td>1,551,549</td>
</tr>
<tr>
<td>Urban</td>
<td>353,130</td>
<td>276,878</td>
<td>463,573</td>
</tr>
<tr>
<td>Rural</td>
<td>1,469,241</td>
<td>1,416,943</td>
<td>1,087,976</td>
</tr>
<tr>
<td>Male</td>
<td>931,604</td>
<td>867,573</td>
<td>791,338</td>
</tr>
<tr>
<td>Female</td>
<td>890,767</td>
<td>826,248</td>
<td>760,211</td>
</tr>
<tr>
<td>Annual growth rate (1990-2000, 2000-07, 07-10)</td>
<td>1.62</td>
<td>1.22</td>
<td>1.74</td>
</tr>
<tr>
<td>Sex ratio (number of males for every 100 females)</td>
<td>104.6</td>
<td>105.0</td>
<td>104.1</td>
</tr>
<tr>
<td>Household population</td>
<td>1,818,699</td>
<td>1,690,203</td>
<td>1,549,388</td>
</tr>
<tr>
<td>Male</td>
<td>928,882</td>
<td>864,906</td>
<td>789,954</td>
</tr>
<tr>
<td>Female</td>
<td>889,817</td>
<td>825,297</td>
<td>759,434</td>
</tr>
<tr>
<td>Number of households</td>
<td>364,472</td>
<td>335,163</td>
<td>288,172</td>
</tr>
<tr>
<td>Population density (square kilometres)</td>
<td>331</td>
<td>308</td>
<td>282</td>
</tr>
<tr>
<td>Proportion by age group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 4</td>
<td>12.3</td>
<td>13.3</td>
<td>13.9</td>
</tr>
<tr>
<td>0 - 14</td>
<td>37.9</td>
<td>40.2</td>
<td>40.8</td>
</tr>
<tr>
<td>15 - 64</td>
<td>57.4</td>
<td>55.2</td>
<td>55.0</td>
</tr>
<tr>
<td>18 and over</td>
<td>55.3</td>
<td>52.9</td>
<td>52.5</td>
</tr>
<tr>
<td>60 and over</td>
<td>7.1</td>
<td>6.8</td>
<td>6.5</td>
</tr>
<tr>
<td>65 and over</td>
<td>4.7</td>
<td>4.6</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Source: (Philippine Statistics Authority, 2014a)
3.2.2 Literacy, education and labour

The literacy rate is defined as the percentage of the population who can read and write. It is divided into two: simple literacy, which means basic reading and writing skills, and functional literacy, which means basic reading, writing and computational skills (Philippine Statistics Authority, 2014b). In 2008, the literacy rate in the Philippines was 95 per cent, and the functional literacy rate was 86 per cent (Central Intelligence Agency, n.d.-a; Philippine Statistics Authority, 2014b). Camarines Sur had a lower rate of 81 per cent for functional literacy (Province of Camarines Sur, n.d.).

The Philippines education system was highly influenced by the American colonisers in late 1800s (Clark, 2009). Filipino families value education because it will ensure the person will have the opportunity to be a productive person with a well-paying job or a successful entrepreneur (UNESCO, 2011). However, there are differences in urban and rural areas for the quality of education; urban areas usually have an advantage over rural areas (Clark, 2009; UNESCO, 2011). In rural areas, especially in provinces, such as Camarines Sur, enrolment from primary school to secondary school drops to 25 per cent, which means that for every four children in primary school, only one proceeds to secondary school; this does not count the children who do not finish secondary school and the children who do not enrol in school at all (Philippine Statistics Authority, 2014a). What the data may not show is the quality of learning of people in the Philippines and the access to a conducive environment for education.

Approximately 4.4 million jobs must be generated each year to employ the growing workforce, two-thirds of which come from rural areas (Shively, 2001). The International Labour Organisation (n.d.) data showed that the labour force participation in the Philippines, as of 2013, was at 64 per cent and, of these, 31 per cent were employed in the agriculture sector (see Figure 9).
Figure 9 Time series graph showing the share of agriculture in total employment in the Philippines (Philippine Statistics Authority, n.d.)

### 3.2.3 Urbanisation

Almost half of the Philippine population lives in urban areas and this is growing fast, at 2.16 per cent annually (Central Intelligence Agency, n.d.-a). The influx of people going to urban areas is due to the lack of employment opportunities in the rural areas. In the province of Camarines Sur, three-quarters of the population are rural settlers (as shown in Table 1) (Philippine Statistics Authority, 2014a).

### 3.3 Socio-cultural environment

#### 3.3.1 Social behaviour

In the Philippines, the family is the centre of the social structure and includes extended families, such as grandparents, aunts and uncles and their families, and non-blood-related honorary relations such as godparents and family friends (Kwintessential, n.d.-a).

In traditional Filipino culture, parents are superior to their children, teachers to their students, and bosses to their subordinates. The implication of this is a high power distance. The power distance
index (PDI) was developed by Geert Hofstede to measure cultural dimensions (Hofstede & Bond, 1984). PDI reflects how much a culture does or does not value hierarchical relationships and respect for authority, and the degree to which the subordinate and less-powerful members of organisations and institutions in a culture accept that power is distributed unequally (Hofstede, n.d.; Kwintessential, n.d.-b; Sweetman, 2012). PDI is one of the six socio-cultural measures developed by Hofstede. Others are individualism versus collectivism (IDV), masculinity versus femininity (MAS), uncertainty avoidance index (UAI), long term orientation versus short term normative orientation (LTO), indulgence versus restraint (IND) (Hofstede, n.d.).

In the Philippines the power distance is 94, the fourth highest in the world, and is opposite to New Zealand, which is the fourth lowest in the world, at 22 (Clearly Cultural, n.d.; Sweetman, 2012). This clearly supports the idea that social inequality is accepted and expected by those in inferior social positions, such as farm labourers (Kritz, 2011). For example, in the coconut industry, pricing has been an issue but most of the coconut producers will just accept the status quo. One article reads:

“Senior-level people get no information, and believe that they have nothing to improve upon, and junior-level people do not bring ideas forward. It’s hard to innovate under these conditions.” - (Sweetman, 2012).

Although this particular statement does not consider different personalities, backgrounds and experiences of people, it is a general statement among people in organisations (Sweetman, 2012). This particular analysis applies to farms as well; and means that user innovations are not communicated for fear of being too forward.

### 3.3.2 Cuisine

Coconuts play a vital role in Philippine cuisine. Camarines Sur is one of the provinces in the region that is known for its dishes that use coconut milk, called “gota” by locals. Coconut milk is an essential ingredient in many Filipino dishes, snacks known as “kakanin” and desserts. This means that there is also a large amount consumed locally, especially in Camarines Sur.

Coconut oil is used for frying foods and Filipino families consume roughly 1 litre of oil per week (Author’s observation during data collection). About one-third of total oil production is retained for domestic consumption (Vinay Chand Associates, n.d.).
3.4 Political/Legal environment

3.4.1 Country name

Philippines is the conventional short form for Republic of the Philippines. Its local long form is *Republika ng Pilipinas*.

3.4.2 Government

The Philippines was one of the islands in the Pacific included in the Hispanic colonisation in the 16th century. The country was ceded to United States of America following a Spanish-American war in 1898; it became a self-governing commonwealth in 1935, then later on occupied by Japan in 1942 following World War II (Arcilla, 1971; Zaide, 1938).

“Philippines is a republic with a presidential form of government wherein power is equally divided among its three branches: executive, legislative and judicial” (Official Gazette, n.d., p.1, paragraph 1). The heads of both the executive and legislative branches of government are chosen by election by registered voters who are at least 18 years old at the time of election, while the head of the judicial branch is appointed by the president of the Philippines (Nolledo, 1987).

The president of the Philippines appoints the cabinet members. The cabinet members, also known as ministers or, in the case of the Philippines, cabinet secretaries, act as the alter ego of the president, executing the power of the Office of the President in their respective departments (ministries) (Official Gazette, n.d.). The Department of Agriculture (DA), “is the government agency responsible for the promotion of agricultural development by providing the policy framework, public investments, and support services needed for domestic and export-oriented business enterprises” (Department of Agriculture, n.d., p. 1, paragraph 3). The primary concern of the department is to, “Improve income and generate work opportunities for farmers, fishermen and other rural workers”; further, in fulfilment of its mandate, it shall encourage people participation in agricultural development (Department of Agriculture, n.d. p.1, paragraph 4).
The Philippine Coconut Authority (PCA) is an attached agency of the Department of Agriculture. PCA is the sole government agency under the DA tasked to oversee the development of the coconut industry in all its aspects and to ensure that the beneficiaries and direct participants of such growth will be the coconut farmers (Philippine Cococnut Authority, n.d.).

The function of the PCA is to:

- “Formulate and promote a strategic and comprehensive development programme for the coconut and the wider palm oil industry in all its aspects;
- Implement and sustain a nationwide coconut planting and replanting, fertilisation and rehabilitation, and other farm productivity programmes;
- Conduct research and extension works on farm productivity and process development for product quality and diversification;
- Establish quality standards for coconut and palm products and by-products; and, develop and expand the domestic and foreign markets;
- Enhance the capacities and ensure the socio-economic welfare of coconut and palm farmers and farm workers.” (Philippine Cococnut Authority, n.d., p. 1, paragraph 5)

3.4.3 Political issues around the coconut industry

The Coco Levy Fund and the Comprehensive Agrarian Reform Programme (CARP) are the two main issues of the coconut industry in the Philippines and all informants mentioned them.

The commodity boom in the early 1970s gave rise to the government’s imposition of the Coconut Consumers Stabilisation Fund (commonly known as the coco levy) (David, Intal, & Balisacan, 2009). The coco levy is an export tax imposed by the government of the Philippines to all coconut oil exports; this lowered the domestic prices of coconut products which, in effect, depressed the incomes of coconut producers, especially low-income smallholders (Warr, 2002).

“The levy was aimed at protecting domestic consumers from a sharp rise in the price of coconut oil in the world market and partly at raising funds for the development of the...
coconut industry. Some of the revenue from this levy was used up to buy up to 80 per cent of the coconut oil milling industry, which was then reorganised under a newly created and privately owned company, United Coconut Oil Mills which eventually acted as a monopsonist buyer of coconut in the farm sector.”-(David et al., 2009, pp234-235).

However, allegedly, the administration of such funds was corrupt and the funds were misappropriated (Warr, 2002) The coconut levy was lifted when world prices of coconut oil fell in 1982 and it was replaced by a ban on coconut exports to protect the coconut oil mills (David et al., 2009). Up until the present time, coconut farmers are still seeking justice related to the coco levy fund (Philippine coconut Authority, 2014).

Although not exclusive to the coconut industry and more with the rice and corn industry, CARP is one of the two biggest political issues in the coconut industry in the Philippines. There is a long history of attempts for land reform in the Philippines instituted to address rural poverty and agrarian unrest (Balisacan & Hill, 2003). The land ownership issues date from the Spanish colonial era where there was a highly skewed distribution of land ownership; these issues about tenancy injustices were meant to be addressed by law through a Presidential Decree signed in 1987 to redistribute all agricultural land to tillers while providing fair compensation to the owners (Balisacan, 2003). This programme is allegedly a sham and that justice for Filipino farmers is far from reality owing to massive bloodshed throughout the years, killing of farmers who are vocal about their plight and treating leaders of farmers’ groups as criminals (Cervantes, 2014). Due to unresolved land reform issues, the just share of agricultural produce and tenancy agreements was still a major concern among coconut farmers (OXFAM, 2014). Agrarian issues such as access and control to land is closely related to rural poverty in the Philippines (OXFAM, 2014).

3.5 Macroeconomic environment

Philippines is categorised as a lower, middle income country, or a developing economy (The World Bank, n.d.-b) According to World Bank data, 70 per cent of the world’s poor who live in rural areas consider agriculture as their main source of income and employment (The World Bank, n.d.-a). In the Philippines, agriculture employs 30 per cent of the population (Philippine Statistics Authority, 2014b). This coincided with the data from the 1980s where the coconut industry was identified to support
over 15 million people, nearly one third of the total population (Food and Agriculture Organisation, 2011).

Coconut, referred to as the “prince of palms”, was once very important in the social economy of the Pacific region, including the Philippines, because of its role in the survival of the pioneer settlers and because it served as a primary cash income for their descendants (Harries et al., 2004). However, it is now marginalised with the present dominance of palm oil and threats of future imperatives for genetically modified rapeseed (Harries et al., 2004). Coconuts occupy 23 per cent of Philippines agricultural land (FAO, n.d.).

In the Philippines, coconut was mainly a smallholder crop (FAO, n.d.). It is estimated that coconuts are grown in approximately 1.6 million coconut farms of which 71 per cent of the landholdings are five hectares or smaller, and only about 3per cent are larger than 50 hectares (FAO, n.d.). This meant that most coconut farms were already divided into smaller farms in contrast to coconuts’ history of being a Hacienda crop. Coconut regions host some of the largest numbers of rural poor (Dy & Reyes, n.d.). This could be attributed to land tenure insecurity as most coconut farmers are tenants on the land that they farm(OXFAM, 2014). As farmer-tenants, coconut farmers have to share at least half of their produce with the landowner (OXFAM, 2014).

“Without access to their own land and lack of necessary capital to support agricultural production, farmer-tenants have little choice but to enter into shared net produce agreements with land owners, often splitting net profit on a 50/50 basis. This severely limits farmers’ ability to move beyond subsistence-level agriculture” – OXFAM (2014, p.12)

Coconut is the second largest source of agricultural income in Camarines Sur next to palay (rice) (Philippine Statistics Authority, 2014a). This means that there are a vast number of farmers who are supported by the coconut industry and whatever problems that may occur in the industry will greatly affect the livelihood of many people in Camarines Sur. It goes without saying that the economy of the province is vulnerable to risks in the coconut industry.
3.6 Technological environment

3.6.1 Copra production requirement

“Between 5,000 and 6,000 coconuts are required to produce one ton of copra and, in practical terms, 60 per cent of the copra weight ends up as oil although theoretically it can be 64 per cent but can also be 55 per cent in inefficient mills. Many oil mills are using very old equipment, often being repaired and it is difficult to maintain a level of capacity utilisation...” (Vinay Chand Associates, n.d., p. 1, paragraph 11).

