THE MARKET FOR BROILERS THROUGH FAST-FOOD OUTLETS IN VENEZUELA

by

Jose E. Gomez

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To my mother.

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CHAPTER I

INTRODUCTION

Statement of the Problem

PROAGRO is the leading firm in the broiler business in Venezuela. It is integrated through hatchery, grow-out, processing and distribution activities. As a consequence of strict price regulation policies enforced by the government in the poultry products, PROAGRO experienced serious injury to its profitability over the last few years. The most severe regulations were applied to PROAGRO's chief product (whole, ready-to-cook broiler with feet and giblets incorporated in the body cavity); therefore, PROAGRO's management has concentrated research efforts to find alternative ways to increase sales of products with larger margins through the most profitable distribution channels. At the present time the distribution channel with the biggest margin for broilers is through the restaurants specializing in broilers. PROAGRO sells 8 percent of its products to this kind of establishment,[1] but recent efforts to increase distribution in these channels have had limited success due to intense competition from other poultry firms. An alternate way to increase broiler sales through "away-from-home" channels would be through an owned (or controlled) chain

[1]Estimated from PROAGRO sources.

operation with high sales volume per unit. To accomplish this it would be necessary to offer faster service and lower prices of the products. These factors have been the basis of the fast-food concept developed successfully in the American market.

This report will focus on the development of research methodology appropriate for (1) analyzing the Venezuelan market potential for fast-food poultry products and (2) evaluating PROAGRO's likelihood of increasing profits through entry into this business.

Objectives

The accomplishment of the goals of this study will be pursued through the following specific objectives:

(1) Description of the development of the poultry industry in Venezuela and its role in the country's economy.

(2) Identification of the existing marketing channels of the broiler industry in Venezuela and description of the different merchandizing forms used by PROAGRO to market its products.

(3) To briefly describe the structure of the food service industry in Venezuela and to suggest appropriate methodology for analyzing the factors affecting the broiler segment of the eating-out business.

(4) To indicate methodology for (a) identifying the main consumer characteristics of the target

market and (b) evaluating the size of the potential market for boilers through fast-food outlets in Venezuela.

(5) To make a preliminary estimation of the total market potential and PROAGRO's sales potential for broilers through fast-food outlets in Venezuela.

(6) To develop the methodology for (a) estimating the major costs and (b) conducting volume cost-profit analysis for a fast-food broiler chain operation in Venezuela.

Organization of the Study

Chapter I has provided a statement of the problem and the specific objectives of this report. In Chapter II, brief preliminary analyses are presented covering: (1) the Venezuelan economy, (2) the stage of development of the broiler industry, and (3) current status of the food service industry. This provides appropriate background information for a more detailed evaluation of the potential market for broilers through fast-food outlets in Venezuela. Chapter III presents a theoretical framework for the market potential analysis to be conducted in Chapter IV; and Chapter V provides an illustrative example of the research methodology to be followed in the break-even analysis. Finally, Chapter VI presents the conclusions obtained from the study and gives some recommendations for additional research.

CHAPTER II

PRELIMINARY STUDY

The Venezuelan Economy

Until 1930, Venezuela was a country whose economy relied heavily upon the agricultural sector. The development of the oil industry drastically shifted this orientation and since then the government has been provided with a strong source of economic power. At the present time, Venezuela has the highest per capita income in Latin America, but its economy is still strongly dependent on oil revenues. In 1975, oil's contribution to the GNP (in current terms) was 35 percent and its exports generated 92 percent of the sources of foreign exchange money.[1] Table 1 presents GNP information and shows the contribution to the GNP from oil and agriculture over the period 1971 to 1976. According to these figures, the average growth of the GNP in that period was 5.6 percent (in real terms). At that time an annual average growth for the GNP was estimated at 8.4 percent in real terms between 1976 and 1980.[2] The government planned to use the extraordinary revenues derived from the 1973 oil

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[1]Banco Central de Venezuela, Informe Economico 1975 (Caracas, 1976).

[2]Cordiplan, Y Plan de la Nacion (Caracas, 1976).

price increases to stimulate development in other areas of the economy.

Table 1.1. The Gross National Product and the Oil and Agricultural Sectors (1971-1976).

	1971	1972	1973	1974	1975	1976
	(millions of 1968 Bs.)					
Gross National Product	51819	53380	56963	60285	63416	68123
From the Oil Industry	10818	9967	10710	9338	7289	7351
From Agriculture	3664	3543	3730	3958	4236	4074
From Other Sources	37339	39870	42523	46989	51891	56698

From: Banco Central de Venezuela, Informes Economicos, 1975 and 1976.

The Venezuelan government decided the nationalization of the oil industry on January 1, 1976. The natural difficulties of a transitional period and the policy to keep price increases determined by the OPEC have meant that oil sales to foreign countries decreased more than the expected figures. This decline in oil revenues has not been offset in other areas of the economy which have been growing at a lower average rate than originally expected in the general plan of development.[3] On the other hand, the higher inflation levels in the last few years have contributed to more trouble in the economy. The relative annual average increase of the CPI was

[3]Cordiplan, V Plan de la Nacion (Caracas, 1976).

2 percent between 1961 and 1972; however, this figure increased an average of 7 percent between 1973 and 1977.[4]

In their efforts to overcome the problems, the government has at time undertaken apparently contradictory policies. That is the case in the agriculture sector which has enjoyed many incentives such as: tax exemptions, financial help, technical assistance, etc., but, on the other hand, has been affected by severe price regulation and control measures.

Development of the Poultry Industry in Venezuela

The poultry industry is relatively new in the Venezuelan economy. Its development is a result of governmental policies aimed to reduce the high level of broiler imports prevailing in the late '40s and early '50s. At the start, the industry was characterized by the presence of many growers who had extended their activities through processing and distribution of the products. The adoption of advanced technologies and consecutive improvements in management techniques led the way toward more efficient farms and fewer but larger processing units. During the '60s and early '70s the feed companies were the leaders in the integrative process and many of the small producer-processors which had remained independent were forced out of the business. At the present time the government policies have resulted in a new shift in the orientation of the industry's growth. The new policies have been aimed

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[4]Banco Central de Venezuela, Informe Economico, selected issues.

at the encouragement of production at the farm level, but strict control in other areas of the vertical broiler complex. The role of integrators traditionally held by the feed companies is being transferred to the processing-distribution firms. There are two main reasons for this: first, the feed companies were not qualified to enjoy the tax exemption incentives provided by the government for most of the agricultural enterprises; and second, to assure effective outlets for their products farmers are now more interested in contracting with processors which also have been qualified for tax exemptions. On the other hand, reduced margins resulting from enforced price regulation at the processing and retailing level makes it more attractive for these firms to integrate backward to the more profitable production level.

