

**Fresh Produce Retail – Analysis of Vertical Coordination and Procurement
Models in the Central California Lemon Supply Chain**

by

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B.S., California State University Fresno, 2015

A THESIS

Submitted in partial fulfillment of the requirements

for the degree

MASTER OF AGRIBUSINESS

Department of Agricultural Economics

College of Agriculture

KANSAS STATE UNIVERSITY

Manhattan, Kansas

2018

Approved by:

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ABSTRACT

The fresh produce retail market is becoming increasingly competitive and the need to cut costs in order to invest in retail prices and innovations is critical. Seasonality of commodities cause market shoulders where retailers face increased prices and an insecure supply base with risk of being out of product. The implications of paying more than competitors or not having a product on the shelf can risk losing a customer's business to a competitor. This thesis is an analysis of procurement strategies by retailers in the fresh produce industry, in order to maximize efficiency by reducing cost of goods and securing supply. Specifically, this thesis will analyze different procurement strategies for procuring lemons out of the California San Joaquin Valley. The analysis will compare traditional market buys vs a vertically integrated procurement model in which the retailer procures farm land and controls the commodity from farm to store shelf. While the fresh produce industry has had an evolution over the past century, models of procurement are not following other industries in advancements such as innovations from technology, genetics and sustainability. By advancing procurement models the industry has the potential to not only benefit farmers and retailers but also deliver the customer a fresher product at a reduced price.

The objective of this project is to investigate the ways to minimize commodity costs for the retailer and gain security of supply by analyzing procurement strategies for procuring lemons from California. This project is intended to support the fresh produce supply chain and specifically the retailer to optimize their procurement model. To determine an optimal strategy this project will compare and contrast traditional market buys vs a vertically integrated strategy. This is to determine if vertically integrating this

commodity in a retailer supply chain would result in a net reduction of cost. Also, this project will determine if security of supply is gained through vertical integration vs traditional market buys. This project will consider variables such as market prices, supply/demand, sustainability and other industry implications. The data examined includes retail pricing and costs, farm production and cost, property market values, and other variables and inputs. The methods of analyzing the data include profitability scenarios throughout multiple procurement models for retailers to determine an optimal procurement model. As a result of the data and methods it is determined that there is an opportunity throughout the produce supply chain for retailers to shift away from traditional procurement models. This project's proposed land acquisition procurement model is an alternative strategy that can supplement traditional procurement model and would potentially reduce cost of goods and improve supply reliability. This vertically integrated procurement model creates supply chain efficiencies and reduces cost for the retailer along with increasing the retailer's security of supply in the fresh produce commodity market. This analysis should serve as a basis and guide for retailers to determine their company's optimal procurement model.

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ACKNOWLEDGMENTS

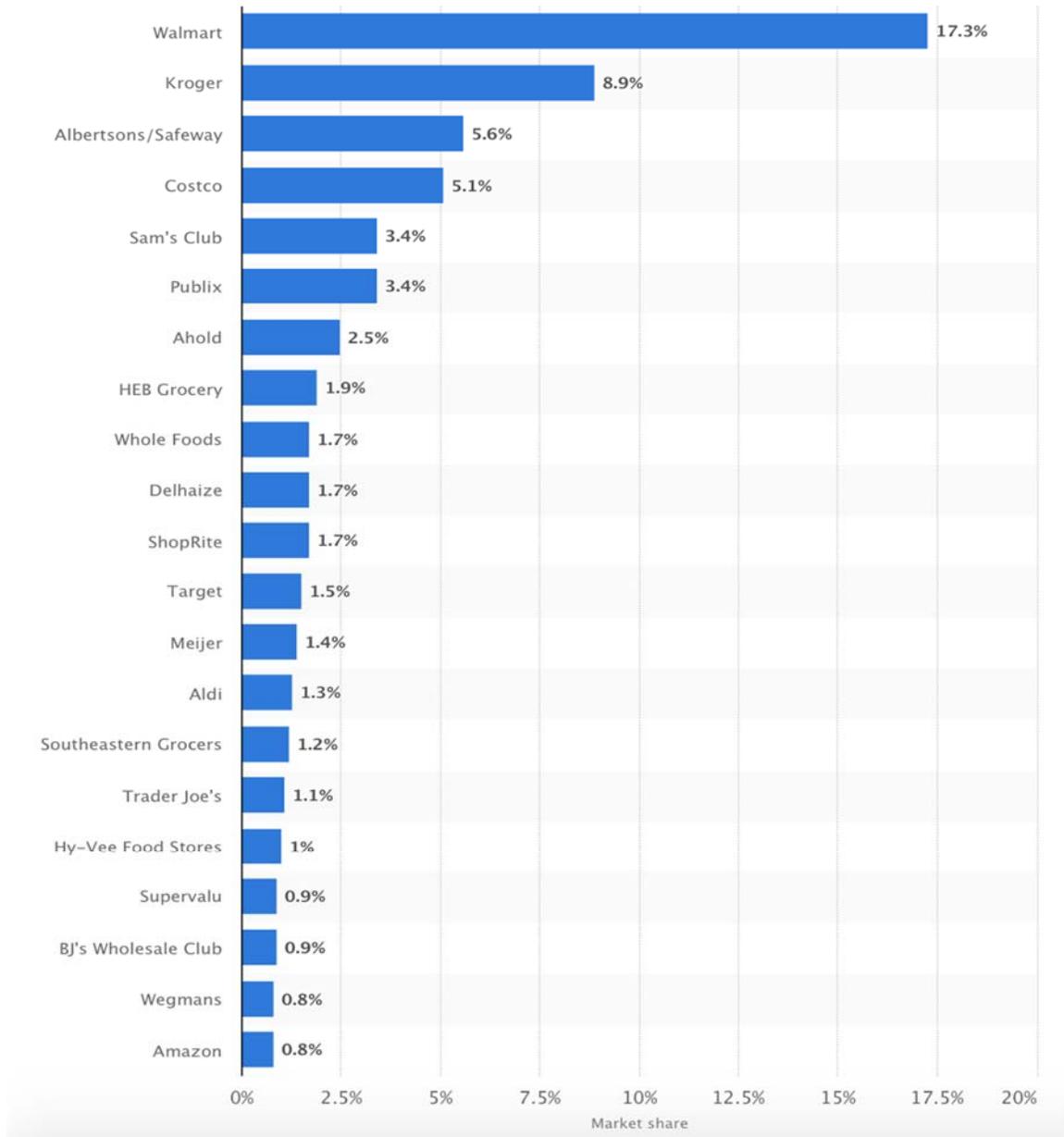
The author would like to acknowledge all who supported the research and inputs which contributed to this project. Aaron & Norma Avedian for financing Nathan's education and the encouragement to pursue a Master's Degree. Major Professor Aleksan Shanoyan who has been a mentor and guide throughout the thesis process from preparation to finality. The author would also like to acknowledge all professors and mentors who have contributed to Nathan's education in the agricultural industry. Also acknowledged are all individuals, groups and entities which contributed to the research of this project.

CHAPTER I: INTRODUCTION

1.1 Retail Industry Environment

The retail marketplace is becoming increasingly competitive, as consumer expectations rise, and retailers are at war to win market share and deliver customer value to gain consumer loyalty. In the retail space one of the most competitive sectors is the fresh food industry and especially fresh produce (Duff 2016). Major retailers holding significant grocery market share in the US include Walmart 17%, Kroger 8%, Albertson/Safeway 6%, Costco 5%, and others are constantly competing for customers. Figure 1.1 illustrates an overview of US grocery retailer market share from 2016 (Statista 2018). As it has always been a competitive market, firms will look to create innovations that will put them ahead of their competition and give themselves a competitive advantage. Competitive advantages can be achieved through many channels including consumer cost, quality, and convenience. Consumers have spoken, and they know what they want “First, it’s about priorities. High-quality produce (57%), convenient location (56%), and product availability (54%) are more important to today’s shopper than simply finding the lowest price, according to the Nielsen report. As far as products are concerned, 75 percent say produce is the most important” (PMA 2017). Reducing cost in the supply chain can help retailers meet these consumer demands by giving them additional funds to invest in innovations and strategies. Consumers are spending more money than ever before, on buying their fresh produce.

Figure 1.1: US Grocery Retail Market Share 2016



1.2 Market Pressures & Evolutions

As the retailers compete for price and security of supply some retailers are even going as far as to give their supplier line of credits and loans in hopes to gain themselves security of supply and not have to pay market prices in times of tight supply. In 2016,

major retailer Costco assisted a supplier in purchasing 1,200 acres of land in Baja, Mexico (Grenoble 2016). This type of unprecedented investment from retailers is an example of retailers recognizing the need to further vertically integrate their supply chain in order to stay competitive in the fresh produce market. Jeff Lyons' Senior Vice President of Costco's fresh foods poses the following questions to his firm and the industry in justifications of their procurement strategies "What do we see down the road that could be a challenge in terms of supply? And what can we put in place today to grow that particular scarce resource?" (Grenoble 2016). As different retailers decide what strategic changes they will implement in their procurement strategies, the industry continues to become increasingly competitive. Security of supply isn't an issue for just Costco or any specific retailer, it is an industry wide issue. The USDA ERS reports that from years 2000-2015, per capita availability of fresh fruit and vegetables decreased by 2.2%. Table 1.1 and Figure 1.2 show the decreasing trend of per capita availability. Along with a decrease in consumer availability the USDA is also reporting expected inflation in 2018 for the fresh produce industry specifically on fresh fruits including lemons. Chapter 2 of this project will contain a market overview specifically for the lemon commodity. "Prices for fresh fruits rose 1.7 percent from December to January and are up 4.5 percent compared with January 2017. While citrus prices fell 0.2 percent in January, apple prices were 2.1 percent higher than in December, and other fresh fruits rose 3.2 percent over the same time period. Fresh fruit prices rose 0.5 percent in 2017, and ERS expects prices to increase 4.0 to 5.0 percent in 2018. Fresh vegetable prices increased from December to January, rising 1.6 percent, and are 5.2 percent higher than in January 2017. Fresh vegetable prices decreased 0.1 percent in 2017 but are expected to change between -0.5 to 0.5 percent in 2018." (Bureau of Labor

Statistics) Based on the information above, with availability decreasing year over year and prices set to increase the fresh produce retailer is under more pressure than ever to innovate in an attempt to gain a competitive advantage. This study will focus on the commodity of lemons. Lemons is a commodity with variable supply and is one of the top consumed commodities in the US. Figure 1.2 below shows the top consumed fruit and vegetable commodities by US consumers according the Produce Marketing Association.

