

EXPLORING THE CALAMANSI INDUSTRY USING ANSOFF MATRIX: BASIS FOR DEVELOPMENT PLAN

Written by **Dr. Fhrizz S. De Jesus, LPT¹, Julius B. Ramos², Johanna R. Gasing³,
Angelica C. Causon⁴**

¹ *Instructor, Nueva Ecija University of Science and Technology, Atate Campus, Palayan City
Philippines*

^{2,3,4} *3rd Year BSBA Students, Nueva Ecija University of Science and Technology, Atate
Campus, Palayan City Philippines*

ABSTRACT

Calamansi was form of livelihood of many Palayanos due to its numerous purposes. The researchers want to help the Calamansi growers achieve profitability and longevity in the market. This study explores the Calamansi Industry using Ansoff Matrix model and intend to determine if there is significant relationship between marketing strategies and the use of the aforementioned theory. This article utilized quantitative and descriptive analysis to assess the respondents in terms of their business operations. Findings revealed that calamansi growers were using direct type of competition, has nearby competitors consider SMS as form of advertising as well as marketed their calamansi fruits are known both on local public market and other marketplaces; the growers were able to acquire and refrain on its existing customers. The more the growers' pays attention regarding to fruit details the more income they generate; growers avoid to invest on research and development. Furthermore, the growers concealed the company/organization from strong competition and lessen to explore new avenues for sales. Calamansi farmers in the city some confronted the following problems: additional laborer expense most prevalent in organization and management aspect; price reduction that commonly experienced by growers in marketing aspect; lack of pesticides and fertilizers is the topmost technical/production problem; and shortage in capital in financial aspect. The findings and results from this study may have important factors in strengthening the practices, designing

effective agricultural methods and development plan to be used by the growers may be applied in the said industry.

Keywords: *Calamansi Industry, Ansoff Matrix Theory, Marketing Strategies, Development Plan*

INTRODUCTION

One of our daily necessities is food, and the Philippines' agricultural sector (DOA) is responsible for continually supplying both vegetables and fruits into our local market. There are cities in our country that are both excellent at growing and harvesting crops. Specifically, here in the City of Palayan, in which Calamansi or Philippine lime is prevalent. Like other industries, calamansi farming/industry is a source of revenue in Palayan, notably in certain barangays. Singalat, Popolon, Manacnac, Santolan, Aulo, Caballero, and Marcos Village are seven of the 18 barangays with a landmass rich in soil nutrients that are required for agriculture, particularly for fruit-bearing trees. According to Real and Digal (2010), Calamansi or Calamondin (*Citrofortunella microcarpa*) was considered a high crop in the Philippines due to its various purposes and profitability.

Palayan's Calamansi Industry achieved both economic and popular recognition. The DTI, which is one of the Commerce and Industry ministries, supports calamansi farmers. Under the Shared Service Facility initiative, DTI provided the Palayan City Calamansi Growers Association (PCCGA) with juice extraction equipment worth of Php.2.2 million. Additionally, many farms in the area have been able to lately produce citrus juice in large enough numbers to begin selling to several eateries in the city.

Based on the study of Garcia (1992), Calamansi production requires not just land but also a sufficient amount of capital to get started. The majority of people rely on family and neighbors for labor resources. As a result, regardless of the difficulties and concerns, the business is sustainable since the farmers' financial position has improved.

Moreover, growers must devote additional effort to marketing in order to ensure the profitability and longevity of the Calamansi industry in the market. This is to boost their

production and delivery capabilities. Calamansi is a seasonal fruit, growers should be required to develop new products from it, especially when there is an abundance of it; this diversification can help grow their income.

The researchers want to help the Calamansi growers achieved their desired success. The above-mentioned problems of the growers can be achieved using the Ansoff Matrix Theory. According to Corporate Finance Institute (2021), the Ansoff Matrix, alternatively called the Product/Market Expansion Grid, is a tool that businesses use to analyze and plan their growth strategies. The matrix illustrates four strategies for assisting a business in growing and also analyzes the risk associated with each strategy. The four strategies involved Market Penetration, Product Development, Market Development, and Diversification. By means of using these strategies, the Calamansi growers will be able to strengthen their competitive advantage in the market and at achieve their desired profit.

The researchers aimed to explore the Calamansi Industry in Palayan City using Ansoff Matrix model. The researchers also wanted to identify the marketing strategies and if there is significance with regards the use of Ansoff matrix theory and propose a business development plan to be used by the growers.

Operation of Calamansi Industry

MF. Quijano, G. Quijano, and R. Diaz (2020) states that, In the province of Nueva Ecija, Calamansi is considered one of the most valuable crops in the Phi lippines. Furthermore, if farmers can supply the required production inputs on a long-term basis, lime production may be a reliable source of revenue.

According to MF. Quijano, G. Quijano, & R. Diaz (2021), selected cities and municipalities in Nueva Ecija, including Palayan City, form the backbone of the Philippine agricultural sector, generating approximately 5.8 percent of total national agricultural production alongside the Central Luzon region.

