

Original Article

Cassava and Wheat Flour Mixture: A Market Potential Study and Marketing Plan

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Abstract - This study is an assessment of the market potential of cassava flour mixed with wheat flour with the end in view of coming up with an effective plan for marketing in Northern Samar. Specifically, it sought answers to determine the market potential of the mixture of cassava and wheat flour in terms of demand and supply in Northern Samar. It also looked into the factors that may affect the demand for the mixture as perceived by the bakery operators and other commercial users of flour. Likewise, it tried to find out the difference between wheat flour and cassava flour mixed with wheat flour in the baking cake, bread, and cookies in terms of appearance, flavor, and texture. The competitive strength of cassava flour mixed with wheat flour against pure wheat flour was determined in terms of quality, price, and cost. Meanwhile, the factors that constitute the effective marketing plan; and the specific strategies that may constitute an effective marketing plan for the mixed cassava and wheat flour with respect to product quality, price, place, and promotions in Northern Samar were also determined. The research design employed the descriptive method. Three sets of interview schedules were adopted in data gathering, which determined the potential demand and supply of cassava flour, and a scorecard was also used to evaluate the significant difference and competitive strength of cassava flour. The study revealed that more bakery operators and other commercial users of flour were willing to purchase cassava flour if the price was lesser than the prevailing price of wheat flour. There were more entrepreneurs or would-be producers who were willing to produce cassava flour if the price would be less than the prevailing price of wheat flour. The deciding factor of bakery operators and other commercial users of flour to buy cassava flour is dependent on the quality of bakery products baked from the cassava and wheat flour combined. The study indicated that in terms of quality, there was a significant difference between the two kinds of flour. In determining the competitive strengths of cassava flour in terms of price and cost, the price of wheat flour was slightly higher than the price of cassava flour, and the cost of expenditures that can be saved by the bakery operators and other commercial users of flour by using cassava and wheat flour mixture was too minimal with the small difference of price and cost, it was not too significant to determine that cassava flour was competitive in price and cost over wheat flour. The means of the bakery products are made of cassava flour in terms of their appearance, flavor, and texture. However, it was noted that cake was the only bakery product

from cassava flour mixed with wheat flour that was acceptable to the consumers. The factors that constituted the effective marketing plan were the marketing strategies and the marketing plan that of the marketing mix of four P's product, price, place, and promotions. On the basis of the findings of the study, the researcher finally came up with a conclusion that there was less market potential of cassava flour mixed with wheat flour in Northern Samar. Nevertheless, he expects to reverse the situation by coming up with a marketing plan.

Keywords - Mixture, potential, marketing, demand, and supply

I. INTRODUCTION

The devaluation of the peso has drastically affected the country's economy. Excessive importation of goods is one of the many causes that weaken the value of the peso. To stabilize the value of the peso to a certain extent, the Philippines has to limit its importation. Flour is one of the many goods imported by the Philippines. Million tons of wheat flour are shipped to the Philippines from other countries, contributing to the further devaluation of the peso. The importation of flour can, however, be reduced if crops abundantly grown here in the Philippines are utilized as a substitute for wheat flour. One of the significant discoveries of the Philippine Poot Crops Research and Training Center (PCRTC), VISCA, Baybay, Leyte revealed that cassava flour could be a substitute for wheat flour, an expensive item in the food industry, as the prime ingredient in bakery products.

Research conducted at VISCA showed that instead of using 100 percent of wheat flour, cassava flour could be used as a substitute flour with a substantial rate of 25 percent in bread, to as high as one hundred percent in cookies and other hard bread. It has been observed that the quality of the food product mixed with cassava flour and consumer preferences for the product has not been affected. On the part of bakery operations, the use of cassava flour as a substitute means reduced production costs. Bakeries will be able to save 10 percent of their expenditure on the materials by substituting wheat flour with cassava, either partially or totally, depending on the kind of food product.



However, there is no commercial production of cassava flour in the province of Northern Samar. It is either because the people are not aware of the technologies, nutritive values, or food application of cassava flour, or the entrepreneurs are just hesitant to venture into this kind of business for some reason or another. Identifying the market potential of cassava flour will provide the researcher and prospective entrepreneurs' basic information supportive to the decision of establishing a cassava flour processing enterprise in the Province of Northern Samar, which could be developed into an industry. The development of the cassava flour processing industry in Northern Samar will, in one way or another, contribute to the improvement of the economy of the province through increased employment opportunities for the people and income generation for small farmworkers.