Using this number, the requirement to produce one ton of oil is approximately 10,000 coconuts. The price of coconut forecast by The World Bank for 2015 was US$ 1,100 per metric ton (MT). This means that each coconut is valued at 11 cents. An experienced farm worker can manually dehusk 2,000 nuts per day (Bawalan, 2014). This does not, however, translate into an income of $220 per day because dehusking is just one stage of the copra process; the other stages are harvesting, splitting and drying. There are also other costs between production and export, such as, but not limited to, transport and securing of legal documents. Finally, it is not every day that coconut gets harvested.

3.6.2 Antiquated technology used in copra production

Evidence from a video of copra production from 1925 shows the process by which copra is produced has not changed much in the last 90 years (Rogge, 2012). Frames from the video were captured and are shown as Figures 10, 11 and 12, below. Figure 13 shows the current processing for harvesting coconut and producing copra.

As mentioned in the previous section (Section 3.5 p. 37), coconuts in the Philippines are a smallholder crop and, therefore, investments in technologies for copra production are costly for the farmers. New technologies tend to take place in rich skill-abundant countries while the poor countries use traditional low-productivity slow-changing technologies (Koren & Tenreyro, 2007).
Also, the Philippines’ high power distance index (as mentioned in Chapter 3 Section 3.3.1) makes it hard to innovate because small farmers make do with what they have instead of lobbying for government support to invest in machinery that would be useful in making copra production efficient.

Figure 10 Coconut harvesting in 1925; manual harvesting of nuts and use of farm animals to transport via land or the creation of a raft to transport by water (Rogge, 2012)
The outer covering is withdrawn after maceration, the fibre that it bears is utilised in the manufacture of matting, brushes, rope etc...

The nut is broken up in order to extract the pulp which is then known as copra.

The copra is then allowed to dry in the sun.

It is despatched to Europe so as to extract the oil used above all in soap manufacture.

Figure 11 Dehusking and deshelling of coconut (Rogge, 2012)

Figure 12 Drying coconut meat and sacking dried copra (Rogge, 2012)
3.7 Global environment

Coconuts are grown in at least 93 countries around the world, with an estimated land area of 12.44 million hectares (FAO and APCC, 2013; Foale, 2003). Ten coconut products are exported on a large scale globally; these are: copra, coconut oil, desiccated coconut, coconut milk, milk powder, cream, coco chemicals, shell charcoal, activated charcoal and coir-based products (Australian Centre for International Agricultural Research, 2006). Of the coconut products exported, coconut oil is the largest in terms of quantity. Data from 2005 showed that the Philippines was the largest exporter of coconut products in the world; 10 years later, Indonesia was found to be the largest, making Philippines the second largest on the list (Australian Centre for International Agricultural Research, 2006; International Trade Centre, n.d.-b).

Philippines is one of the 34 charter member nations that founded the Food and Agriculture Organisation of the United Nations in 1945 (Food and Agriculture Organisation, 2011). In 1957, the UN FAO established the FAO Group on Coconut and Coconut Products, which is the only
intergovernmental forum for specialised consultations between exporting and importing countries about problems affecting the world coconut economy, and for the exchange of views on ways of solving arising difficulties (World Trade Organisation, 1965).

The Philippines maintains institutional and technical arrangements with international organisations throughout the world such as, but not limited to:

- APCC – Asia and Pacific Coconut Community
- IPGRI - International Plant Genetic Resources Institute
- FOSFA - The Federation of Oils, Seeds and Fats Associations Ltd
- COGENT - The International Coconut Genetic Resources Network
- BUROTROP - Bureau for the Development of Research on Tropical Perennial Oil Crops
- NIOP - National Institute of Oilseed Products
- Codes Alimentarius International Food Standards

Membership and association with international organisations ensures the Philippines remains in the forefront of the global economic arena (Philippine Coconut Authority, n.d.-c).

3.7.1 Coconut production

“World coconut production in 2012 in whole nuts is estimated at 71.3 billion nuts or 12.5 million metric tons in copra equivalent. The Asia-Pacific region account for approximately 88.5 per cent of total global nut production” - (FAO and APCC, 2013, p. 38)

Coconuts are largely produced in the Philippines. They rank third and fourth in the list for top agricultural production and value, respectively (see Table 2).
Globally, the Philippines is one of the top three coconut producing countries. It used to be the top producing country, until it was overtaken by Indonesia in 2008 (Australian Centre for International Agricultural Research, 2006; Vinay Chand Associates, n.d.). Figure 14 below, shows a map of the top coconut producing countries in the world using Food and Agriculture Organisation (FAO) data from 2009.
3.7.2 Coconut exports

Production does not always translate into exports. In the case of coconut in the Philippines, coconut dominates the list of top ten agricultural exports (Table 3). There are three coconut product streams that are exported: coconut oil streaming from copra, copra cake (or copra meal, the residue of coconut oil milling), and desiccated coconut. The value of copra cake is low because even though it is in the top four for agricultural exports in terms of quantity, it does not feature in the top ten in terms of value.
Table 3 Philippines top ten commodities by export quantity and export value

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Quantity (t)</th>
<th>Commodity</th>
<th>Value (1000 USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bananas</td>
<td>2046743</td>
<td>Coconut (copra) oil</td>
<td>1425446</td>
</tr>
<tr>
<td>Coconut (copra) oil</td>
<td>826721</td>
<td>Bananas</td>
<td>471152</td>
</tr>
<tr>
<td>Sugar Raw Centrifugal</td>
<td>580735</td>
<td>Sugar Raw Centrifugal</td>
<td>354853</td>
</tr>
<tr>
<td>Cake of Copra</td>
<td>314338</td>
<td>Coconuts Desiccated</td>
<td>286766</td>
</tr>
<tr>
<td>Molasses</td>
<td>300417</td>
<td>Pineapples Canned</td>
<td>193467</td>
</tr>
<tr>
<td>Pineapples</td>
<td>263019</td>
<td>Milk Whole Dried</td>
<td>166440</td>
</tr>
<tr>
<td>Pineapples Canned</td>
<td>205163</td>
<td>Tobacco, unmanufactured</td>
<td>131063</td>
</tr>
<tr>
<td>Coconuts Desiccated</td>
<td>108867</td>
<td>Fruit Prep Nes</td>
<td>124153</td>
</tr>
<tr>
<td>Fruit Prep Nes</td>
<td>95806</td>
<td>Cigarettes</td>
<td>118434</td>
</tr>
<tr>
<td>Pineapple Juice Concentrate</td>
<td>89492</td>
<td>Food Prep Nes</td>
<td>111397</td>
</tr>
</tbody>
</table>

Source: (FAOSTAT, 2012)

Globally, Philippines's exports represent 20.26 per cent of world exports for coconuts. It is ranked second to Indonesia. Philippines top three importing countries are the United States of America, Netherlands, and Indonesia with 43 per cent, 29 per cent, and four per cent, respectively (International Trade Centre, n.d.-b).
3.7.3 Coconut producers as price takers and risks thereof

As a commodity, the price of coconut oil and copra depends on world market price for edible oils; coconut producers are price takers because, for them, the price is already a given (The World Bank, 2014a; Vinay Chand Associates, n.d.). However, there are factors that make the domestic the prices vary and world prices do not explain most of these variations (Baffes & Gardner, 2003; Vinay Chand Associates, n.d.).

Over the past years, the price of coconut oil in the world market has been declining (Australian Centre for International Agricultural Research, 2006; The World Bank, 2014a); it is forecast to continuously decrease until 2025 (The World Bank, 2014a, p. 23). Commodity prices are volatile and poor countries, such as the Philippines, are more vulnerable to supply shocks (those which could be caused by local environmental and climactic factors) (International Fund for Agricultural Development, n.d.; Jacks, O’Rourke, & Williamson, 2011; Koren & Tenreyro, 2007) and the Philippines, as a major exporter of coconut products in the world, faces a high volatility risk.
Chapter 4
Exploring Camarines Sur’s coconut oil supply chain

“We have no right to express an opinion until we know all of the answers.” (Cobain, n.d., p. 1, paragraph 11)

This chapter describes the methods used to collect and analyse the data from the case studies. This chapter discusses the research strategy and the method by which the informants were identified.

4.1 Research strategy

Denscombe (2010) explains that the strategy to be used in a research project should be linked to the purpose of the research. This research provides an in-depth analysis of the supply chain for coconut oil in the Philippines. A non-experimental research model was used in this type of research where there is no active manipulation of variables or no treatment to take place (Salkind, 2012). One type of non-experimental research is qualitative research that examines individuals, institutions, and phenomena gaining an in-depth understanding of its behaviour and the reasons thereof. Qualitative research has the ability to represent the views and perspectives of the participants in the study (Yin, 2011; Yin, 2010). Since the objective of the research was to identify the supply chain of coconut oil and to understand whether small coconut producers perceived benefits of complying with production standards, a qualitative approach was considered an appropriate method of collecting information.

4.1.1 The case study method of research

As defined in the article of Perry (1998), case study research is a research method based on interviews that is often used at a postgraduate level and involves a body of knowledge. Eisenhardt (1989) defined a case study as a research strategy that focused on understanding the dynamics presented within single settings. According to Sterns, Schweikhardt, and Peterson (1998), the objectives of research are around conducting applied, problem-solving research; developing a new theory, and testing existing theory. The case study method was chosen here because, according to
Perry (1998), it is rigorous and coherent and well-suited to answering the ‘how’ and ‘why’ questions posed in this study.

4.2 Choice of research method

The desired outcomes of the research were to be able to describe the supply chain of coconut oil, identify the production standards for coconut oil, and determine the attitude of smallholders towards these standards. The substantive issue being researched was the question of whether there was a premium paid for better quality copra. The selection of the research design was based on the research questions. Analysis of the issue will be inductive in nature.

The choice of research method depends on what the researcher wants to know and the resources available for the study (Davidson & Tolich, 2003). In describing the supply chain of coconut oil, an understanding of modes of engagement observed between buyers and sellers is required. This could only be concluded through questions about the system in place of the buyers and sellers and questions related to their interaction with the other members of the supply chain. Since qualitative research uses open-ended questions, this method was deemed appropriate for the research (Woodford, 2014).

The selection of cases is an important aspect of case study analysis (Eisenhardt, 1989). The concept of population is crucial because it defines the entities from which the research data are drawn (Eisenhardt, 1989). Using several case studies, instead of using just one case study, allows cross-case analysis to be used for richer analysis (Perry, 1998).

A fundamental component of case study research is the unit of analysis – the “case” (Yin, 2014). The unit of analysis should be defined and bound (Yin, 2014). The units of analysis in this research were the chains supplying the supermarket and the supply chains supplying the public market. These cases – coconut oil from the supermarket chain and coconut oil from the public market chain, proved to be a single case from the producer to the consolidator to the miller, and separate cases from the miller downstream to the dealers and then to the distributors. However, this finding did not affect
the goals of the research, which were to describe the supply chain of coconut oil, identify the production standards for coconut oil, and determine the attitude of smallholders towards the standards.

Sufficient access to data for potential cases is fundamental in selecting cases to study (Yin, 2014). According to Yin (2014), the cases must be chosen to illuminate the research questions. Denscombe (2010) added that all case studies have to be chosen based on their relevance to the issues being researched. However, practical conditions such as budget, proximity and resources available should also be considered in choosing cases to study. The province of Camarines Sur was the chosen geographical boundary of this research not only because it houses one of the largest copra oil millers in the Philippines but also because the smallholders’ vernacular was the same as the Author’s. This meant that in-depth interviews would be more open because there was no language barrier. Cases were the supply chains for coconut oil sold in either supermarkets or public markets. These were assessed through the actors involved.

In the interviews, open-ended questions were used and the informants were able to offer their insights beyond the prepared interview questions. This research strategy was commonly used for qualitative research due to its inductive nature. In guiding the structure of the interview process, a list of questions was prepared and these questions were the main points for the analysis of results. The prepared questions (Appendix B) served as the backbone of the interview; however, additional inputs from the informants were duly noted and considered in the preparation of the results.

4.3 Method of data collection

4.3.1 How the interviews were arranged

Key informants’ contact details were gathered prior to data collection. Emails were sent to authors of Philippine journals, officers of the national coconut industry associations, officers of the government institution mandated to oversee the development of the coconut and palm oil industries, business owners and friends who might know people engaged in the coconut oil business. It was, however, very frustrating that out of the numerous emails sent, only one person replied, and this was due to the fact this person was someone acquainted with the author. What happened in the process of
obtaining potential interview schedules was not very surprising to the author. Research is often viewed as intrusive in the Philippines. In the World Bank’s development indicators, Philippines was one of the countries with the lowest number of researchers in proportion to its inhabitants (The World Bank, 2014b).

Preliminary contact through email is only possible for certain actors in the chain. Most producers and public market sellers do not have access to the internet. As a result, communication with these actors was carried out during data collection. For formal interviews, letters were prepared and delivered to the business locations or offices. Some interviews were more informal than the others but times to meet still had to be personally booked to explain the purpose of the research. What was planned to be a week of contacting informants turned into several weeks although it was undertaken simultaneously along with the interviews. The setting up of interviews was carried out through personal visits and with phone calls to follow-up on availability.

4.3.2 Identification and sampling of informants

Initial informants were identified based on their knowledge and familiarity with a particular stage of the coconut oil supply chain. Thereafter, a snowball sampling method was employed (Biernacki & Waldorf, 1981). Persons identified during the interviews as being more knowledgeable about the next stage of the supply chain were added to the list of key informants. Since the nature of the research to follow a chain, most of the respondents were connected to each other but were not necessarily in one location. There were times when travel would take more time than at others. All modes of public and private transport were used in this research.