Throughout the year, calamansi fruits are collected by cutting the stems when they become completely colored. The peak season in the Philippines is from mid-August through

October. The farm's farmers sort the fruits based on their condition, size, and color (Philippine Calamansi Association, 2015).

Calamansi may be grown from seed. However, the most common method for large-scale reproduction of superior plants is shield budding using calamandrin as rootstock. Calamansi may also be propagated via stem cuttings, marcotting, and grafting. Following the wet season, Irrigate calamansi trees during the first dry season; after that, trees may rely completely on rain for water. A three-year-old tree yields 75 kilos of fruit; a six-year-old tree yields 10 kilograms; and a ten-year-old tree yields 50 kilograms. Calamansi yields 20 tons of fruit per acre each year on average (Pinoy Negosyo, 2017).

Calamansi as a Source of Income for the Farmers

According to Baua (2021), Calamansi fruit flavor has the potential to be used as a component in the manufacture of mead wine. As a result, it is a highly suitable commodity in the community and has the potential to be a source of revenue and a producing business.

As stated by Ochasan, Aspuria and Cimafranca (2014), Citrus is a major commercial fruit crop produced in the Philippines. In terms of area and output, it comes fourth behind banana, mango, and pineapple. It is a significant source of revenue for many small farmers.

Factors such as socioeconomic (i.e., farmer educational attainment, household size, and income from other sources), institutional (i.e., extension contact, access to credit, and volume of output sold), and physical characteristics (i.e., type of road and location dummy) factors have a positive influence on farmers' decision to join a cooperative. Cooperative membership also had a diverse effect on the wellbeing of its members (Jimenez et al., 2018).

In addition, Jimenez et al. (2018), several non-member farmers, did not sell the majority of their peak season crop since the prices given by merchants were so low that they could not even recoup the cost of harvesting. Aside from calamansi cultivation, the farmers questioned were involved in a variety of agricultural and non-farm activities. Production of palay, banana, and other fruit crops was the most frequent source of off-farm income, with remittances and payment for services/labor provided accounting for the majority of non-farm revenue. The average annual income from other sources varied from PhP 37,060 to PhP 51,420 per adult.

Farmer non-members earn more money from other sources, with a mean difference of PhP 14,360 that is statistically significant at the 10% probability level.

According to Patena, Refuerzo and Barba (2003), Citrus is one of the Philippines' most important fruit crops, and its commercial production provides a significant source of revenue for many Filipino farmers. Calamansi, pummelo, orange (mandarin and sweet), lemon, and lime are among the most valued species. Calamansi is often used as a condiment and in juice. Despite declining acreage of other citrus species owing to disease outbreaks, notably tristeza virus and leaf mottling, calamansi stand has been rising.

Ansoff Matrix

Based on the study of M.S. Clarissia (2019), The Ansoff Matrix plays an important role by assuming all risk variables using a four quadrant approach. Due to the increasing technological changes, marketers must follow a step-by-step procedure to make their product acceptable in a highly competitive environment by considering market penetration, which includes various uncertainties, and other diversification strategies to acquire a relatively risk-free company. This technique is widely used in business strategy management to evaluate ideas for organization to grow the market and create new goods more objectively and correctly (Yin, 2016).

Market penetration measures of a product or service's sales as a percentage of the total projected market. It is helpful in developing strategies to enhance the overall share of those goods or services. Furthermore, established businesses utilize this approach to evaluate the possibility to improve their total income by gaining market share. In terms of penetrating in market this would be a great help to acquire your competitor within the same marketplace and increases your business distribution and promotion efforts (CFI, 2021).

According to Marcio (2017), The goal of market penetration is to utilize your product efficiently, join the market as quickly as feasible, and capture a significant market share. Moreover, market penetration is often employed as a metric to evaluate if your product or service has the potential to capture a certain proportion of the market.

A market development strategy is most effective if the firm owns proprietary technology that it can leverage into new markets, potential consumers mostly in a new market are profitable (i.e., they have disposable income), and consumer behavior in the emerging markets does not differ too far from consumer behavior in the established markets. In this sense, entering new markets may include entering new geographical locations, consumer groups, and so on (CFI, 2021).

According to Market Business News (2021), market development also entails attempting to persuade existing consumers to spend even more money. This may attempt to convey it through various mediums, rather than just extending geographically.

According to CFI (2021), the company creates a new product to serve the current market “Product Development”. The transition usually entails significant research and development as well as the growth of the company's product line. When companies have a good knowledge of their present market and are able to offer new solutions to suit the requirements of the existing market, they use the product development approach. Some of organization or companies form strategic alliances with other companies in order to get access to each partner's distribution channels or brand.

The organization's ability to undertake effective research and insight into their consumer and market requirements, as well as their own internal skills and competences for generating innovation, is critical to the strategy's success. As a result, the risk is greater than market penetration (Oxford College of Marketing, 2016).

A diversification strategy involves the company entering a new market with a new product. Although this approach is the most risky since it requires market and product development, the risk may be reduced slightly by relevant diversification (CFI, 2021).