Figure 1.2: PMA – Consumption – Top 20 Fruits & Vegetables

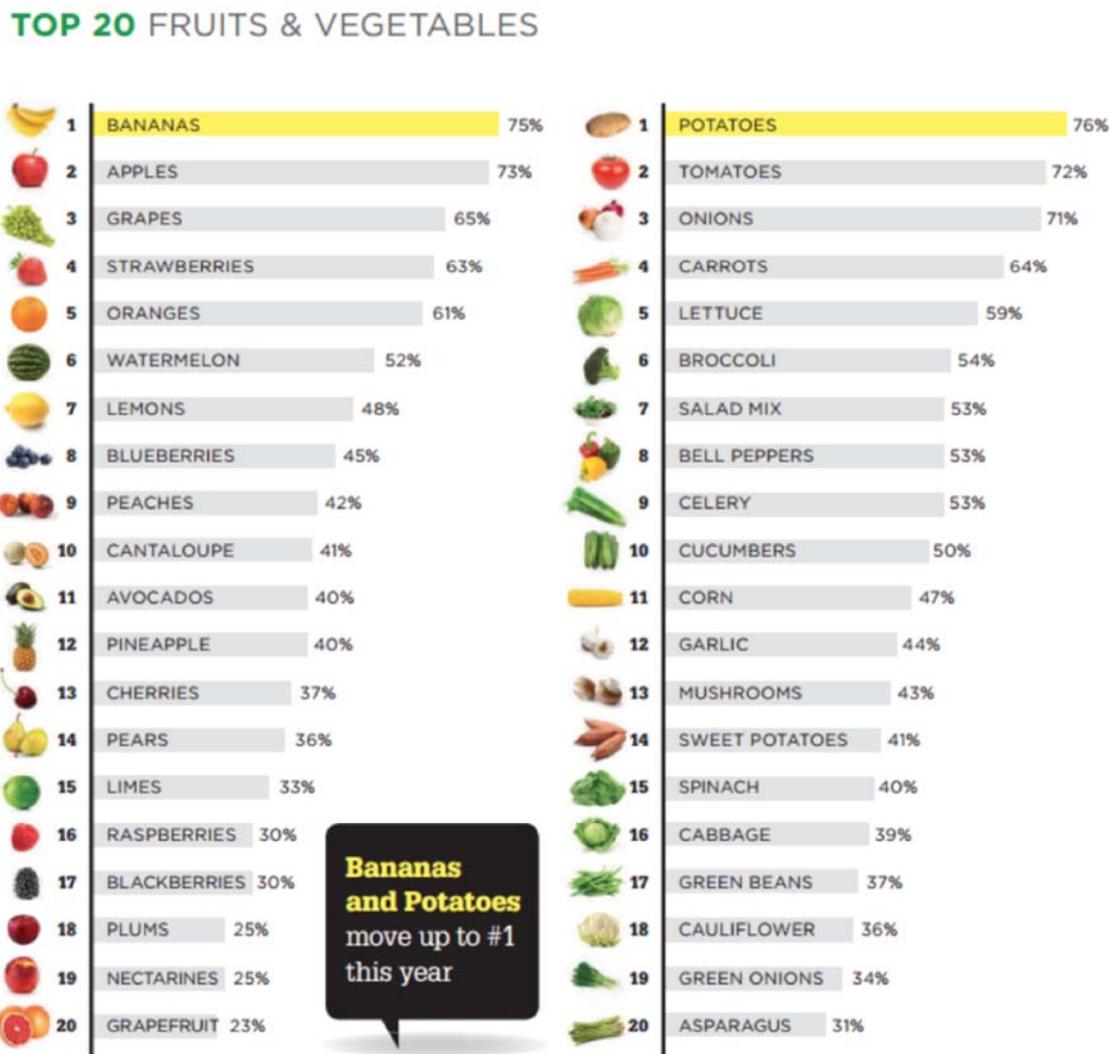
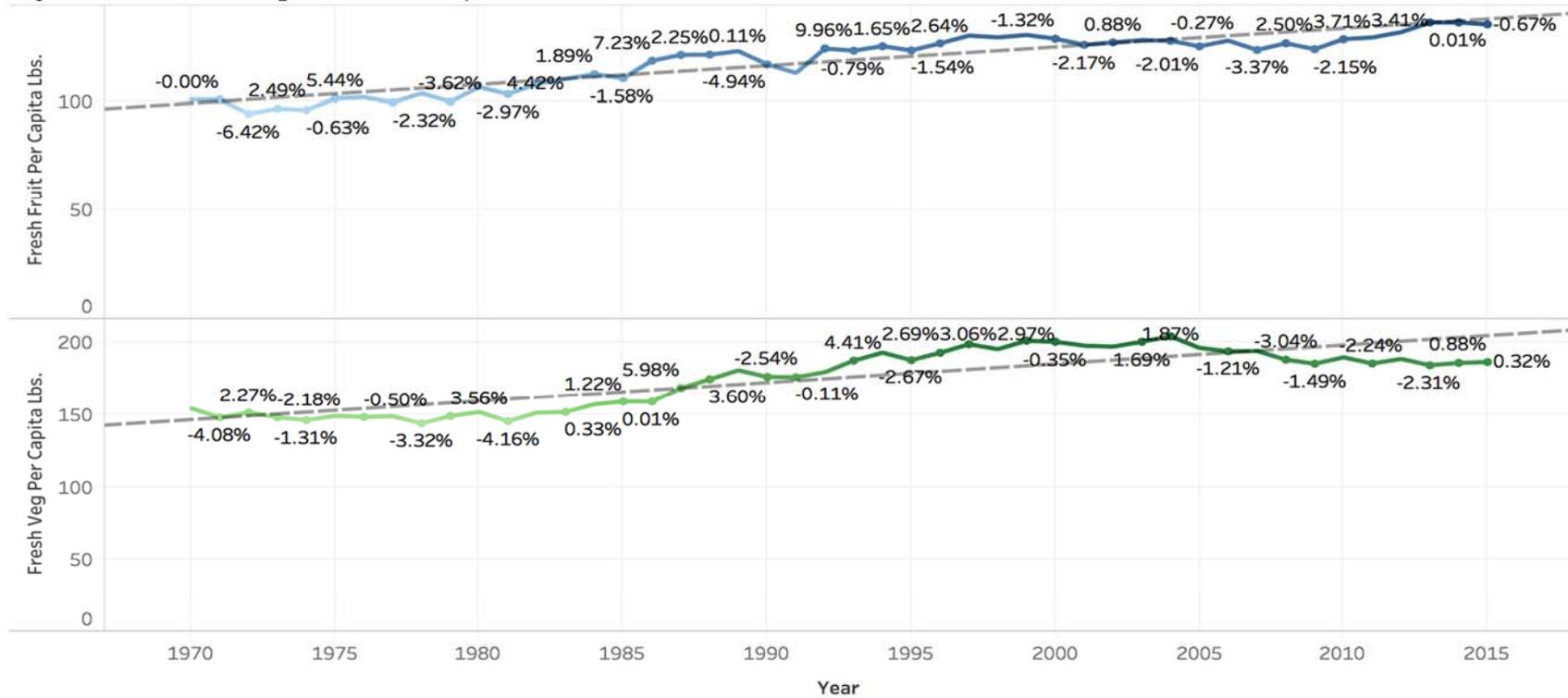


Table 1.1: USDA - US Per Capita Availability - Fresh Commodities

Year	FRESH FRUIT lbs.	FRESH VEG lbs.	Total Fresh lbs.	YoY Delta	From Yr. 00' Delta
2000	128.8	200.7	329.4	0.00%	0%
2001	126.0	198.0	324.0	-1.66%	-1.66%
2002	127.1	197.3	324.4	0.13%	-1.53%
2003	128.2	200.6	328.8	1.36%	-0.18%
2004	127.8	204.4	332.2	1.03%	0.85%
2005	125.3	196.4	321.7	-3.17%	-2.35%
2006	127.9	194.1	322.0	0.08%	-2.26%
2007	123.6	194.3	317.9	-1.28%	-3.52%
2008	126.7	188.3	315.0	-0.89%	-4.37%
2009	124.0	185.5	309.5	-1.75%	-6.05%
2010	128.6	190.0	318.5	2.92%	-3.31%
2011	129.4	185.7	315.1	-1.09%	-4.36%
2012	131.8	188.9	320.7	1.77%	-2.67%
2013	136.3	184.5	320.8	0.04%	-2.63%
2014	136.3	186.1	322.4	0.51%	-2.13%
2015	135.4	186.7	322.1	-0.10%	-2.22%
Mean	128.93	192.60	321.53	0%	-2%
MEDIAN	128.05	192.02	321.85	0%	-2%
STD DEV	3.91	6.22	5.58	1%	2%
MIN	123.6	184.5	309.5	-3%	-6%
MAX	136.3	204.4	332.2	3%	1%

Figure 1.3: US Per Capita Availability – Fresh Commodities



Fresh Fruit Per Capita Lbs.

Fresh Veg Per Capita Lbs.



	Year										
	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	
Fresh Fruit Per Capita Lbs.	100.9	101.4	106.5	110.7	117.0	123.4	128.8	125.3	128.6	135.4	
% Difference in Fresh Fruit vs Previous Year Fruit		0.49%	5.09%	3.87%	5.69%	5.51%	4.35%	-2.73%	2.63%	5.31%	
Fresh Veg Per Capita Lbs.	154.4	149.1	151.8	159.1	176.4	188.0	200.7	196.4	190.0	186.7	
% Difference in Fresh Fruit vs Previous Year Veg		-3.41%	1.79%	4.85%	10.86%	6.59%	6.72%	-2.10%	-3.29%	-1.71%	

1.3 Problem Statement

In the fresh produce industry, supply is becoming increasingly scarce due to seasonality, changing weather patterns, and regulatory policies. Demand for premium commodities along with price conscious consumers, results in retailers under increased pressure to reduce cost of goods and increase security of supply. This is occurring in an industry space that is becoming increasingly consolidated, retailers compete to be the preferred choice of consumers through price, quality and convenience (Statista 2018). In order to gain a competitive advantage, retailers need to innovate and reassess all internal aspects of their business in order to identify where efficiencies can be gained, and costs can be reduced. Specifically, this project will investigate and review multiple procurement models and determine each model's costs and efficiencies in order to determine an optimal procurement model. The current procurement method is based on spot buys, contracts and some strategic partnerships which the traditional models of procurement in the fresh produce industry have been. This proposal will introduce an additional procurement model as well which introduces the concept of farm land acquisition for retailers. A determination will be made to conclude which procurement model is optimal from the models listed above and recommendation will be made.

1.4 Research Question

Is there an optimal procurement model for lemons from California's San Joaquin Valley that gives retailers in that region a competitive advantage by reducing cost and creating efficiencies in the supply chain? The application case used for this project will be applying the multiple procurement models to a fresh produce supply chain for the commodity Lemons from California's San Joaquin Valley. Determining the profitability

and risks of each model will determine which is an optimal option for fresh produce retailers to apply to their business.

1.5 Research Objective

The purpose of this project is to provide insights and guidance that will help reduce cost and increase security of supply for fresh produce retailers. The research question asked above will determine if a fundamental change in the strategy of how retailers procure fresh produce commodities can achieve the objective. If the objective can be better achieved through this new proposed procurement model of Lemons from California's San Joaquin Valley then the recommendation of this project would be for a retailer to move forward with the proposal of executing the model by procuring farm land, contracting out farm inputs and management, and being able to sell internally grown product to consumers. The rest of this thesis is organized as follows: Chapter 2 provides an overview of the state of the lemon commodity industry along with an overview of current fresh produce procurement models and introduces the new proposed model of vertically integrated procurement through farm land acquisition. Chapter 3 provides an overview of the data and methods of procurement models where profitability and risk will be assessed. Lastly, the Chapter 4 contains a conclusion and recommendation for the fresh produce retailer on what procurement model is the most optimal and should be applied.

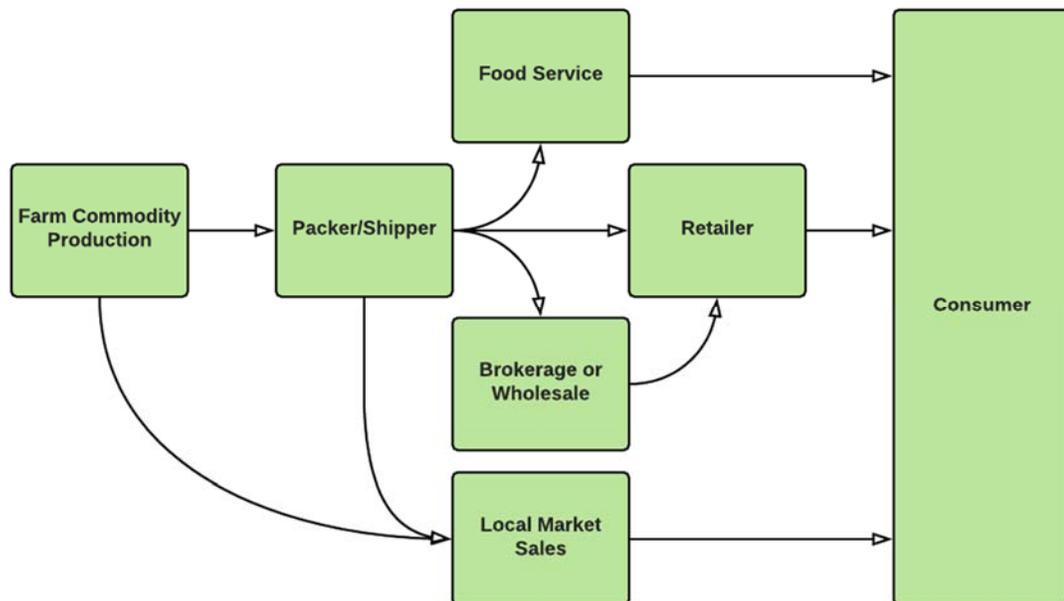
CHAPTER II: INDUSTRY OVERVIEW

2.1 Commodity Overview & Supply Chain

The case applied in this project is the commodity of fresh lemons sourced from California San Joaquin Valley. Lemons are a staple item for fresh produce retailers and is a commodity which is very popular with US customers. The next section of this project will give details on the significant increase in consumer demand for this commodity, which continues to rise year over year. Significant commodity trends show that nearly 50% of all US consumers purchased a lemon in the past year. Also, consumers with children in the house are more likely to purchase lemons than general consumers which indicates that lemons are correlated with a healthy diet. Consumers are attracted to this commodity for various reasons including health benefits, culinary ingredient usage, and other uses of the commodity. “Lemons offer a host of health benefits that have gained attention recently. They provide a hefty dose of vitamin C, an antioxidant that can help fight cancer and boost the immune system. The citric acid in lemons can help dissolve gallstones, calcium deposits and kidney stones. Lemons have antibacterial properties and can be used to get rid of odors and germs. The rutin found in lemons has been shown to improve eye health. The U.S. Food and Drug Administration has approved the following nutrient content descriptors for lemons: fat-free, saturated fat-free, very low sodium, cholesterol-free, low in calories, and high in vitamin C” (Farm Journal, 2018). In order to get consumers this commodity which is in high demand, there is a fresh produce supply chain in place which delivers the commodity from farm to consumers.

The lemon commodity supply chain consists of growers, packers, shippers, merchandisers and consumers. The process starts at the farm where the commodity is produced through farming inputs and cultural practices until the commodity is fully matured and ready to ship. From there the commodity will go to a citrus packing house to be graded, sorted and prepared to ship. Once the commodity passes the required grading it will be prepared to ship to a merchandising entity which includes produce retailers, brokerages, wholesalers, or food service vendors. Once received by this entity the products will be appropriately merchandised to the final commodity consumer. It is also important to note that a small amount of product can go directly to the consumer through local market sales from either the farm or packing house. Figure 2.1 below shows a visualization of the US domestic citrus supply chain.

Figure 2.1: US Domestic Citrus Supply Chain



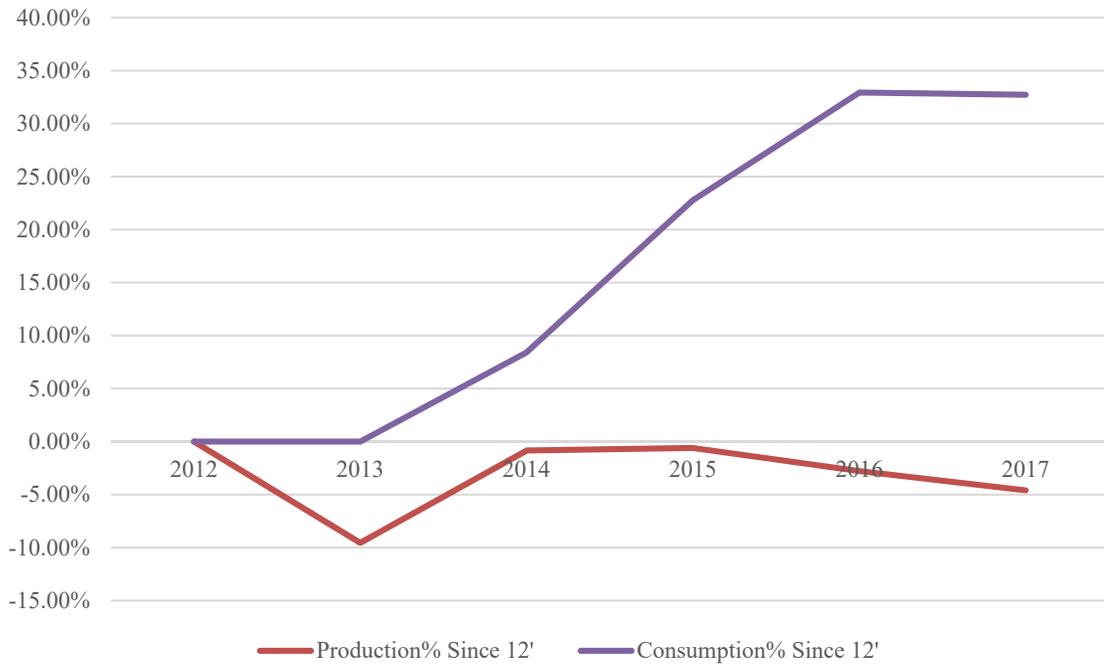
2.2 Commodity Supply/Demand Trends

The commodity of fresh lemons has had increased domestic demand with decreased domestic production over the past 5 years. In January 2018 the “Citrus: World Markets and Trade” report stated that from years 2012 – 2017 US domestic production of lemons & limes decreased by 4.6%. The report also states that over the same time period from 2012-2017 the US domestic consumption of lemons & limes increased 32.7%. See Table 2.1 and Figure 2.2. While there are imports that come into the market to sustain the rapid increase in consumer demand, a negative rate of domestic production implies that the US is on a decreasing trend to be able to meet demand and that there is potential for a security of supply issue, not just for retailers but for the United States. (USDA FAS) An important note is that the consumption trend is also increasing at a much faster rate for the commodity type of organics.