Up to 1975 PROTINAL was the leading company in the poultry business in Venezuela. To take advantage of the governmental policies aimed at the production sector, this company decided to divide into two firms: (1) the original feed company alone and (2) all the other activities grouped in a new firm (PROAGRO) whose basic objectives are the production and marketing of broiler products to the final customer. The organization of this new firm has forced its management to look more directly into the specific problems of the broiler market. At the present time the chief product is the traditional whole, ready-to-cook broiler with the giblets and feet incorporated in the body cavity. More

than 95 percent of the broilers in Venezuela are sold to customers in this form. The other 5 percent is sold with additional processing and preparation.[5] The main type of this further processed product is the "special broiler" which is the carcass of the bird, without the giblets or feet (cleaned up), and classified by weight according to customer requirements.

The government regulation policies in the broiler industry have been focused on the whole, ready-to-cook product at the retailing and consumer levels. Price regulations effecting the chief product have been so harsh that prices are sometimes exceeded by costs; and processors' efforts to avoid losses very often result in the detriment of quality and reduction of shelf life.

The Broiler Marketing Channels

PROAGRO is the biggest firm in the broiler business in Venezuela with 20 percent of the total market. More of 90 percent of PROAGRO's broilers are marketed as the chief product (whole, ready-to-cook bird). The other 10 percent is sold with some sort of additional preparation and are exempt from strict price regulation policies.[6] As a major company, PROAGRO should encourage the Poultry Associations' stance in asking the government for fair price policies. As an individual firm, PROAGRO should undertake research aimed to

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[5]Estimated from PROAGRO's sources.

[6]PROAGRO.

achieve increases of efficiency through all the stages of the new vertically integrated operation analyzed as a whole system. Simultaneously, its marketing research department should focus its efforts in order to find out ways to increase sales of the products with larger margins and through the most profitable distribution channels.

Figure 2-1 presents the possible ways in which, at the present time, PROAGRO's products can reach consumer hands.

Of all the possible alternatives to increase sales of the most profitable products,[7] the one which appears to have the greatest market potential is through the institutional outlets (restaurants, hospitals, schools, military, hotels, fast-food outlets, etc.). The expansion of these outlets has been one of the key features in growth of broiler consumption in the U.S. during the last 10 years. Sales of broilers through the institutional markets in the U.S. increased from 10 percent in 1963 to 25 percent in 1975.[8]

In Venezuela, sales to institutional markets are made mainly by independent distributors and retailers. PROAGRO's sales to the institutional market are made primarily to restaurants specializing in broilers called "Pollos en Brasas." This kind of establishment is a new feature in the

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[7]Other presentations different to the chief product (whole, ready-to-cook bird).

[8]Verel W. Benson and Thomas J. Witzig, The Chicken Broiler Industry: Structure, Practice, and Cost, U.S. Department of Agriculture, Economic Research Service, Agricultural Economic Report No. 381, August 1977.

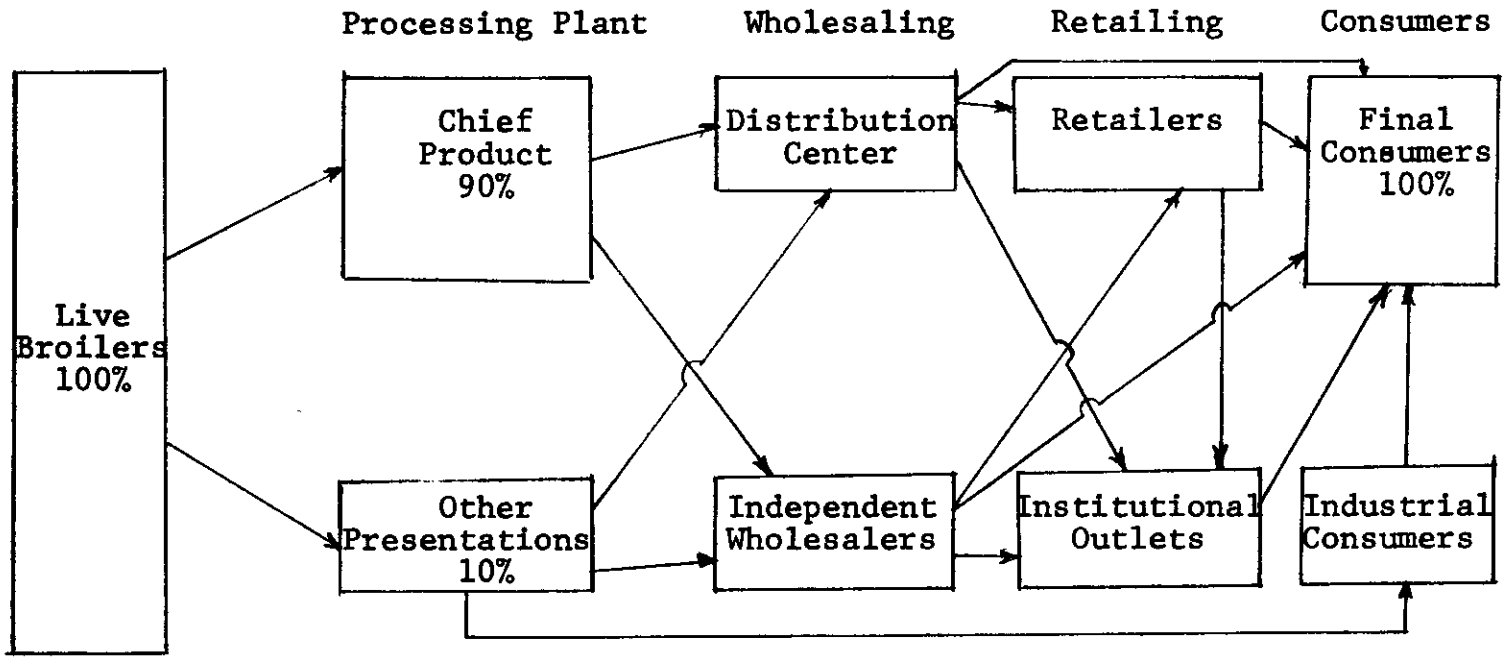

Figure 2-1. Major marketing channels for PROAGRO's products.

"away-from-home" business in Venezuela. They have the characteristic of providing faster service and at the same time lower prices than the other restaurants.