Based on the study of Debashish, Tanzin and Madhuri (2017), In terms of crops, diversification may be an effective approach in this direction, and it has been proposed as a new strategy for improving and stabilizing production, making Indian agriculture export competitive, and so raising net farm income and economic security. Despite the fact that crop diversity is an essential tool for economic development, a country's capacity to diversify in order to achieve different objectives will be mainly determined by the possibilities for diversification and farmers' response to these opportunities.

OBJECTIVES OF THE STUDY

Specifically, it sought to answers the following:

1. How may the marketing profile of the respondents be described in terms of :
 - 1.1 Competition;
 - 1.2 Location of competitors;
 - 1.3 Number of Competitors;
 - 1.2 Marketing Strategies; and
 - 1.3 Marketing Outlets?

2. How may the operations of the respondents be assessed in terms of:
 - 2.1 Market Penetration;
 - 2.2 Market Development;
 - 2.3 Product Development; and
 - 2.4 Diversification?

3. What are the problems encountered by the respondents in their business operations in terms of:
 - 3.1 Organization and Management Aspect;
 - 3.2 Marketing Aspect;
 - 3.3 Technical/ Production Aspect;
 - 3.4 Financial Aspect?

4. Is there a significant relationship between the marketing strategies of the respondents and the use of Ansoff Matrix theory?

5. What business development plan may be proposed for the improvement of operations of the Calamansi growers in Palayan City?

MATERIALS AND METHODS

Research Design

The study was quantitative, wherein researchers used frequencies, percentages, weighted mean, or other statistical tool to determine its influence. This study also utilized descriptive analysis to assess the respondents in terms of their business operations.

According to Sheard (2018), unlike qualitative research, quantitative research works with facts that can be turned into numbers. Statistical methods organize, analyse, interpret, and present numerical data.

Descriptive analysis is a kind of data analysis that helps explain, illustrate, or summarize data points so that patterns may develop that meets all conditions (Rawat, 2021).

Study Locale

This study was conducted in the City of Palayan, Province of Nueva Ecija. The respondents are chosen from Barangays of Palayan where most of the Calamansi growers live such as Aulo, Santolan, Popolon and Manacnac.

Participant Selection

This study used purposive sampling; wherein one of the most common non-probability sampling techniques is the purposive sample. Purposive sampling, also known as judgment sampling, is the intentional selection of an informant based on the characteristics the informant has. It is a non - random method that does not need underlying hypothesis or a predetermined number of informants (Tongco, 2007).

The total sample size of the respondents of the study is 67 from the total population of 80. Raosoft application is used in this research to calculate the sample size with a 95% confidence level and a margin of error of 5%.

Data Collection

The results of this research were obtained via a limited face to face survey, interview and other online flat forms like messenger, which used a database to gather and store data, as well as statistical tools to analyse the results. Regarding the authenticity of the study subject, “Exploring the Calamansi Industry Using Ansoff Matrix: Problems and Recommendations,” the researchers begin gathering relevant data and material from the Internet. The questionnaire was led by relevant research and is confirmed by a competent person for validation of the recommended views. The researchers perform a dry run to ensure the questionnaire's reliability and validity. The instrument's reliability coefficient was evaluated and measured to ensure internal consistency. The reliability coefficient of the instrument was tested and measured with a score of .875, which means that the instrument has a good internal consistency.

Data Analysis

The information gathered from the location was encoded, tabulated, and evaluated. The data was analysed using statistical techniques such as percentage, frequency distribution, weighted mean and thematic analysis.

RESULTS AND DISCUSSION

1. PROFILE OF THE RESPONDENTS

Table 1. Marketing Profile of the Respondents in terms of Competition

Type of Competition	Frequency	Percentage
Direct	67	100%
Indirect	–	–
Total	67	100%

This finding indicates that those calamansi growers that near to each other were consider as competitors, and direct competition is the most useful type of competition in terms of Calamansi industry. As added by the respondents, this provides a chance to save marketing expenses while also adding value to calamansi fruit.

According to Monson, Mainville and Kuminoff (2008), direct marketing is a potentially appealing marketing option since it has been proven to improve farmers' net revenue. Furthermore, farm size, high-value crop production, non-certified organic production techniques, and household size influence the proportion of total farm output sold via direct competition.

Table 2. Marketing Profile of the respondent in terms of Location of Competitors

Location	Frequency	Percentage
Within the Barangay	43	64%
Within the Cluster	10	15%
Within the City	14	21%
Total	67	100%

The result implies that all growers within the same location compete with each. The respondents added that it enables the buyers to compare goods from various vendors before making a final purchasing choice since the sellers is nearby to each other.

Because location influences both the direct marketing channel utilized and the capacity to attract consumers, it may have a significant effect on an enterprise's profitability (Dunn, Harper & Kime, 2005).

Table 3 . Marketing Profile of the respondent in terms of Number of Competitors

No./s	Frequency	Percentage
1-2	19	28%
3-4	12	18%
5 & above	36	54%
Total	67	100%

The above finding indicates that the more competitors in the same region, the less income they may produce and the higher the seller's competitive nature. According to the respondents, despite the fact that they have many rivals, they have no option but to continue producing calamansi fruit since it has become their source of income.