Theoretical saturation is “the phase of qualitative data analysis in which the researcher has continued sampling and analysing data until no new data appear and all concepts in the theory are well-developed” (Morse, 2004, p. 1, paragraph 1). The proposed number of interviews was approximately 40 but only 27 interviews were actually conducted. This was when the interviews started to become repetitive and no new information that mattered in the research was emerging. The information necessary to analyse the results had already been acquired, thus, conducting more interviews was not necessary. Table 4 summarises the key informants interviewed.
Table 4 Number of informants interviewed and their location/representation

<table>
<thead>
<tr>
<th>Stage of the Supply chain</th>
<th>No. of informants</th>
<th>Particulars / location (Municipality/City)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>1</td>
<td>Philippine Coconut Authority</td>
</tr>
<tr>
<td>Market Support</td>
<td>1</td>
<td>United Coconut Associations of the Philippines</td>
</tr>
<tr>
<td>Consumer (household)</td>
<td>1</td>
<td>Pili</td>
</tr>
<tr>
<td>Consumer (business)</td>
<td>2</td>
<td>Pasacao, Libmanan</td>
</tr>
<tr>
<td>Public market seller</td>
<td>3</td>
<td>Naga City, Pili</td>
</tr>
<tr>
<td>Supermarket seller (small)</td>
<td>2</td>
<td>Naga City</td>
</tr>
<tr>
<td>Distributor/dealer</td>
<td>1</td>
<td>Pasacao, Naga City</td>
</tr>
<tr>
<td>Miller (official)</td>
<td>1</td>
<td>Pili</td>
</tr>
<tr>
<td>Miller (process of milling)</td>
<td>1</td>
<td>Pili</td>
</tr>
<tr>
<td>Miller (process of testing for moisture content)</td>
<td>1</td>
<td>Pili</td>
</tr>
<tr>
<td>Consolidators</td>
<td>6</td>
<td>Tinambac, Nabua, Pasacao, Iriga City</td>
</tr>
<tr>
<td>Producer (big)</td>
<td>2</td>
<td>Minalabac, Iriga City, Tinambac</td>
</tr>
<tr>
<td>Producer (small)</td>
<td>5</td>
<td>Libmanan, Pasacao</td>
</tr>
</tbody>
</table>

4.3.3 Actual method of interviews

Data were gathered through semi-structured interviews and was documented through two recording devices, the actual recording machine and the recording application on a mobile phone. This was to ensure that data would not be lost, in case one of the two devices malfunctioned. All informants were educated about the interview process and were asked to sign the consent form.

The selected informants were interviewed using a semi-structured interview. The unstructured or semi-structured interview is a type of qualitative interview where the researcher has prepared some question topics beforehand, but improvises as the interview continues based on the responses of the informant (Myers & Newman, 2007).
During the conduct of the interview, questions were added to the initial set of questions because there were key factors that had not been considered during the preparation of the questions. The questionnaire was changed as the interviews progressed, depending on the information the informants provided. Using a semi-structured interview allowed for this type of adjustment.

### 4.4 Choice of subject area/location

Camarines Sur was the chosen geographical boundary for this research because, as mentioned in Chapter 3, the province was one of the Philippines’ largest coconut producing provinces and the top coconut producing province in the Bicol Region. Figure 7 shows a map of Camarines Sur that is colour-coded, based on the five legislative districts. The encircled towns were the towns where data were collected. Note that each of the districts was represented in this research including the ones encircled in red, which were the two cities of the province. Pili, which is the capital town of Camarines Sur was also included in the areas where data were collected.

The province has islands that can only be reached by boat. The municipalities where interviews were conducted were all located in the main island of Camarines to reduce risks associated with travel in the Philippines. Nevertheless, all five districts were represented in the sample and several of the consolidators interviewed described their interactions with producers from the islands.

### 4.5 Limitations and constraints

The geographical boundary of Camarines Sur was large enough to have a complete set of respondents along the supply chain. However, only one miller was still operating in Camarines Sur at the time of this study. Two other millers had stopped operating in recent years when the production of coconut in the province declined. Three different respondents were interviewed at the surviving mill to cover different aspects of its operation relevant to this study. These three employees included an informant on the business/trading side, an informant who explained the refining process and machinery used, and an informant who explained the process of testing for moisture content.
In conducting qualitative research, it was important that the informants were knowledgeable about the subject of the interview. This meant that the informants, in their capacity, should be able to answer the questions relative to the particular stage of the supply chain that they were in. It should be noted that the list of respondents in Table 4 did not include big supermarket sellers. This was because most, if not all, the big supermarkets operating in Camarines Sur were operating on a national scale and the identification of respondents was difficult. Local managers would defer to their head offices in other parts of the country or simply refuse the interview invitation.

The non-response problem was not confined only to large supermarkets. Most of the businesses invited to participate in the interview refused to be interviewed, some being almost rude. In one instance, the security guard assigned to a business told the author that their manager was out having a break and that she should return at 5:30 pm. However, to the author’s surprise, the store was already closed at 5:30 pm.

Weather in the country was also a challenge. High temperatures, ranging from thirty-four to thirty-eight degrees Celsius, made travel difficult. Some interviews had to be cancelled towards the end of the data collection period when a typhoon hit Camarines Sur. As farmers and participants in the coconut supply chain, prospective informants affected by the storm had more urgent matters to deal with. The province was also out of electrical power for almost a month.

In writing this research thesis, the use of dialect was a challenge. It is true that using the vernacular the author knew made the interview process easier, but the challenge lay in translating the data for analysis. This particular research had to be transcribed verbatim (both Bikol and Tagalog), then translated into English to get the data required. In some cases, there was no direct translation of the terms used; these had to be re-worded in their closest English terms or in phrases that most clearly expressed the meaning of the informant.

The informants were approached through letters and personal visits to schedule the interviews. Some of the key informants were referrals from previously-interviewed people. A research information sheet (Appendix C) was sent in advance for them to read. It was also explained before
the start of the interview. A consent form (Appendix D) was signed by the informant before the start of every interview. In two cases, informants were reluctant to sign the consent form just because they were afraid to sign any document. They verbally agreed to participate but did not sign the consent form.

Transportation could be an issue of constraint for future researchers. The author is well-versed in the public transport system and, therefore, was not constrained with long jeepney and tricycle (forms of local transport only found in the Philippines) rides along potholed roads. It also was not a problem for the author to ride with live chickens held by a co-passenger less than a metre away, or a problem to ride cramped buses that can accommodate 40 passengers but were loaded with 60.

![Figure 16 Overloaded transport vehicles (photos taken by the author during the course of research)](image)

4.6 Analysis of data

4.6.1 Explanation building

Explanation building is one of the five analytical techniques used as case study evidence. Explanation building takes place in a narrative form. Its goal is not to conclude a study but to develop ideas for further study (Yin, 2014). Explanation building in multiple case studies seeks to build a general explanation that fits each individual case, even though the cases vary in their details (Yin, 2014). This method was used in the analysis of the collected data.
Explanation building was chosen over pattern matching, time series analysis, logic models and cross case synthesis because of its iterative nature in explaining “how” or ‘why” something happened. Iteration is defined in this context as a procedure in which repetition of a sequence of operations yields results successively, each closer to a desired result. Supply chains belong to this type of analysis because a chain is a sequence of operations. The strategy of triangulation (Hill, Capper, Hawes, Wilson, & Bullard, 1998) was used to confirm the findings.

4.6.2 NVIVO Software

NVivo is a software owned by QSR International. It is a research tool widely used in transcribing, organising and preparing data gathered in qualitative and mixed method interviews for analysis (QSR International, n.d.).

4.7 Human ethics and health and safety

No application was made for human ethics clearance because the questions posed to the informants were of a non-personal nature and related to matters within the professional competence of the informants. In addition, the author was native to the area of research and was familiar with cultural and environmental sensitivities. In the interests of best practice, informants were given a copy of the Research Information Sheet and were asked to sign a consent form which stated their right to be anonymous if they chose to be and their right to withdraw from the research project at any time (Appendices C and D).

The author took every precaution necessary to avoid falling prey to criminals and limited business travel to day trips (except for bus rides going to Manila). New Zealand based travel and health insurance was valid over the duration of the research.

The author stored all equipment (laptops and external storage drives) and questionnaires in safe places. Copies of electronic data were stored in different places including cloud storage which could be accessed online.
4.8 Summary of the chapter

This chapter explained the research design adopted for this study and the logic behind the selection of cases and the process by which the informants were selected. It discussed the method of data collection and the strategy to be used for the data analysis. The following two chapters present the findings of the case studies and address the research questions.
This chapter is the first of the two results chapters. It addresses the first research question: How is the coconut oil chain in Camarines Sur organised? The following sections describe the structure of the chain, its actors and how they interact. It also provides insights on informants’ perceptions about copra quality.

5.1 Structure of the supply chain of coconut oil in Camarines Sur

5.1.1 Production stage

The coconut oil supply chain started from the coconut farm where the coconuts were harvested. Small copra producers harvested coconuts from smaller parcels of land and often bought coconut from other small coconut farmers, whereas large copra producers harvested coconuts only from their own farms. The small producers processed the coconut into copra and sold it to nearby consolidators, also known as “buy and sell traders”, whereas large producers sold their product directly to a miller in the Camarines Sur province. The consolidators played a vital role, buying copra from a number of small producers in their surrounding area and selling it to the miller of their choice, whether in the province of Camarines Sur or not.

5.1.2 Processing and trading stage

The sole miller in Camarines Sur bought copra from consolidators and large producers. In some cases, the miller forwarded the copra to millers outside the province. The millers then processed the copra into crude oil (CNO). This process has a by-product called copra meal, which was a common ingredient in animal feeds. Some of the crude oil was purchased by large dealers who then distributed it, either local oleo chemical manufacturers or pooled it with other crude oil for the
export market. The rest of the crude oil was refined, bleached and deodorised (RBD) and then sold as edible cooking oil. The edible cooking oil was then distributed to small dealers who either: (a) wholesaled it or packaged it in retail sizes for household consumers; or (b) sold it to large dealers who packaged it into large containers such as drums and 17kg containers for selling wholesale to public market vendors and industrial consumers. Some larger dealers sold RBD oil to packagers outside Camarines Sur who then packaged the oil into brands to distribute to supermarkets. Supermarkets sourced their displays of different coconut oil brands from these distributors, and their unbranded oil from the large dealers. Table 5 summarises the chain actors and their functions. Figure 17 illustrates the structure of the chain.

Table 5 Chain actors and their functions in the coconut oil supply chain, Camarines Sur

<table>
<thead>
<tr>
<th>Input</th>
<th>Process</th>
<th>Output</th>
<th>Next Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coconut farm</td>
<td>Coconut fruit</td>
<td>Harvesting, de-husking,</td>
<td>Split coconut</td>
</tr>
<tr>
<td>Small producer</td>
<td>Split coconut</td>
<td>Smoking, removing the</td>
<td>Copra</td>
</tr>
<tr>
<td></td>
<td></td>
<td>meat from the shell,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>cooking, drying</td>
<td></td>
</tr>
<tr>
<td>Large producer</td>
<td>Split coconut</td>
<td>Smoking, removing the</td>
<td>Copra</td>
</tr>
<tr>
<td></td>
<td></td>
<td>meat from the shell,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>cooking, drying</td>
<td></td>
</tr>
<tr>
<td>Consolidator</td>
<td>Copra</td>
<td>Drying (if not properly</td>
<td>Copra</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dried; otherwise,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>warehousing/ storage/</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>aggregating</td>
<td></td>
</tr>
<tr>
<td>Miller</td>
<td>Copra</td>
<td>Milling (by-product: copra meal)</td>
<td>Crude oil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refining, bleaching,</td>
<td>RBD oil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>deodorising</td>
<td></td>
</tr>
<tr>
<td>Small dealer</td>
<td>RBD oil</td>
<td>Distribution</td>
<td>17 kg containers or drum containers</td>
</tr>
<tr>
<td>Large dealer</td>
<td>Crude oil</td>
<td>Distribution</td>
<td>Truckload</td>
</tr>
<tr>
<td></td>
<td>RBD oil</td>
<td>Distribution</td>
<td>Large containers</td>
</tr>
<tr>
<td>Public market</td>
<td>17kg containers or drum containers</td>
<td>Retail packaging, selling</td>
<td>Wholesale and retail sized cooking oil</td>
</tr>
<tr>
<td>Supermarket</td>
<td>Branded and unbranded RBD oil from distributors</td>
<td>Selling</td>
<td>Branded and unbranded RBD oil from distributors</td>
</tr>
</tbody>
</table>
Figure 17 Flow chart illustrating the coconut oil supply chain in Camarines Sur (photos taken by the author during the course of research)
5.2 Supply chain actors

This section describes in detail the different actors in the coconut supply chain in Camarines Sur.

5.2.1 Producers

According to the Philippine Coconut Authority (PCA) and FAO, small farmers/producers were classified as those who farmed areas smaller than five hectares (FAO, n.d.; Trespeces, 2014). Some producers sourced coconuts solely from their own farms while others sourced coconuts from other coconut farmers, but all of them processed the coconut into copra. One thing that was consistent among the seven producers interviewed was that the small producers brought their produce to a consolidator, whereas the large producers supplied their produce directly to millers. All the producers interviewed had been producing copra for at least ten years and most of them had been exposed to the industry all their life and had inherited the business/livelihood from their parents or grandparents.

The producers provided a description of their harvest and copra processing practices (see section 5.4 of this chapter). They explained that old coconuts were better raw materials for copra because the coconut meat had become thicker. Ideally, farmers should wait 45 days between harvestings from a tree, as one participant explained:

“If the coconut is still green, you cannot harvest it yet. It just needs to be brown-ish before processed to copra. The good quality copra are the matured coconuts because even if you don’t cook it for a long time, it is already good” — Producer 7

However, there were instances when they were harvested after thirty days and so these coconuts were called ‘premature’ coconuts. They claimed that premature coconuts had softer coconut meat and, when processed into copra, become crumpled (see Figure 19, top-middle photo). For them this was a visible sign that the quality of the copra was not good. Producer 1 mentioned “...in copra, there’s good quality when it is the hard coconuts that are processed into copra. But if it is the lumbod (young coconut), it is of poor quality.”
It was also mentioned by PCA that in the past the farmers could harvest coconuts eight times a year but, due to recent weather conditions, this had decreased to seven times a year. However, copra was a cash crop for the small producers and they can seldom afford to wait for the coconuts to mature fully before harvesting and selling them. As one producer and one consolidator remarked:

“Our production takes a long process. For one, it is better to dry coconuts through sun exposure than to use other methods like UV rays. Another thing, there are but a few ‘big buyers’ for copra here in Camarines Sur. So what most farmers do is to bring their products ‘from the farm gate’ to the Municipal Level. Municipal Level gets a Php 1-2/kilo cut. Despite this, farmers grab such unfair treatment because they need the money to buy basic household commodities like soap, condiments, etc.” – Producer 3

“…most of the (producers from) coastal areas bring copra in the morning through the boat, and then upon their return, the boat is filled with food from the market. They will deliver the copra first, and then the money they get from it, they will use to buy the things they need and then head back home” – Consolidator 1

Consequently, the copra was often of lower quality and the price paid for it was heavily discounted by the consolidators. Large producers, on the other hand, were able to transact directly with millers as they have sufficient quantities of production to cover transaction costs and they, therefore, received higher prices than the small farmers. These higher prices and larger volumes generated strong incentives to harvest mature coconuts in order to maintain copra quality.

