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Profitability of fruit business in one municipality of Northern Philippines

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Abstract

Fruits and vegetables have been identified as potential production alternatives to use available farm resources. This study aimed to determine the profitability of fruit business in Conner Apayao, Northern Philippines. Data were obtained from the 110respondents through a questionnaire and gathering of the secondary data. Descriptive and inferential statistics were employed to determine the relationship between the production area and yield and among the production area, yield and profit were used in the data analysis. Findings of the study revealed that the wider the production area, the higher the production yields. The banana plant had the highest production area while the dragon fruit had the least production area. In terms of production yield and production cost, rambutan had the highest production yield and cost. On the average profit and the profitability along net profit margin, return on investment and benefit-cost ratio, all the fruits are very profitable with rambutan consistently generating the highest profit and profitability ratio for 5 years. Furthermore, there is a significant perfect relationship between average production area and yield. There is a low correlation between production area and profit while a negative low correlation exists between yield and profit. The fungible and perishable items were the top problem encountered by the fruit farmers in Northern Philippines.

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Introduction

The Philippines is an archipelago composed of 7,107 islands stretching to an area of 300,000 square kilometers. Luzon, Visayas, and Mindanao are the three largest island groups. Its favorable climate and fertile soils make it an ideal location for tropical fruit production. The country boasts of more than 300 species of edible fruits and nuts but only 20 species are cultivated commercially (Rodeo, 2016).

Agricultural products like fruits are very essential in the human diet because of their healthy –based food value as the source of vitamins and minerals. The new consumer awareness of health is driving fruit consumption. It is believed that increasing fruit consumption contributes to a healthier lifestyle. Taking a diet rich in fruits may reduce risk in stroke and other vascular diseases. Hence, growing fruits is an opportunity for people to engage in. With the growing population in the Philippines, the security of food supply can be a problem if people do not go into business like growing of fruit trees, rice, and other root crops and eventually selling them at reasonable prices. A business is any activity that involves the trade, production of goods, services or both to consumers. It may refer to a particular organization or to an entire market sector. Compound forms such as agribusiness represent subsets of the word's broader meaning, which encompasses all activities by suppliers of goods and services.

The challenge in the organization is on how to identify which fruit is profitable. The benefit of this will guide the people to prioritize the fruit trees to be grown as well as the fruits to be sold so as to little time, effort and money. High fruit and vegetable intake can promote health and prevent chronic diseases such as heart diseases and certain types of cancer (Hu, 2003). The health benefits of fruits and vegetables seen in epidemiological studies are the main reasons for the recommended intake of at least 400 g of fruit and vegetables per day (WHO, 2003).

In the context of agribusiness management in academia, each individual element of agriculture, production, and distribution may be described as agribusinesses. However, the term "agribusiness" most often emphasizes the "interdependence" of these various sectors within the production chain. The discipline of agribusiness is changing to market-centric. All agents of the food and fiber value chain and those institutions that influence it are part of the agribusiness system. Within the agriculture industry, "agribusiness" is used simply as a portmanteau of agriculture and business, referring to the range of activities and disciplines encompassed by modern food production. There are academic degrees in and departments of agribusiness, agribusiness trade associations, agribusiness publications, and so forth, worldwide.

In the Philippines, suitable type of business is the agriculture. This is a business of agricultural production. It includes agrichemicals, breeding, crop production (farming and contract farming), distribution, farm machinery, processing, and seed supply, as well as marketing and retail sales. That seminal work traces a complex value-added chain that begins with the farmer's purchase of seed and livestock and ends with a product fit for the consumer's table. There are a lot of agricultural businesses in the Philippines; one of these is the fruit and vegetable farming and the resale of such fruits and vegetables to the consumers which is the focus of this study. Traditionally, fruit-tree cropping has been practiced by smallholders for household consumption in, for example, home gardens and forest gardens (Kumar and Nair 2004; Wiersum 2004), yet, over the years small-scale fruit production for marketing purposes has gained field. With the transition from shifting agriculture to short-fallow and permanent systems of crop cultivation, more attention has been given to the development of sustainable farming systems to combat decreasing soil productivity, and land degradation in general. Magulod (2018) cites that biodiversity has the fundamental value of human survival. However, at present, it is being assaulted due to rapid and accelerating anthropogenic activities causing the persistent decline in production.