According to Menezes and Quiggin (2012) when competition is fierce, the majority of the benefits from more competition are grabbed by a small number of companies, and future gains from entrance are modest. Once the intensity of competition is low, decreased in the number of companies may have a significant effect on wellbeing.

Table 4. Marketing Profile of the respondent in terms of Marketing Strategies

Marketing Strategy/ies	Frequency	Percentage
SMS	36	54%
Direct mail	3	5%
Referrals	17	25%
Trade fairs	11	16%
Total	67	100%

This table demonstrates that respondents who used SMS or text messaging to communicate with their clients may increase revenue and participate in a wider market. According to respondents, some of them have contact with local brokers via whom they can easily sell those calamansi fruits. They also added that through SMS it is more convenient way to get in touch with their buyers.

Mobile marketing is a marketing strategy that employs pre-existing infrastructure to enable companies to interact directly with consumers through cell phones or other mobile devices. Small companies lack expertise creating and implementing mobile marketing strategies to boost sales (Doleman, 2017).

Table 5. Marketing Profile of the respondent in terms of Marketing Outlets

Marketing Outlets	Frequency	Percentage
Sari-sari Store	9	13%
Specialty Store	2	3%
Local Public Markets	56	84%
Total	67	100%

The above table presented that **(56) or 84%** of the respondents used local public markets as their marketing outlets of Calamansi fruits. This finding indicates that almost of the respondents sold their harvested calamansi in public markets because of many distributors, many customers will emerge at the same time as well opportunities. According to the respondents, public markets are usual things especially here in City of Palayan as starting point of marketing fruits and vegetables specifically calamansi fruits.

Consumer views about buying at farmers markets in general, and public markets in particular, vary. Income, education, age of family head, household size, and price and quality of produce seem to be significantly associated with consumer buying habits and attitudes about shopping at public markets (Bukenya, Mukiibi & Molnar, 2007).

2. Industry Assessment using Ansoff Matrix

Table 6. Market Penetration

Market Penetration	WM	VI	RANK	VD
Our Calamansi fruits are well-known in various public markets.	3.75	Always	1	Practiced all the times
Our Calamansi fruit have a competitive price for the market.	3.73	Always	2	Practiced all the times
Our Business uses marketing strategies to gain market share.	3.70	Always	3	Practiced all the times

Our Calamansi fruit are sold in different market places.	3.20	Sometimes	5	Practiced once in a while
Our Calamansi fruit are bought by all ages.	3.47	Always	4	Practiced all the times
Market Penetration	3.57	Always		Practiced all the time

The calamansi fruits of the growers are known in different public markets because of numerous competitors in the said outlet “public markets” are selling the same fruit, with a weighted mean of **3.75** and verbally interpreted as **Always**. However, the growers calamansi fruit are being sold in different market places gained the lowest weighted mean of **3.20** and verbal interpretation of **Sometimes**.

Based on the findings, being known or acquainted in different public marketplaces seems to be one of their assets. According to the respondents, when their calamansi fruits become well-known in different public markets, it implies that they seek new consumers and lower their prices in order to increase demand and market share.

According to Clarissia (2019) that to retain the product's market share alongside existing competitor brand products and make it accessible to new tiers of consumers, or by finding a new set of customers inside established markets, "Promotion" must be included as a marketing mix component.

Table 7. Market Development

Market Development	WM	VI	RANK	VD
Geographically expanding.	2.61	Sometimes	3	Practiced once in a while
Upselling to our existing customers.	2.23	Often	4	Practiced in few instances
Attracting non- users of calamansi.	3.24	Sometimes	2	Practiced once in a while

Attracting the competitors' customers.	3.88	Always	1	Practiced all the times
Market Development	2.99	Sometimes		Practiced once in a while

Calamansi growers were able to acquire competitors' customers due to the quality of harvested calamansi, with a weighted mean of **3.88** and verbal interpretation of **Always**, while upselling to their existing customers received the lowest weighted mean of **2.23** and verbal interpretation of **Often**.

The data indicates that enticing the customers of rivals may be beneficial, and it highlights the benefits that a client receives while doing business with you. Respondents also indicated that acquiring rivals' consumers requires persistence and faith in yourself that you would sell your calamansi fruits for a profit.

According to Quardighi and Pasin (2006), The rate of new client acquisition for each competition is determined by its own goodwill, while the rate of disloyalty for existing consumers is determined by the percentage of faulty products.

Table 8. Product Development

Product Development	WM	VI	RANK	VD
We continuously improve our existing products.	3.28	Always	2	Practiced all the times
We perform research and development to improve our products.	2.36	Often	4	Practiced in few instances
We pay attention to details.	3.76	Always	1	Practiced all the times
We reduce production costs and add features to our products.	2.75	Sometimes	3	Practiced once in a while

Product Development	3.04	Sometimes	Practiced once in a while
----------------------------	-------------	------------------	----------------------------------

The respondents' pays attention to details of their calamansi fruit specifically on its qualities through sorting method ranked as number one with a weighted mean of **3.76** and verbal interpretation of **Always**. On the other hand, calamansi growers **Oftenly** perform or invested on research and development to improve their calamansi fruits with a weighted mean of **2.36**.