The producers’ choice of consolidator was also limited by the poor road infrastructure and transport services. In the words of one small producer:

“When it’s rainy, there is difficulty in transportation. Because we rent we have to look for rental vehicles.” – Producer 5

High per unit transport and transaction costs prevented small producers from dealing directly with millers and obliged them to deal with a small number of local consolidators.

All producers agreed that their production had decreased over recent years owing to the higher incidence of typhoons in the province. They said that it took four years for a coconut tree to recover
from a typhoon. Small producers were particularly vulnerable as, for most of them; coconut farming was their only source of livelihood.

“Q: So typhoon greatly affects your livelihood? A: Yes because this is our only means of livelihood.” – Producer 4

“Before, Luzon has the largest copra production but now, we are lagging behind... sometime seven years ago, we are constantly hit by typhoon. Production and calamities has a correlation. The sad part however is that we can’t get any support from the government.” – Producer 3

While most producers associated the quality of the copra with the quality of the coconut itself, one of the large producers appeared to be more knowledgeable and spoke about Aflatoxin and its consequences for the industry. Among the producers, he was the only one who discussed openly the need for government intervention to improve quality in the coconut chain. He suggested that the mechanised system of drying copra should be supported to help eliminate Aflatoxin-causing moulds.

“The problem in the Philippine copra is that our production is not yet mechanised. Most are still operated manually so the cost (of production) is a bit higher. Also, other countries criticise this and some even accuse our coconut products of containing Aflatoxin. Our copra faces hard competition against these other countries because since their production (of palm oil) is mechanised, their product is cheaper compared to ours. If we could have government support to mechanise the cooking of coconut instead of merely smoking it, it could have been better; we can dry our copra even during rainy season and it wouldn’t be mouldy so Aflatoxin will be avoided.” – Producer 3

Small producers were not sure where their products went once weighed and paid for by a consolidator, nor did they have much interest in processes further down the chain. “We don’t care about that (next stage of the chain) anymore. After our copra gets weighed, we don’t have anything to do with them (consolidators)”, said Producer 4. They have limited knowledge about the next stage of the process or where their product went after they sold it to the miller or to the consolidator.
The producers in Camarines Sur were not organised. All the informants interviewed claimed that they did not belong to any organisation or cooperative and they undertook all their transactions independently. One of the producers said, “All of us here are small producers of copra. Our neighbours also consider copra production as their only source of livelihood. No, we do not have any form of association.” When asked whether they belonged to an organisation that could support them in improving their harvest or copra production, Producer 2 said, “Ah, we don’t have that kind of organisation.”

All of the small producer-informants sold their products within the province, mostly at the municipal level, other small ones sold at the barangay level, owing to transport costs or ease of access. They had some freedom to choose a consolidator to deal with, but their choices were based on factors such as proximity. The amount of product that they had was also a deciding factor in where they sold it. One of the small producers said:

“If our production is 10 sacks or more, it gets picked up; otherwise, we have to rent transport to bring it to the consolidators.” - Producer 1

Large producers, however, supplied their copra directly to Cosay, the sole surviving miller in the province of Camarines Sur; the details will be discussed later in this chapter.

5.2.2 Consolidators

Consolidators were buyers and sellers of copra. They were sometimes referred to as traders and colloquially called “casa” (casa is a localised term from the Spanish word “caja”, which mean “box” or “case” usually used to store valuables)by their suppliers due to the nature of their business of lending money to farmers. They bought copra from small producers and aggregated it in a warehouse to be delivered to the miller of their choice when the price of copra would not cause them a financial loss. Some consolidators lent money to small producers in proportion to their usual supply when the small producer borrowed money in between harvests. As some of the informants put it:

“In this type of business, you really need to lend money. We are called “casa”; we didn’t even know why we are called casa. If we don’t lend money, you won’t get enough deliveries. They borrow money because the production of copra is every two months and within those times they also need money for their children’s education and they also need to maintain household expenses. As buyers we also need to consider their family
needs within that period that they are waiting for production – they need money for their vices – cockfights; they need money for occasions – weddings; they borrow around 25,000php (around 750 NDS) and if you don’t lend them, they don’t supply to you.” – Consolidator 1

“Yes, that’s (lending) necessary because for example a customer owns four hectares then their labour cost is high. Our lending amount ranges from 300php to 5,000php to the bigger ones. Sometimes others insist that it’s for emergency purposes and they ask to pay on the next copra harvest; that’s all right for us.” – Consolidator 2

Consolidators also vary in size. Some consolidators were quite small, so they have their coprasan, or the place where they sundry and sack the copra in their houses, while others are quite large, and their coprasan was a huge warehouse separate from where they lived. Most consolidators were also involved in other businesses, of which the most common was the sale of hardware and electrical supplies, and other agricultural products, such as rice and feed.

Figure 18 Left: House of a medium scale consolidator; right: Warehouse of a large scale consolidator (photos taken by the author during the course of research)

All informants attested that they had the liberty to choose which miller to bring their copra to. Some of them take their products to Cosay, the miller in Camarines Sur, while others supplied to both Cosay and millers outside of Camarines Sur, with a special mention of a particular province, Quezon. They said that as “buy and sell traders”, it was important that they paid attention to the prices so as not to incur financial losses. They did this by monitoring the prices of the different millers through
telephone calls. Some of them claimed that they preferred to supply to millers who they already knew and had established a relationship with because some millers, even with better prices, could still cheat them through the weighing scales.

Figure 19 Top images are examples of observable bad quality copra; Bottom images show the observable good quality copra (photos taken by the author during the course of research)

Most of them measured the quality of copra by simply looking at it, and would sometimes consult with reliable sellers. All said that they can do this based on experience because they had been in the business for a very long time. One consolidator stated:

“We just look at it based on experience because you can really see what kind of copra it is, if it is okay or if it has the rubber I was telling you about. The rubbery copra has a different deduction versus the really good copra. Our computation for every 50 kilos, we deduct one kilo. That deduction is explained to the customer because they might say that we are taking advantage, we explain that the computation is based on moisture content.” – Consolidator 2

Two out of the six consolidators interviewed owned a simple machine called a bansok which is an instrument used to extract samples from the sacked copra (Appendix F.1). By looking at the samples
they would be able to decide the moisture content of the copra and they enforced a suitable discount factor accordingly. According to them, the farmers knew when they were supplying good or bad quality copra and so they did not necessarily get complaints as to the discount factor they enforced. Both farmers and consolidators needed to agree to the amount of money the copra delivery was equivalent to.

All the consolidator-informants said earlier that they were aware the millers were implementing discount factors based on the moisture content of the copra (Appendix A) after it was tested in the miller’s laboratory. They received a sheet of paper (see Figure 20 below) that stated the transaction, including the total weight of their delivery, the rate of buying, the moisture content and the applicable discount factor. It served as their receipt or proof of delivery.

Figure 20 Copra delivery transaction sheet from the miller; MC and DF stand for moisture content and discount factor, respectively (photos taken by the author during the course of research)
Among the consolidators, only one openly discussed her knowledge about the quality standards that they were expected to follow. She shared her knowledge about Aflatoxin and why she thought supplying good quality copra was beneficial. She also said that the PCA were constantly monitoring the consolidators and they needed to secure a permit to operate every year. She said:

“We buy it (copra) already cooked and dried, but you see, there some copra that are not cooked well or more moist. Also, for example it rained, and they did not dry it properly, then once it is in stock, it will have moulds. There was a memorandum circulated that prohibits the export of copra with moulds because they are carriers of Aflatoxin which is dangerous to human health. The buyers said they will still buy it (mouldy copra), but if ever, there will be a huge discount, that’s why we, so as not be heavily discounted, sundries the copra so as to avoid the moulds. Contrary to what was believed in earlier times when if the copra have moulds, it is the better kind because it means it has be in stock (and could produce more oil).” – Consolidator 1

The consolidators in Camarines Sur, similar to the producers, were not organised. They explained that they agreed on the prices from the millers and they could always choose to whom to deliver their products.

“Yes, it is really the millers (who dictate the price to us). Here in Camarines Sur, we monitor the price through Cosay because that is the nearest oil mill. Even other comprada (a local term for consolidator which is used for both the person and the place where producers bring the copra) in this area relies on Cosay’s rate. But we also deliver in Candelaria Quezon. We deliver there because the price is better.” – Consolidator 2

“(We buy copra from producers) depending on the running price in the oil mill. Then of course you will factor in your profit, you will consider the expenses, labour, everything - to make a profit.” – Consolidator 4

Information as to where the product went after milling was not available to the consolidators. They just knew that the millers milled them into oil but they were not aware about what happened next or where their product went to. It was interesting though that one of the producers shared that the sole miller in Camarines Sur was also acting as a consolidator and sold the copra to other millers because
the cost of operating the mill was making them earn less than taking it to larger millers outside Camarines Sur.

“Cosay also acts as a consolidator because they don’t mill every week, they also forward to Lucena (is a province in the same region as Quezon province) especially if the price is higher in Lucena when the export demand is high; so, in effect, they are also consolidating. As producers we cannot afford trucking to go straight to Lucena.” – Producer 7

5.2.3 Miller

There was one sole surviving miller in Camarines Sur. Milling the copra into oil was the basic function of a miller. The participation of the millers was important in the industry as they were the source of the finished product, coconut oil. There were two finished products after milling: crude coconut oil and copra meal and the millers sold both. Crude coconut oil was a raw material used for oleo chemicals, manufacturing soap, shampoo and cosmetic products, and the Philippines was the top exporter of this product in the world. Copra meal was used as animal feed because it was known to be a source of high quality protein for cattle, sheep and deer. These products were not the focus of this research; however, both are mentioned in the analysis of the research questions.

Crude coconut oil is not safe for human consumption and needed to be processed further. For crude coconut oil to become edible/cooking oil, it has to undergo refining, bleaching and deodorising. After this process, the refined, bleached and deodorised (RBD) oil is stored in the milling factory and dealers collect it from there. The miller uses a truck scale to weigh the pick-up truck. The quantity of oil is then computed as the difference between the weight of the truck before and after it was filled. The miller bought copra and sold RBD oil in a separate building referred to as a ‘buying station’. Small dealers could walk in and buy smaller quantities of RBD oil, such as a 55 gallon drum and a 17 kilogram container.

The miller buys copra from producers and from consolidators at the prevailing market price. However, as shown in Figure 20, the price paid to suppliers is discounted for high moisture content. According to the miller:
“Whatever is the prevailing price, that’s the price we give but depending on the type of
copra, we will deduct the kilo.”

Thus, the suppliers were aware that their copra would be priced according to its quality. The millers
have laboratories to test the moisture content of the copra. They also followed the discount Table
(see Appendix A) provided by the Philippine Coconut Authority. PCA’s discount Table recommends
that at 14 per cent moisture content the copra should be rejected. The millers, however, did not
reject any copra delivered to them:

“We accept all kinds of copra but we have a laboratory to test the moisture content.
Then once we tested the oil out of the sample copra, we already compute using our
Tables with the corresponding discount factor for the kilo (weight) based on the quality
of the copra brought to us.”

Every sack of copra is sampled, but only to determine its price. All of the copra is accepted regardless
of its quality because “…if there is a defect, it gets refined during milling; for example, if the oil is very
yellow that looks very low quality, the refinery makes the quality good.” This was why the miller was
not worried about the presence of moulds in the copra.

The miller sells the edible oil product to dealers also known as tankers who usually pick up the
product directly from the milling factory. The tanks come in different sizes, as stated by the
informant: “…bulk, tankers. We don’t have packagers, we only have tankers: 25 tons, 30 tons, and 15
tons”. The miller does not supply directly to packagers, and has no contact with dealers after the
sale: “…it’s up to them (dealers) where to sell it. Our role is just to sell to them.” Thus, the role of the
miller ends after sale of the RBD Oil.

Some of the producers and consolidators interviewed said that the miller in Camarines Sur
sometimes acted as a consolidator and sold copra to other millers. This was clarified by the miller
who explained that un-milled copra is sold to other millers when the plant was under repair, and
occasionally to other copra buyers:

“If the plant/factory has a defect, that’s the only time that we forward it to other oil
millers but usually we do not. Sometimes we sell as buy and sell - we also sell to other
copra buyers, but that is very seldom.”
5.2.4 Dealers

Dealers, sometimes referred to as traders, were those who bought coconut oil directly from the miller to be sold further in the market, either as wholesale to distributors or repacked into smaller containers for selling to vendors and industrial consumers. They usually had targeted customers so they did not have to sell on the spot market.

The dealer interviewed in this research was a small dealer who bought oil from the miller in 17kg containers five times a month and sold in his own business to walk-in customers who ranged from public market sellers to industrial consumers.

“There are those who buy from me and they sell it in their sari-sari stores to end users. They repack it into small bottles (medya-medya) then they retail sell it to small coastal areas.”

He also sold to catering businesses in his town and one of his industrial consumers was interviewed for this research. He said, “There are vendors, and there are personal consumers. The vendors are those who are selling banana fritters, fried chicken who buy per container.”

The small dealer mentioned that the preference of his buyers was usually price-centric so he also sold palm oil as well as coconut oil. According to him:

“We also sourced from Lucena before, it is much whiter and clearer but it is pricey, so my buyers buy the cheaper. If for example coconut oil is expensive, they buy palm oil, so we also source palm oil, whichever is cheaper.”

He did not test the quality of the oil he bought from the miller but he knew that the good oils were those that were whiter and clearer in colour. He stated that the oil from the miller in Camarines Sur was quite reddish compared to the ones that were branded, but he still bought and sold it because of the price.
According to the informant, most dealers did not usually come from Camarines Sur. This was verified during the interview with the miller. When asked to provide the names dealers to interview, the miller gave eight names, including addresses, but all of them were from outside Camarines Sur.

5.2.5 Public market sellers

The public market sellers’ role in the chain was to sell oil to household consumers. They operated on a different scale, such that some were large enough to sell to smaller scale vendors and *sari-sari* stores. Sari-sari stores are small convenience stores in Filipino communities. They are perceived as a primary source of consumer items in exactly-needed amounts (Chen, 1997). The three public market vendors interviewed in this research were from different sized operations. All of them were selling in organised public markets.

Public market sellers usually sold both branded and unbranded oil. They bought 17kg containers of oil from the dealers and repacked it into retail sizes, referred to as “medya-medya”, which were 350mL in size, and even had smaller sizes, such as half or a quarter of the *medya*. One of them bought directly from the miller, which as mentioned earlier, was also operating as a buying station. That particular public market seller was located in the same town as the miller, no more than 500 metres from the buying station.