There are no reports which show that the Department of Trade and Industry and the Department of Science and Technology has conducted a study to determine the demand, supply, and competitiveness of cassava flour. In view of this, the researcher was prompted to conduct this study which primarily aims to determine the actual market potential of cassava flour in Northern Samar, which will serve as a basis in the formulation of a marketing plan for the product. The researcher is of the belief that he is at a vantage position in pursuing this study considering his educational qualification, being a holder of the Business field of marketing as an entrepreneur.

II. STATEMENT OF THE PROBLEM

In order to determine the market potential of cassava flour in Northern Samar and come up with an appropriate marketing plan, this study aims to:

1. Determine the market potential of cassava flour in Northern Samar in terms of demand and supply.
2. Find out what factors affect the demand for cassava flour as perceived by the bakery operators and other commercial users of flour in Northern Samar.
3. Determine the significant difference between wheat flour and cassava flour mixed with wheat flour in the baking cake, bread, and cookies in terms of appearance, flavor, and texture.
4. Find out the factors that determine the competitive strengths of cassava flour against wheat flour in terms of quality, price, and cost.
5. Identify the factors that constitute an effective marketing plan.
6. Come up with the strategies that may constitute the marketing plan for cassava flour in Northern Samar.

III. METHODOLOGY

This study was conducted in the Province of Northern Samar, which occupies the entire Northern portion of Samar

Island on the Eastern edge of the Philippine Archipelago. Its territories are being defined by the Pacific Ocean on the East, San Bernardino Strait on the North, the Samar Sea on the West, and Western Samar. The province embraces an area of 3,495 sq. km with a population of 449 663. Twenty-four municipalities comprise the province of Northern Samar, with Catarman as the capital town and at the same time the hub of commerce and industry in the province. The choice of Northern Samar as the locale of the study is due to several reasons. One reason is that the current commercial production of cassava flour in the province is wanting despite the existence of processing technologies and food applications, coupled with the awareness of the nutritive value of cassava. Another reason is the fact that there is a need to fully utilize the crop which is abundantly grown in the province.

There is a felt need to improve the economic status of the industry in the province, and with this study to be conducted in the province, income and employment opportunities of small farmers will be augmented. Likewise, there is also a need to motivate prospective entrepreneurs in the province by providing them basic information that will support their plan to establish a cassava flour processing enterprise in Northern Samar.

A. Respondents of the study

The respondent of the study is 53 farmers, 42 entrepreneurs, 64 bakery operators and other commercial users of flour who were randomly selected from 19 municipalities of the province of Northern Samar and 82 students randomly selected from the College of Business Administration of the University of Eastern Philippines, who composed the jury of evaluators. To ensure that each municipality was represented proportionally, the following steps were observed.

1. The number of farmers, entrepreneurs, bakery operators, and other commercial users of flour in each municipality was determined.
2. The percentage of respondents taken from each municipality was determined by dividing the number of farmers, entrepreneurs, bakery operators, and other commercial users of flour in each municipality by the total number of farmers, entrepreneurs, bakery operators, and other commercial users of flour in the Province of Northern Samar.
3. The percentage of respondents from each municipality was multiplied by the sample size to determine the number of respondents that were taken from each municipality.
4. The respondents from each municipality were identified through simple random sampling.

B. Research Design

The descriptive survey research design was utilized to determine the potential demand and supply of cassava flour. On the other hand, the competitive strength of bakery products in terms of quality was determined by adopting the jury evaluation technique.

C. Research Instruments

The study adopted three sets of interview schedules in data gathering. Set A was utilized in interviewing bakery operators and other commercial users of wheat flour from whom potential demand for cassava flour was gathered. Set B was intended for entrepreneurs who were probable investors or operators of cassava flour processing firms in Northern Samar. Set C was used specifically for farmers who were producing or potential producers of cassava. The last two sets of interview schedules were designed to gather data that establish the potential supply of cassava flour in Northern Samar. In determining the competitive strength of cassava flour in terms of the quality of bakery products partially or purely made of cassava flour, a scorecard was used. The scorecard was used in evaluating the quality of the bakery products in terms of appearance, flavor, and texture. A one-to-five rating scale was used to describe the quality of the snack samples. This evaluation scorecard was patterned after the instruments used by Delariarte, Julaponthong, and Sonti in their studies, with very slight modification.