Based on the results, as the growers pays more attention on the fruit details it drives many customers to encourage buying calamansi fruit because of the good quality and ripeness in accordance with their desires.

This is line with study of Borin, Cerf and Khrishnan (2011), Consumer perceptions of product quality, value, and purchase intentions do not vary substantially between goods with and without favorable environmental statements. As added by Zineldin (2006), Changes in quality over time within different segments or linked to particular goods or categories of products/services may be used to measure loyalty

Table 9. Diversification

Diversification	WM	VI	RANK	VD
Protect company from strong competition.	3.15	Sometimes	1	Practiced once in a while
Explore new avenues for sales.	2.50	Often	4	Practiced in few instances
Minimize the risk of business downturn	3.05	Sometimes	3	Practiced once in a while
Boost brand image.	3.12	Sometimes	2	Practiced once in a while
Diversification	2.96	Sometimes		Practiced once in a while

According to table 12, in terms of diversification, the majority of calamansi farmers protect their business from severe rivalry since calamansi production is common within a barangay(neighbourhood) and has 5 or more rivals, with a weighted mean of **3.15** and verbal interpretation of **Sometimes**. Exploring new possibilities for sales to create extra revenue, on the other hand, had the lowest weighted mean of **2.50** and verbal interpretation of **Frequently**.

The findings imply that since the nearby calamansi growers were identified as a competitor, the business or organization is obligated to protect its growers, pruners, and sellers. According to the respondents, although selling the same fruits, they proceed immediately to the market, unlike other calamansi growers.

The ability to diversify in order to accomplish various goals will be largely influenced by comparative advantages and farmers' responses to these opportunities (Debashish et.al, 2017).

According to Farmtree (2018), Diversification is not a remedy and may be a time-consuming process, but it can also be very interesting and profitable. It may take many forms, both agricultural and non-agricultural.

3. PROBLEMS ENCOUNTERED ON CALAMANSI INDUSTRY

Table 10. Organization and Management Aspect

Organization and Management	Frequency	Percentage	Rank
Laziness and Absenteeism	13	19%	3
Unequal Distribution of task	20	30%	2
Additional laborer: Kabesilya	34	51%	1

The additional labor fee that pays for the kabesilya was the source of the majority of the organization's and management's issues.

According to Yuan, Dai and Gong (2017), the larger farms have the greatest cost and profit margin, while tiny farms have the lowest cost and profit margin, and medium-sized farms have a cost and profit margin that fall between the large and small sizes. In the line with this, Uematsu and Mishra (2012) expounded that organic growers pay much more on labor, insurance, and marketing than conventional farms.

Another issue to examine is the unequal distribution of task on some calamansi growers. According to some responses, they have experienced it since certain calamansi pruners are connected to calamansi farm owners, thus they excused themselves from doing the task that was given to them, which seems to be unfair to other laborers.

Farming-family relationships are often pragmatic but objectively unequal. However, when mutual recognition occurs, these arrangements may still be regarded as fair, leading in satisfaction among family members (Contzen & Fortney, 2017).

Table 11. Marketing Aspect

Marketing	Frequency	Percentage	Rank
Price Reduction	49	73%	1
Emerging Indirect Competitors	18	27%	2

The price reduction was ranked 1 as problem in aspect of marketing. This means that when the price of calamansi fruit declines, farmers are hesitant whether or not to sell their harvested calamansi.

According to Belay and Ayalew (2020) that having access to pricing information raises average farm-gate prices for traded commodities and encourages farmers to devote additional acreage, fertilizer, and better seeds to commodities.

Another problem to consider is the emergence of indirect competitors, which indicates that there is an alternate product instead of using calamansi and may be seen as a threat to growers.

According to Small Business BC (2021.), indirect competitions are companies that provide somewhat different goods and services but target the same set of consumers in order

to meet the same demand. These are often referred to as replacements. Micheels & Boecker, (2017) added that Competitive strategy, along with an effective and timely reaction, is a critical element in enhancing anticipated future performance

Table 12. Technical/ Production

Technical/ Production	Frequency	Percentage	Rank
Lack of Pesticides and Fertilizers	24	36%	1
Insufficient source of Proper Irrigation System	13	19%	3
Oversupply	13	19%	3
Fortuitous Events	17	25%	2

Lack of pesticides and fertilizers was the most frequent problem of calamansi growers in the City of Palayan. This means that calamansi trees must be treated with pesticides and fertilized on a regular basis in order to produce high-quality fruits when harvesting time arrives.

Based on the brochure of Rockford City entitled “Applying fertilizers and pesticide” (2006), fertilizers stimulate plant growth by supplying nutrients to the soil. Pesticides (which include herbicides) are any poisonous chemical that is used to kill insects, animals, or plants. If fertilizers and pesticides are applied incorrectly, they may wash off your lawn or garden and straight into our streams and rivers.