The Food Service Industry in Venezuela

In Venezuela most of the people who eat out do so at the traditional style of restaurant where they get their lunch which still is the most important meal in the Venezuelan diet. However, at the present time, the development of the "pollos en brasas" establishments and the introduction of the "fast-food" hamburger chain operations show that this pattern is starting to change and it seems that it may even continue changing at a faster rate in the near future. There are several reasons to believe this: (1) Distances between work and home are greater nowadays and therefore, more people have to eat their noon meal at their work places or close to them. (2) Time to have lunch is being reduced. Many public and private office workers who have had a 2-hour break for lunch (12 to 2 p.m.) are now getting only a 1-hour lunch break. (3) The increasing number of working housewives and the coincidental fact that nowadays it is more difficult and expensive to have someone other than the housewife cooking the food at home. (4) The economic growth in the last few years has generated notable increases in business and therefore more intercity movements of people who has less time to eat. On the other hand, even when the personal disposable income has increased, the proportion of discretionary money has declined. Therefore,

people want to save time and money in eating. Simultaneously they want to get the best possible quality in taste and nutritional value from food they consume. The fast-food establishments have been the answer to these consumer demands in the United States, and it seems that a similar trend is likely in Venezuela. With higher prices of red meat products, it may be feasible to obtain larger sales volumes with broiler products in these establishments.

As a part of its efforts to search for more profitable outlets for its products, PROAGRO decided to explore the food service industry through the acquisition of a traditional restaurant specialized in poultry products. The preliminary results obtained in this pilot center suggest that in order for a real chain of establishments to be successful, their operations should be based on a higher volume per unit.[9] The fast-food concept offers the opportunity to fit this basic requirement and at the same time provides the perspective of development for a new and highly profitable outlet for PROAGRO's products.

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[9]PROAGRO.

CHAPTER III

MARKET POTENTIAL ANALYSIS

"The ordinary business of marketing is the matching of goods and people. Perhaps its extraordinary business is the matching of possible goods and the potential needs of people."[1]

In the previous part of this paper a set of potential wants and needs in the Venezuelan "away-from-home" food market has been recognized. From the preliminary analysis it has been concluded that this group of potential wants and needs could be fulfilled by the fast-food concept. The task now is to evaluate the total potential market for the fast-food business and to estimate the potential market share that might be captured by broiler products in Venezuela.

This chapter will provide a theoretical framework to be applied in market potential analysis. Market potential studies have two phases: first, qualitative analysis is used to identify the most relevant characteristics of the different groups of potential customers for the product or service being researched; and second, the quantitative analysis is used to estimate the size of the potential market for the product.

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[1]William Lazer. Marketing Management: A Systems Perspective. The Wiley Marketing Series (New York: John Wiley and Sons, Inc., 1971), p. 45.

Qualitative Market Analysis

According to the general objective approach used by Weisenberg,[2] different segments can be identified in the market based upon demographic and socioeconomic factors. The demographic characteristics most widely used are sex, age, marital status, number and age of children, ethnic or racial background, geographical location, and mobility of household. Socioeconomic characteristics include such factors as: income, education and occupation. Table 3-1 presents a list of factors to be used in the identification of different segments of the Venezuelan market. This table has been elaborated from Robert Dietrich,[3] who used a similar set of characteristics to evaluate the away-from-home food market in the U.S.

Once the relevant characteristics of the target market for a product are identified, the task is to estimate the size of this potential market and when possible, the size of the potential market in each one of the market segments identified in the qualitative analysis. Several methods of quantitative market analysis will be addressed in the following section.

Quantitative Market Analysis

Total market potential is normally interpreted as meaning the maximum sales opportunities for all the sellers of a

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[2]Terry Mathew Weisenberg, "Generalized Market Segments," (Ph.D. dissertation, Michigan State University, 1977).

[3]Robert Dietrich, "Who's Eating Out," Progressive Grocer (September 1977), p. 31.

Table 3-1. Identifying Characteristics of the Away-From-Home Market.

Factors		
(1)	Age	Under 20 20-24 25-29 30-34 35-44 45-54 55-64 Over 64
(2)	Annual Income ($)	Under $7,500 $7,500-11,900 $12,000-19,900 $20,000-34,900 $35,000 +
(3)	Education	Elementary School High School University
(4)	Sex	Female Male
(5)	Marital Status	Widowed Married Single Divorced/Separated
(6)	Size of Household	1-3 4-5 6 or more
(7)	Type of home	House Apartment Other
(8)	Working Status of Women	Working out Housework

product or service in a market. When referring to an individual seller it is called Sales Potential. It is important to point out that the concept of "maximum sales opportunities" is to a great extent a very abstract and subjective term for any product that has not yet saturated its potential demand. For the purposes of this discussion, the following concept will be specified: Total Potential Market is the maximum volume of the product or service that all sellers are likely to be able to sell with similar product offerings at given prices and marketing techniques, and with current buying proclivities of consumers. Here it is important to emphasize again that the market potential available to all firms may be larger than existing total sales when the product or service is still far from market saturation.

The quantitative methods used to analyze potential markets can be segregated into (1) a nationwide market (Total Potential Analysis) and (2) a specific area or market segment (Area Potential Analysis). According to Luck and Taylor, the Total Potential Analysis can be further divided into two general types: Macropotential and Micropotential Analysis Methods.[4] The Macropotential Analysis Methods start with the total demand for a whole industry and then narrow down the estimated demand for the particular product concerned. Two different approaches are commonly used, the

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[4]David J. Luck, Hugh G. Wales, Donald A. Taylor, and Ronald S. Rubin. Marketing Research, 5th Ed. (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1978).

corollary product and the statistical derivation. In the corollary product method, the demand for any product is correlated with the demand for products whose sales data are available. This is very useful in estimating the demand for a new product; the only problem is that an appropriate relationship with a corollary market has to be developed.

In the statistical derivation method, markets may be estimated by starting with a total consumer market and then successively eliminating those classes of buyers who are likely to have little demand for the products. For existing products, information is generally available on total sales or national consumption and about how purchases have been distributed among consumers with different characteristics. For a new product, this narrowing process must be accomplished on a judgmental basis.

Micropotential Analysis starts with the demand for each individual purchasing unit and then these are aggregated and projected to arrive at an estimated total market potential. Two different approaches are frequently used, buying intention surveys and test markets.

In the buying intention surveys, the population is classified by socioeconomic groups on a sampling basis. In these surveys the questions are aimed at obtaining useful information to quantify the potential need at the present time for different segments of the population.