D. Validation of Research Instruments

Since the interview schedule was researcher-made, they were submitted to the members of the advisory committee for comments and improvements. Other experts in the research were also consulted for further comments and suggestions, and the final draft was again submitted to the advisory committee for editing before the pre-testing was administered.

The instrument was pre-tested with entrepreneurs, farmers, bakery operators who were not included in the actual testing of the respondents. After one week, the same questionnaire was given to the same entrepreneurs, farmers, bakery operators who answered it the first time it was subjected to pre-testing. The responses to the items in the questionnaire were analyzed to find out if their responses did not change. To determine the reliability of the instrument, the Pearson Product Moment of Correlation was used before the final run of the questionnaire was conducted.

IV. FINDINGS

The market potential of cassava flour in Northern Samar in terms of demand and supply per month is presented in Table 1.

Table 1. Market Potential of Cassava Flour in Terms of Demand and Supply

Price of Cassava flour	Mean		Difference in Kilos
	The demand for Cassava Flour (in kilos per month)	Supply of Cassava Flour (in kilos per month)	
• Equal to the prevailing price of the wheat flour	335	726	391
• Less than the prevailing price of wheat flour	481	746	265
Difference	146	20	

Table 2 present the responses of farmers on the number of sacks of cassava produced every year. Thirty farmers, or 56.60%, responded that they produced below 50 sacks of cassava, six or 11.32% responded 200 to 249 sacks, five or 9.43 answered that they produced 250 sacks above, another five or 9.43% answered 50-99 sacks, four or 7.55%, 150-159 sacks. Three or 5.67% indicated that they produced from 100-149 sacks. This implied that the majority of the farmers were producing below 50 sacks, while others produced 50 sacks and more.

Table 2. The Market Potential of Cassava in Terms of Supply

No. of Sacks Per Year	Frequency	Percent
250 – above	5	9.43%
200 – 249	6	11.32%
150 – 199	4	7.55%
100 – 149	3	5.67%
50 – 99	5	9.43%
Below 50	30	56.60%
TOTAL:	53	100%

The factors affecting the demand for cassava flour perceived by the bakery operators and other commercial users of flour are presented in Table 3. The different factors were ranked from 1 to 6, and it was found out that the factor on “Quality of bakery product produces” ranked 1, the “Availability (supply) of Cassava Flour” ranked 2, followed by the “Demand for Bakery Products”, “Buying price of cassava flour”, buying price of wheat flour and selling prices of bakery products all ranked 6.

Table 3. Factors affecting the Demand for Cassava Flour

Factors	Weighted Frequencies	N	Rank
• Quality of bakery product produced	185	64	1
• Availability (supply) of Cassava Flour	196	64	2
• Demand for Bakery Products	215	64	3
• Buying Price of Cassava Flour	224	64	4
• Buying Price of Wheat Flour	250	64	5
• Selling Price of Bakery Products	268	64	6

Table 4 shows the comparison of wheat flour considered as sample 2, and cassava flour and wheat flour mixture, as sample 1, in determining their significant difference and competitive strength in terms of quality.

Table 4. Comparison of the Wheat Flour (Sample 2) and combined Cassava and Wheat Flour (Sample 1) in terms of quality.

Characteristics	Bakery Products	Sample 2 (Wheat Flour)		Sample 1 (combined cassava/wheat flour)		t-test		Degrees of Freedom	Level of Significance	Interpretation
		Mean	Standard Deviation	Mean	Standard Deviation	Computed Value	Tabular Value			
Appearance	Cake	4.38	.696	3.84	.728	4.865	1.645	162	.05	S
	Bread	4.26	.763	3.26	1.040	7.042	1.645	162	.05	S
	Cookies	4.28	.758	3.50	.820	6.341	1.645	162	.05	S
Flavor	Cake	4.26	.798	3.88	.822	3.016	1.645	162	.05	S
	Bread	4.16	.838	3.02	.868	8.571	1.645	162	.05	S
	Cookies	4.26	.836	3.42	.888	6.296	1.645	162	.05	S
Appearance	Cake	4.37	.694	3.77	.821	3.727	1.645	162	.05	S
	Bread	4.38	.601	3.21	.857	10.086	1.645	162	.05	S
	Cookies	4.22	.786	3.27	.994	6.786	1.645	162	.05	S