Furthermore, an insufficient source of irrigation system, as well as an oversupply of calamansi fruit, was a technical and production issue to address. This shows that a lack of a consistent source of irrigation may impair the calamansi trees' ability to produce quality calamansi fruits, resulting in a loss in the calamansi business, while an overabundance (surplus) of calamansi fruits may induce rotting.

According to Agrimag (2018), irrigation is an essential part of the agricultural system. It increases land productivity by supplying enough water to crops to enhance output and maintain production stability even under severe weather conditions. Mores (2016) added that

during peak production times, an excess of fresh calamansi products in the market led prices to drop and fruits to decay at many fields. Farmers have been discouraged from keeping their calamansi trees alive and have switched their focus to growing other fruits.

Table 13. Financial Aspect

Financial	Frequency	Percentage	Rank
Shortage in Capital	35	52%	1
Spoilage of calamansi fruit	32	48%	2
T			

Shortage in capital is the no. 1 problem in terms of financial aspect. The result implies that investing in calamansi industry can be sacrificial but rewarded at the same time.

Access to financial instruments has a significant impact on farmers' choices to invest and produce (Ruiz, 2014).

Based on the study of Li, Cao and Guo (2016), the financial activities and continuing operations of small and medium-sized businesses (SMEs) are accomplished via large graded loans and cost allocation throughout the production chain. Karlan (2012) & Cai (2009) noted that increasing access to finance may expand farmers' investment choices and provide them with more effective risk-management tools.

Another difficulty to consider is the spoilage of calamansi fruit, which, according to other responders, it occurs when there is an excess of calamansi during harvesting season. This means that if spoiling arises, a large number of them will incur losses, yet they will have no option but to continue working in the calamansi industry. Also, Losses are more severe in developing countries than in developed economies, and the warm, humid agro-ecology, along with inadequate storage structures that define tropical agricultural landscapes, has been blamed for these massive losses, among other things (Enyiukwu, 2020).

4. SIGNIFICANT RELATIONSHIP BETWEEN THE MARKETING STRATEGIES OF THE RESPONDENTS AND THE USE OF ANSOFF MATRIX

Table 14 presents the significant relationship between the marketing strategies and the use of Ansoff Matrix

Table 14. Marketing strategies and the use of Ansoff Matrix

Ansoff Matrix	<i>r</i>	<i>p</i> – value	VI	Decision
Market Penetration	0.3788	0.5294	Low positive correlation	Accept the null hypothesis
Market Development	-0.0628	0.9371	Weak negative correlation	Accept the null hypothesis
Product Development	0.6132	0.3867	Moderate positive correlation	Accept the null hypothesis
Diversification	0.7035	0.2964	High positive correlation	Reject the null hypothesis

*Critical value /significance level: ($\alpha=0.05$)

The table above reveals that **diversification** has to only one with verbal; interpretation of **High positive correlation** towards the marketing strategies with calculated of r-value of (**0.7035**) but had a p-value of (**0.2964**) which is greater than the critical value of 0.05, so there is no significant relationship between diversification and marketing strategies of the respondents.

The findings indicate that whether a corporation approaches marketing by defending their company/organization against intense competition, exploring new routes for sales, or enhancing their calamansi fruit image, it has no effect on the producers' marketing methods. According to respondents, diversification in the calamansi industry, such as adding additional revenue-generating activities, will have no effect on their marketing strategies for calamansi

fruits; on the contrary, it will increase their income, but they will be unable to focus on producing quality calamansi fruits.

Farm diversification, as defined by Business Info (2021), occurs when a farm expands its operations beyond standard farming by adding revenue-generating industries. This could be in addition to or in instead of its typical agricultural activity. Diversification of the farm can take many forms, ranging from pastured poultry and organic beef production to the establishment of a bed and breakfast in the barn or a local tourism destination. Additionally, market development has a modest negative link with marketing methods, indicating that even if they are successful in attracting competitors' clients, they would not activate the marketing techniques used by calamansi growers.

According to Kokemuler (2019), market development is characterised by the fact that it frequently demands capital investment in growth, whether through new construction or the expansion of marketing activities into new markets. If the new prospect fails, the business will have squandered money and resources that could have been invested in other ventures.

CONCLUSION AND RECOMMENDATION

With the data given from the discussions, it can be concluded that the majority of respondents utilized direct competition within the barangay, considered SMS as their marketing strategy, and identify local public market as marketing outlets.

In terms of the assessing the the Calamansi industry using Ansoff Matrix, most of the respondents penetrate on the market by means of ensuring the profitability of calamansi fruit they “always” make sure that their calamansi are known in different public market; and sometimes growers sold their calamansi in different market places. Most the respondents were able to acquire competitors’ customers and avoid upselling to its existing customers oftenly when it comes to market development. Majority of the respondents stated that they always pay attention with regards to calamansi fruit details and oftenly engaged in research and development. Sometimes, the respondents protect the company from strong competition in the market while they oftenly explore new avenues for sales. In this line, the following are recommended by the researches:

Strengthening the application of best practices in Calamansi farmer marketing and implementing additional business processes to replace ineffective ones. Calamansi farmers can thereby achieve longevity and sustainability in their businesses, as well as broaden their scope of operation in terms of organization and management, marketing, technology, and finance.