Public market sellers did not measure the quality of the oil they sold. According to them, they knew when a product was good; because of their own usage and the demand from their buyers. Also, their idea of quality was how better their food was when cooked with the oil. To quote:

“Coconut oil is good oil especially if compared to palm oil. Palm oil when used seems like there is water in it so the oil splashes.” – Public market seller 2

and;

“Coconut oil is much better. Because palm oil pops when used for frying, I’m actually scared. I turn the heat lower, and then when you fry, there are bubbles. When you fry with this (holds coconut oil), the fried food is crispy, especially chicken. And then the palm oil – you can use it for sautéing only. The coconut oil is delicious for frying.” – Public market seller 3
One of them noted, however, that the colour of coconut oil was clearer than the competing oils, i.e. palm oil. In his statement he said: “The colour of coconut oil is brighter. Businesses buy coconut oil, but households for sautéing buy palm oil. Coconut oil looks better than palm oil.” –Public market seller 1

While all of them agreed that coconut oil was the best oil to use when frying, they said that consumers still bought palm oil because of the price. To quote:

“...when the difference between palm and coconut oil becomes large enough to buy something that the consumers can use, they go with practicality.” –Public market seller 1

The same seller noted that the repacked, unlabelled oil was easier to sell than retail-labelled oil because his customers were really poor. In fact, he stopped selling coconut oil because he could earn better margins on palm oil. If he charged similar margins on coconut oil it became unaffordable to his consumers.

5.2.6 Supermarket sellers

There were different scales of supermarket sellers in Camarines Sur. The large supermarkets were chains of supermarkets owned and operated by companies outside Camarines Sur. In this research, two supermarket sellers were interviewed and both were owned and operated by people in the province.

The supermarket sellers’ role in the chain was to sell oil to the consumers. Some of the small-scale public market sellers bought their products on a wholesale basis from the supermarket. Their buyers ranged from resellers (e.g. sari-sari store vendors, merchandisers) and industrial consumers who bought from them on a wholesale basis, to household consumers who bought from them on a retail basis. One of the sellers said: “We serve to end consumers.”

The supermarkets sold both labelled and unlabelled oils (see Figure 21). The brands they sold were distributed to them either from distributors outside Camarines Sur or from the packagers (oil brand companies) outside Camarines Sur. They said that they acquired the products through an order and
delivery process. The unlabelled oils were delivered to them from a miller outside Camarines Sur, which operated on a larger scale compared to the miller in the province. According to one of the supermarket sellers, 300 pieces of 17 litre containers were delivered to them at a time. To quote:

“(We get the unlabelled ones) from Tantoco, a Lucena-based company. It is being delivered here in bulk, around 300 carboys, where every carboy has 17 litres/17 kilos.” – Supermarket seller 2

One of the supermarket sellers did not test the quality of the unlabelled oil he sold but observed the customers’ behaviour. He said that: “You will know (the quality of the oil) because the customer comes back to you. They will tell you if your product is good or bad. If it’s good they will keep on coming back, if it’s bad, they will complain.” The branded oils did not need testing because the consumers knew what they were getting and they just went for the brand they liked. The consumers did not usually ask the supermarket sellers about its quality. According to both supermarkets, the buying preference of the consumers had shifted to palm oil because of the sensitivity in pricing. However, unlike the public market sellers who sold more of the small pack sizes, which could be as small as one-fourth of the mediya (approximately 85ml), the supermarket sellers sold more of the 1 litre and half gallon packs.

Another of the supermarket sellers interviewed stated that the supply of coconut oil had decreased and consumers had switched to cheaper oils. He added:

“I heard that it will never be able to be at par with the pricing of palm oil because the resources of our coconut products are dwindling...because the typhoon hit Southern Luzon where the bulk of the coconut trees are.”–Supermarket seller 2

He also mentioned that in the past, consumers would complain that palm oil was of inferior quality but now they preferred to buy it because it was cheaper.
5.2.7 Consumers

There were two types of consumers: industrial and household. They varied in usage and preference for cooking oil. Industrial consumers prefer long-lasting oil and are willing to pay a premium for it. The household consumers, however, based their preference on price.

The consumers interviewed were both small-scale industrial consumers and household consumers. One of them bought coconut oil for frying as it could be used more than once and the taste of the food he sold was better. He purchased directly from the small dealer interviewed in this research that sold unlabelled oils, but also bought from the supermarket when the opportunity arose.

“The branded, more expensive one you can use it again, it doesn’t turn dark instantly and it doesn’t decrease (the chicken doesn’t absorb it) but the non-labelled ones we only use it for two days because it drains and gets dark. The palm oil, yes it is cheap but in the end we are at a loss. The branded one we can use for a long time. The coconut oil is better; we look at the quality of the oil. The cheap oil is gone easily so I choose the more expensive one that I can use for a long time.” – Consumer 2

The other consumer bought from the public market and was more interested in low prices than with good quality.
“I don’t know what type (of cooking oil I use) because it doesn’t have any label. Once I buy oil from the public market I pour it in my container. When buying oil, I consider the price. I don’t mind if it is not high quality or if the colour is yellowish or clear; when I see that the oil doesn’t have residue, I buy it.” – Consumer 1

Consumers generally had definite preferences about cooking oil depending on factors such as income, health awareness and frequency of usage. Quantitative research would help to reveal the relative importance of these factors in consumer purchasing decisions.

5.3 Supply chain supporting actors

This section describes in detail the government and private organisations responsible for overseeing the development of the coconut industry in the Philippines.

5.3.1 Philippine Coconut Authority (PCA)

The PCA was divided into twelve regional offices representing each of the regions. There were eighteen regions in the Philippines but the Cordillera Administrative Region and National Capital Region that had no, or very low coconut production, did not have a regional office. Also, Regions I, II, III, IV-B were combined to form one regional office because of their low coconut production. The PCA Region V, during the time of this study, was in a period of transition. The informant was the designated Officer-in-Charge (OIC) Division Chief.

The informant was contacted a few months ahead of data collection but was unable to respond as he was busy with procurements. This was understandable because, as OIC, he was performing multiple tasks in the regional office and also had to represent the region at national office meetings. The interview progressed well as the author had worked with the OIC in her previous job at the Department of Agriculture. He was very accommodating and even scanned and printed documents for this research that were not accessible online. He was also able to direct the author to some people to interview.
The OIC explained that the PCA Region V office was further divided into districts, and the largest area was Camarines Sur. He was able to provide a general overview of the coconut industry. One important thing to note was that coconut oil’s raw material was the coconut and that copra was an intermediate product. The implication is that copra cannot be used or consumed unless it is milled and/or refined. He also claimed that “The systems and practices started during the Spanish era. It is an industry dominated by traders. Both the farmers and the oil millers/processors are at the mercy of traders.”

The PCA’s role in the supply chain as a government entity is to implement the coconut industry development programmes. According to the OIC:

“…this includes programmes for production sites, regulatory - such as copra quality… we were part of those who formulated the standards for copra (with Bureau of Agriculture and Fisheries Standards). However, the standards for copra were just used as a guide and that the buyers would still have an option whether they will buy the copra product or not.”

The PCA gave the standards information to consolidators and the consolidators and traders were the ones who decided on the buying price. The OIC explained that this was because copra was a “buyers’ market”. So although the producers had no control over the pricing they would, of course, have the choice where they sold their produce. He added that there could be forms of abuse perpetrated against producers, especially when they owed the consolidators money and were forced to deliver their product to them even if the price was not very good.

The PCA classified coconut farms as at least one and a half hectares of land with 50 coconut trees. When asked about the classification of small farmers, he mentioned that below ten hectares they were considered as smallholders because, unlike other crops, the land productivity was lower and based on the space needed to grow coconuts.

The informant made mention that the Philippines used to export copra but it has been banned from exporting by the PCA due to the scarcity of local supply and also because of the rise of the Aflatoxin
issue. As mentioned in Chapter 1 (pp. 6-7), “Aflatoxins are toxic metabolites produced by certain fungi in/on foods and feeds (Cornell University, 2014).” He said that the moulds that breed Aflatoxin were the yellow-green ones (Figure 22), which were caused by too much moisture in the copra.

Figure 22 A sample of copra with grey and yellow-green moulds (photos taken by the author during the course of research)

When the quality of copra was discussed, the OIC referred immediately to moisture content and showed the author a document entitled “Copra Moisture Discount Table” (see Appendix A). The moisture content had to be measured in a laboratory and the oil mills have laboratories. He added that the coconut farmers, having no laboratories could not measure the moisture content for themselves. He claimed that measurements made at the barangay or municipal level were based on visual inspection and that farmers did not bother to dry their copra well thinking that their prices would always be discounted He said that farmers would purposefully deliver copra with a high
moisture content hoping that the additional weight would offset the discounted price, as the price would be discounted regardless of the moisture content.

He stated that six percent moisture content was the threshold for good copra. Any moisture content level higher than six percent should be discounted, as explained earlier. Conversely, if the moisture content is lower than six percent, the copra should earn a premium. In his own words:

“... instead of a discount, you will earn a premium. This is because we are promoting the better quality. However, some of the oil millers do not want it too dry because they claim that it has an effect with the processing – it should have a bit of a moisture.”

The OIC said that the wetter the copra was, the more likely it was to grow moulds. Ideally, copra with moisture content higher than fourteen percent should be rejected, but no-one rejected copra because of the tight supply. He also mentioned that:

“...if the supply of copra is very tight, the quality is being sacrificed. (This is when) no copra gets rejected by the miller and they just adjust the price by factoring a hefty discount. The oil mill requires a large amount of copra in order to operate. Actually there are a lot of oil mills in Bicol that ceased to operate due to lack of copra supply. Even our copra quality programme is on and off because of the competition for supply - you cannot prevent millers from buying (low quality copra).”

When asked about what PCA does with this quality issue he mentioned that PCA has a coconut quality improvement programme which has been “on and off” because it was disregarded when copra was in short supply. He said that in implementing this programme, not only the moisture content was considered but also the presence of Aflatoxin-related moulds and the copra coming from immature coconuts should be rejected. He said that the millers did not reject copra because the oil was cleaned during the process of refining. However, the problem was with the copra cake, also known as copra meal, which was being used as an ingredient in animal feeds. According to him:

“If the copra you crushed has moulds, all the moulds will stick to the copra cake. All of the dirt will be acquired by the animal. They said that when it is fed to the dairy cows, it contaminates the milk and the toxin is passed back on humans.”
As to other copra development schemes, he said that usually copra was a very cheap product because it was an intermediate and not a finished product. That was why there was very little incentive to invest in processing methods. He said that the drying method had not changed. There were two types of drying, sun-drying and mechanical drying. The mechanical drier was the better drying method; however, it was also very expensive for the farmer. The former took about two weeks in order to make good quality copra. While copra was a cheap product, the coconut meat was still the most valuable part of a coconut.

With regard to collaborative relationships between agents in the supply chain, the OIC emphasised the role of price fluctuations that discouraged consistent supply arrangements:

“...if you bought the copra from the producers at a high price and then days after the prices went down, you need to store it first and wait until the price goes up again, otherwise you’ll be at a financial loss.”

The author asked whether there was a fixed schedule of delivery that would prevent this from happening and he said there was no such thing. He added that the only assurance of delivery was when a producer owed the consolidator money, due to cash advances. This reference to captive relational contracts was denied by some of the consolidators as discussed later in this chapter.

In his opinion, producers can easily distinguish between good and poor quality copra through visual inspection. However, without an objective measure of moisture content it was impossible for small producers to refute the consolidator’s assessment. In addition, consolidators would aggregate deliveries from small producers and discount the entire batch if any one of the farmers delivered poor quality copra. This further diminished the incentive for small producers to supply good quality copra. Consolidators would then sundry copra that was not properly dried and deliver it as good quality copra to millers. He claimed that there was a lot of cheating going on and that the consolidators knew all the tricks.

The OIC confirmed the miller’s description of the oil milling and refining process and clarified some labelling issues. Vegetable oils are a mixture of different oils and are not purely coconut oil. Coconut oil can be distinguished, however, because it is labelled as lauric oil (see Figure 23).
The OIC recalled the history of the coconut industry noting that in the past, coconut plantations were owned by *hacienderos*, owners of large estates known as *haciendas*. Attempts to break up *haciendas* and redistribute land to smaller farmers as part of a national land reform programme are taking effect but many small coconut farmers are still operating as tenants and not as land owners. “The lack of secure access to land is closely linked to poverty, especially in rural Philippines.” (OXFAM, 2014, p. 2).

In the early 90s, PCA organised smallholders to form an organisation called SCFO or the Small Coconut Farmer Organisation where membership was limited to the farmers who owned a maximum of five hectares. The OIC mentioned that the organisation was cross-sectoral. This meant that the membership was a combination of farm owners, tenants, farm workers and other stakeholders. This project was abandoned because SCFO entered the political arena. He said:

“In the past, all of our projects went through SCFO so our approach was not individual but through the organisation. We thought that it was a good channel for our programmes because we have barangay-based federated to municipality-level, then
provincial and regional. We once had a national organisation (of SCFO) but the problem started when they entered the political arena as a Party-List. This means that we should detach from them because it is not allowed that Party-Lists are partially assisted by the government.”

Some of the members formed a coalition with the Philippine Coconut Producers Federation, Inc. (COCOFED) whose members were hacienderos. This split collapsed the SCFO.

5.3.2 United Coconut Associations of the Philippines (UCAP)

The United Coconut Associations of the Philippines (UCAP) is a non-stock, non-profit confederation of associations and organisations involved in the various activities of the Philippine coconut industry. It was established to “Unite all various sectors of the coconut industry and work for their common good; serve as centre of information about the coconut and related subjects; provide a forum for the coconut industry and/or any of its sectors; among others” (United Coconut Associations of the Philippines, n.d., p.1, paragraph 1). An Executive Director heads the UCAP Secretariat and is responsible for UCAP’s daily activities.

In the words of the Executive Director of UCAP:

“The particular stage of the supply chain we are part of is just market support. That’s our only role because we do not manufacture, we don’t produce the oil (and) we don’t sell the oil. We just gather information and provide people with market information... and then make reports.”

Part of their role as a private sector organisation was to join different committees in the Department of Agriculture and discuss issues in the World Trade Organisation (WTO) Free-Trade Agreement (FTA). They represented the different coconut industry sectors in choosing the position that they want to hold.