Fruit Business is a regulated business with specific rules and guidelines regarding fruit grade, a method of transportation, storage requirements and freedom from disease or insect infestation. Most fruit brokers distribute fruit locally, which is common practice in Conner, Apayao, although some may have distribution on the national level. It is always best to start out small, at the local level, and expand the business slowly. A careful analysis of what fruits should be purchased most is necessary. This is the most crucial step in forming a fruit business because this might be the cause of profitability or losses in the future due to its shelf life or slow turnover of inventories.

With the soil suitability and capability, fruit-bearing crops are abundant in the Municipality of Conner-Apayao, the locale of the study. Having such a capacity would mean a high dependence on establishing their own fruit business. Fruit business is very essential in the community, it would give opportunity not just to those average income earners but to those who cannot be employed, physically challenge can earn income through this endeavor.

The risk of having this business is the fact that fruits are produced seasonally, but the market requires products throughout the year. Although this problem of matching product availability with consumer demand was solved in two ways: First, selling fresh products during harvest and shortly thereafter and second, processing the rest to meet demand during the rest of the year. But the next challenge in the community is on to identify what fruit would give a high profit in the future. Thus, the vendors should make a preliminary study on the choices of the people despite the fact that it is seasonal.

This study, the profitability of fruit business in the municipality of Conner, Apayao would give the vendors guidance in the near future for their upcoming peak of business and additional knowledge that would be helpful in their fruit business. This would be a guiding path for every vendor's goal- profit oriented and fruit specification that would give high profits. With the abundance of these fruit crops, it will create an avenue for the province to and promote its agri-tourism potential. This study will give a background of the past harvest crops' profits on the different fruit-bearing tree which includes lansones, rambutan, dragon fruit, bananas, and citrus crops.

The basis for conceptualizing the profitability of fruit business in the municipality of Conner Apayao is to provide an option and guide every fruit business owners, farmers and would be investors of the business on which fruit has the greatest demand and can lead to entrepreneurship and income generation. Fruit Business is full of uncertainties and in order to minimize such uncertainties, we need to have proper planning in business.

According to Lovitt (2002), growing and selling fresh produce can be a profitable and satisfying family business; however, risks are involved. Before investing money, time, and energy into any new business venture, it is advisable to first evaluate personal skills, market conditions, financial resources, and overall project feasibility. He affirmed that people who have successful fruit and vegetable businesses provide quality products in a clean and customer-friendly environment that encourages repeat sales. They know their markets and what their customers want. They also manage money, people, and natural resources effectively. Growing and selling fruits and vegetables can be a satisfying family business.

Profitability according to Ballada (2018) is the primary motive of any business venture. Income is the money generated from the business activities while expenses are the cost of resources consumed in the activities of the business. Ballada (2018) measures profit by subtracting expenses from the revenues generated by the business. Profitability is the ability of the business to generate adequate profit to sustain its operations and earn a satisfactory return to the owners. A business is said to have a net profit if its revenues exceed its expenses. Obtaining net profit is an indication of success or failure in business. Tulisan (2014) described that profitability is from the word profit and ability, which is the power of the business entity to earn a profit or the ability of a given investment to earn a return from its users.

It is one of the best techniques for measuring the productivity of capital employed and operational efficiency of an investment.

Fruit business is an income generator to people and the country, however, only a few types of research were studied in this area. Some researches on fruit business conducted were on the benefits of fruits and vegetables, factors affecting the agricultural production and marketing of the products. Information on business profitability, yield, and challenges in this field of business are still inadequate, hence this study attempts to fill the gaps.

Recent economic conditions in agriculture have led to a decrease in farm income and increased stress on many farm families. As a result, farmers have considered alternative means to improve their economic plight. One alternative receiving much attention has been the intensive production of fruits and vegetables. A problem confronting farmers considering fruit and vegetable enterprises involves effective estimation of the potential of these products for the commercial market. The main objective of the study is to determine the profitability of the fruit business from 2011 to 2015. Specifically, it aimed to determine the 1) production area and yield of the fruits produced like a) banana-saba b) citrus (mandarin) c) lansones d) rambutan and e) dragon fruit, 2) significant relationship between the production area and yield 3) average net profit on the identified fruits 4) conduct a financial analysis using net profit margin, return on investment and benefit-cost ratio 5) significant relationship among the production area, yield and profit and 6) the problems encountered by fruit farmers.

Materials and methods

Research Design

The descriptive correlational research design was used in the study. The descriptive component focused on the survey of the production area and yield of the fruits produced and the problems encountered by the fruit farmers. Likewise, the correlational component determined the relationship among the production area, yield, and profit.

Descriptive research is research designed to provide a snapshot of the current state of affairs while the Correlational aspect is designed to discover relationships among variables and to allow the prediction of future events from present knowledge.