The Calamansi industry should enhance its procedures in accordance with the Ansoff Matrix, which will result in a shift in the strategic orientation and digitization of Calamansi growers, possibly resulting in an increase in the quality of their fruits.

Various therapies are recommended to alleviate the difficulties faced by Calamansi farmers. It may assist them in identifying efficiency improvements and cost reductions that will enhance their economic advantages as linked with the project's overall viewpoint, so assisting them in accelerating and stabilizing economic growth.

Creating more dependable methods and concepts for enhancing the calamansi industry's brand image in the City of Palayan in order to diversify the market. Establish the most effective methods for improving the quality of Calamansi fruits.

It is proposed that the researcher's development plan be used to assist Calamansi growers in increasing revenue regardless of industry change, and that the initiatives included in the proposed development plan may augment their income as well as expand, grow, and benefit the economy in the long run.

REFERENCES

- Agrimag (2018). Philippine agriculture saddled by poor irrigation systems. <<https://www.agriculture.com.ph/2018/02/12/philippine-agriculture-saddled-by-poor-irrigation-systems/>> Accessed on October 1, 2021
- Baua, M. A. I. (2021). Development and acceptability of mead wine with calamansi fruit flavor. *Plant Science Today*, 8(3), 451–455. <https://doi.org/10.14719/pst.2021.8.3.1069>

- Belay, D. G., & Ayalew, H. (2020). Nudging farmers in crop choice using price information: Evidence from Ethiopian Commodity Exchange. *Agricultural Economics*, 51(5), 793-808.
- Borin, N., Cerf, D. C., & Krishnan, R. (2011). Consumer effects of environmental impact in product labeling. *Journal of Consumer Marketing*.
- Bukenya, J. O., Mukiibi, M. L., Molnar, J. J., & Siaway, A. T. (2007). Consumer purchasing behaviors and attitudes toward shopping at public markets. *Journal of Food Distribution Research*, 38(856-2016-57945), 12-21.
- Business Info (2021). Diversify your Farm Business. < <https://www.nibusinessinfo.co.uk/content/what-farm-diversification>> Accessed on September 27, 2021
- Clarissia, M. S. (2019). A Study on Ansoff Matrix Technique: As a Growth Strategy and Adaptive Learning Technique Adopted In the Leading Brand of Products. *A Journal of Composition Theory (India)*.
- Contzen, S., & Forney, J. (2017). Family farming and gendered division of labour on the move: a typology of farming-family configurations. *Agriculture and human values*, 34(1), 27-40.
- Corporate Finance Institute (2015). What is Market Penetration? < <https://corporatefinanceinstitute.com/resources/knowledge/economics/market-penetration/>> Accessed on September 30, 2021.
- Corporate Finance Institute (2015). Ansoff Matrix < <https://corporatefinanceinstitute.com/resources/knowledge/strategy/ansoff-matrix/> > Accessed on September 30, 2021.
- Doleman, J. P., (2017). *ProQuest LLC*, D.B.A. Dissertation, Capella University. Understanding How to Use Mobile Marketing in Small Businesses.
- Dunn, J., Harper, J., & Kime, L. (2005). *Agriculture Alternatives: Fruit and Vegetable Marketing for Small-scale and Part-time growers*
- El Ouardighi, F., & Pasin, F. (2006). Quality improvement and goodwill accumulation in a dynamic duopoly. *European journal of operational research*, 175(2), 1021-1032.
- Enyiukwu, Dn & Bassey, In & Nwaogu, Ga & Chukwu, La & Maranzu, J. (2020). Postharvest Spoilage and Management of Fruits and Vegetables: A Perspective on

Small-Holder Agricultural Systems of the Tropics Enyiukwu et al / Greener Trends in Plant Pathology and Entomology. 3. 1-17.