In a test market method, actual sales operations are carried out in selected test markets and some of the most

important variables influencing performance are evaluated. The results from these tests are projected nationwide to get the total market potential. This is a very expensive method which therefore should be followed only if the market is sufficiently broad to generate adequate profits.

Area Potential Analysis

Very often the markets under study are specific areas such as states, cities, counties, or sales territories, or the target markets may be certain classes of the population such as farmers, homeowners, or persons at certain income levels. According to Luck and Taylor, the objective of Area Market Potential Analysis is to find the best markets for a product or service. The term may better be applied to the highest potential per capita, the highest total market, or the market with the greatest profit possibilities. Three main approaches have been selected to be presented in this paper as means of determining area market potentials: (1) corollary-product index; (2) buying power index; and (3) multiple regression analysis.

The corollary-product index uses the same approach explained in total potential market, but applied to specific areas or selected market segments.

The buying power index is a comparative method based on those factors influencing the amount of purchasing power in different localities. The most common factors utilized are population, retail sales, and disposable income. These

factors are usually weighed on a judgmental basis according to the analyst's criteria, and expressed in a common denominator to obtain a general buying power index. Some other important factors effecting the demand for a particular product can be incorporated on the basis of the realistic knowledge of the market conditions for the product.

The multiple regression method is based on the theory that if certain factors are freely related to the demand for a product this has been evidenced in the past. In this case, the relationship between the different factors and the demand (dependent variable) is supported with statistical tools and the size of the potential market and its future growth is associated with changes of the levels of these independent variables.

CHAPTER IV

THE VENEZUELAN FAST-FOOD BROILER MARKET

In this chapter, some of the theoretical aspects described in Chapter III will be applied to analyze the Venezuelan fast-food broiler market.

The qualitative analysis is difficult to develop in detail due to lack of information about the relevant factors required in order to identify the different market segments in Venezuela. However, by comparing the analyses realized by R. Dietrich[1] in the U.S. and a preliminary report presented by C. Reyna[2] in Venezuela, the following characteristics can be generalized about the "away-from-home" food market in both countries:

1. The young people eat out with more frequency than older people.
2. As income levels are higher, a higher percentage of people eat out.
3. Better educated people eat out more frequently.
4. Men eat out with higher frequency than women.
5. Single people (or divorced) are more likely to eat out than married or widowed.

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[1] R. Dietrich, "Who's Eating Out?", p. 31.

[2] Carlos E. Reyna, "Informe de la Gerencia de Desarrollo de Mercados" (PROAGRO, 1977).

6. People living in apartments eat out more times than people living in houses.
7. Women working away from home eat out more often than housewives.
8. The fast-food outlets have the highest rate of growth in the away-from-home food market.

The size of the potential market for broilers in the fast-food segment of the away-from-home food market will be estimated by the following approach: the demand for broilers through fast-food establishments can be linked with the total demand for broilers and with the growth in the away-from-home food segment of the economy. This approach is a combination of two of the analytical methods described in Chapter 3, namely, the multiple regression analysis and the corollary-product index.

The total demand for broilers will be analyzed through a multiple regression model and the growth in the eating out business will be estimated with the data published by the Venezuelan Central Bank.

Demand Analysis for Broilers in Venezuela

The demand for broilers will be projected by assuming that population and income (private consumption expenditures) are the major shifters of demand. By this approach, prices will be held constant at the levels of 1977 and the effects of factors other than population and income will be allowed

by the inclusion of a "trend" factor in the demand market.[3] According to the recommendations of FAO, a double-log function has been selected to estimate the demand equation. This function implies a constant elasticity over all income ranges. The income elasticity will be selected from a previous study[4] and the regression analysis will be applied to a 15-year series data.

The double-log function used to estimate the demand equation is:

(1) $\text{Log}(q_t) = a + b \log(y_t) + zt$

where:

qt = per capita consumption of broilers in the year t (kgs);

y = per capita private consumption expenditures in year t;

t = time; and

a, b, and z are constants.

In this kind of function, b represents the income elasticity (given in this case as n = .28)[5] and z is the coefficient representing the trend factor.

The equation obtained by using the least-square method was:

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[3]FAO. Agricultural Commodity Projections, 1970-1980, Volume II. (Food and Agriculture Organization of the United Nations: Rome, 1971).

[4]Jose E. Gomez, "Demand and Supply Analysis for Broilers in Venezuela," (unpublished paper, Michigan State University, 1978).

[5]Ibid.

(2) $\log(q_t) = -7.5 + .28 \log y_t + .042\ t.$ [6]

The adjusted coefficient of determination $\tilde{R}^2$ shows that more that 93 percent of the variations in the quantities demanded are explained by this model.[7]

The projections for the demand in the next five years will be obtained by assuming that Yt will grow at a rate of 4.7 percent in this period.[8] Increases in the per capita demand will be estimated through the following form:

(3) $\text{Log } \frac{qi}{qo} = n \text{ Log } \frac{yi}{yo} + z(ti-to).$ [9]

where:

qo, yo, and to refer to the year basis (1977 in this case, and

qi, yi, and ti refer to the year projected (1978 through 1982).

Table 4-1 shows the values used in the base year (1977) and the figures obtained in the estimation of percent and total broilers consumption from 1978 to 1982.

According to these projections, the total demand for broilers in Venezuela will grow at an average annual rate of 8.8 percent between 1977 and 1982. A government analysis predicted 6.6 percent for this figure between 1975

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[6]See Appendix I: Regression Analyses for the Demand of Broilers in Venezuela.

[7]Ibid.

[8]CORDIPLAN, V Plan de la Nacion (Caracas, 1975).

[9]This form is obtained by applying the equation (1) to two different periods (ti and to) and subtracting the results.

Table 4-1. Projected Demand for Broilers (1977-1982) in Venezuela

Year	Per capita[a] private cons. expend. (y) (millions of 1974 BS)	Population[b]	Per capita broiler consumption (kgs)	Total broiler consumption (tons)
1977	4845.45	12,736,686	12.91	164,473
1978	5145.35	13,121,952	13.69	179,667
1979	5367.64	13,515,063	14.45	195,286
1980	5613.73	13,913,218	15.26	212,311
1981	5877.58	14,313,365	16.12	230,733
1982	6153.82	14,714,153	17.03	250,582

[a] CORDIPLAN, V Plan de la Nacion.