Table 2.1: US Lemons and Limes, Fresh: Production & Consumption Table

Year	2012	2013	2014	2015	2016	2017
Production (1,000 Metric Tons)	827	748	820	822	804	789
Production Trend	0.0%	9.6%	9.6%	0.2%	-2.2%	-1.9%
Production Since 2012	0.0%	9.6%	0.8%	-0.6%	-2.8%	-4.6%
Consumption (1,000 Metric Tons)	926	926	1004	1137	1231	1229
Consumption Trend	0.0%	0.0%	8.4%	13.2%	8.3%	-0.2%
Consumption Since 2012	0.0%	0.0%	8.4%	22.8%	32.9%	32.7%
Production Vs Consumption (1,000 Metric Tons)	-99	-178	-184	-315	-427	-440

Figure 2.2: US Lemons and Limes, Fresh: Production & Consumption



2.2.1 Commodity Market Trends

The cost of the lemon commodity has doubled over the past 15 years. A standard carton of lemons cost retailers a market average of \$16.40 in 2004 while in 2017 the average carton cost retailers \$37.09. (USDA AMS) Figure 2.2 visualizes this market price trend. Lemons are packed in 7/10 bushel cases which weigh approximately 40lbs, so we can determine that in 2017 the average cost per pound for lemons to retailers was \$0.93/lbs. Not only does the annual pricing show a long-term increase but also year over year volatility in price and demand. Volatility in the fresh produce industry is often determined by diversity of commodity growing region and weather. Growers of the commodity practice cultural farm practices in order to mitigate risks including weather, natural disease, pests & insects and other variables. “We take steps to mitigate risk as much as we can, our cultural practices include using wind machines and irrigation strategies to combat weather when there is risk of freeze. In order to fight other natural elements, we follow the USDA

and other agency guidelines to use applications of approved fertilizers and preventative applications to maximize yield and quality” (E. Herman, personal communication, January 15, 2018). Although growers use best practices to mitigate against risk there is still always potential to lose up to 100% of the crop any given year due to these natural risks. Due to this risk, many farmers take out crop insurance as a last default to mitigate risk. Crop insurance is an option which helps to mitigate all risks associated with farming listed above. Farm insurance often can cover all farming input costs that farmers invest throughout the year and cover the risk of losing a year’s worth of inputs. This is utilized by almost all farmers in the fresh produce industry and has become a common practice in the industry.

Figure 2.3: USDA AMS – US Domestic – Lemons Avg Price Per Case

Year of Date	
2004	16.40
2005	15.10
2006	17.85
2007	24.41
2008	28.77
2009	20.06
2010	22.74
2011	20.15
2012	21.85
2013	22.97
2014	29.82
2015	29.14
2016	30.51
2017	37.09

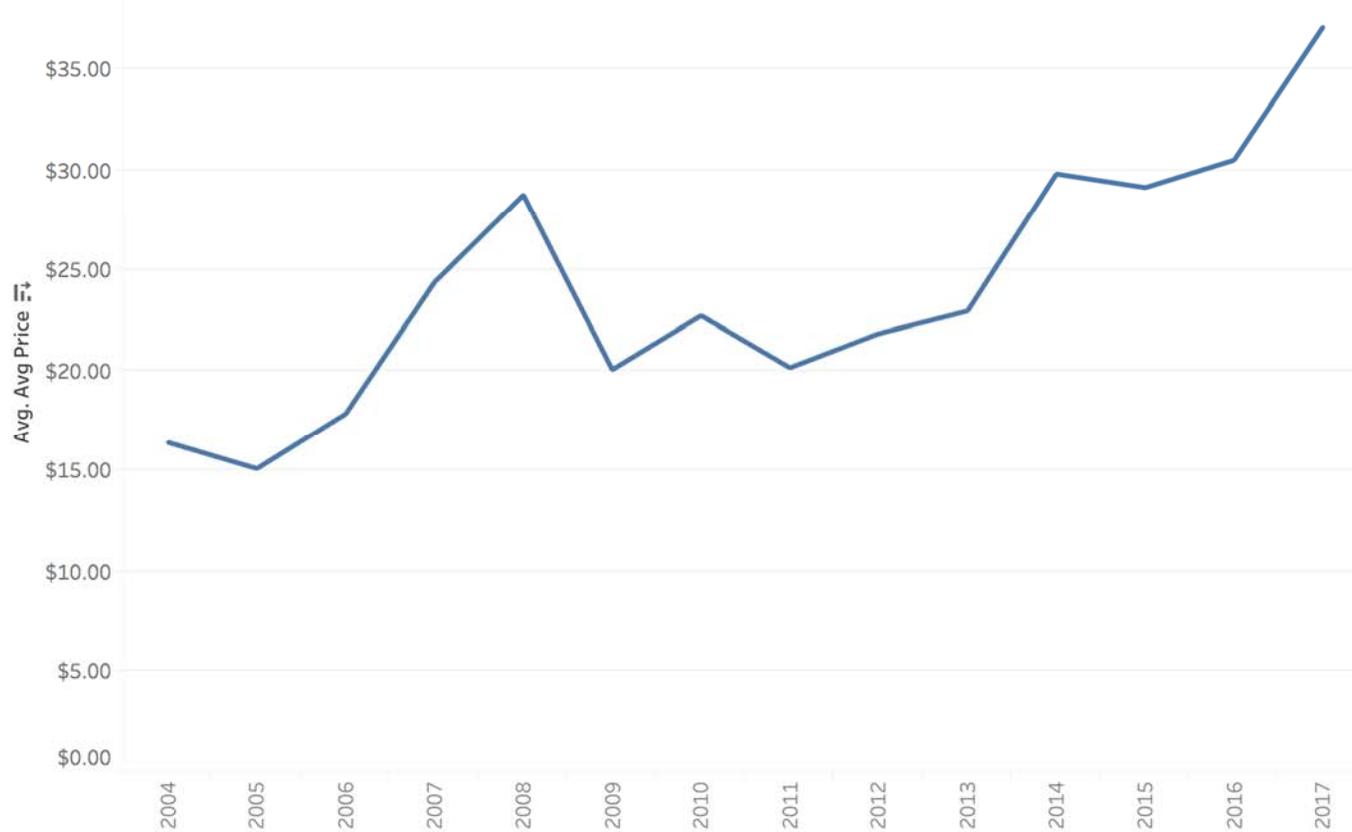
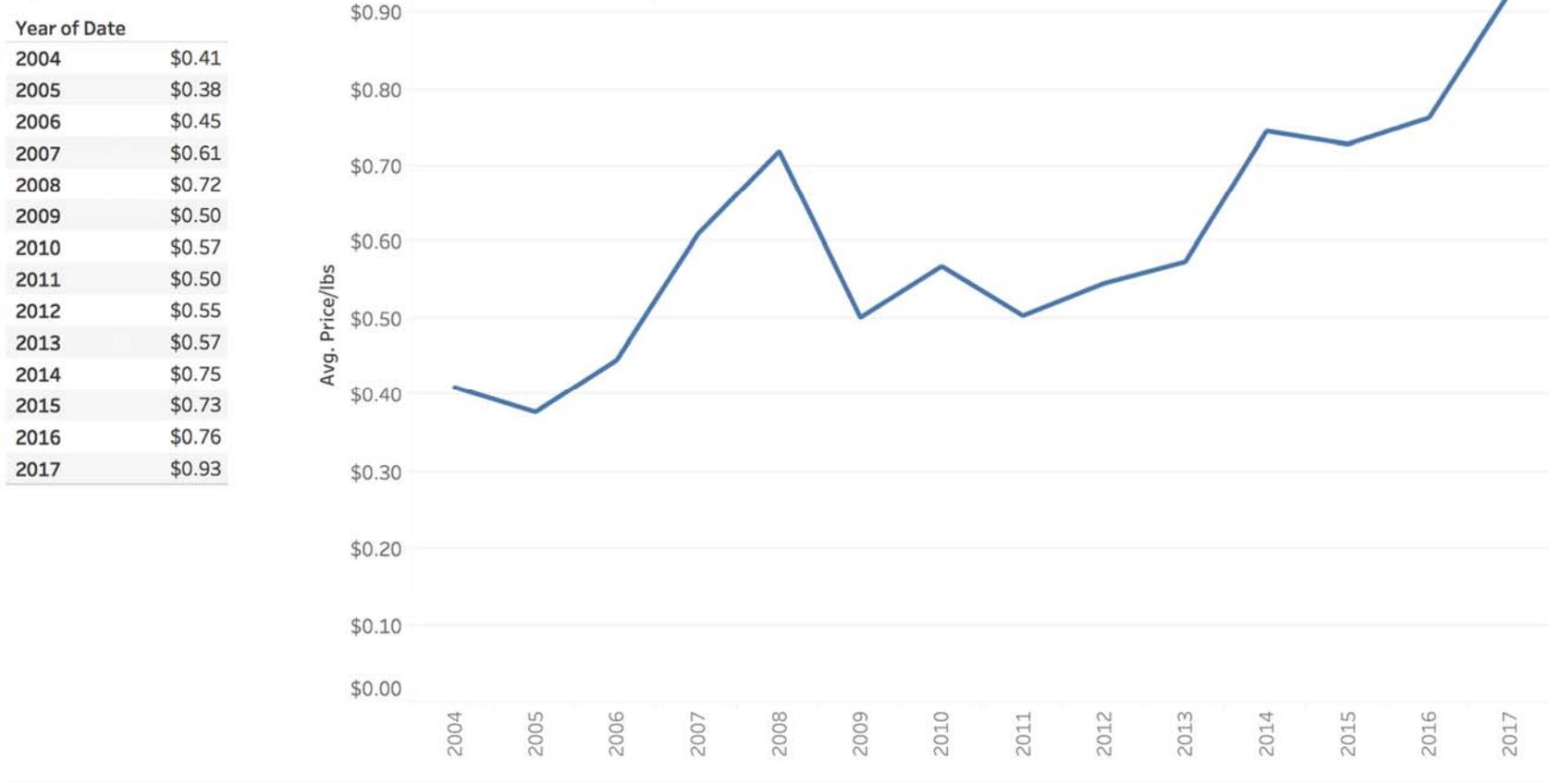


Figure 2.4: USDA AMS – US Domestic – Lemons Avg Price Per Pound



2.2.2 Commodity Retail Pricing

As a result of rising costs, retailers are following trends and raising retails on the lemon commodity as well. In 2015 the US National average retail price for lemons was \$1.30/lbs. In 2016 that number increased to \$1.48/lbs. resulting in a 14% retail increase. Retailers are being forced to raise retails due to increased costs. If a retailer was able to reduce costs in the supply chain and gain security of supply where other retailers couldn't by implementing a new strategic procurement model they could gain a competitive advantage on retail pricing by being able to invest their cost savings into their retail pricing. Once applied the price gap would help the retailer to gain consumer market share through a low retail cost.

Table 2.2: USDA ERS - Fresh Produce Retail Price - Lemons/Lbs.