- Hota, Debashish & Pattanaik, Madhuri & Ladon, Tanzin. (2017). Diversification of Temperate Fruit Crops-Prospects and Achievements.
- Jimenez, C. D., Catelo, S. P., Elauria, M. M., & Sajise, A. J. U. (2018). Impact of Cooperative Membership on Household Welfare: Evidence from Calamansi Farmers in Oriental Mindoro, Philippines. *Journal of Economics, Management and Agricultural Development*, 4(2), 27-44.
- Karlan, Dean, Isaac Osei-Akoto, Robert Osei, and Christopher Udry. 2012a. Examining Underinvestment in Agriculture: Measuring Returns to Capital and Insurance. *Innovations for Poverty Action*, New Haven, CT.
- Kokemuller, N. (25, January 2019). Market Development vs. Market Penetration <https://smallbusiness.chron.com/market-development-vs-market-penetration-66561.html> Accessed on October 1, 2021
- Leonard, K. (February 2019). Product Development Strategy Definition <<https://smallbusiness.chron.com/product-development-strategy-definition-5144.html>> Accessed on September 23, 2021
- Li, C., Cao, Q., & Guo, F. (2009). A method for color classification of fruits based on machine vision. *WSEAS Transactions on Systems*, 8(2), 312-321.
- Market Business News (2021). Market Development. < <https://marketbusinessnews.com/financial-glossary/market-development/>> Accessed on September 29, 2021.
- Marcio, M. (6 February, 2017). Market Penetration Strategy: Definition & Pros and Cons. < <https://www.linkedin.com/pulse/market-penetration-strategy-definition-pros-cons-marcio-monti> > Accessed on September 26, 2021
- Menezes, F. M., Quiggin, J. (2012). More competitors or more competition? Market concentration and the intensity of competition. *Economics Letter*. <https://doi.org/10.1016/j.econlet.2011.11.001>
- Monson, J., Mainville, D., & Kuminof, N. (2008). The Decision to Direct Market: An Analysis of Small Fruit and Specialty-Product Markets in Virginia. *Journal of Food Distribution Research*. [10.22004/ag.econ.55971](https://doi.org/10.22004/ag.econ.55971)

- Mores, M.,C.,L., (2016). Value adding revives town's wasting calamansi industry. < <https://fanssea.searca.org/news-and-updates/fanssea-news/value-adding-revives-town-s-wasting-calamansi-industry>> Accessed on September 30, 2021.
- Ochasan, J. M., Aspuria, N. T., Celo, M. A. F., Cimafranca, A., Gumtang, M. Q., & Custodio, R. G. (2014). Survey, Strain Identification and Management of Huanglongbing (HLB) Disease of Citrus in the Philippines.
- Oxford College of Marketing, (2016). The Ansoff Matrix to Develop Marketing Strategy. < <https://blog.oxfordcollegeofmarketing.com/2016/08/01/using-ansoff-matrix-develop-marketing-strategy/>> Accessed on October 1, 2021
- Patena, L. F., Refuerzo, L. C., & Barba, R. C. (2003). Somatic embryogenesis in calamansi (*X Citrofortunella microcarpa* Bunge.) and lime (*C. aurantifolia*, Swingle). Philippine Journal of Crop Science (Philippines).
- Phau, I., & Teah, M. (2009). Young consumers' motives for using SMS and perceptions towards SMS advertising. *Direct Marketing: An International Journal*.
- Philippine Calamansi Association (2015). Calamansi Fruits Harvest. < <http://www.philippinecalamansi.org/2015/05/calamansi-fruits-harvest.html>> Accessed on October 1, 2021
- Pinoy Negosyo (2017). How To Develop Calamansi Production At Your Farm Lot. < https://www.pinoynegosyo.net/business/calamansi-production-440.html?fbclid=IwAR04YopqN3LE8Qv5hswobODMkEazix4nmlvJpQ0eONPcMBc_QqIX-8c0mVw> Accessed on October 1, 2021
- Quijano, M.F.; Quijano, G.; Diaz, R. Agricultural Economic Production of Philippine Calamansi Industry: A Basis for Production Local Development Plan. Preprints 2021, 2021020388 (doi: 10.20944/preprints202102.0388.v1).
- Rawat, A. S. (31, March 2021). An Overview of Descriptive Analysis. <<https://www.analyticssteps.com/blogs/overview-descriptive-analysis>> Accessed on September 24, 2019
- Ruiz, C., (13 January, 2014). How Can Finance Influence Productivity of Agricultural Firms? < <https://blogs.worldbank.org/allaboutfinance/how-can-finance-influence-productivity-agricultural-firms> > Accessed on October 1, 2021

- Sheard, J. (2018). Quantitative data analysis. In K. Williamson, & G. Johanson (Eds.), *Research Methods: Information, Systems, and Contexts, Second Edition* (2nd ed., pp. 429-452). Elsevier. <https://doi.org/10.1016/B978-0-08-102220-7.00018-2>
- Small Business BS (2021). Understanding Your Competition. <<https://smallbusinessbc.ca/article/understanding-your-competition/>> Accessed on September 25, 2021
- Tongco, M. D. (2007). Purposive Sampling as a Tool For Informant Selection. *Ethnobotany Research & Applications: A Journal for Plants, People, and Applied Research (Philippines)*.
- Uematsu, H., & Mishra, A. K. (2012). Organic farmers or conventional farmers: Where's the money?. *Ecological Economics*, 78, 55-62.
- Yin, Nan. (2016). Application of AHP-Ansoff Matrix Analysis in Business Diversification: The case of Evergrande Group. *MATEC Web of Conferences*. 44. 01006. 10.1051/matecconf/20164401006.
- Yuan, Y., Yuan, Y., Dai, Y., & Gong, Y. (2017). Economic profitability of tilapia farming in China. *Aquaculture international*, 25(3), 1253-1264.
- Zineldin, M. (2006). The royalty of loyalty: CRM, quality and retention. *Journal of consumer marketing*.