[b] Direccion de Estadisticas y Censos Nacionales (Caracas, 1975).

and 1980;[10] but the actual growth was 16 percent in 1976 and 14 percent in 1977.[11] Therefore, it may be concluded that these are rather conservative estimates.

The Away-From-Home Food Industry in Venezuela

The prospects of the eating out business must be considered in two dimensions: growth rate of the sector and advances in the overall economy.[12] The overall economy as measured by GNP growth in a five year period from 1971 to 1976 shows an expansionary trend. Expressed in real terms, the gross national product grew at an average rate of 5.68 percent in this period (see Table 4-1). Disposable income and private consumption expenditures are two important indices for restaurant sales.[13] Evaluated in real terms, the first one grew at an average rate of 8.2 percent in this period and the second grew at an average of 10.7 percent in the same period (see Table 4-2). These figures are good indicators of the growth trend in private business activities.[14] Another useful index providing a relative benchmark for measuring the performance of the eating business is the retail sales growth. Additionally, this index

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[10] CORDIPLAN, V Plan de la Nacion.

[11] Estimated from PROAGRO sources.

[12] Michael J. Esposito, "An Economic Profile for Fast Food," Fast Service (May 1978).

[13] Ibid.

[14] BCV, Informe Economico, 1975, p. 183.

TABLE 4-2. Gross National Product, Disposable Income and Personal Consumption Expenditures in Venezuela (1971 - 1976).

Year	Real GNP (millions of Bs)[a/]	Real Disposable income (millions of Bs[1])	Personal Consumption Expenditures[b/] (millions of Bs)[c/]
1971	51819	43108	-- [d/]
1972	53380	44579	28788
1973	56963	47330	29582
1974	60285	47756	34701
1975	63416	55533	39357
1976	68123	63418	42956

[a/] At 1968 prices.

[b/] Deflated by the CPI (1968 = 100)

[c/] Flow of goods and services purchased by consumers.

[d/] No available figure.

SOURCE; Banco Central de Venezuela, Informe Economico, 1975, 1976.

should be compared to the Eating and Drinking Place sales' rate of growth during the same period. The Retail Sales growth average was 8.6 percent, while the Eating and Drinking Place sales averaged 9.0 percent in the period considered. These figures were estimated from a survey realized by the Venezuelan Central Bank in several important cities of the country.[15]

The Potential Fast-Food Broiler Market in Venezuela

The potential fast-food broiler (ffb) market in Venezuela will be estimated in three levels: low, intermediate and high.

The low level (Level I) will be estimated under the assumption that the FFB outlets will keep the present market share of the total broiler market in the next five years. According to private sources, the present ffb market share is estimated at approximately 10 percent of the total market for broilers in Venezuela.[16] (The projections for the total demand were given in Table 3-1.)

The intermediate level (Level II) of the ffb potential market will be estimated by assuming that this marketing channel will increase its market share of the total broiler market every year. This growth will be estimated as originated by the influence of two factors: first, the increase in the total potential market for broilers and second, the

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[15] BCV, Informe Economico 1976, p. A-210.

[16] PROAGRO.

increase in the entire away-from-home food business. The formula developed to estimate this market is:

$$ffb(t+1) = s(t) \times Q(t+1) + rxffb(t)$$

where:

ffb(t+1) = potential fast-food broiler market in the year t+1,

s(t) = market share of the ffb market in the total potential market for broilers in the year t,

Q(t+1) = total potential market for broilers in the year t+1,

r = the rate of growth in the food-away-from-home business = .09, and

ffb(t) = potential fast-food broiler market in the year t.

In this formula the rate of growth in the away-from-home food market (r) has been assumed constant and equal to the rate of growth of the Eating and Drinking Place sales in the last five years. This index averaged 9.0 percent in the period between 1971 and 1976.[17]

The high level (Level III) for the fast-food broiler potential market in Venezuela will be estimated by assuming that it would be a similar percentage to the U.S. broilers sales through these outlets. In the U.S. this figure has been approximately constant over the last five years at 16.6

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[17] BCV. Informe Economico 1976.

percent.[18] Therefore, it will be assumed that this maximum market potential boundary will increase at a uniform rate for the next five years in Venezuela. As a consequence, the intermediate level (Level II) of the potential market will be slowly approaching the high level (Level III) in these five years of estimations and eventually may overcome it in the future.

In Figure 4-1, a chart can be observed with the different market potential levels estimated for broiler consumption in Venezuela through fast-food outlets under the aforementioned conditions. The corresponding calculations are shown in Table 4-3.

Sales Potential Analysis

A major objective of this paper has been the analysis of a potentially profitable distribution outlet for a private poultry firm in Venezuela (PROAGRO). Following consideration of the total potential market for broilers through fast-food outlets, attention will be focused on specific geographic areas which may be of particular interest for PROAGRO's purposes.

A closer look at the consumption of broilers through fast-food outlets shows that more than 90 percent of them are consumed in the urban areas of the following states:[19] Distrito Federal, Aragua, Bolivar, Carabobo, Falcon, Lara

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[18] Benson and Witzig, USDA, 1977.

[19] PROAGRO.