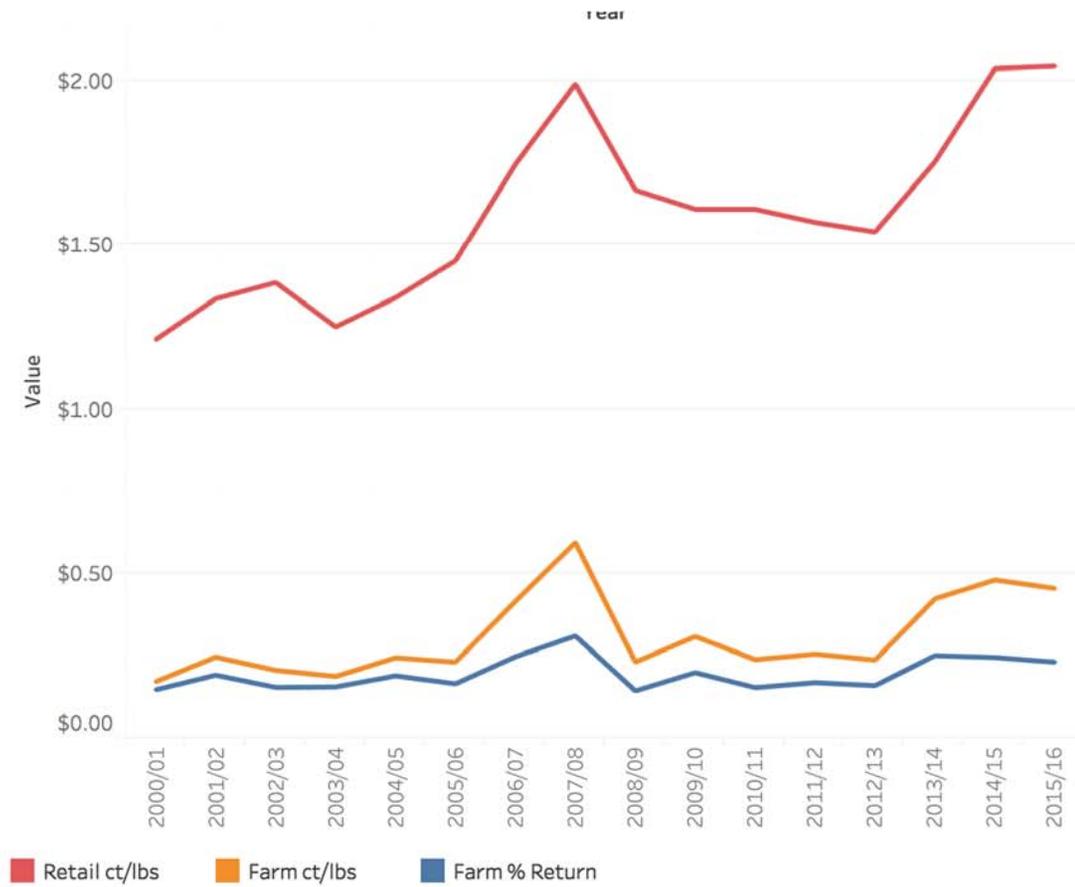
Commodity	Month	Unit	2016 Avg. Retail	2015 Avg. Retail	Difference	%Change
LEMONS	ANNUAL	lbs.	\$1.48	\$1.30	\$0.18	14%
LEMONS	January	lbs.	\$2.25	\$1.37	\$0.88	64%
LEMONS	February	lbs.	\$1.68	\$1.45	\$0.23	16%
LEMONS	March	lbs.	\$1.63	\$1.08	\$0.55	51%
LEMONS	April	lbs.	\$1.32	\$1.44	(\$0.12)	-8%
LEMONS	May	lbs.	\$1.09	\$1.31	(\$0.22)	-17%
LEMONS	June	lbs.	\$0.71	\$1.06	(\$0.35)	-33%
LEMONS	July	lbs.	\$1.69	\$1.01	\$0.68	67%
LEMONS	August	lbs.	\$1.19	\$1.94	(\$0.75)	-39%
LEMONS	September	lbs.	\$0.99	\$0.89	\$0.10	11%
LEMONS	October	lbs.	\$1.15	\$1.34	(\$0.19)	-14%
LEMONS	November	lbs.	\$1.28	\$1.25	\$0.03	2%
LEMONS	December	lbs.	\$1.34	\$1.36	(\$0.02)	-1%

2.2.3 Commodity Price Spread from Farm to Consumer

The commodity spread between price to consumer shows that although supply & demand are in their present state, farmers are currently receiving nearly a 25% share of the commodities' final consumer retail price. Over the past 20 years this number has shifted between a 15-31% share. This share is high compared to other commodities reported by the USDA ERS. A relative high Farm Share % of total retail price is identified as a good potential candidate when considering which commodity, a vertically integrated procurement model may be applied. This metric indicates the possibility of high returns for the grower which would translate to a larger gap of potential cost reduction for a retailer if they were to vertically integrate. See figure 2.3 for details on commodity price spread from farm to consumer.

Figure 2.5: USDA ERS – Price Spread from Farm to Consumer

Year	Farm ct/lbs	Retail ct/lbs	Farm % Return
2000/01	\$0.17	\$1.21	14.88%
2001/02	\$0.25	\$1.34	19.30%
2002/03	\$0.21	\$1.39	15.60%
2003/04	\$0.19	\$1.25	15.74%
2004/05	\$0.25	\$1.34	19.08%
2005/06	\$0.23	\$1.45	16.68%
2006/07	\$0.42	\$1.75	24.88%
2007/08	\$0.60	\$1.99	31.17%
2008/09	\$0.23	\$1.67	14.53%
2009/10	\$0.31	\$1.61	20.06%
2010/11	\$0.24	\$1.61	15.53%
2011/12	\$0.26	\$1.57	17.04%
2012/13	\$0.24	\$1.54	16.13%
2013/14	\$0.42	\$1.75	25.22%
2014/15	\$0.48	\$2.04	24.63%
2015/16	\$0.46	\$2.04	23.25%



2.2.4 Commodity Farm Land Prices

Agricultural land in the California San Joaquin valley can range anywhere from \$15,000 - \$40,000 per acre. The variables include location, weather patterns, soil & water. While some ground can sell for as little as \$15,000 an acre this land is likely either not optimal for agricultural production or requires investment such as drilling a well, redevelopment or other investments in order to meet necessary production standards. In contrast, premium land with ideal soil and water for the proposed commodity can go for \$40,000+ per acre (California MLS). “The most critical thing that buyers are looking for now is having two sources of water. Farmer’s today need to have warm ground, good soil, and most importantly allocated surface water and good ground water, if you have all of these you likely have a high value property” (Lacefield, personal communication, 2018). While all commodities have their own requirements, lemons in the San Joaquin Valley of California require somewhat warmer ground as they are a high-risk freeze crop and will grow on various soil types. The tables 2.2 and 2.3 below from the American Society of Farm Managers and Rural Appraisers is the current farm land prices and availability along with historical information. Below shows that from 2009 – 2015 agricultural land in the San Joaquin Valley of California rose over 200%, a rising market trend that Lacefield expects will continue. In regard to availability farm land is booming increasingly and properties are either often on the market for a short duration or being sold even prior to hitting the public market. These increasing land values and tight markets realize that while real estate is assumed to be a non-liquid asset, farm real estate moves very fast on the market and mitigates risk with liquidation option that offers independent profitability from the proposed profit gain of the potential gains outlined later in this project.

The citrus industry specifically was analyzed by the California Chapter, American Society of Farm Managers and Rural appraisers where they gave a market evaluation of citrus grown in the San Joaquin Valley “Sales of citrus groves in Fresno County were also limited in 2015. In 2012, the activity and value trend for citrus increased; followed by a stabilizing market trend in 2013 and 2014. A slight increase in values was noted in 2015 for good quality groves with desirable varieties. The low end of the range is characteristic of older groves with inferior varieties, indicating values generally consistent with open land values. Most buyers of these older groves will continue to farm them for the short term and redevelop the land to newer, more desirable citrus varieties in the near future. The high end of the range is typically reflective of modern groves developed to desirable citrus varieties with the ability to produce good quality fruit” (CA-ASFMRA 2016). From this overview given by the American Society we conclude that citrus land in the san Joaquin valley is becoming increasingly valuable. We can conclude form the information above that as farmers continue to produce high quality commodities and with competitive yields the land will continue to be in high demand.

Table 2.3: San Joaquin Valley Agricultural Land Prices – 2016

LAND USE	VALUES PER ACRE	ACTIVITY / TREND	RENT RANGE	ACTIVITY / TREND
<u>FRESNO COUNTY</u>				
Almonds	\$13,000 - \$42,000	Moderate/Increasing	25% - 35%	Limited/Stable
Pistachios	\$25,000 - \$40,000	Limited/Increasing	25% - 30%	Limited/Stable
Tree Fruit	\$18,000 - \$30,000	Very Limited/Slightly Increasing	\$500 - \$1,000	Limited/Stable
Citrus	\$15,000 - \$30,000	Limited/Increasing	N/A	Limited/Stable
Raisin Grapes	\$20,000 - \$33,000	Strong/Increasing	20% - 25%	Limited/Declining
Table Grapes	\$20,000 - \$30,000	Very Limited/Increasing	20% - 25%	Limited/Stable
Wine Grapes	\$20,000 - \$30,000	Very Limited/Increasing	None	Limited/Declining
Cropland: USBR - West	\$6,000 - \$10,000	Moderate/Slightly Increasing	\$175 - \$250	Moderate/Stable
Cropland: Exchange Contractors	\$12,000 - \$24,000	Very Limited/Increasing	\$250 - \$450	Moderate/Stable
Cropland: Districts	\$10,000 - \$30,000	Moderate/Increasing	\$200 - \$400	Moderate/Stable
Cropland: Well Water	\$10,000 - \$28,000	Limited/Increasing	\$200 - \$400	Moderate/Stable
Rangeland: Westside	\$250 - \$750	Very Limited/Stable	\$5 - \$15	Moderate/Stable
Rangeland: Eastside	\$600 - \$3,000	Very Limited/Stable	\$12 - \$30	Moderate/Stable

Table 2.4: San Joaquin Valley Agricultural Land Prices – Historical per acre

LAND USE	ALMONDS	PISTACHIOS	TREE FRUIT	CITRUS	RAISINS	TABLE GRAPES
FRESNO COUNTY						
2015	\$13,000 - 42,000	\$25,000 - \$40,000	\$18,000 - \$30,000	\$15,000 - \$30,000	\$20,000 - \$33,000	\$20,000 - \$30,000
2014	\$14,000 - \$36,000	\$25,000 - \$40,000	\$16,000 - \$28,000	\$12,000 - \$20,000	\$18,000 - \$30,000	\$18,000 - \$25,000
2013	\$15,000 - \$28,000	\$25,000 - \$33,000	\$12,000 - \$25,000	\$12,000 - \$20,000	\$15,000 - \$23,000	\$15,000 - \$20,000
2012	\$15,000 - \$20,000	\$25,000 - \$33,000	\$12,000 - \$17,000	\$12,000 - \$20,000	\$13,000 - \$18,000	\$13,000 - \$19,000
2011	\$12,000 - \$18,000	\$18,000 - \$25,000	\$9,000 - \$14,000	\$7,500 - \$15,000	\$10,000 - \$15,000	\$10,000 - \$15,000
2010	\$9,000 - \$16,000	\$10,000 - \$18,000	\$9,000 - \$12,500	\$7,500 - \$14,000	\$9,000 - \$13,000	\$10,000 - \$15,000
2009	\$8,000 - \$15,000	\$8,000 - \$15,000	\$8,700 - \$12,500	\$7,500 - \$14,000	\$9,000 - \$13,000	\$10,000 - \$15,000
LAND USE	CROPLAND USBR-WEST	CROPLAND EXCHANGE CONTRACTORS	CROPLAND DISTRICT WATER	CROPLAND WELL WATER	RANGELAND WEST	RANGELAND EAST
FRESNO COUNTY (continued)						
2015	\$6,000 - \$10,000	\$12,000 - \$24,000	\$10,000 - \$30,000	\$10,000 - \$28,000	\$250 - \$750	\$600 - \$3,000
2014	\$5,000 - \$8,500	\$10,000 - \$16,000	\$10,000 - \$25,000	\$10,000 - \$22,000	\$250 - \$750	\$600 - \$3,000
2013	\$5,000 - \$8,500	\$9,000 - \$11,000	\$7,500 - \$19,000	\$7,000 - \$16,000	\$250 - \$750	\$600 - \$3,000
2012	\$4,000 - \$8,500	\$8,000 - \$20,000	\$7,500 - \$15,000	\$4,500 - \$13,000	\$200 - \$750	\$500 - \$3,000
2011	\$2,500 - \$5,500	\$7,500 - \$9,000	\$4,500 - \$13,000	\$4,000 - \$8,000	\$200 - \$750	\$500 - \$3,000
2010	\$2,500 - \$4,500	\$7,000 - \$8,500	\$4,500 - \$11,000	\$3,000 - \$8,000	\$200 - \$750	\$750 - \$3,000
2009	\$2,500 - \$4,000	\$6,750 - \$8,000	\$3,500 - \$10,500	\$3,000 - \$9,000	\$125 - \$750	\$500 - \$3,000

CHAPTER III: LITERATURE REVIEW

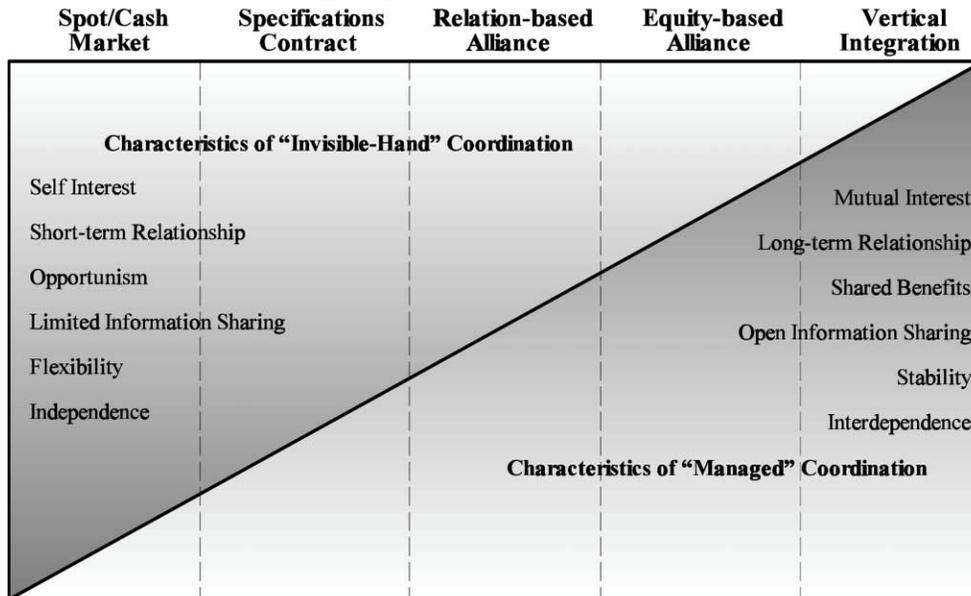
3.1 Produce Procurement

In the fresh produce industry there are different methods of sourcing and procurement, but they can generally be bucketed into three groups: spot/market buys, contact pricing, and strategic partnerships. These models have been the industry standard as it exists, but potential opportunity remains to optimize these procurement strategies. Since the original form of procurement which was spot buys, many other models have emerged as entities in the supply chain look to create efficiencies and reduce costs. Throughout the evolution of these procurement models there are multiple classifications some which are more transactional and some more strategic. We can see this evolution continuing to accelerate in the fresh produce industry, “Fundamental changes are continuing, if not accelerating, in the agri-food system. Changes that are altering traditional marketing relationships. Parts of the food system have become tightly integrated, such as the poultry and pork subsectors. The tightening of vertical linkages has been characterized by movement from open markets to various forms of managed coordination, e.g., contracting, strategic alliances, and single ownership of multiple market stages” (Peterson 2001). Spot buys are the most transactional based type of procurement where there is minimal strategy and the transfer of goods is tactical. On the other end of the spectrum there are models which implement a high level of vertical integration, this type of model would be considered highly strategic and not a tactical transaction (Peterson 2001). Peterson has grouped agricultural market models into 5 classifications in order from transactional to strategic including spot markets, specification contracts, relation-based alliances, equity-

based alliances, and vertical integration. Peterson explains that in order to determine which model is optimal the entity will need to compare models and apply them to their business in order to determine which is the best choice. This section will give an overview of existing procurement models in the marketplace and potential models which could be implemented by fresh produce retailers.