Respondents

The 110 respondents were taken from the 22 barangays of Conner, Apayao selected through stratified random sampling. Stratified random sampling is a method of sampling that involves the division of a population into smaller groups known as strata. In stratified random sampling or stratification, the strata are formed based on members' shared attributes or characteristics.

Location of the Study

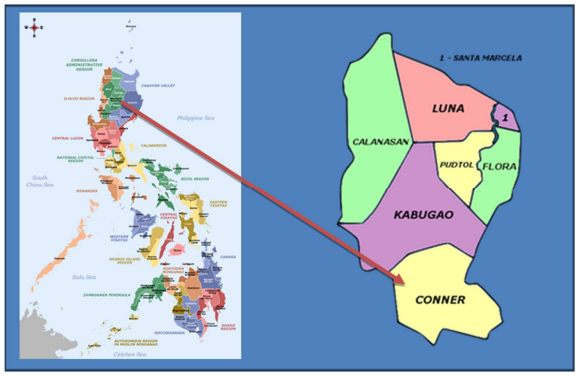

Fig. 1. Map of the Philippines showing the Province of Apayao where the Municipality of Conner is situated as the site of the study.

The study was conducted in the municipality of Conner, Apayao, Northern Philippines. It is bounded on the east by Rizal, Cagayan, on the west by Teneg, Abra and on the southern part by Pinukpuk, Kalinga (Fig. 1). It is located at 17° 48′ 0″ N, 121° 20′ 0″ E. Apayao is bounded on the north and east by Cagayan, on the west by Ilocos Norte and Abra and on the south by Kalinga. The Cordillera Central Range, with an elevation range of 300 to 2,500 feet above sea level, extends from north to south of the province. There are steep slopes, rising peaks, masses of rocks and plateaus on the west and the north is characterized by relatively young rock formations, rolling terrain, and sloping foothills. The province is classified into Upper and Lower Apayao. Upper Apayao has three towns with an area of 67.2% of the province.

It has a mountainous topography characterized by towering peaks, plateaus and intermittent patches of valleys. On the other hand, Lower Apayao has four towns which comprise 32.8% of the land area. It is generally flat, with rolling mountains and plateaus. The northern and central districts of the province are drained by a large river system, Apayao River that traverses six municipalities (Calanasan to Luna) and flows into the north coast of Cagayan, 25 km west of the Cagayan River mouth at Aparri, and out into the Babuyan Channel.

Instrumentation

A structured questionnaire was the main instrument used in gathering the data needed in the study. A self-made questionnaire was prepared by the researcher which was validated by experts. The instrument identified the production area and yield of the fruits produced and the problems encountered by the fruit farmers.

Data Analysis

For the analysis of the data, the descriptive statistics like frequency counts, percentages, ranks, and averages were used. Further, Pearson Correlation and t-test were used to test the relationship between the production area and production yield and among the production area, yield, and profit.

Results and discussion

Table 1 shows that on production areas planted for the past five years, banana got the highest. This is due to the time involved before a banana plant bears fruit. A banana plant takes about 9 months to grow up and produce a bunch of bananas. It can be gleaned from the table that rambutan ranked second followed by mandarin. Based on reading materials, the years involved before a rambutan tree bears fruit is 4 to 5 years, while it takes 3 years for mandarin to bear fruit. With the introduction of the grafted longkong lansones from Thailand and Malaysia, it takes 5 to 6 years to bear fruits as compared to that of 10 to 15 years from seeds locally germinated. Although it takes 1 year for dragon fruit cuttings to bear fruit, it has the least production area. It could be gleaned from the table that growers considered the years it takes the fruit trees to bear fruits.

Table 1. Presents the production area of the selected fruits.

	Production Areas (ha)					
Fruits	2011	2012	2013	2014	2015	Total
Banana-Saba (*Musa acuminata* × balbisiana)	187	189	185	194.17	194.17	949.34
Mandarin (*Citrus reticulata*)	29	36	41	50	68	224
Lansones (*Lansium domesticum*)	20	22.5	26.5	50	62	181
Rambutan (*Nephelium lappaceum*)	39	43.40	51.4	65	74	272.8
Dragon Fruit (*Hylocereus undatus*)	5	4	5	7	10	31

The table on production yields shows that from year to year, the yields had been increasing except for lansones which remain constant in production per metric ton per hectare for 3 years and it had its increasing trend in 2014 and 2015. However, in terms of fruit trees that gave the highest yield for the past five years, rambutangot the highest with a total yield of 48.94 metric tons per hectare followed by mandarin which is 45.35 metric tons per hectare. The lowest yield in metric tons per hectare for the past five years is on dragon fruits. Dragon fruit in the locality was not well known yet. As per observation, it is only now that dragon fruit is getting its popularity as it was identified as a medicinal fruit.