FIGURE 4-1

THE POTENTIAL MARKET FOR BROILERS TROUGH FAST-FOOD OUTLETS IN VENEZUELA

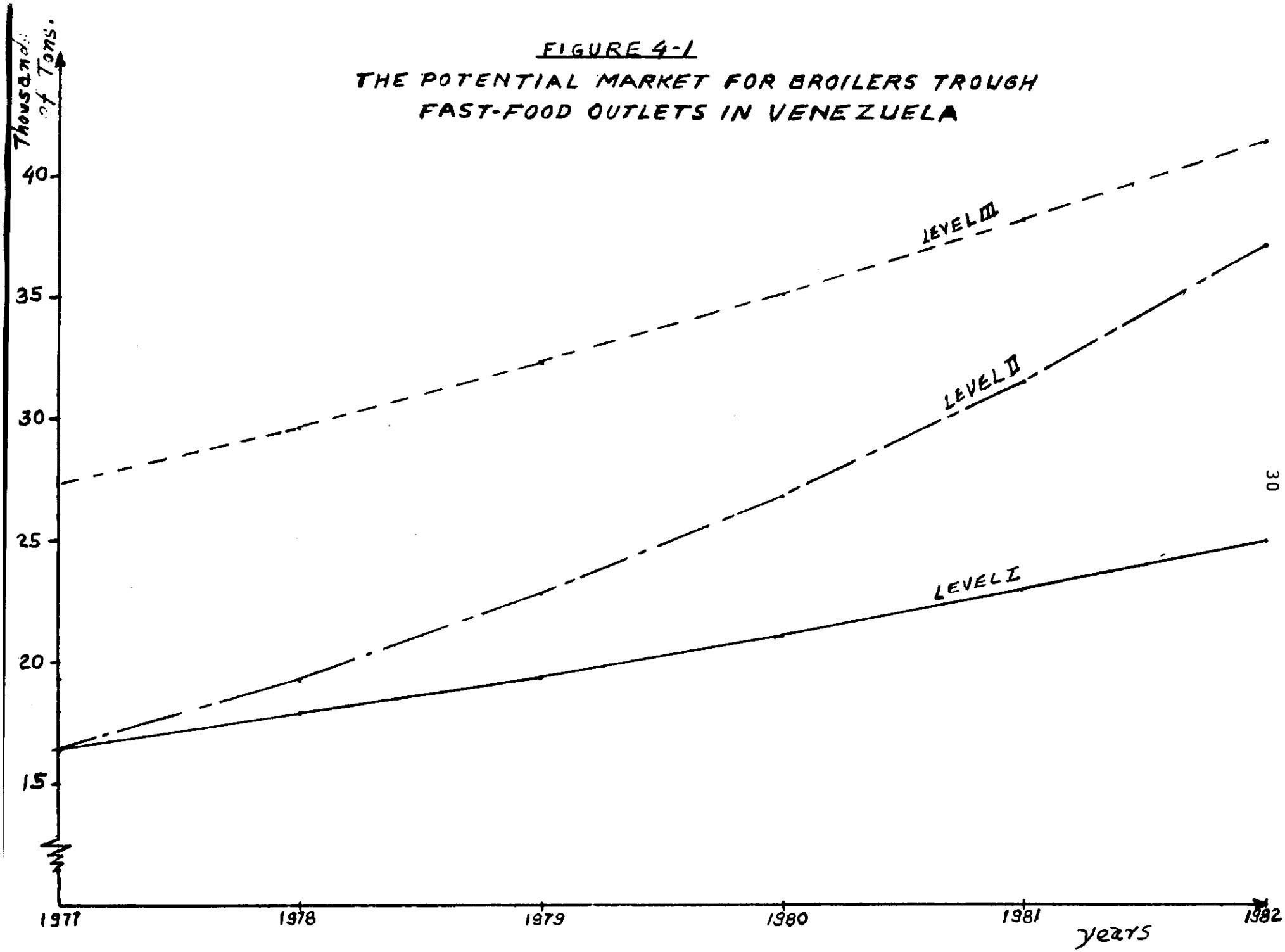

TABLE 4-3. The potential fast food broiler (ffb) market in Venezuela. Maximum and minimum bounds for the present and future potential market of broilers through fast food outlets in Venezuela.

	1977	1978	1979	1980	1981	1982
Total broiler market (Tons)	164473	179667	195286	212311	230733	250582
Level I of the ffb market (Tons)[1]	16447	17966.7	19528.6	21231.1	23073.3	25058.2
Level II of the ffb market (tons)[2]	16447	19447	22888	26943	31706	37287
Level III of the ff broiler market[3] (tons)	27303	29825	32417	35246	38302	41596

[1] 10% of the total broiler market in each year.

[2] ffb market in year t+1 = (market share at the end of year t) x total broiler market in year (t+1) + 9% of the ffb market in year t.

[3] 16.6 percent of the total broiler market in each year.

Examples to illustrate the calculations in Level II:

a) 1978: $ffb(t+1) = s(t) \times Q(t+1) + r \times ffb(t)$
$ffb(1978) = s(1977) \times Q(1978) + .09ffb(1977)$
$ffb(1978) = .10 \times 179667 + .09 \times 16447 = 19447$

b) 1979: $ffb(1979) = s(1978) \times Q(1979) + .09ffb(1978)$
$= .11 \times 195286 + .09 \times 19447$
$= 22888$ [here $s(1978) = 19447/179669 = .11$].

Miranda, Tachira y Zulia (Area II). According to Table 4-4, more than 57 percent of the Venezuelan population is concentrated in these urban areas. PROAGRO has control (through ownership or contract) of production and processing facilities in the central part of the country. For these reasons, these areas will be selected as possible centers of operation for PROAGRO in the fast-food business. The area for market potential analysis is now reduced to the states of Distrito Federal, Miranda, Aragua y Carabobo (Area III).

To estimate the sales potential market for PROAGRO, the following procedure will be applied:

1. Three areas are defined for the Venezuelan market:

   Area I. The total population.

   Area II. The urban areas of the following states: Distrito Federal, Aragua, Bolivar, Carabobo, Falcan, Lara, Miranda, Tachira, and Zulia. Fifty-seven percent of the Venezuelan population is living in these areas of the country.[20]

   Area III. The urban areas of the central part of the country composed by the states Distrito Federal, Miranda, Aragua and Carabobo (all of them included also in Area II). This area represents

[20] Table 4-3.

TABLE 4-4. Urban population in selected areas of Venezuela (Projections)

	1977	1980	1982
Distrito Federal	2228677	2453138	2605740
Aragua	599665	663852	683767
Bolivar	371079	414576	427013
Carabobo	737430	817467	841991
Falcon	269912	297272	306143
Lara	543121	599893	617889
Miranda	904934	1014620	1045058
Tachira	347318	383231	394727
Zulia	1294027	1432642	1475621
Subtotal (Area II)	7296163	8076691	8397949
Subtotal Central Part of the Country (Area III)	4470706	4949077	5176556
Total Venezuela (Area I)	12736686	13913218	14714153

SOURCE: Division de Estadisticas y Censos Nacionales (Caracas 1977).

35 percent of the population of Venezuela.[21]

2. The fast-food broiler market in Area II in 1977 was 90 percent of the total ffb market in Venezuela.[22] Total ffb market in 1977 = 16,447 tons. The ffb market in Area II = .9 x 1,644 = 14,802 tons.
3. The ffb market in Area III is estimated by assuming that the per capita consumption in this area is the same as in Area II: Per capita consumption in Area II = 14,802 tons ÷ 7,296,163 x 10^{3} = 2.03 kgs. Per capita consumption in Area III = 2.03 kgs. Total consumption in Area III = 2.03 kgs x 4,470,706 x 10^{-3} = 9,074.5 tons.
4. The area potential markets in 1980 and 1982 in Area III are obtained by applying the steps 2 and 3 to the three market potential levels estimated for the total ffb market in Table 4-2. The population figures for 1980 and 1982 are given in Table 4-3. The results obtained for the area potential market are summarized in Table 4-5.
5. A pessimistic approach to estimate sales potential is applied by assuming that PROAGRO would obtain 5 percent of the market in Level I in 1980, but

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[21] Table 4-3.