The office of UCAP was located in Metro Manila, nine to ten hours away from Camarines Sur. This was very strategic for them because all the eleven sectors they were serving had their offices in the
same region. The executive director named most of the eleven sectors represented in their organisation. These were:

- the coconut producing sector (also known as the farmers)
- the oil milling sector
- the oil refining sector
- the oleo chemical sector
- the desiccated coconut sector
- the virgin coconut oil (VCO) sector
- PCA – which is the government sector
- the banking sector – United Coconut Planters Bank (UCPB)
- the activated carbon manufacturers

This informant mentioned that all of these sectors contributed financially and they provided them with marketing services, such as market information, which was basically market monitoring. She added:

“The price of coconut oil is fluctuating daily so we get that market information; then that market information is translated by the millers and other end users. They convert it into the equivalent in copra – that’s their basis for buying copra. We provide them the market information – the reasons why the prices are down, (or why) the prices are up. It’s not only that, we also monitor the prices of the competing oils like palm oil, kernel oil, palm kernel oil (and) not only coconut oil which we consolidate into a daily, weekly, monthly, semi-annual and annual market report.”

The UCAP Executive Director mentioned that the coconut oil price trend in the Philippines depended on what was happening abroad as the Philippines was a price-taker. She contended that price leader countries were the ones that produced large volumes of oil, such as palm oil, soy bean oil, sunflower oil and grape seed oil. As for the prices, they gathered information from brokers who were the ones talking to the buyers, who were generally overseas clients. They relayed this information to the farmers. They checked with the oil refiners and the oil millers their price for the day; however, they did not dictate the price to the millers, and the latter usually computed their prices at the break-even point. When asked about the method by which such information is cascaded/conveyed to the millers, she answered: “Through email, they get the information around 11 o’clock in the morning.”
Talking about the challenges of the coconut oil industry in the Philippines, she mentioned that in the past the organisation spent roughly sixteen million pesos to hire a lobbyist in the United States of America to prevent them from making a law that would discriminate against coconut oil. She recalled that there had been an issue in the 80s saying that coconut oil was bad for the health because it contained saturated oils; what the general public did not know was that saturated oil coming from plants (i.e. from coconuts) was a good saturated oil because it did not have cholesterol, unlike the ones that were animal based. She added:

“And then we told them that and actually soy bean and corn oil are worse because it’s not a very stable oil. For it to be stable, they have to partially hydrogenate it to lengthen the shelf life and to make it more usable to the food industry. They actually said, because it is starchy it produces a new compound called transfatty acids, which are the ones which are bad for the health. ‘Coz it raises the bad cholesterol and lowers the good cholesterol. In the case of coconut oil, it raises the good cholesterol.”

Regarding the quality of coconut oil and the shelf life of coconut oil when it was already refined, the informant said that the coconut oil industry had issues with shelf life. It could last for a long time provided that the product was properly processed. In her own words:

“The important thing there is the moisture of the oil product. There are certain specs and standards. There are cases wherein the storage is not very careful (and) that there could be drops of water which of course would spoil the oil. But it (coconut oil) doesn’t have to be refrigerated to prolong the shelf life unlike other oils.”

The Director confirmed that copra quality was based on its moisture content, with prices discounted for moisture levels higher than six per cent. Like PCA, she made the point that bacteria developed by the moulds were eradicated in the process of refining due to exposure to high temperature levels. She also noted that while Aflatoxin did not come out in the oil, it came out in the copra meal. If copra meal was fed to animals, it was only a portion of the feed compound and so it was diluted in the process. The European requirement was set at twenty parts per billion (20 ppb) and the copra meal would still be mixed with other compounds. She said that 20 ppb was hard to comply with especially if the processing was not very careful. She added that:
“Not all moulds are harmful. We just need to watch out for the grey moulds and the yellow-green moulds. If the mould is grey, most likely, the copra has Aflatoxins. What we do is that we suggest that copra drying should be sun-drying and right after the nut splitting; it has to be dried as soon as possible. If the season is rainy, sun drying is not an option because of the moist spores. If the copra is moist, then it gets moulds...so there should be proper handling.”

When asked about who bore the risk from Aflatoxin, the Director said that it was the animals; however, there was a chance that it could be transferred to humans. This was similar to the OIC division chief of PCA’s answer. In her own words:

“...for example there’s Aflatoxin, when a cow eats it, then the cow gives milk, the milk will also be contaminated. For copra it is called b1, but with the cow it’s already n1. The Aflatoxin in milk can cause liver cirrhosis. But Aflatoxin is all over the place, not only in copra. It can also be found in peanuts, corn. The important thing really is the handling and proper drying of copra.”

While this respondent favoured sun drying, the PCA said that they were discouraging sun-drying and recommended mechanical drying.
As to the behaviour of coconut producers towards standards, the Director mentioned that coconut was referred to as the “lazy man’s crop”. She added that:

“After they harvest, especially when the copra price is high, they hurriedly sell it even if the moisture is still high. The dealer buys it at a discount. Some of them their copra is already encumbered to pay for their debt.”

As described earlier in this Chapter, small producers who are indebted to consolidators are obliged to deliver their product to them even if their price was unfavourable. She said that:

“For example they got sick, or there’s a feast, or other events, they will ask for money in advance from their buyer then once they produce the copra, it’s already encumbered. However the producers are also smart, they don’t sell their whole crop to their collector/creditor because they know the price given to them won’t be good.”

When asked whether there was discrimination in the industry of coconut oil, whether the good ones were exported and the not-so-good ones were sold in the domestic market, the Director stated that the millers did not have a preference for selling to either export or domestic markets. She said that some millers even mixed their supplies depending on where there was more profit because the oil price fluctuated and so sometimes export prices were not very good.

5.4 Production of copra

5.4.1 Manual method of production

Production of copra has not changed much over the last 90 years. In the Philippines, most copra is dried under the sun or by smoking. Mechanised drying was introduced but is not widely used. The manual method of harvesting copra is very similar among all producers. All of the producer-respondents who harvested their own coconuts were using a kawit or sanggot, which is a sharp hook attached to the end of a pole. Some of the producers paid labourers to do the harvesting and paid them by volume. This process would take them approximately four days depending on the number of
labourers they employed and the size of their harvest. The harvesting was described by one the producers as:

“First, we pull the coconuts from the coconut palm using a sanggot. We choose the hard coconut. Then we collect the coconuts that fall on the ground and put them in a wooden sled-like “hilada” which is tied to a carabao (water buffalo) and the carabao pulls it to the place where we process them into copra.” — Producer 1

The coconuts are then prepared for copra processing. They de-husk the coconut and split it.

“… after de-husking, we will bring the nuts to the copra area (coprasan). We will open the nut, then we will lie them in the place where we will cook (smoke) them. In my experience there is a secret on how to arrange it; we just throw them on top of each other. But others have different style. Some would arrange it very well in layers. The husk will be used as the firewood.” — Producer 7

Figure 25 Left: the simple machine they use for de-husking coconut; Right: coconut husks used as fuel in smoking the coconut to loosen the coconut meat from the shell (photos taken by the author during the course of research)
The split coconut is then smoked to loosen the coconut meat from its shell. There are different set-ups for smoking: some smokers are underground and others above ground; some use bamboo planks while others used hollow blocks. One of the producers with an underground set-up described it as:

“...yes we dug a hole. It’s above my head, almost just as my height.” – Producer 2

When asked about the length of time it took to smoke the split coconut, one of the producers said it could take six hours, another said seven hours while another said it could take eight hours. They also have to check whether it was well smoked, otherwise, it would have to be returned to the smoking pit until the coconut meat could be removed from the shell. As one of the producers put it:

“You can see it through the coconut shell. Then you will also see the ‘lukad’ (coconut meat) if it can already be loosened from the coconut shell. That’s it. It is already cooked. We let it cool. It takes one hour to cool down then we remove it from the cooking area. When it is already cool, we remove the copra from the coconut shell.” - Producer 2

The producers also agreed that it sometimes took more than one time to smoke the coconut meat. According to them, there was a technique in which the copra will be evenly cooked, such as by alternately arranging the copra into prone and supine positions. However, most of the times, they didn’t take the time to arrange them and just had to re-smoke the ones that were unevenly cooked. As one of them put it:

“...sometimes (you have to smoke them) three times because you will still check if it is cooked well or not. If it is not cooked well, you have to cook it once more before you sack them.” – Producer 4
5.4.2 Drying process

After the coconut meat, now called copra, was taken out of the shell, some of the producers put it into the pit again to dry while others sacked them directly ready for selling. This was noticed from the varied answers given by the producers:

“*We don’t sundry it anymore; we sack them directly after cooking.*” – Producer 4

“When it is already removed from the coconut shell, considering it is big, we tear it into smaller pieces then we bring it back to the coprasan for re-cooking.” – Producer 1

*They should already be put into sacks. After dividing them, the well-cooked ones are all ready to be put into sacks. Then it will already be delivered. After putting them into sacks, we do not solar dry it anymore, they are delivered immediately.*” – Producer 2

There was no pattern from which it can be concluded that producers who sacked them directly were usually the smaller producers who brought their copra to the consolidators because Producer 2 was a large producer but sacked the copra directly unlike Producer 1 who further dried it.
Two of the producers noted that there was a premium in selling solar-dried copra, which agreed with the statement of UCAP. However, one of them also claimed that they were not doing it because it took a long time to dry it under the sun and they needed the copra immediately. He added that it could be cooked better if it were solar dried. And the price was good, because there was no discounting as the copra was of good quality. According to them:

“Ah, there’s something I like to add. The copra which has a high price is the solar-dried one.”—Producer 1

“Basically, we have two ways of cooking copra. One is sun drying and the other is smoking. Solar dried copra has less mould. Sunlight contains UV rays that helps to prevent the growth of moulds in coconuts.”—Producer 3

5.4.3 Forwarding to the next stage

The producers forward their products either to the consolidator or directly to the millers. Producers who supply directly to millers are more likely to earn premium prices than those supplying consolidators. Those who supplied copra directly to the millers were usually large producers who could fill up at least a jeepney, (a jeep-like vehicle that carries around twenty-four passengers—see Appendix E) which could transport up to three tonnes of copra. Those who did not produce as much were forced to sell theirs to consolidators due to high unit transport and transaction costs. According to some of the informants:

“After I process here, I bring it to the consolidator. It is already sacked. It gets weighed, and then I get paid. Sometimes I hire a tricycle, sometimes jeepney. Sometimes my sibling who is also a consolidator picks it up from me. He still sundries it.”—Producer 5

“I bring it to the nearby consolidator. Here in our barangay. Not in the centre of the town.”—Producer 4

There are several ways of transporting the copra. Smaller amounts of copra are delivered to consolidators using hired tricycles (a three-wheeled motorised vehicle—see Appendix E). Larger amounts of copra are delivered to consolidators or millers using jeepneys or trucks. Large producers used trucks to deliver copra to the millers.
Chapter 6
The premium for high quality copra and the small farmers’
opportunity for advantage

“The effectiveness of a supply chain depends to a large extent on the
relationships among its members; but often one company in a chain may
attempt to influence other members in order to achieve its own goals and
promote its own interests.” - Munson et al. (1999, p.1)

6.1 Research synthesis

The aim of this research is to improve small farmer access to quality premiums for copra in the
Philippines’ domestic coconut oil supply chain. The rationale behind this study is that coconut oil is a
very important industry in the Philippines and large numbers of small farmers depend on copra
production for their livelihood. As discussed in Chapter 2, asymmetric information leads to
asymmetric power, which creates opportunities for opportunistic behaviour (Bhattarai et al., 2013).
Evidence from other countries suggests that small farmers are aware of the premium paid for
meeting buyer requirements relating to quality standards (Barham & Chitemi, 2009; Bernard &
Spielman, 2009; Devaux et al., 2009; Fischer & Qaim, 2012; Markelova et al., 2009).

The literature reviewed in Chapter 2 led to the identification of research questions to better
understand the coconut oil supply chain in Camarines Sur. Key informants were purposively selected
for their particular knowledge of the supply chain. Data were collected through semi-structured
interviews with producers, consolidators, a miller, a dealer, public market sellers, supermarket
sellers, consumers, and private and public agencies servicing the coconut oil supply chain. Analysis of
the data attempted to answer the following research questions:

1. How is the coconut oil supply chain organised?
2. Is there a premium for high quality copra?
3. How can small farmers of copra take advantage of such premiums?
The previous chapter addressed the first research question. This chapter addresses questions two and three. As presented in Chapter 2, the ability of small farmers to capture premiums for high quality copra is influenced by three factors, namely: the measurement and enforcement of standards, asymmetries in information and power along the value chain, and the cost of collective action in lobbying and marketing activities.

6.2 Is there a premium for high quality copra?

Copra quality is measured by its moisture content because excessive moisture encourages moulds that produce Aflatoxin. Aflatoxin does not affect the quality of coconut oil but it does affect animal feeds produced from copra meal. Copra meal (otherwise known as copra cake) is a by-product of copra after the oil milling process. It is a major ingredient in the formulation of feed for livestock (see pp. 45) and is widely traded in world markets. Copra quality standards are relevant to the sustainability of the coconut oil chain because feed contaminated with Aflatoxin compromises food safety in livestock chains.

Guidelines for premiums (discounts) applied to prices paid for copra of low (high) moisture content are published by the PCA and the small farmers interviewed in this study were aware of the premiums - a finding consistent with results from study conducted by Blandon et al. (2009) in Honduras. Small farmers understand the premiums as discounts applied to the quantity of copra that they deliver to a consolidator. To illustrate this point, if a small farmer delivers 100kg of copra and its moisture content is assessed as 13.5 per cent, this high level of moisture would attract a published price discount of 10 per cent. In this case, the farmer is effectively paid for only 90kg of the copra delivered and views the discount as 10kg of copra lost through poor quality.

However, the PCA does not monitor the discounts applied by buyers when they purchase copra from small farmers. The miller measures the moisture content of the copra that it buys from consolidators and larger farmers, but consolidators do not provide this service. Consequently, small farmers, acting individually, have no way of validating the discount imposed by the consolidators. All of the consolidators interviewed claimed that they could assess the moisture content based on visual inspection of the copra and their experience. Regardless of the consolidators’ ability to make
accurate assessments of moisture content, and regardless of their honesty in applying the published discounts, smallholders perceive that consolidators are not rewarding them fully for high quality copra because the assessments of moisture content are subjective. As some of the informants revealed in the interview:

“Q: So you agree on these terms (discounting their high moisture copra)
A: Yes, just so...