The visualization below 3.1 from Peterson is a visualization of the vertical coordination options which are explained in detail starting in section 3.1.1.

Figure 3.1: Peterson – Strategic Options for Vertical Coordination



NOTE: The diagonal line represents the mix of invisible-hand and managed coordination characteristics found in each of the five alternative strategies for vertical coordination. The area above the diagonal indicates the relative level of invisible-hand characteristics and the area below the diagonal indicates the relative level of managed characteristics.

3.1.1 Spot/Market Buys

Market or spot buys are the original form of trade in the produce industry, established in the 1800s this traditional buying method often occurred at produce terminals throughout the US where merchants would bring the fresh produce items they had to sell to

a marketplace with multiple vendors and customers. (Reading Terminal Market) In this form of negotiation the seller and buyer have the ability to negotiate the terms of the trade. In this procurement model, the retailer has little negotiation power and is often subject to the vendor's set price. The model is very transaction oriented and is not strategic. In this model each party is looking to maximize immediate profit and get the best deal possible without regards to future business or implications. This model is still used today but is becoming less common. This model often occurs when an unexpected surplus or shortage of a commodity enters the marketplace and there is an immediate transaction need from either the buyer or seller. (Peterson, 2001)

3.1.2 Contract Pricing

Contract pricing is quite common in the fresh produce industry today. In this model the buyer and seller will agree on a set price and volume over a period of time. These contracts can often have set price changes throughout the year depending on the seasonality of the product. While contracts are more strategic than spot buys they still have their flaws. Contracts can often end up having a clear winner or loser in a volatile market like the fresh produce industry. If a crop is not affected by weather and supply exceeds demand, then the farmer or seller of the commodity will often get the better end of the contract. Adversely, if there is a significant weather impact and the market runs short, then retailers can benefit as they are able to secure product at a contracted price rather than pay open market price when there is a shortage. Contracts are often reviewed and renegotiated during volatile markets which often revert them to more of a spot buy market.

Contracts take willingness and cooperation from all participating parties; World Bank Group describes relationships in contract pricing in the agricultural section and

explains how they can be successful for both parties yet require good management and communication “The quality of the management is a critical factor and yet it is the most difficult to define. The biggest managerial impact in contract farming is achieved by establishing good communications, listening and acting on each party’s issues and honoring agreements. This is the basis of trust between the buyer and seller.

In the case of the agribusiness, good management means establishing frequent dialogue with the farmers, or farmer groups, supporting with inputs and extension, providing appropriate information and having the flexibility to quickly react to unexpected circumstances as and when they occur. The frequent dialogue can be aided by contracting a cluster of farmers near good roads.” While this model falls in the middle of what we could consider to tactical and strategic we can still determine that communication and management are necessary to maintain current contracts and seek future contracts.

3.1.3 Strategic Partnerships

Strategic partnerships are new to the fresh produce industry and are becoming increasingly popular as retailers and growers look to align for a long-term solution on moving volume and securing sustainable returns. This model of procurement is more strategically based and less impacted by market volatility. In a strategic partnership both parties realize that returns are not only measured in top line profitability but factors such as long-term plans and growth strategies are also in the instructions. In this model growers and retailers work together to create synergy and efficiencies that reduce costs for both parties while also attempting to increase consumer demand in an attempt to create a sustainable future for both parties (Peterson, 2001).

Strategic partnerships are something that are becoming more common as industries advance an opportunity become available to identify. These partnerships can be equity based or strategically based but the end goal is always to create strategic synergies and efficiencies along with reducing commodity cost. “New technology and business models are allowing companies to treat their different functions and operations as component pieces, firms can pull those pieces apart and put them back together again in new combinations, based on strategic judgments about which operations the company wants to excel at and which it thinks are best suited to its partners. These decisions are not simply a matter of offloading noncore activities, nor are they mere labor arbitrage. They are about actively managing different operations, expertise, and capabilities so as to open the enterprise up in multiple ways, allowing it to connect more intimately with partners, suppliers, and customers” (Samuel, 2006, p. 6)

3.1.4 Farm Acquisition Procurement Model

The proposed farm acquisition procurement model once applied, would effectively be the most vertically integrated and strategic procurement model in the produce industry. In this model the fresh produce retailer would purchase the farm production acreage and own the crop from conception to consumer. In this model the retailer would own the farm land but not take on the activity of the farm management or labor inputs. The retailer would assume to be the owner of the land and the crop while contracting out the farm management and labor to a farm management service either inside or outside of their current supplier base. Ideally, retailers would partner with a farm management firm that also services one of their strategic suppliers in order to explore and identify additional synergies in the supply chain. This relationship would also be ideal for strategic supplier

who provide private label items for the retailer. In this model that retailer would gain significant cost saving by absorbing the profitability of the farm owner and would secure commodity market share. If a retailer were to engage in this procurement model they would have an immediate strategic competitive advantage as they would have a security of supply that would be unmatched in the marketplace. In this model the retailer has the ability to take the farm profitability and chose how to reinvest it. The retailer would then have several options on how to strategically reinvest the farm profitability including lowering retail prices, developing retail innovations, or taking the profit to the bank. In Chapter 3 we will examine the profitability and risk of this model compared to traditional models in order to conclude which is the optimal procurement strategy.

3.2 Security of Supply & Risk Mitigation

In the fresh produce industry there are many variables and uncertainties which cause risk in the supply chain and jeopardizes a consistent supply base. Each of the models described above influence the supply base in different ways. Peterson suggests that the more vertically integrated the procurement model is, it will also have favorable security of supply. (Peterson, 2001). Referenced as “stability” in the marketplace can be achieved through strategic partnerships rather than transactional partnerships. Risks in the Lemon supply chain include but are not limited to climate/weather impact, water & input resource availability, labor quality and availability, geopolitical influences, along with other variables. The more a retailer can control these variables the they will be able to influence the consistency of supply and secure product.

While a retailer does not have the ability to control the weather, some produce

suppliers are investing and betting big on indoor or vertical farming. Consumer demand rises, companies look to how they will feed future consumers “The world’s population will increase from approximately seven billion people to nearly ten billion by 2050. That will make it even more challenging to feed everybody on the planet.” (Charlie, 2017)

Innovations continue to progress in sustainable growing and it is booming a global trend, in a recent interview on PBS, this was addressed by Dr. Leo Marcelis “We wanted to control the production process, that we can control the yield, the quality, that we can give guarantees towards the consumers. Although we can control a lot, we’re still dependent on the outdoor conditions. So, the next step would be to have a further control. So, we can in fact guarantee how much produce we will have tomorrow, or on any date of the year, of a guaranteed quality.” (Feliciano, 2017, p. 128) While controlled environment farming has can mitigate lots of risks to the industry and is a growing trend, it still only makes up a small percentage of the overall agricultural supply chain.

As Herman explained in section 2.1, there are many risks in the agricultural sector but through proper management many of them can be mitigated. The primary risk tool for farmers in the lemon industry is crop insurance. Crop insurance not only benefits the farmer but the whole supply chain, due to the fact that it helps keep farmers sustainable for future years of production. “Crop insurance is the primary risk management tool farmers use to financially recover from natural disasters and volatile market fluctuations; pay their bankers, fertilizer suppliers, equipment providers and landlords; purchase their production inputs for the next season; and give them the confidence to make long term investments that will increase their production efficiency. Without effective and affordable crop insurance, catastrophic production losses would sap the rural economy by setting in motion

a series of harmful events: farm failures and consolidation, job losses, farm-related small business failures, financial stress on rural banks and reduced investment in U.S. agriculture. A financially healthy rural economy requires a financially healthy farm production sector.” (National, 2017) Through crop insurance the industry is able to decrease market volatility and risk in the current and future years. Through strategically based procurement models, exploration and implementation of innovative growing practices, and an insured industry, risk can be mitigated in the supply chain.

CHAPTER IV: DATA ANALYSIS & METHODS

4.1 Data Overview – Selection, Surveys & Interviews

The data analyzed in this thesis is comprised of both primary and secondary sources. The primary data consists of surveys and interviews. The secondary data consists of articles, journals, government agency databases and web articles which can be found in detail on the works cited page. These sources were used in analysis in different levels of significance to validate the thesis' assumptions and recommendations.

The primary data was collected in a series of several interviews and surveys. There are three unique interviews which included industry experts including farmers and real estate agents, along with an interview where set questions were asked across several retailers. The interviews with the farmers and real estate agents are referenced and quoted throughout the paper. These interviews were used to collect data regarding land prices & market trends, lemon supply chain insights, lemon production costs and other variables relating to farming and cultural practices. The interviews done with retailers can be found in detail in Appendix A and are discussed in section 3.5 *Commodity Significance to Retailer*. These interviews were done by appointment and on spot at California retailers by the author with assistance of an additional individual to record the transcript. Another primary data source was a survey done by the author which recorded additional variables of commodity significance to retailers which is represented in figure 3.6. This primary data served to help provide insights and verify assumptions made about the significance of lemons as a commodity to the retailer.

This paper also references numerous secondary sources citing related research and data related to this vertical coordination analysis. Articles referenced include reports of existing retailer vertical coordination strategies, analyses of vertical coordination strategies and procurement models, USDA commodity production and market data, along with additional resources. The USDA datasets were used as a basis to establish market trends of prices along with trends in production and consumption. The trends found by the USDA data are used to confirm realities of market conditions described in this paper along with consumer and production trends. Secondary sources were also used to verify assumptions and statements made by primary resources regarding risk mitigation and farm insurance. These next sections along with the previous sections of this thesis discuss and reference the data discussed in this section.

4.2 Comparing Models – Market Buys vs Land Acquisition Procurement

This section will compare actual profitability of the two procurement models to determine which one is optimal between traditional market buys and the proposed land acquisition procurement model. While it is impossible to identify and determine profitability on all potential procurement models, this paper will focus on the two ends of the spectrum. It is important to note that between these two models there are many variations in between which all will be specific to the parties involved and the balance of tactical and strategic influences of the relationship. This paper's models will be using the scenario of procuring the commodity of fresh lemons from the San Joaquin Valley of California. All costs, fixed and variable, will be weighed against revenue to determine

profitability. Along with determining profitability this chapter will also review the risks involved with each model.

4.3 Retailer Market Buy Model Net Profitability

In the current market based on the numbers in chapter 2 we can determine that retailers have an average cost of \$0.93/lbs. and an average retail price of \$1.48/lbs. This results in a \$0.55/lbs. profit with a 37% profitability margin. This concludes that if the land acquisition procurement model runs at less than 37% profitability margin then it may be less optimal while if it results in a greater than 37% profitability margin then it is more optimal. This is not considering the factor of security of supply which for this project is not a tangible measure. Table 3.1 below shows the profitability of this procurement model.

Table 4.1: Retailer Market Buy Model Net Profitability

Unit	Cost	Retail	Profit\$	Profit%
Case	\$37.09	\$59.20	\$22.11	37%
Lbs.	\$0.93	\$1.48	\$0.55	37%

4.4 Land Acquisition Procurement Model Net Profitability

This section will overview all of the costs and revenue of land acquisition procurement model to determine profitability. Once profitability is determined a conclusion and recommendation will be made that this new proposed procurement model should either be applied or not applied to a fresh produce retailer’s procurement strategy.

4.4.1 Fixed Costs & Liquidity

Based on the information in chapter 2 we can determine that on average citrus land is selling for \$25,000/acre. An important note is that the \$25,000 assumes planting and producing acreage, an undeveloped property with good soil and water can expect to sell for

\$5,000 - \$10,000 less than already producing acreage. Due to the high liquidity of farm land in the San Joaquin Valley of California, the land will be carried as a liquid asset and will not be weighted as an expense on the final measure of profitability. Market trends and real estate experts both conclude that the cost of farm land is increasing and will continue to do so. Due to the profitability of the crops on these lands there is little risk in land devaluation.

4.4.2 Development, Farm Management & Inputs

Cost in this section are discussed per acre of farm land, profitability and cost will later be converted to per lbs. to determine final profitability. In this scenario the assumption is made that the retailer is purchasing farm land with an existing commodity to redevelop for lemon production. The reason this assumption is made is because it is a much more likely scenario as producing lemon acreage has scarcely been for sale over the past few years. Being that the land is being repurposed from another commodity, we will also make the assumption that there is a need to install wind machines in order to mitigate risk against freeze. Note that depending on the piece of land purchased these costs can become variable and therefore where applicable conclusions and recommendations will need to be considered.

The total redevelopment cost per acre to shift from a standard crop to a citrus crop such as lemons is \$6,000/acre. This includes but is not limited to, ripping old trees, burning old trees, leveling ground, planting new crop, and all other farm inputs and cultural practices until maturity & production. The wind machines costs \$3,500 per acre to purchase and install. Both these costs will incur in years 1-3 until first harvest occurs. Full lists of costs below. The annual cost incurred for farming and cultural practices is \$3,000 per acre.

It is important to note that this annual farming cost does not incur until maturity and production, farming costs for years 1-3 are built into the \$6000/acre total mentioned above. Full maturity and production occurs in year 7.