[22] PROAGRO.

TABLE 4-5. Area potential market for broilers through fast food outlets in Venezuela Area III: Central Part of the Country

	1977	1980	1982
Level I (tons)	90745	11708.4	13818.9
Level II (tons)	9074.5	16509.6	21281.2
Level III (tons)	15056.8	21597.4	23740.5

TABLE 4-6. Sales potential analysis in the fast food broiler market

	Pessimistic Approach		Optimistic Approach	
	1980	1982	1980	1982
Area potential market (Area III) (tons)	11708.4	13818.9	13818.9	21281.2
Sales potential market (PROAGRO) (tons)	585.42	2763.8	2763.8	10640.6
No.of stores (PROAGRO)	12	59	59	229

20 percent[23] in 1982 in the same level. The number of stores is calculated by the assumption that a new store would sell an average of 276 meals per day.[24] This number represents the current average of meals served in Venezuela in this kind of store.

Sales potential market in 1980	= .05 x 11708.4 = 585.42 tons = 585420 kgs.
No. broilers in 1980	= 585420 kgs/year ÷ 1.15 kgs/broiler[25] = 509060 broilers = 509060 ÷ 365 = 1394 broilers/day
No. meals/day	= 1394 x 2.5[26] = 3485 meals
No. stores	= 3485 ÷ 276 = 12
Sales market potential in 1982	= .2 x 13818.9 = 2763.78 tons
No. broilers in 1982	= 2763.78 x 10^3 ÷ 1.15 = 2403286 = 2403286 ÷ 365 = 6584 broilers/day
No. meals/day	= 6584 x 2.5 = 16460
No. stores in 1982	= 16460 ÷ 276 = 59

6. An optimistic approach is applied by assuming that PROAGRO would obtain 20 percent of the market in

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[23]Present market share of PROAGRO in the broiler processing and distribution business.

[24]PROAGRO.

[25]Average weight of a bird = 1.15 kgs.

[26]2.5 meals per bird in average (PROAGRO).

Level I in 1980 and 50 percent in Level II in 1982.[27]

Sales market potential in 1980	= .2 x 13818.9 = 2763.78 tons
No. broilers in 1980	= 2763.98 x 10^3 ÷ 1.15 = 2403286 = 6584 broilers/day
No. stores in 1980	= 6584 x 2.5 ÷ 276 = 59
Sales market potential in 1982	= .5 x 21281.2 = 10640.6 tons
No. broilers in 1982	= 10640.6 x 10^3 ÷ 1.15 = 9252695 = 25349 broilers/day
No. stores in 1982	= 25349 x 2.5 ÷ 276 = 229 stores

[27]The leading chain operation in the U.S. has more than 50 percent of the market.

CHAPTER V

VOLUME COST-PROFIT ANALYSES

The objective of this section will be to show the methodology to be used in estimating the total cost per store, and to estimate the average price per meal required in order to develop a profitable operation in the fast-food broiler business in Venezuela. The final aspect of this analysis will be a break-even chart to show the potential profits of operating a fast-food broiler restaurant at different volume levels. It is recognized that a chain operation would imply some scale economics; but since profits are built up on a per unit basis, this analysis will be limited to the single store level.

Determination of Prices

This analysis will be assumed as representative of the relationship between total costs and sales volume. Some costs may be semivariable since they fluctuate in volume, but not in direct proportion to the volume change. However, for illustrative purposes, they will be classified in this case as either fixed or variable. The following formula will be applied in estimating the specific price required to obtain a desirable profit in this operation.

(1) $R = TC + \Pi$, and

$TC = FC + VC$

where:

R = total revenues,

TC = total cost,

FC = fixed cost,

VC = variable costs, and

Π = profit.

In this case, 20 percent of return on investment is a target profit rate based upon company policy.[1]

Thus, on a daily basis:

(2) $R = FC + VC + .2I$

where:

$R = p \times V$,

$VC = v \times V$,

I = total investment,

p = price per unit,

v = variable cost per unit, and

V = sales volume (number of meals per day).

According to a survey made in the central part of Venezuela, the average number of meals sold by a fast-food broiler (ffb) restaurant is 276 every day.[2] By using this figure in formula (2), it is possible to determine the average price necessary to obtain a 20 percent return on investment in a new store. However, the estimated cost

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[1] PROAGRO

[2] Ibid.

components must also be considered. Table 5-1 shows the cost components used in this estimation. The calculations to determine the price are shown below:[3]

Fixed cost per day (FC)	= Bs. 679.66
Variable cost per meal (v)	= Bs. 5.28
No. of meals per day (V)	= 276
Total investment[4] (I)	= Bs. 630688
Desired return on I	= .2 x 630688 = 126137.6/ year = Bs. 345.58/day
R	= FC + VC + .2I
pxV	= FC + vxV + .2I
Px276	= 679.66 + 5.28 x 276 + 345.58
P	= Bs. 8.99/meal

Determining the Break-Even Point

By developing a good product and providing faster service at competitive prices, it may be expected that PROAGRO would achieve a higher average number of meals per restaurant. For this reason, the second point for this chart will be selected at 400 meals per day. This figure is considered as representative for a low sales volume American restaurant. The results estimated for 400 daily meal operations are summarized as follows:

R = Bs. 8.99 x 400 meals

= Bs. 3597.86

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[3]The cost components are analyzed in more detail in Appendix 2.

[4] Estimated from Appendix 2.

TABLE 5-1. Fixed Costs and Variable Costs in a Fast Food Store Operation

Fixed Costs	Bs.	
Interest on land investment	12000	
Building depreciation	15000	
Interest on building	15000	
Annual cost of general equipment	26139	
Annual cost of equipment for chicken	7206	
Annual cost of auxiliary equipment	20330	
Utilities and miscellaneous	26660	
Corporate overhead	43000	
Unit management	74140	
Contingencies and reserves	8600	
Total Fixed Costs	248075	
Total Fixed Costs charged every day		679.66
Variable Costs		
Direct labor	30660	
Indirect labor	63875	
Material cost	437713	
Total Variable Costs	532248	
Variable cost per day		1458.21
Variable cost per meal		5.28

Total Cost (TC) = Fixed Cost (FC) + Var.Costs (VC)

TC = 679.66 + 1458.21

TC = Bs. 2137.87 per day

$$TC = FC + VC$$

$$TC = 679.66 + 5.28 \times 400$$

$$TC = 2791.66$$

$$\Pi = R - TC$$

$$\Pi = 3597.86 - 2791.66$$

$$\Pi = Bx.\ 806.20$$

In Figure 4-1, the Break-Even Chart is presented and the cost component factors are summarized in Table 4-1. A more detailed treatment of the different elements involved in the cost analysis is presented in Appendix 2. According to this chart, the Break-Even point is given for 175 meals and 1575 Bs. per day. At this point TC = TR and, therefore, there are no profits or losses associated with the operation.