Q: You already accept the discounts that they deduct from you?
A: You can’t do anything about it

Q: Really?
A: They are the ones who dictate the price. There is no benefit in supplying quality copra, it’s just the same, there is no such thing as standards” – Producer 7

And another informant shared:

“Q: Do you get a good price from the consolidator if your copra is good?
A: Not really. Whatever type of copra you bring it’s the same price, whatever is their prevailing price

Q: So what if you sell them not so good copra, is the price the same?
A: Yes it’s just the same. They don’t add anything extra. But if the copra is bad, for example because of the typhoon it has become rotten, they decrease (the kilo or the price) so much.” – Producer 4

Even if consolidators could afford to purchase equipment to measure the moisture content of copra, they may have no incentive to do so as this would reduce their information advantage over small farmers. The power extracted from this advantage is evident in statements made by some of the consolidators interviewed:

“Sometimes they (producers) wet it (copra) on purpose to make it heavier. It can be seen. It is usually moist. .... But nowadays, there isn’t much of those shenanigans. Before, they
used to have those kinds of techniques but then they see that we decrease the price 
when we see that it’s wet so they learned from it.” – Consolidator 1

“Some sellers wet the copra so that the weight will be heavier, and we reject that kind of 
practice.” – Consolidator 2

Under these conditions, small farmers have little incentive to improve their copra quality (by delaying 
harvesting and properly sun drying the copra) as they perceive that their efforts will not earn the 
 premiums they deserve. Larger farmers who are able to sell directly to the miller (owing to their 
lower unit transaction and marketing costs) are less exposed to the threat of opportunistic behaviour 
as the miller does measure the moisture content of their copra. Unlike their smaller counterparts, 
larger farmers are able to capture premiums for high quality copra.

It is important to distinguish between quality premiums paid for copra and quality premiums paid for 
coconut oil. Whereas small farmers could, in the absence of opportunistic behaviour, earn premiums 
for high quality copra, they cannot capture premiums for high quality, branded coconut oil as the 
quality of coconut oil is determined largely by processing and packaging and not by the quality of 
copra from which it extracted. Farmers big and small are aware of this and consequently have very 
little interest in the chain beyond their own point of sale.

“We don’t care about that anymore. After our copra gets weighed, we don’t have 
anything to do with them” – Producer 4

Although farmers are not affected by different prices paid for branded and unbranded oil in 
supermarkets and public markets (Pabuayon & Medina, 2009) they are affected by quality premiums 
paid for copra. The inability of smallholders to capture known premiums for high quality copra has 
serious implications for the sustainability of the coconut oil chain, and hence for their livelihoods. As 
discussed in Chapter 3, coconut is a critically important industry in the Philippines because it 
produces the country’s largest export commodity in terms of value and supports the vast majority of 
small farmers, who comprise 71 per cent of the coconut producers in the country. The information
and power asymmetries that discourage small farmers from delivering properly dried copra increase the risk that copra meal sold into livestock chains will be contaminated with Aflatoxin and pose a threat to animal and human food security. Such a food safety scare would be devastating for the industry and small coconut farmers. The Melamine contamination of milk in China showed that food safety scares tend to exclude small farmers from supply chains because buyers give preference to larger suppliers who can afford to comply with food safety standards and processes (Barboza, 2008; Gale & Hu, 2009; Jia, Huang, Luan, Rozelle, & Swinnen, 2012; Pei et al., 2011).

6.3 How can small farmers of copra take advantage of copra quality premiums?

The preceding analysis emphasises an important point, namely that the final research question addressed in this section is concerned not only with the ability of small coconut farmers to benefit from price premiums, but also the sustainability of the industry and smallholder livelihoods. To recap, the fundamental problems are that (a) small farmers have little incentive to deliver high quality copra because they cannot verify its moisture content and are therefore vulnerable to opportunistic behaviour, real or perceived; and (b) small farmers cannot sell directly to millers owing to high unit transaction and marketing costs. Even if small farmers pool their copra and sell it collectively to millers, it is unlikely that millers will bear the cost of assessing the quality of each farmer’s product separately.

The literature suggests two possible solutions to these problems. The first approach is to address the underlying problem of asymmetric information by introducing a third-party to measure the moisture content of copra at the point of sale. While it could be argued that the PCA has a mandate to finance this service, the costs of servicing large numbers of individual transactions scattered throughout the countryside will undoubtedly exceed the PCA’s financial means.

The second approach is to promote collective marketing through farmer organisations. Collective action in marketing can reduce unit marketing and transaction costs, strengthen farmers bargaining power and facilitate capital pooling to finance lumpy assets like storage facilities, mechanical dryers and measuring equipment (Markelova et al., 2009). Organised producer groups monitoring their own
food safety standards through collective action often become attractive to buyers who are looking for ways to ensure traceability and reduce transaction costs (Narrod et al., 2009).

Attempts made by the PCA in the 1990s to promote small coconut farmer organisations (SCFOs) for farmers owning fewer than five hectares of land were abandoned for political reasons (see Chapter 3, Section 5.3.1). This, and problems experienced with the coco levy, discouraged farmers from joining organisations and it will take a concerted effort to establish viable farmer organisations for the purpose of collective marketing. However, this may be the most cost-effective way of safeguarding the chain and the interests of small coconut farmers.

A key issue in this approach is to establish farmer marketing organisations that reward members who invest the equity capital needed to finance value-adding assets. Traditional marketing cooperatives do not, whereas New Generation Cooperatives and Investor-share cooperatives do (Chaddad & Cook, 2004). Future efforts to revive collective marketing should, therefore, consider these hybrid cooperative models rather than traditional cooperatives. As practised in India since 2012, government support, not necessarily financial, is an important tool for producers to be informed about producer organisations and trained in their management (Trebbin, 2014). The PCA could play a key role in the establishment of these organisations.
Chapter 7
Recommendations

"He who asks a question is a fool for five minutes; he who does not ask a question remains a fool forever." (Chinese proverb, n.d.)

7.1 The role of the Philippine Coconut Authority

The Philippine Coconut Authority (PCA) is the government agency that has a mandate to “oversee the development of the coconut industry in all its aspects and to ensure that the beneficiaries and direct participants of such growth are coconut farmers’.

In the short term, PCA should at least monitor consolidators to ensure transparency in the measurement of copra moisture content. This could be challenging given that the organisation is publicly funded and lacks manpower. However, unless properly monitored, standards set by the PCA will continue to be abused by local buyers to the detriment of small farmers and the entire industry owing to the threat posed by Aflatoxin. The agency should continue to distribute information about the consequences of Aflatoxin and its link to poor quality copra.

In the longer term, PCA should lobby the Department of Agriculture to consider a hybrid marketing cooperative model for the revival of the SCFOs. In the recent FAO high level expert consultation on coconut sector development in the Asian and the Pacific regions, one of the recommended regional strategies is to:

“...facilitate and support the formation of economically viable Coconut Farmers’ Cooperatives, Coconut Producer Societies or Coconut Producer Companies; facilitate the formulation of their respective Coconut Industry Strategic Plans and Roadmaps; and facilitate periodic agricultural surveys to ensure evidence-based policy formulation and program planning.” - (FAO and APCC, 2013 p. 4)
The establishment of hybrid marketing cooperatives would create incentives for farmers to pool their capital and, together with other investors, finance their own drying facilities and measuring equipment. The PCA should facilitate this process, provide the necessary training and information, help these cooperatives negotiate supply contracts with millers, and perhaps offer some seed funding to kick-start their drying and distribution operations. This would promote broad-based development in poor coconut farming communities while addressing the Aflatoxin problem that is threatening the industry.

7.2 Recommendations for future research

Due to limitations in time, and the focus of this research on small farmers, large dealers and oil manufacturers were not part of the interview pool. It would be useful to elicit the views of these large buyers on quality requirements as there may be opportunities for small coconut farmers to realise premiums in these markets if, through collective action, they could guarantee the quality of their copra and overcome the high unit transaction and marketing costs that discourage large buyers from dealing with small producers.

7.3 Contribution to knowledge

This research gave an understanding about how members of the coconut oil supply chain in Camarines Sur interacted. According to the informant from the Philippine Coconut Authority in Region 5, no research such as this has been published yet and so this could be useful for them.

There has been a decrease in research regarding the coconut industry in the Philippines over the years. As shown in Figure 27 and Table 6, the Philippine Journal of Science compared the number and subjects of coconut industry research in the Philippines since 1906 (F. M. Dayrit, n.d.).
Figure 27 Number of papers on coconut from year 1906 to 2005 (Dayrit, n.d., page 239).

Table 6 Breakdown and classification of topics of coconut papers published in the Philippine Journal of Science between 1906-2005

<table>
<thead>
<tr>
<th>Period</th>
<th>Coconut oil production, quality &amp; analysis</th>
<th>Other Coconut products</th>
<th>Biology, Agronomy, Entomology</th>
<th>Chemical/enzyme modification</th>
<th>Total coconut papers in PJS</th>
<th>Ave: papers per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1906 to 1926</td>
<td>12</td>
<td>4</td>
<td>9</td>
<td>1</td>
<td>26</td>
<td>1.3</td>
</tr>
<tr>
<td>1927 to 1941</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>6</td>
<td>0.4</td>
</tr>
<tr>
<td>1946 to 1971</td>
<td>8</td>
<td>16</td>
<td>2</td>
<td>2</td>
<td>28</td>
<td>1.1</td>
</tr>
<tr>
<td>1972 to 1986</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>14</td>
<td>1.0</td>
</tr>
<tr>
<td>1987 to 2005</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>5</td>
<td>10</td>
<td>0.6</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>32</td>
<td>14</td>
<td>9</td>
<td>84</td>
<td>0.8</td>
</tr>
<tr>
<td>% of total</td>
<td>35%</td>
<td>38%</td>
<td>17%</td>
<td>11%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Source: (Dayrit, n.d., page 240).

This research provided understanding and made connections among the actors of the coconut oil supply chain in Camarines Sur. As most of the actors were not aware of the next stage in the process after their particular stage in the supply chain, this research would give them a valuable knowledge which could assist them in gaining information and could aid in decreasing the information asymmetry in the supply chain.
Moreover, this research contributed to the social agribusiness side of the coconut industry in the Philippines, especially in Camarines Sur. Much has been written about the scientific side of the coconut industry, such as the pest and diseases of coconuts, the different uses of the coconut, and the processing of harvesting and processing of coconuts. There was, however, almost no literature pertaining to the social side of the coconut industry including the behaviour of the actors in the agribusiness chain and the disadvantages facing small farmers.

It has been mentioned in different reports that the coconut farmers were poor. This qualitative research dug deep into the primordial reason of their financial and power disadvantage in the chain; and although the small farmers did not realise this, the analysis of their statements made it apparent that there was an opportunity for them to gain access to price premiums. With sufficient government support, the small farmers of copra can raise their farm incomes and contribute to an efficient and high-quality supply chain for coconut oil.

However, only a little can be done to raise small farmers’ incomes through improving the prices they would receive from producing better quality copra. Perhaps an alternate research issue should be considered – to focus on the small proportion of the overall copra income such as the income split between land owners and tenants. Perhaps redefining tenure relationships in favour of small farmers could improve their income more, but that is likely to be a major political issue.
References


Bernard, T., & Spielman, D. J. (2009). Reaching the rural poor through rural producer organizations? A study of agricultural marketing cooperatives in Ethiopia. *Food policy, 34*(1), 60-69. doi: [http://dx.doi.org/10.1016/j.foodpol.2008.08.001](http://dx.doi.org/10.1016/j.foodpol.2008.08.001)


Philippine Coconut Authority. (n.d.-e). Copra Moisture Discount Table. Retrieved May 24, 2015 from Philippine Coconut Authority Region 5 Office


Salkind, N. J. (2012). *100 questions (and answers) about research methods* : SAGE.


Trebbin, A. (2014). Linking small farmers to modern retail through producer organizations—Experiences with producer companies in India. *Food policy, 45*, 35-44.

Trespeces, A. (2014, May 2014). [Personal communication with Philippine Coconut Authority OIC Executive director for Region 5].


World Trade Organization. (1965). Food and Agriculture Organization machinery for consultation and action on commodity problems (pp. 7-8).


Yin, R. K. (2010). *Qualitative research from start to finish* : Guilford Press.