According to Nyombi (2013), soil fertility, moisture stress, pests were considered constraints in the production of fruits such as bananas and rambutan. He affirmed that increasing fruit prices, urbanization, and infrastructure development are likely to increase demand for bananas and reduce transportation costs. In order to reduce the production constraints, research should embrace a systems approach. Research should be done on mineral fertilizer recommendations for the major fruit producing areas.

As to the average production area, the banana plant got the highest in the area and ranked 3rd on production yield. This is due to the limited quantity that a banana plant can yield per harvest as compared to the other fruits. Although lansones is the second highest in terms of the production area, it got the highest on production yields. This is because of the nature of the fruit-bearing trees.

A rambutan tree can yield 2000 kilos per season. Dragon fruit got the lowest in average production area and yields. This was because of its being new in the place. People were not yet aware of the benefits provided by the plant.

Table 2. Distribution of Production Yields in Metric Tons per hectare.

	Production Yield in metric tons per Hectare					
Fruits	2011	2012	2013	2014	2015	Total
Banana-Saba (*Musa acuminata* × balbisiana)	5.54	5.60	8.38	10	10.56	40.08
Mandarin (*Citrus reticulata*)	8.62	7.22	9.51	10	10	45.35
Lansones (*Lansium domesticum*)	5	5	5	9	10.16	34.16
Rambutan (*Nephelium lappaceum*)	6.75	9.05	10.01	11.08	12.05	48.94
Dragon Fruit (*Hylocereus undatus*)	4	3.75	4.50	3.71	4	19.96

Table 3. Average production area (HA) and yield of the following fruits in Metric tons.

Fruits	Area (HA)(a)	Production (MT)(b)	Yield (b/a)
Banana-Saba (*Musa acuminata* × balbisiana)	189.87	1,527.16	8.04
Mandarin (*Citrus reticulata*)	44.80	416	9.29
Lansones (*Lansium domesticum*)	36.20	285	7.87
Rambutan (*Nephelium lappaceum*)	54.56	556.53	10.20
Dragon Fruit (*Hylocereus undatus*)	6.20	23.80	3.84
Banana-Saba (*Musa acuminata* × balbisiana)	66.33	561.70	8.46

The table shows that the average area of the production has a significant perfect relationship with average production yield per year as shown by the Pearson correlation of 0.99 and the t-test value of (-) 2.20 at the t-critical value under .05 level significance of 2.13. This means that the area of production can highly contribute to the increase in the production yields of the fruits. It can, therefore, be confirmed that the wider the production area, the higher increase in the production yield of the fruit per year. A similar study has been found out by Firoz *et al* (2007) on the yield and yield attributes of okra as influenced by planting time and plant spacing in hill slope condition.

The proceeding table shows that all the fruits are profitable. The fruit that gave the highest average net profit is rambutan. Rambutan, as cited in the Philippine primer, is the second top fruits in the Philippines. The second fruit that provides high profit for the last five years was lansones which also ranked as the third top fruit in the country. The fruit that generated the lowest profit was the banana because a banana plant only bears a banana bunch which is smaller in quantity as compared to the fruits of a rambutan tree. The production cost and expenses for all the fruits are very minimal when the fruits trees started bearing fruits. The data showed that when sales are high, production cost and expenses are also high but with high profits. Silva *et al* (2008) noted the relationship between production costs and fruit yield profitability.

Table 4. Correlation of the Average Area with the Average yield per year.

Variables	Average Value	Standard Deviation	Correlation	t-test	t-critical Value
Area	66.33	71.39	0.99	(-) 2.20	2.13
Yield	561.70	574.30			

Decision: Reject Ho/ Significant Perfect Relationship

Table 5. Average Gross Sales, Cost of Production & Expenses, Net Profit.