4.4.3 Farm Owner Cost vs Revenue

This section shows us the profitability of a farmer growing lemons without yet looking at the retail benefits. In this model we assume a conservative 3% annual increase in market value of the lemon commodity. We also assume an annual 1% increase in farming costs. Below shows profitability per acre and per lb. for a lemon farmer based on current industry numbers from given chapters 2 & 3. Acres are converted to pounds by assuming that a good producing lemon grove yields 50 bins per acre, 1 bin packs out to 20 cartons, 1 carton contains 40lbs. 1 acre = 40,000 lbs.

Table 4.2: Farmer Profitability Schedule

Year	Total Farming Costs/Acre (Assuming 1% increase after year 4)	Yield Bin/acre	Price/Bin (Assuming 3% annual increase)	Gross Return/acre	Annual Net Profit/Acre	Annual Net Profit Lbs	Rolling Net Profit
1	\$ 9,500.00	-	\$ 225.00	\$ -	\$ (9,500.00)	\$ (0.24)	\$ (9,500.00)
2	\$ 1,000.00	-	\$ 231.75	\$ -	\$ (1,000.00)	\$ (0.03)	\$ (10,500.00)
3	\$ 1,000.00	10.00	\$ 238.70	\$ 2,387.03	\$ 1,387.03	\$ 0.03	\$ (9,112.98)
4	\$ 3,000.00	25.00	\$ 245.86	\$ 6,146.59	\$ 3,146.59	\$ 0.08	\$ (5,966.39)
5	\$ 3,030.00	35.00	\$ 253.24	\$ 8,863.38	\$ 5,833.38	\$ 0.15	\$ (133.00)
6	\$ 3,060.30	45.00	\$ 260.84	\$ 11,737.65	\$ 8,677.35	\$ 0.22	\$ 8,544.35
7	\$ 3,090.90	50.00	\$ 268.66	\$ 13,433.09	\$ 10,342.19	\$ 0.26	\$ 18,886.53
8	\$ 3,121.81	50.00	\$ 276.72	\$ 13,836.08	\$ 10,714.27	\$ 0.27	\$ 29,600.80
9	\$ 3,153.03	50.00	\$ 285.02	\$ 14,251.16	\$ 11,098.13	\$ 0.28	\$ 40,698.93
10	\$ 3,184.56	50.00	\$ 293.57	\$ 14,678.70	\$ 11,494.14	\$ 0.29	\$ 52,193.07
11	\$ 3,216.41	50.00	\$ 302.38	\$ 15,119.06	\$ 11,902.65	\$ 0.30	\$ 64,095.72
12	\$ 3,248.57	50.00	\$ 311.45	\$ 15,572.63	\$ 12,324.06	\$ 0.31	\$ 76,419.79
13	\$ 3,281.06	50.00	\$ 320.80	\$ 16,039.81	\$ 12,758.75	\$ 0.32	\$ 89,178.54
14	\$ 3,313.87	50.00	\$ 330.42	\$ 16,521.00	\$ 13,207.14	\$ 0.33	\$ 102,385.68

15	\$ 3,347.01	50.00	\$ 340.33	\$ 17,016.63	\$ 13,669.63	\$ 0.34	\$ 116,055.31
16	\$ 3,380.48	50.00	\$ 350.54	\$ 17,527.13	\$ 14,146.66	\$ 0.35	\$ 130,201.97
17	\$ 3,414.28	50.00	\$ 361.06	\$ 18,052.95	\$ 14,638.67	\$ 0.37	\$ 144,840.63
18	\$ 3,448.42	50.00	\$ 371.89	\$ 18,594.54	\$ 15,146.11	\$ 0.38	\$ 159,986.75
19	\$ 3,482.91	50.00	\$ 383.05	\$ 19,152.37	\$ 15,669.47	\$ 0.39	\$ 175,656.21
20	\$ 3,517.74	50.00	\$ 394.54	\$ 19,726.94	\$ 16,209.21	\$ 0.41	\$ 191,865.42
21	\$ 3,552.91	50.00	\$ 406.38	\$ 20,318.75	\$ 16,765.84	\$ 0.42	\$ 208,631.26
22	\$ 3,588.44	50.00	\$ 418.57	\$ 20,928.31	\$ 17,339.87	\$ 0.43	\$ 225,971.13
23	\$ 3,624.33	50.00	\$ 431.12	\$ 21,556.16	\$ 17,931.84	\$ 0.45	\$ 243,902.96
24	\$ 3,660.57	50.00	\$ 444.06	\$ 22,202.85	\$ 18,542.28	\$ 0.46	\$ 262,445.24
25	\$ 3,697.18	50.00	\$ 457.38	\$ 22,868.93	\$ 19,171.76	\$ 0.48	\$ 281,617.00
26	\$ 3,734.15	50.00	\$ 471.10	\$ 23,555.00	\$ 19,820.85	\$ 0.50	\$ 301,437.85
27	\$ 3,771.49	50.00	\$ 485.23	\$ 24,261.65	\$ 20,490.16	\$ 0.51	\$ 321,928.02
28	\$ 3,809.20	50.00	\$ 499.79	\$ 24,989.50	\$ 21,180.30	\$ 0.53	\$ 343,108.31
29	\$ 3,847.30	50.00	\$ 514.78	\$ 25,739.19	\$ 21,891.89	\$ 0.55	\$ 365,000.21

4.4.4 Retailer Total Cost vs Revenue

Using the information above from sections 4.2 and 4.3.2 we can conclude what the gain advantage or disadvantage is to this proposed procurement model. Based on the information in section 3.2.2 we will apply the net savings in year 7 (the first year of maturity) of \$0.26/lbs. to our current retailer cost structure. Being that all savings are incremental and the market price for a retailer whether they are a grower or not is static, we can assume as shown below a \$0.26/lbs. cost savings for the retailer. In addition to this the retailer also gains security of supply for the acreage they have planted. Table 4.3 shows the profitability of this procurement model assuming current market conditions (Year 7). Table 4.4 shows profitability based on conservative market projections (Year 20). Rather than calculating the farm revenue for a commodity and knowing all costs, the USDA price spread from farm to consumer can be used for estimates on other commodities using Farm Share – Farm Management & Inputs Costs = Actual Farm Profitability. The metrics explained in section 3.1.3.

Table 4.3: Retailer Farm Acquisition Model Profitability – Current Returns (Year 7)

Procurement Model	Unit	Cost	Retail	Profit\$	Profit%
Market Buy	Case	\$37.09	\$59.20	\$22.11	37%
Market Buy	Lbs.	\$0.93	\$1.48	\$0.55	37%
Land Acquisition	Case	\$26.69	\$59.20	\$32.51	55%
Land Acquisition	Lbs.	\$0.67	\$1.48	\$0.81	55%

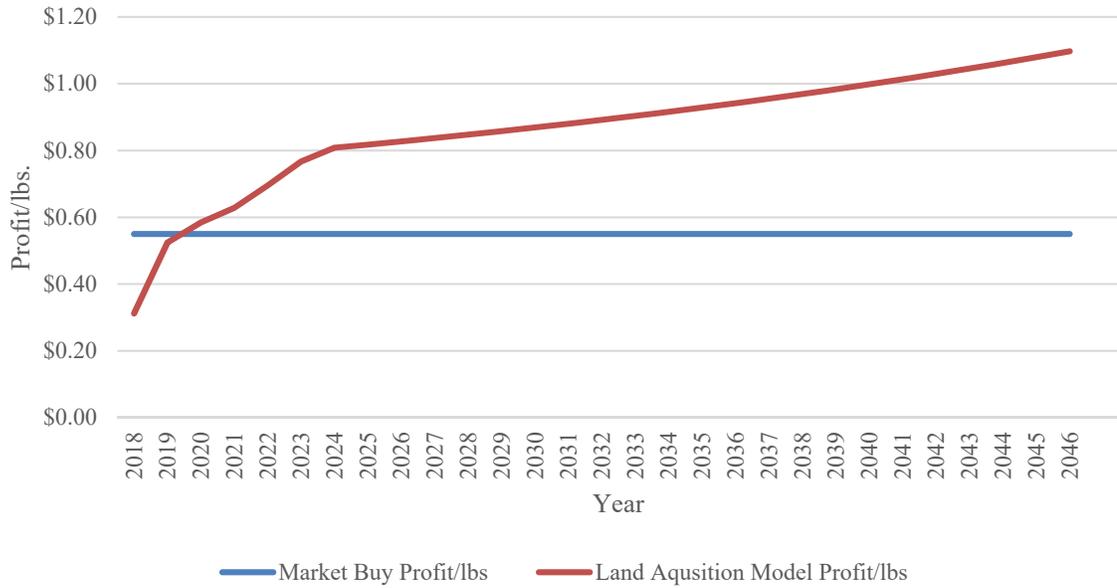
Table 4.4: Retailer Farm Acquisition Model Profitability – Projected Returns (Year 20)

Procurement Model	Unit	Cost	Retail	Profit\$	Profit%
Market Buy	Case	\$37.09	\$59.20	\$22.11	37%
Market Buy	Lbs.	\$0.93	\$1.48	\$0.55	37%
Land Acquisition	Case	\$20.69	\$59.20	\$38.51	65%
Land Acquisition	Lbs.	\$0.52	\$1.48	\$0.96	65%

Table 4.5: Amortized Model Comparison

Year	Market Buy Profit/lbs.	Farm Profit/Lbs.	Land Acquisition Model Profit/lbs.
2018	0.55	(\$0.24)	\$0.31
2019	0.55	(\$0.03)	\$0.52
2020	0.55	\$0.03	\$0.58
2021	0.55	\$0.08	\$0.63
2022	0.55	\$0.15	\$0.70
2023	0.55	\$0.22	\$0.77
2024	0.55	\$0.26	\$0.81
2025	0.55	\$0.27	\$0.82
2026	0.55	\$0.28	\$0.83
2027	0.55	\$0.29	\$0.84
2028	0.55	\$0.30	\$0.85
2029	0.55	\$0.31	\$0.86
2030	0.55	\$0.32	\$0.87
2031	0.55	\$0.33	\$0.88
2032	0.55	\$0.34	\$0.89
2033	0.55	\$0.35	\$0.90
2034	0.55	\$0.37	\$0.92
2035	0.55	\$0.38	\$0.93
2036	0.55	\$0.39	\$0.94
2037	0.55	\$0.41	\$0.96
2038	0.55	\$0.42	\$0.97
2039	0.55	\$0.43	\$0.98
2040	0.55	\$0.45	\$1.00
2041	0.55	\$0.46	\$1.01
2042	0.55	\$0.48	\$1.03
2043	0.55	\$0.50	\$1.05
2044	0.55	\$0.51	\$1.06
2045	0.55	\$0.53	\$1.08
2046	0.55	\$0.55	\$1.10
2047	0.55	\$0.57	\$1.12

Figure 4.3: Model Profitability Projection Comparison



4.5 Commodity Significance to Retailer

This section will discuss findings from surveyed stores, identifying commodity significance and what lemons represent to retailers and consumers in the grocery industry. The data referenced below is derived from a collection of retail interviews and surveys which can be found in Appendix A. Table 4.6 shows from a survey of stores the significance of lemons in the central valley.

Table 4.6: Retail Survey – Lemons

Central California Retail - Lemons - August 2018								
Retailer	Do they Carry It	How Much Space Approx. sqft	On Shelf Availability	Type	Price type 1	Quality Appearance	Import Season Source	Domestic Season Source
Costco	Yes	8	100%	Bulk	\$ 0.99	8	Chile	California
Walmart	Yes	6	100%	Bulk	\$ 0.70	9	Mexico	California
Walmart Neighborhood	Yes	6	100%	Bulk	\$ 0.70	9	Mexico	California
Save Mart	Yes	5	75%	Bulk	\$ 0.99	10	Mexico	California
Food For Less	Yes	6	100%	Bulk	\$ 0.70	8	Chile	California
Whole Foods	Yes	4	75%	Bulk - Organic	\$ 1.49	6	Mexico	California
Trader Joe's	Yes	6	100%	Bulk	\$ 0.99	9	Mexico	California
Target	Yes	4	75%	Bulk	\$ 0.75	8	Chile	California
Smart& final +	Yes	4	75%	Bulk	\$ 0.99	9	Mexico	California
Local Retailer #2	Yes	4	100%	Bulk	\$ 0.90	8	Chile	California
Local Retailer #3	Yes	4	50%	Bulk	\$ 0.99	9	Mexico	California
*Some retailers also carried Lemons in Bags in comparable prices								

The following retailers were surveyed: Costco, Walmart, Walmart Neighborhood Market, Save Mart, Food For Less, Whole Foods, Trader Joe's, Target, Smart & Final+ & 2 local retailers. This survey determined that not only do all of these retailers carry the product but that lemons are a significant commodity for these retailers. The retailers in this sample dedicated anywhere from 4-8 sqft of shelf space for lemons. All of the retailers sold lemons in bulk while some also had additional offerings in bags. During the month of August all retailers were supplied from either Chile or Mexico, during this period there is no domestic production. During the domestic season, all retailers carry California grown product. This survey, along with an interview done at the Target store show the significance of lemons in the central valley and why it is an important commodity for consumers.

When asked what the significance of having lemons on the shelf when customers come in the store the Produce Manager at Visalia, CA Target responded. "Our number one priority for our market areas is to have our products fresh and abundant. Our guests come in with their grocery list and if we don't have the items in stock then we are failing at our job and losing sales." Additionally, asked was if locally grown products are important to their customer. "Being in the Central Valley where our guests are aware and prideful of the local market items we produce, it is important to have locally grown commodities and local brands in our stores" (Manager, "Target Produce Interview"). It is clear that not only having the product in shelf but having a locally grown product is critical to the customer and therefore the retailer.

A secondary interview and survey was done at Costco, Food For Less, Save Mart, Trader Joe's and other local retailers. The intent of this was to collect information regarding the strategic significance of the lemon commodity for retailers. The questions listed below were asked, individual store responses and survey data can be found in appendix A.