The competitive strengths of cassava flour in terms of price were determined through the comparison of the price of wheat flour. Table 5 presents the responses of bakery operators and other commercial users of flour with regard to the prevailing price of wheat flour, with an average price of P16.60 per kilo. The price of Cassava flour was assumed at P16.50 per kilo. When both prices were compared, there was only a slight difference of 10¢ per kilo, which means that cassava flour was lower by only 10¢ per kilo, not too significant to determine that cassava flour was competitive in price over wheat flour.

Table 5. The prevailing price of wheat flour in the market

Price per Kilo	Frequency	Points
P12.00	4	48
P13.00	7	91
P14.00	2	28
P15.00	6	90
P16.00	8	128
P17.00	4	68
P18.00	23	414
P19.00	4	76
P20.00	6	120
TOTAL	64	1,063

The factor that constituted the effective marketing plan was the marketing strategies. "Marketing strategy spells out the game plan for attaining the market objectives". The primary role of the marketing strategy was to contribute to the achievement of the organization's goals by developing satisfactory exchange transactions with customers.

The specific strategies that constituted the effective marketing mix popularized by McCarthy of Michigan State University are called the four Ps. Each P variable has its own marketing function identified as follows:

1. **Product.** To provide benefits desired by the target market.
2. **Placement (or distribution).** To make product conveniently available to target market consistent with its purchasing patterns.
3. **Promotions (or Marketing Communications).** The promotion has four components, and the right promotion mix must be chosen.
 - a) **Advertising** – to effectively inform and persuade the target market.
 - b) **Public Relations** – to offer a positive image of the company and the brand.
 - c) **Selling** – to get customers to buy.
 - d) **Sales Promotions** – to convince customers to buy immediately.
4. **Price.** To make the product affordable to the target market.

V. CONCLUSION

The following conclusions were formulated on the basis of the findings of this study. There are more bakery operators and other commercial users of flour who are willing to purchase cassava flour if the price were lesser than the prevailing price of wheat flour. There are more entrepreneurs or would-be producers who were willing to supply cassava flour at a lower price more than the demand of the bakery operators and other commercial users of flour. The factor that most affected the demand for cassava flour was the quality.

There was a significant difference between wheat flour and cassava flour mixed with wheat flour in the baking cake, bread, and cookies in terms of appearance, flavor, and texture. The factors that determined the competitive strength of cassava flour against wheat flour were quality, price, and cost, which were less competitive.

The factors that constituted the effective marketing plan are the marketing strategies. The specific strategies that constitute an effective marketing plan are the four P's of the marketing mix: Product, Price, Place, and Promotions.

Finally, in the light of the above conclusions, the researcher is of the conviction that there is less market potential for cassava flour in Northern Samar. This fact, however, does not daunt him, who believes that with the right marketing plan, the future of cassava flour may yet be bright.

VI. RECOMMENDATIONS

In the light of the findings and conclusions of the study, the following recommendations are formulated to augment the market potential of cassava flour in Northern Samar.

1. Improve the quality of cassava flour by strictly conforming to the present quality standards for flour. The easiest way to market products and stimulate demand is to sell a quality product.
2. Lower the price of cassava flour to make it more competitive, considering this as a new product in the market.
3. The manager or owner who is the marketing man should make direct contact with the bakery operators and other commercial users of flour. This is to make use of the advantage of being the nearest supplier to the local end-users.
4. Sponsor's promotional activities. Sponsoring cooking demonstrations, for instance, using cassava and wheat flour mixture as the main ingredient, is an effective avenue or sales outlet. Contests for the best recipes will also be a good strategy for promoting the product and discovering new issues.
5. Disseminate technical product information to all bakery operators and other users of flour through the distribution of product information sheets.
6. Conduct further research on how to improve the quality of cassava flour.

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