Appendix A

Tables

A.1 Copra moisture discounts

<table>
<thead>
<tr>
<th>Moisture Content (per cent)</th>
<th>Discount (per cent)</th>
<th>Moisture Content (per cent)</th>
<th>Discount (per cent)</th>
<th>Moisture Content (per cent)</th>
<th>Discount (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>11</td>
<td>5.8</td>
</tr>
<tr>
<td>5.1</td>
<td>1.8</td>
<td>8.1</td>
<td>2.1</td>
<td>11.1</td>
<td>6</td>
</tr>
<tr>
<td>5.2</td>
<td>1.6</td>
<td>8.2</td>
<td>2.2</td>
<td>11.2</td>
<td>6.1</td>
</tr>
<tr>
<td>5.3</td>
<td>1.4</td>
<td>8.3</td>
<td>2.3</td>
<td>11.3</td>
<td>6.2</td>
</tr>
<tr>
<td>5.4</td>
<td>1.2</td>
<td>8.4</td>
<td>2.4</td>
<td>11.4</td>
<td>6.3</td>
</tr>
<tr>
<td>5.5</td>
<td>1</td>
<td>8.5</td>
<td>2.6</td>
<td>11.5</td>
<td>6.4</td>
</tr>
<tr>
<td>5.6</td>
<td>0.8</td>
<td>8.6</td>
<td>2.7</td>
<td>11.6</td>
<td>6.5</td>
</tr>
<tr>
<td>5.7</td>
<td>0.6</td>
<td>8.7</td>
<td>2.8</td>
<td>11.7</td>
<td>6.6</td>
</tr>
<tr>
<td>5.8</td>
<td>0.4</td>
<td>8.8</td>
<td>2.9</td>
<td>11.8</td>
<td>6.7</td>
</tr>
<tr>
<td>5.9</td>
<td>0.2</td>
<td>8.9</td>
<td>3</td>
<td>11.9</td>
<td>6.8</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>9</td>
<td>3.1</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>6.1</td>
<td>0.1</td>
<td>9.1</td>
<td>3.4</td>
<td>12.1</td>
<td>7.2</td>
</tr>
<tr>
<td>6.2</td>
<td>0.2</td>
<td>9.2</td>
<td>3.6</td>
<td>12.2</td>
<td>7.4</td>
</tr>
<tr>
<td>6.3</td>
<td>0.3</td>
<td>9.3</td>
<td>3.7</td>
<td>12.3</td>
<td>7.6</td>
</tr>
<tr>
<td>6.4</td>
<td>0.4</td>
<td>9.4</td>
<td>3.8</td>
<td>12.4</td>
<td>7.8</td>
</tr>
<tr>
<td>6.5</td>
<td>0.5</td>
<td>9.5</td>
<td>3.9</td>
<td>12.5</td>
<td>8</td>
</tr>
<tr>
<td>6.6</td>
<td>0.6</td>
<td>9.6</td>
<td>4</td>
<td>12.6</td>
<td>8.2</td>
</tr>
<tr>
<td>6.7</td>
<td>0.7</td>
<td>9.7</td>
<td>4.1</td>
<td>12.7</td>
<td>8.4</td>
</tr>
<tr>
<td>6.8</td>
<td>0.8</td>
<td>9.8</td>
<td>4.2</td>
<td>12.8</td>
<td>8.6</td>
</tr>
<tr>
<td>6.9</td>
<td>0.9</td>
<td>9.9</td>
<td>4.3</td>
<td>12.9</td>
<td>8.8</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>10</td>
<td>4.7</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>7.1</td>
<td>1.1</td>
<td>10.1</td>
<td>4.8</td>
<td>13.1</td>
<td>9.2</td>
</tr>
<tr>
<td>7.2</td>
<td>1.2</td>
<td>10.2</td>
<td>4.9</td>
<td>13.2</td>
<td>9.4</td>
</tr>
<tr>
<td>7.3</td>
<td>1.3</td>
<td>10.3</td>
<td>5</td>
<td>13.3</td>
<td>9.6</td>
</tr>
<tr>
<td>7.4</td>
<td>1.4</td>
<td>10.4</td>
<td>5.1</td>
<td>13.4</td>
<td>9.8</td>
</tr>
<tr>
<td>7.5</td>
<td>1.5</td>
<td>10.5</td>
<td>5.2</td>
<td>13.5</td>
<td>10</td>
</tr>
<tr>
<td>7.6</td>
<td>1.6</td>
<td>10.6</td>
<td>5.3</td>
<td>13.6</td>
<td>10.2</td>
</tr>
<tr>
<td>7.7</td>
<td>1.7</td>
<td>10.7</td>
<td>5.4</td>
<td>13.7</td>
<td>10.4</td>
</tr>
<tr>
<td>7.8</td>
<td>1.8</td>
<td>10.8</td>
<td>5.5</td>
<td>13.8</td>
<td>10.6</td>
</tr>
<tr>
<td>7.9</td>
<td>1.9</td>
<td>10.9</td>
<td>5.6</td>
<td>13.9</td>
<td>10.8</td>
</tr>
<tr>
<td>14.0</td>
<td>REJECT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: (Philippine Coconut Authority, n.d.-e)
A.2 Coconut production area in the Philippines per region

Bicol (Region V) has the highest number of coconut production area in the Philippines.

<table>
<thead>
<tr>
<th>Region</th>
<th>Region Name</th>
<th>Year 2009</th>
<th>Year 2010</th>
<th>Year 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR</td>
<td>CAR</td>
<td>281</td>
<td>281</td>
<td>295</td>
</tr>
<tr>
<td>I</td>
<td>Ilocos Region</td>
<td>11540</td>
<td>11600</td>
<td>12023</td>
</tr>
<tr>
<td>II</td>
<td>Cagayan Valley</td>
<td>13611</td>
<td>13661</td>
<td>17578</td>
</tr>
<tr>
<td>III</td>
<td>Central Luzon</td>
<td>24088</td>
<td>24088</td>
<td>23126</td>
</tr>
<tr>
<td>IV-A</td>
<td>CALABARZON</td>
<td>343580</td>
<td>438673</td>
<td>335777</td>
</tr>
<tr>
<td>IV-B</td>
<td>MIMAROPA</td>
<td>179321</td>
<td>181784</td>
<td>146522</td>
</tr>
<tr>
<td>V</td>
<td>Bicol Region</td>
<td>447763</td>
<td>452319</td>
<td>496513</td>
</tr>
<tr>
<td>VI</td>
<td>Western Visayas</td>
<td>119663</td>
<td>119922</td>
<td>135928</td>
</tr>
<tr>
<td>VII</td>
<td>Central Visayas</td>
<td>128707</td>
<td>128708</td>
<td>129725</td>
</tr>
<tr>
<td>VIII</td>
<td>Eastern Visayas</td>
<td>383546</td>
<td>434881</td>
<td>479266</td>
</tr>
<tr>
<td>IX</td>
<td>Zamboanga Peninsula</td>
<td>369013</td>
<td>372971</td>
<td>425186</td>
</tr>
<tr>
<td>X</td>
<td>Northern Mindanao</td>
<td>300773</td>
<td>301257</td>
<td>303628</td>
</tr>
<tr>
<td>XI</td>
<td>Davao Region</td>
<td>375922</td>
<td>375884</td>
<td>375277</td>
</tr>
<tr>
<td>XII</td>
<td>SOCCSKSARGEN</td>
<td>169254</td>
<td>174054</td>
<td>182507</td>
</tr>
<tr>
<td>CARAGA</td>
<td>CARAGA</td>
<td>219107</td>
<td>219121</td>
<td>391312</td>
</tr>
<tr>
<td>ARMM</td>
<td>ARMM</td>
<td>315490</td>
<td>315645</td>
<td>208643</td>
</tr>
<tr>
<td>TOTAL</td>
<td>Philippines</td>
<td>3401709</td>
<td>3564850</td>
<td>3663307</td>
</tr>
</tbody>
</table>

Source: (FAO and APCC, 2013)

A.3 Historical prices of Philippine coconut oil products

I. Coconut oil monthly average, 1996 to 2006 (price per kilogram)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>22.23</td>
<td>21.78</td>
<td>21.63</td>
<td>23.19</td>
<td>25.95</td>
<td>27.08</td>
<td>27.9</td>
<td>27.54</td>
<td>28.08</td>
<td>31.70</td>
<td>32.86</td>
<td>32.59</td>
<td>26.88</td>
</tr>
<tr>
<td>1999</td>
<td>32.79</td>
<td>32.39</td>
<td>30.81</td>
<td>35.42</td>
<td>36.67</td>
<td>35.44</td>
<td>28.67</td>
<td>27.91</td>
<td>28.93</td>
<td>29.14</td>
<td>30.10</td>
<td>30.55</td>
<td>31.57</td>
</tr>
<tr>
<td>2002</td>
<td>18.06</td>
<td>18.7</td>
<td>18.47</td>
<td>20.44</td>
<td>20.34</td>
<td>21.93</td>
<td>22.24</td>
<td>22.36</td>
<td>22.84</td>
<td>23.20</td>
<td>25.51</td>
<td>26.06</td>
<td>21.68</td>
</tr>
<tr>
<td>2003</td>
<td>26.72</td>
<td>25.7</td>
<td>24.27</td>
<td>23.02</td>
<td>23.33</td>
<td>23.75</td>
<td>23.74</td>
<td>23.12</td>
<td>23.50</td>
<td>26.09</td>
<td>28.03</td>
<td>32.31</td>
<td>25.30</td>
</tr>
<tr>
<td>2004</td>
<td>32.35</td>
<td>35.71</td>
<td>40.94</td>
<td>44.27</td>
<td>41.12</td>
<td>41.72</td>
<td>38.41</td>
<td>36.60</td>
<td>37.07</td>
<td>37.31</td>
<td>37.58</td>
<td>38.25</td>
<td>38.44</td>
</tr>
<tr>
<td>2005</td>
<td>37.25</td>
<td>35.07</td>
<td>37.12</td>
<td>37.45</td>
<td>35.06</td>
<td>34.69</td>
<td>31.71</td>
<td>28.85</td>
<td>29.07</td>
<td>30.85</td>
<td>30.20</td>
<td>28.52</td>
<td>32.99</td>
</tr>
<tr>
<td>2006</td>
<td>29.46</td>
<td>29.41</td>
<td>29.04</td>
<td>30.85</td>
<td>31.39</td>
<td>30.60</td>
<td>31.74</td>
<td>31.81</td>
<td>31.17</td>
<td>31.80</td>
<td>33.57</td>
<td>40.30</td>
<td>31.76</td>
</tr>
</tbody>
</table>

Source: (Philippine Coconut Authority, n.d.-f)
II. Refined Coconut Oil (RBD) monthly average, 1996 to 2006 (price per kilogram)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>22.55</td>
<td>22.62</td>
<td>22.53</td>
<td>23.88</td>
<td>24.68</td>
<td>27.02</td>
<td>25.12</td>
<td>23.88</td>
<td>23.20</td>
<td>23.53</td>
<td>23.45</td>
<td>23.36</td>
<td>23.82</td>
</tr>
<tr>
<td>1998</td>
<td>24.40</td>
<td>24.11</td>
<td>23.64</td>
<td>25.13</td>
<td>27.76</td>
<td>28.82</td>
<td>29.93</td>
<td>29.71</td>
<td>30.37</td>
<td>33.84</td>
<td>35.75</td>
<td>35.57</td>
<td>29.09</td>
</tr>
<tr>
<td>1999</td>
<td>35.95</td>
<td>35.57</td>
<td>33.89</td>
<td>37.87</td>
<td>39.67</td>
<td>38.80</td>
<td>32.90</td>
<td>31.24</td>
<td>32.39</td>
<td>32.24</td>
<td>33.30</td>
<td>33.66</td>
<td>34.79</td>
</tr>
<tr>
<td>2002</td>
<td>20.43</td>
<td>21.03</td>
<td>20.66</td>
<td>22.61</td>
<td>22.91</td>
<td>24.15</td>
<td>24.81</td>
<td>25.32</td>
<td>24.78</td>
<td>25.35</td>
<td>27.28</td>
<td>28.02</td>
<td>23.95</td>
</tr>
<tr>
<td>2004</td>
<td>35.71</td>
<td>38.72</td>
<td>44.31</td>
<td>48.36</td>
<td>45.17</td>
<td>45.66</td>
<td>42.16</td>
<td>39.82</td>
<td>40.75</td>
<td>40.49</td>
<td>40.51</td>
<td>41.49</td>
<td>41.93</td>
</tr>
<tr>
<td>2005</td>
<td>40.29</td>
<td>38.35</td>
<td>40.21</td>
<td>39.87</td>
<td>38.23</td>
<td>37.10</td>
<td>34.46</td>
<td>32.28</td>
<td>32.10</td>
<td>33.35</td>
<td>32.90</td>
<td>31.51</td>
<td>35.89</td>
</tr>
<tr>
<td>2006</td>
<td>31.96</td>
<td>31.77</td>
<td>31.86</td>
<td>32.90</td>
<td>33.65</td>
<td>33.47</td>
<td>33.82</td>
<td>34.37</td>
<td>33.85</td>
<td>35.07</td>
<td>36.85</td>
<td>43.91</td>
<td>34.46</td>
</tr>
</tbody>
</table>

Source: (Philippine Coconut Authority, n.d.-f)
Appendix B

Interview questions checklist

B.1 Informants:

A. Small farmers/producers
B. Consolidators
C. Millers (large and small)
D. Traders
E. Supermarket
F. Public market vendors
G. Consumers

B.2 Things to cover:

1. The particular stage in the coconut oil chain they are part of
2. The process by which they acquire the product
3. The process by which they forward the product to the next stage
4. The challenges they encounter in the process
5. Their understanding of quality (in their particular stage of the chain)
   a. How do they gauge the quality
   b. Is the measurement tangible?
   c. Is there a benefit for supplying a quality product? Is it a price premium benefit?
   d. Do they know anything about quality standards?
      i. If yes, do they wish to comply?
      ii. If no, why not?
6. If they are aware of the next stage of the process (where their product goes and where it goes after that and where it is sold?)
7. Their perception of collective action (if ever they raise it)
Appendix C

Research information sheet

You are invited to participate in a project entitled: Quality premiums for small farmer copra in the Philippines: Case studies of the coconut oil chain in Camarines Sur

The aim of this project is to analyse the domestic Philippines’ coconut oil supply chains to assist small farmers of copra. We want to understand how the public markets and supermarket coconut oil supply chains are organised. We would also like to learn whether there is a premium for high quality copra. We would like to hear about your experiences in the supply chain.

Participation in this project involves completing an interview with the researcher. The interview will take no longer than 90 minutes and will be voice recorded. This voice recording will be deleted once the notes have been written up. You will remain anonymous. Each participant will be given a number that will be used in place of your name on all the data received by the researchers. Your name will not appear anywhere apart from the consent form, which will be securely stored and then destroyed once the project is complete.

Taking part in this research is voluntary. You do not have to answer any or all of the questions. You can withdraw your information from the study by getting in contact with one of the researchers below before Thursday 18th of July 2014.

If you require more information or wish to withdraw from the study, please contact either of the researchers below:

Maria Acela Katrina Padua
e: ace.padua@lincolnuni.ac.nz
m:09175589900/ 0223702080

Dr Rupert Tipples
e: rupert.tipples@lincoln.ac.nz
p: +64 (03) 423-0280

This project has been reviewed and approved by the Lincoln University Faculty of Commerce.
Appendix D

Consent Form

Project Title: Quality premiums for small farmer copra in the Philippines: Case studies of the coconut oil chain in Camarines Sur

- I have read and understood the description of this project;
- I agree to take part in the project;
- I understand that the information I have provided can be withdrawn at any time before Thursday 18 July 2014;
- I understand the results of this study will be published, but my identity will remain anonymous.

Name: ____________________________________________________________
Signed: ___________________________________________________________
Date: ______________________________ Participant Identification Number: __________

Consent Form

Project Title: Quality premiums for small farmer copra in the Philippines: Case studies of the coconut oil chain in Camarines Sur

- I have read and understood the description of this project;
- I agree to take part in the project;
- I understand that the information I have provided can be withdrawn at any time before Thursday 18 July 2014;
- I understand the results of this study will be published, but my identity will remain anonymous.

Name: ____________________________________________________________
Signed: ___________________________________________________________
Date: ______________________________ Participant Identification Number: __________
Appendix E

Fieldwork Photos

E.1 Instruments used to measure moisture content

Level: Consolidator

Level: Miller
E.2 Types of transport used in the supply chain

Pedicabs

Tricycles
Jeepneys

Trucks
Appendix F

NVivo Screen shots

F.1 Sources

Interview voice recordings

Interview transcriptions
F.2  Nodes
F.3 Reports