1. Is it challenging to keep products in stock? Specifically, lemons?
2. What is the impact of not having the product available?
3. Are locally grown products significant to your customers?
4. How do you advertise and market when you have locally grown products?
5. Do customers often ask or take interest in the products origin?
6. Is it difficult to be competitive on pricing with other retailers?
7. Do you often face challenges with the quality of your products from growers?
8. Do you carry lemons year around? Is there any seasonality in supply and demand?
9. Where do you procure them from? e.g. directly from growers, from distributors, wholesalers etc... Where does the majority of your lemon supply come from: local growers, regional growers, national growers, international growers.
10. What is the biggest challenge associated with ensuring consistent quantity and quality of lemons? How would you solve these issues if you had complete decision-making power over the procurement process/arrangement?
11. What is your procurement arrangement for lemons: spot buys, contracts, exclusive relationships, strategic partnership, joint venture, vertical integration (e.g. we grow our lemons)?

12. How important are lemons as a product category for your store/department? e.g. if you stop procurement of lemons will the effect on revenue be: very significant, somewhat significant, insignificant, very insignificant?

A trend confirmed across all retailers is that having lemons on the shelf is very important and if they don't have the product it hurts not only that sale but has other detrimental effects as well. Save Mart associate commented "Every grocery store carry's lemons, it's a must have, you need to have a good combination of items to be successful. You would not just be losing the revenue of the one item but potentially the whole basket." (Store Associate, Personal Interview). All other retailers interviewed responded similarly emphasizing how important it is to always have produce items available for customers. In the interview with Trader Joe's they gave an example of this significance saying, "One missing item can ruin a family's dinner." It is clear that it is important for retailers to have availability to products for their customers.

Many of these retailers operate on a combination of procurement models as shown in table 3.7. Retailers are becoming more strategic with how they source products, shifting away from spot buys and becoming more vertically integrated. Figure 3.7 shows that many retailers are engaged in strategic partnerships and some are engaging in joint ventures. Although no company has yet publicly stated they have engaged in a farm ownership model, Costco has engaged in indirectly purchasing land through a joint venture. (Grenoble, 2016) During the survey Costco Store Manager was asked if the proposed farm ownership model is something they saw being implemented at Costco. "I know that the market is becoming increasingly competitive and Costco would likely be interested in any strategy that would give us a competitive advantage."

Table 4.7: Retail Survey – Procurement Models

Retailer Procurement Model Participation	Spot Buys	Contracts	Strategic Partnership	Joint Venture	Farm Ownership
Costco		x	x	x	
Food For Less	x	x	x		
Save Mart		x	x		
Trader Joe's		x	x		
Whole Food's		x			
Local Retailer #1	x	x	x		

One California based retailer interview was the regional manager for the stores and also procures produce for the local chain. When asked how they deal with managing quality and availability they responded “It is important to give our growers visibility to our demand so that we can always have product available. We give them a projection of how much product we need weeks in advance, so they can prepare. If I don't like how a supplier is performing I can give a portion of my business to someone else to create competition for better performance." This is an example of how retailers are constant grading suppliers against each other to procure superior products. When asked about how they manage relationships with suppliers and what type of procurement models they used they explained "We buy on the market through brokers, have contacts on some items depending on the time of year. Also, we are partnered with one of our vegetables growers...They plant their fields according to our demand and schedule and we commit to buying that product." When asked why they did this rather than just buying everything on the open market they responded “This allows for us to be confident in our supply base, if we buy off a national provider we may get shorted or not get a quality product. This way, we own the supply chain and have the product committed from start to finish.” This

would be an example of a joint venture where the retailer and grower are strategically working together to gain market efficiencies. It is clear that as the industry advances and competition continues, retailers will look to further seek competitive advantages which can be influenced by vertical coordination in procurement models.

CHAPTER V: RESULTS, RISK VS RETURN, & RECOMMENDATIONS

5.1 Economic Analysis of Market Buy Model

The market buy model is a form of procurement that has long been the industry standard. In this model we were able to determine that retailers operated on a 37% profit margin in 2017 based on an average cost of \$0.93/lbs. with an average retail of \$1.48/lbs. While a 37% profit margin does have relatively good profitability for the produce industry, profitability is limited due to the constraints of the model. In this model, three parties are making profits, the grower, the packer/shipper and the retailer. While this model of fresh produce procurement is profitable, it is not the optimal procurement model which maximizes profitability.

5.2 Economic Analysis of Land Acquisition Procurement Model

The land acquisition procurement model is a new proposed form of procurement in the fresh produce and offers newly achievable levels of profitability that were not previously available in the current market structure through vertical integration. Based on the data and analysis in chapter 3, this procurement model is significantly more profitable than the industry standard market buys model of procurement. While the market buys model of procurement offered a profitability of \$0.55/lbs. or 37%, the land acquisition procurement models offers a \$0.88/lbs. profit margin for the commodity of Lemons sourced from the San Joaquin Valley of California. This model shifts the 37% profitability in the market buy model up to a 55% profitability using the new proposed model in year 7 while when mature in year 20 reaching 65% profitability. This model essentially cuts the farmer out of the equation as the retailer is assuming the role of the farm owner therefore

absorbing the profitability of the farm owner through vertical integration. Not only does this model offer an increased profitability but it also offers a vertically integrated security of supply which would be unmatched in the fresh produce retail industry. While retailers currently secure supply through methods such as verbal agreements, contracts and strategic partnerships, none of these models insure security of supply like the proposed land acquisition procurement model. In this model the retailer already owns the product which they are procuring therefore giving them the ability to secure as much product in the marketplace as they would like based on how they decide to scale this model into their overall procurement strategy.

5.3 Strategic Risk & Return Consideration

This thesis has presented analysis which determines there are different levels of profitability and strategic influence depending on which procurement model is used in vertical coordination. This section will discuss some of the additional strategic risks vs return which could occur depending on the procurement model selected. The farm land acquisition model which gives the retailers liability of the farm's ownership is a model which should only be undertaken if the retailer is to have full understanding of risks and reward.

One risk that is often associated with farming is risk of natural disaster, fire, rain, hail, flooding, freeze etc. These natural variables can all have significant impacts on an investment in agricultural farm land and can impact an annual crop, or even the life of an entire orchard. This was discussed at length in the interview with farmer Erik Herman. Herman explains that to mitigate these risks, a combination of preventative measures along

with crop insurance are used. This is further addressed in section 2.2.1. Herman goes onto explain that while this can occur the commodity of lemons in this region of California is not usually prone to these risks other than the occasional freeze. From interview along with supporting records it is clear that the main weather factor that could impact the lemon commodity in the California San Joaquin valley is a freeze. “A freeze can put your crop in jeopardy for that year and you can lose up to 100%, also if you have recently planted you can even have 1-2-year-old trees die if they get too cold”. (Avedian, 2018). Although this is a serious risk the chances of this occurring are very small, especially if you take preventative measures. “The key is wind machines and irrigation, irrigation keeps the ground warm and if you support that along with wind machines you can usually mitigate the freeze completely if you have planted in a strategic position.” These two interviews both acknowledge the risk of weather and natural disaster yet make it clear that even if they can’t be prevent entirely, they can be mitigated and controlled.

Another natural risk is the health of an orchard and disease control of both an orchard and food born illness. While in general California lemons are not known to have any major disease impacts there are impacts on other United States domestically grown citrus commodities impacting yield and quality. Disease and orchard health are a reflection of many variables including tree health from nursery, bud wood and varietal compatibility, soil & water type/nutrition, inputs & application and other variables. While all these can be issues, based on the compiled interviews, these things can be mitigated by proper farm management and cultural practices. As suggested earlier in this paper, retailers will need to partner with farm management agencies or existing suppliers who are familiar with proper cultural practices and can search for management entities with cultural practices which best

fits their needs. While some farm managers may have different focuses such as premier practices on certain varieties, different methods to optimize yields, and different practices of sustainability, it is important for a retailer to find management company that is aligned with the same goals & objectives. Food born illness is also something that can occur and have a macro effect on demand, while this is an issue across all food products, this scenario is not calculated and quantified in this thesis and will be a variable for the retailer to consider.

A risk which can influence many agricultural impacts is changes in the marketplace related to either supply or demand. While this paper discusses national consumption and domestic production of lemons it is also important to discuss the influence of imports and exports that can change over time. Macro market moves can be influenced by geopolitical factors such as trade barriers, tariffs & subsidies. Also, the increase or decrease of production in foreign countries with existing imports to the US can influence the market as well. While there will always be threats of geopolitical influence, this thesis does not attempt to predict those influences and assumes the market based on historical figures referenced throughout the thesis. In the data collected through interview and survey we can conclude that retailers are focused on getting lemons that are grown locally to them, also from the retailer survey we can determine that the demand for lemons is consistent and inelastic. Based on this information the determination can be made that while market conditions may shift, the demand for locally grown San Joaquin Valley Lemons will remain consistent.

This section addressed some of the major concerns when considering which model of vertical coordination offers an optimal procurement model for retailers. While not every concern can be discussed in this section, it is important for retailers to be critical of their decisions when deciding to further vertically integrate their supply chain. It is important to note that none of these models need to be used for 100% of a retailer's supply chain but can be a model which is diversified into an overall procurement strategy at any level of penetration based on retailer demand and farm production.

5.4 Recommendations

The recommendation for this project is for retailers to pursue the new proposed fresh produce land acquisition procurement model. Conclusions from chapters 3 and 4 verify that the new proposed model of procurement not only offers increased profitability for the retailer but also offers a vertically integrated security of supply which would be unmatched in the industry. With potential for 65% profitability and increased security of supply through complete supply chain control the recommendation of this paper would be for retailers to pursue the land acquisition model on a size and scale appropriate with their demand.

CHAPTER VI: DISCUSSION & CONCLUSION

6.1 Overview & Scope

This thesis is an analysis of vertical coordination is intended to be a resource that provides information, insights, and recommendations to retailers when considering which procurement model to apply that aligns with financial and strategic goals. The topic of this thesis was identified through retailer ambitions to minimize commodity cost while also gaining control of a commodity's supply chain. Specifically, this thesis has reviewed the case of lemons grown in the California San Joaquin valley and has identified varying levels of profitability and strategic influence depending on the model applied.

The models discussed in this paper have different levels of vertical coordination ranging from highly transactional to highly strategical. While the fresh produce industry has evolved over the past century, models of procurement are not following other industries in advancements such as innovations from technology, genetics and sustainability. By advancing procurement models the industry has the potential to not only benefit farmers and retailers but also deliver the customer a fresher product at a reduced price. This last chapter will give an overview to the scope of this paper, key findings, limitations, further areas of research and a conclusion.

6.2 Key Findings

Throughout this paper many primary and secondary data sources were referenced, analysis was made, followed by recommendations. This section will focus on key findings that can be derived from this thesis and their significance. While this project specifically focused on the commodity of lemons sourced from the San Joaquin Valley of California

this same type of analysis can be applied for any fresh produce commodity in any region of the world.

The first and most significant finding of this paper was the financial savings of implementing the farm land procurement model vs a traditional market buy model. While realizing that this model would provide an additional opportunity of cost savings, the results confirmed and exceeded the expectations of the analysis. In the analysis it was determined that traditionally a retailer has a \$0.55/lbs or 37% initial profit margin when using the standard market buy procurement model. This is a profitability margin which is consistent across the market and industry contracts based on the USDA ERS market data. This analysis showed that while this level of profitability is standard in the market there is much more profitability to be captured through the farm land acquisition model.

When implementing the land acquisition model, profitability changes from a static 37% to a variable level of profitability that increases year over year throughout from the initial investment. This is forecasted based on increases in both farm inputs and market returns discussed in detail in chapter 3. While this model does require initial capital and has risks which are discussed throughout the paper it also offers a significant level of increased profitability. The full out of pocket capital of the investment is recovered by year seven along with increased profitability. In year seven of the model, profitability will increase to \$0.81/lbs or 55% initial profit margin. By year twenty the model reaches a profitability of \$0.96/lbs or 65% initial profit margin. While an assumption was made of increased profitability through the land acquisition model the expectations increased profitability were confirmed and exceeded by identifying significant profits in farm land ownership of California lemons.

Another key finding was the significance of risk mitigation strategies which lemon land owners have to mitigate the risks of their investment. Data regarding this was collected through interview done with California lemon farmers and was verified by insuring agencies. While profitability of the model is encouraging, it was important to consider the risks of the model as well. The paper takes these risks into consideration discussing topics such as yield or orchard loss through natural and market variables. The natural variables considered were impacts of weather such a natural disaster, flood or freeze, along with discussion of market influences through shift in market supply to demand. Analysis of these risks identified that although they are present they can be avoided and when not, can be mitigated.

These risks are mitigated through a strategic combination of preventative measures and crop insurance policies. Based on the information collected and verified the most significant threat to California San Joaquin lemons is a freeze. A freeze has the potential to wipe out up to 100% of an annual crop and also potentially damage the orchard permanently. Although this is the most critical natural threat identified to model it can be prevented and mitigated through cultural practices including use of wind machines and irrigation practices which help to warm and hold the heat of the orchard. When these cultural farming practices fail, there is also a crop insurance policy that can cover up to 100% of losses and is purchased by California lemon growers to hedge these risks. This was a key finding as it dismisses many, if not all of the natural threats which can influence risk to the farm acquisition model.

One more key finding that identified significant in the analysis was the commodity significance to the retailer. One variable when considering if retailers competitive landscape specially to lemons was done through store surveys and interviews. The data gathered during this process confirmed that lemons are very significant to California retailers. When surveying retailers, all retailers surveyed carried the lemon commodity and, in all interviews, conducted retailers either stated or referenced lemons as being very significant to their business. One quote which stood out during the interviews came from an interview with Trader Joe's "Lemons are used so many different ways people always want them, not having lemons would be an big issue.... One missing item can ruin a family's dinner." This quote not only shows the significance of the individual commodity but also the impact no having one item can have on a customer. Relating to this there was also a strong consensus having California and or locally grown lemons was preferable to the customer and strongly marketed by the retailer.