Fruits	Gross Sales	Cost of Production & Expenses	Net Profit
Banana-Saba (*Musa acuminata* × balbisiana)	300,446.52	18,450.80	281,995.72
Mandarin (*Citrus reticulata*)	435,817.44	30,303.70	405,513.74
Lansones (*Lansium domesticum*)	2,086,661.11	33,639.60	2,053,021.51
Rambutan (*Nephelium lappaceum*)	2,928,314.56	37,133.24	2,891,181.32
Dragon Fruit (*Hylocereus undatus*)	413,907.61	23,461.30	390,446.31

The proceeding table shows that regardless of the tool used in evaluating and analyzing the profitability of the different fruits, rambutan was consistent to be the lead fruit in terms of profitability followed by lansones. This confirms the statement of Lutzs (2010) that there is no single way to express profitability. These leading fruits in terms of profitability are included among the top 10 fruits in the Philippines as cited on the Philippine primer. This implies that people are aware of the benefits of such fruits. Rambutan, for instance, is reached in antioxidants

that fight free radicals and prevent any ailment that they might cause. Mandarin or citrus got the lowest rank in terms of their profitability. However, the five fruits are all profitable.

Table 6. Financial Data on Net Profit Margin, Return on Investment & Benefit-cost Ratio.

Fruits	Net Profit Margin	Rank	Return on Investment	Rank	Benefit-cost Ratio	Rank
Banana-Saba (*Musa acuminata* × balbisiana)	94.00%	4	22%	4	24.13%	3
Mandarin (*Citrus reticulata*)	93.04%	5	16.69%	5	17.93%	5
Lansones (*Lansium domesticum*)	98.39%	2	74.29%	2	75.50%	2
Rambutan (*Nephelium lappaceum*)	98.73%	1	92.86%	1	94.06%	1
Dragon Fruit (*Hylocereus undatus*)	94.33%	3	22.36%	3	23.70%	4

The table shows that the correlation between the production area and Yield is 0.99 which mean perfect correlation. This implies that the wider the area, the higher the yield. On the other hand, between the production area and Profit, the correlation is -0.27 which is the low correlation. This indicates that if the area is reduced, the profit may increase depending on the other factors of production. Lastly, between the yield and profit, the correlation is -0.21 which means negative low correlation. This also means that whenever the yield has a small increase, the profit may be reduced due to other factors affecting the sales.

Table 6. Correlation of the Production area, Yield, and Profit.

Variables	Area	Yield	Profit
Area	1		
Yield	0.994812943	1	
Profit	-0.275396525	-0.213369284	1

On the table presented, the top five ranking problems of fruit farmers are fungible and perishable items, seasonal fruits, spoilage, climate, and strong competition. It can also be gleaned from the table that the five highest problems are beyond the control of the fruit farmers. However, the problem on spoilage can be solved if fruit farmers think of going for fruit processing. The least problem identified by the farmers/entrepreneurs was the lack of processing facilities which delays their going into processing activities that can also be contributory to their profitability as well as solve the problem of strong competition among them.

In the previous study of Rubzen, Janes & Dias (2011) they found out that fruit farmers are faced with high marketing costs, lack of access to main markets and low prices for their produce. Moreover, the quality of local produce is considered inferior to imported vegetables, thus prices fetched for locally produced vegetables are also lower. This is exacerbated by a lack of grading and standardization system, hence farmers are unable to take advantage of any price differentiation.

Table 7. Problems encountered by fruit farmers.

Problems	Frequency	Percentage	Rank
Seasonal Fruits	65	59	2
Fungible and Perishable items	68	62	1
Climate	29	26	4
Unfinished Farm to Market Road	15	14	6
Distance to commercial sites	6	5	10
Lack of transportation facilities	8	7	7
Limited Workers	6	5	10
Strong Competition	18	16	5
Inadequate harvest facilities	5	5	10
11.An absence of storage facilities	7	6	8
12.Lack of processing facilities	4	4	12
13.Spoilage	45	41	3

*multiple responses

Conclusions

This study concludes that the wider the production area, the higher is the production yield. The production area is contributory to the increase in production yields of the fruits. Fruit business is a very profitable business. All the fruits produced and sold are profitable with a high rate of return whether computed on the net profit margin, return on investment or benefit-cost ratio. Lastly, the production cost and expenses incurred are very minimal. As to the problems encountered by fruit farmers, the five ranking problems on fungible and perishable items, seasonal fruits, spoilage, climate, and strong competition.

Recommendations

The researcher recommends that the fruit farmers engaged in the business can sell any of the fruits covered in the study. However, a study or analysis as to the fruits providing the highest profit should try to consider other factors like the time element involved in the fruit trees before they bear fruits. Pieces of training should be conducted on fruit preservation or processing to address the problem on perishable produce as well as spoilage. An association should be organized among the people engaged in business to have a friendly competition. A study should be conducted to include other factors of measuring the profitability of the fruit business like time involved in growing the fruit trees before bearing fruits, and the capital involved.

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