5.3 Limitations

This study was completed within the parameters and scope discussed in section 5.1 had certain variables and limitations and bounds on the research and analysis. One limitation of this paper is the geographical location and scope. The lemon commodity has consumption and production throughout the world, this paper was done in the scope of the San Joaquin valley of California. While some variables would be able to be applied to a state wide or national analysis of this topic, due to the intent of this project and available resources the paper is limited to that geographical score. Another limitation of this paper is that it is done specifically for the commodity of lemons. Although similar projects to this

thesis can be attempted using similar process and methods the conclusions and recommendations of this thesis should only be applied for the lemon commodity and no other citrus items.

Another limitation of this paper is the amount of analysis done regarding shifting market influence which can be shifted through changes in supply and demand, geopolitical trade influences and other factors. While considering additional market conditions may provide additional information and have potential to alter recommendations this analysis was outside the scope of this paper. Weighing scenarios of market changes because of geopolitical influences was not practical for this thesis and the research itself could be a stand-alone project which could incubate an undeterminable number of scenarios with unknown results. This thesis determined the market based on USDA historical data regarding production, consumption, market prices and other variables.

One other notable limitation is the different procurement models analyzed and proposed. While this thesis analyzes traditional models along with a proposed new model there is opportunity to suggest additional models which are either more or less vertically coordinated. The model proposed was determined to be the model analyzed based on its progression in the current evolution procurement models in the industry. While this was the model that was the focus of this thesis, the thesis does not explore other models which may be more or less vertically integrated depending on the proposed model and its specific parameters.

5.4 Areas of further research.

The limitations discussed in the previous section identifies the parameters and scope of this study. While this paper was contained in the outlined parameters, there are identifiable areas of further research that could be done to expand on the finding in this thesis. An area of further research that would provide value to retailers would be able to expand the geographical parameters of the thesis. While this paper does highlight a major California lemon growing region, there are other growing regions in California, United States and internationally. There may be additional strategic benefits from applying these procurement models across multiple growing regions in an attempt to gain additional financial benefits, strategic benefits or to simply diversify further.

Another application of further research would be to use the data types and methods of this paper as a basis to apply a similar analysis across other commodities which may benefit from an altered procurement model. Each commodity and geographic location will result in various levels of profitability, but we can conclude that wherever farmer profitability is a net positive there is potential for a retailer to achieve a reduced cost of goods in their supply chain and gain security of supply. Determining farm profitability through in-depth analysis or using the starting point of the USDA Price Spread of from farm to consumer will give retailers the ability to do analysis and determine to which commodity and geographic location is a strategic fit to integrate the land acquisition procurement model.

Lastly, as mentioned in the limitation section above. Additional research and analysis can be done to try and predict market conditions based on changes in supply and demand along with geopolitical influence. While in general this is a very broad subject,

certain analysis can be done by running market scenarios of conditions that may occur based on current or possible future geopolitical events & legislature. These are some of the areas which areas of further research can be applied and could further advance and broaden the scope of this thesis or a similar project.

5.5 Conclusion

In conclusion, this study is intended to be an analysis of vertical coordination that provides information, insights, and recommendations to retailers when considering which procurement model to apply that aligns with financial and strategic goals. This thesis has used primary and secondary resources to compare and contrast procurement models of lemons from California's San Joaquin Valley. Based on the analysis and results of this thesis a recommendation has been provided in chapter 4 that suggests the optimal procurement model for the discussed commodity and geographical region. The recommendation provided encourages retailers to implement the land acquisition sourcing model which would enable retailers to reduce their commodity cost while also gaining additional control of their commodity's supply chain.

Keeping in mind the intent of this thesis, analysis, recommendation along with the limitations mentioned, this completes the intent of this project. This thesis achieved the intent of identifying the status of the retail landscape and identifying potential reductions in cost while also providing a strategic competitive advantage. Finally, recommending a procurement model that is optimal for produce retailers for the case examined.

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APPENDIX A: RETAIL INTERVIEWS & SURVEYS

Questions	Costco - Store Manager/Supervisor
Is it challenging to keep products in stock? Specifically, lemons?	"We have a national buying team that helps insure we always have product. No issues with lemons specifically, but depending on the time of year we have items that are sometimes out." (Out of stock)
What is the impact of not having the product available?	We never want to be out of an item, especially in produce. "One missing item can ruin a family's dinner"
Are locally grown products significant to your customers?	"Yes. Being from fresno, people expect fruits and vegetables grown from this area" "If we don't have it, some of our customers will go to farmer's markets instead"
How do you advertise and market when you have locally grown products?	"In store we often try to feature locally grown items. Also we have a national marketing campaign."
Do customers often ask or take interest in the products origin?	"They care if its gown in California, other than that I am not sure they care where it comes from."
Is it difficult to be competitive on pricing with other retailers?	We always want to give our customers a good price. We adapt to our local market on pricing when we can.
Do you often face challenges with the quality of your products from growers?	It depends on the item, but on oranges and lemons we usually don't have a lot of quality issues.
Do you carry lemons year around? Is there any seasonality in supply and demand?	Yes. "There is always a demand for lemons."
Where do you procure them from? e.g. directly from growers, from distributors, wholesalers etc... Where does the majority of your lemon supply come from: local growers, regional growers, national growers, international growers.	All types. Local to International
What is the biggest challenge associated with ensuring consistent quantity and quality of lemons? How would you solve these issues if you had complete decision making power over the procurement process/arrangement?	In order to ensure quality Costco maintains good relationships with its suppliers. Manager said they have a team that works directly with farmers and suppliers at corporate office.
What is your procurement arrangement for lemons is based on: spot buys, contracts, exclusive relationships, strategic partnership, joint venture, vertical integration (e.g. we grow our lemons)?	Contracts, Strategic Partnerships, Joint Ventures. (Source Interview & Costco/A&W relationship via AP)
How important are lemons as a product category for your store/department? e.g. if you stop procurement of lemons will the effect on revenue be: very significant, somewhat significant, insignificant, very insignificant?	Very Significant. "All produce is very significant to our company, especially the big selling items like lemons."
With your company already engaging in a joint venture, do you see Costco ever implementing a farm procurement model? Model explained before question	I know that the market is becoming increasingly competitive and Costco would likely be interested in any strategy that would give us a competitive advantage."

Questions	Food 4 Less - Produce Assistant Mngr
Is it challenging to keep products in stock? Specifically, lemons?	"Sometimes, It depends on the item and time of year."
What is the impact of not having the product available?	"We will lose the sales and sometimes they customer wont come back."
Are locally grown products significant to your customers?	"On some items more than others, fresh prodce is the most important in the store"
How do you advertise and market when you have locally grown products?	"We promote in the newspaper and radio."
Do customers often ask or take interest in the products origin?	"Some customers ask, but some don't seem to care. "
Is it difficult to be competitive on pricing with other retailers?	No Comment. Did not want to discuss pricing.
Do you often face challenges with the quality of your products from growers?	"Our buyers deliver us quality products to put on our shelves, if its not good quality it wont be on the shelf". This can sometime result in not having the product on the shelf.
Do you carry lemons year around? Is there any seasonality in supply and demand?	Yes we carry them year around, it is not as seasonal as other items
Where do you procure them from? e.g. directly from growers, from distributors, wholesalers etc... Where does the majority of your lemon supply come from: local growers, regional growers, national growers, international growers.	"We always try and buy local products." If the product is not available locally we will buy depending on where it is grown, the quality and price. Depending on the item we source all over the world.
What is the biggest challenge associated with ensuring consistent quantity and quality of lemons? How would you solve these issues if you had complete decision making power over the procurement process/arrangement?	Quality and consistency comes from having good relationships with our growers." I would maintain good relationships with them and pay the amount nessesary to have good product year around. "
What is your procurement arrangement for lemons is based on: spot buys, contracts, exclusive relationships, strategic partnership, joint venture, vertical integration (e.g. we grow our lemons)?	Mixture of contracts and grower relationships which we have maintained over the years. Also we do buy additionally on the market when needed.
How important are lemons as a product category for your store/department? e.g. if you stop procurement of lemons will the effect on revenue be: very significant, somewhat significant, insignificant, very insignificant?	Very Significant. "This is an item that there isnt a lot of subsitute for, sometimes people will buy a lime instead, but people expect you to have lemons."

Questions	Market - Produce Buyer & Store Manager
Is it challenging to keep products in stock? Specifically, lemons?	"It depends on the time of the year, it can be in august and september."
What is the impact of not having the product available?	"Not having something the customer needs makes them lose your trust, it is important."
Are locally grown products significant to your customers?	"We have one of the best locally grown selections there is, if it's grown here, we have it."
How do you advertise and market when you have locally grown products?	Signing above each local item said "Locally Grown" then the City & Farm entity. Also chalk board listing local items when walking in store.
Do customers often ask or take interest in the products origin?	
Is it difficult to be competitive on pricing with other retailers?	"Yes. We are constantly checking local ads and other retailers to try and match and beat pricing when we can. It is sometimes difficult to compete on price when marking a locally grown item vs a item that is available at a national price."
Do you often face challenges with the quality of your products from growers?	"We try and partner with growers that we have consisently good quality over the years."
Do you carry lemons year around? Is there any seasonality in supply and demand?	Yes. Supply is somewhat seasonal and can get a little tight at times, they are always in demand
Where do you procure them from? e.g. directly from growers, from distributors, wholesalers etc... Where does the majority of your lemon supply come from: local growers, regional growers, national growers, international growers.	Local Growers, Regional Growers, National through brokers.
What is the biggest challenge associated with ensuring consistent quantity and quality of lemons? How would you solve these issues if you had complete decision making power over the procurement process/arrangement?	"It is important to give our growers visibility to our demand so that we can always have product available. We give them a projection of how much product we need weeks in advance they can prepare. If I don't like how a supplier is performing I can give a portion of my buisness to someone else to create competetition for better performance."
What is your procurement arrangement for lemons is based on: spot buys, contracts, exclusive relationships, strategic partnership, joint venture, vertical integration (e.g. we grow our lemons)?	"We buy on the market through brokers, have contacts on some items depending on the time of year. Also we are partnered with one of our vegitables growers." Asked to explain more... Strategic partnership "They plant their fields according to our demand and schedule and we commit to buying that product."
How important are lemons as a product category for your store/department? e.g. if you stop procurement of lemons will the effect on revenue be: very significant, somewhat significant, insignificant, very insignificant?	Very important. & Very Significant.

Questions	Save Mart - Produce Associate
Is it challenging to keep products in stock? Specifically, lemons?	"No, we usually have them available."
What is the impact of not having the product available?	"People sometimes get upset if we don't have a product. They may leave a bad review of the store and not shop here again."
Are locally grown products significant to your customers?	Yes. "We do a lot of local produce."
How do you advertise and market when you have locally grown products?	Store Signing, On Grocery Bag, Mail Ads
Do customers often ask or take interest in the products origin?	Yes. "People spend more time than you would think looking at the labels on the products"
Is it difficult to be competitive on pricing with other retailers?	Yes. "Pricing is always competitive for all produce and grocery."
Do you often face challenges with the quality of your products from growers?	Explained quality process. Product graded at distribution. Stores filter out expiring products at the store.
Do you carry lemons year around? Is there any seasonality in supply and demand?	Yes. "Customers are always buying lemons."
Where do you procure them from? e.g. directly from growers, from distributors, wholesalers etc... Where does the majority of your lemon supply come from: local growers, regional growers, national growers, international growers.	Local, National, International products all on shelf. Good amount of regional for the California grown commodities.
What is the biggest challenge associated with ensuring consistent quantity and quality of lemons? How would you solve these issues if you had complete decision making power over the procurement process/arrangement?	Central buying team. Procures and replenishes stores. "We usually have consistent quality and supply for lemons"
What is your procurement arrangement for lemons is based on: spot buys, contracts, exclusive relationships, strategic partnership, joint venture, vertical integration (e.g. we grow our lemons)?	Contracts & Strategic Partnerships
How important are lemons as a product category for your store/department? e.g. if you stop procurement of lemons will the effect on revenue be: very significant, somewhat significant, insignificant, very insignificant?	Very Important. "Every grocery store carry's lemons, it's a must have, you need to have a good combination of items to be successful. You would not just be losing the revenue of the one item but potentially the whole basket."

Questions	Trader Joe's - Assistant Mngr
Is it challenging to keep products in stock? Specifically, lemons?	No, We have a national buying team that helps keep our products on the shelf
What is the impact of not having the product available?	We never want to be out of an item, especially in produce. "One missing item can ruin a family's dinner"
Are locally grown products significant to your customers?	Yes "We carry lots of California grown produce"
How do you advertise and market when you have locally grown products?	Our store has signing to maket what products are locally grown.
Do customers often ask or take interest in the products origin?	Depends on the customer. Some customers seem more engaged than others in caring about the details of their food.
Is it difficult to be competitive on pricing with other retailers?	"We get our pricing from our coperate office. "
Do you often face challenges with the quality of your products from growers?	"We partner with premium growers to ensure good quality"
Do you carry lemons year around? Is there any seasonality in supply and demand?	"Yes, We have year around demand"
Where do you procure them from? e.g. directly from growers, from distributors, wholesalers etc... Where does the majority of your lemon supply come from: local growers, regional growers, national growers, international growers.	"We have a team that manages our procurment. They buy from California farmers but also internationally depending on the commodity. Not everything is grown in California but we get the commdoities we can."
What is the biggest challenge associated with ensuring consistent quantity and quality of lemons? How would you solve these issues if you had complete decision making power over the procurement process/arrangement?	"We don't see those issues usally at the stores, the are checked for quality at our distrubution centers." If a customer does not like the quality of a product after purhcasing, they can bring the product back.
What is your procurement arrangement for lemons is based on: spot buys, contracts, exclusive relationships, strategic partnership, joint venture, vertical integration (e.g. we grow our lemons)?	"I know we operate on some contracts but also have some relationships which are more strategic as we grow and expand our buisness."
How important are lemons as a product category for your store/department? e.g. if you stop procurement of lemons will the effect on revenue be: very significant, somewhat significant, insignificant, very insignificant?	"Yes"(Very Important). "Lemons are used so many different ways people always want them, not having lemons in our store would be a big issue."