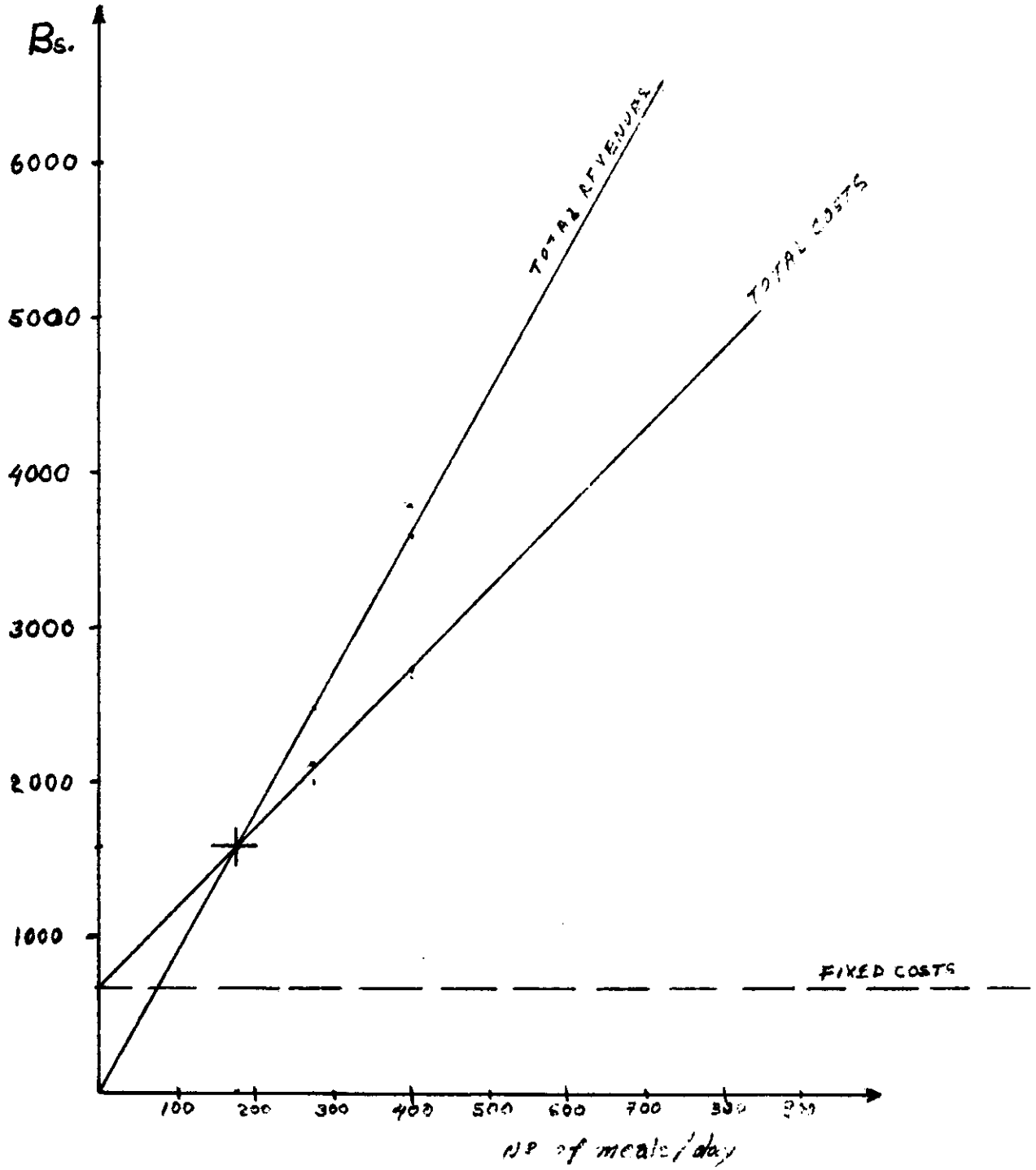
The previous example has been based on a daily break-even analysis, but the charts may be prepared for a month, a year, or for any other given period.

FIG. 5-1

BREAKEVEN CHART

FOR A FAST FOOD BROILER STORE OPERATION

IN VENEZUELA



CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS FOR ADDITIONAL RESEARCH

Conclusions

The application of the research methodology presented in this report in conjunction with a more complete set of data and information will enable the characteristics and size of the market potential for broilers through fast-food outlets to be evaluated with greater accuracy. It will therefore be possible to make a more realistic assessment of PROAGRO's possibilities for increasing profits through entry into this business. Although some of the estimates in this study might be improved with more complete data, it may nevertheless be concluded that the existence of an increasingly attractive potential market for the fast-food broiler business exists in Venezuela. This conclusion is supported by the results of the preceeding analysis of factors affecting the fast-food broiler sector, namely the stage of the economy, the development of the poultry industry, and the current status of the food service industry.

In addition, the promising nature of the preliminary findings of the sales potential analysis and crude cost estimates justify a more precise evaluation. The main conclusions of this report will be summarized according to the objectives stated at the beginning of the study as follows:

(1) The preliminary analysis shows a growing trend in the Venezuelan economy. The GNP is real terms has been growing at an average rate of 5.7 over the last five years and an expansionary trend in business activities can be observed. However, it is important to point out that this study has assumed that this trend will continue in the future. Therefore, if substantial changes in the socioeconomic or political environment are foreseen then the findings would be much less useful for decision making purposes.

(2) The poultry industry in Venezuela is still in a growing phase. Its growth rate averaged 12 percent in the period analyzed; therefore, it is expected that the quantities of broilers marketed through fast-food outlets will increase simultaneously with the development of this industry.

(3) The away-from-home food market was evaluated with the Eating and Drinking Place sales' rate of growth. This index averaged 9 percent in the last five years. Lack of more detailed information impeded the formulation of a better analysis of the structure of the food service industry and growth trends. However, a preliminary analysis provided some evidence that the fast-food sector has an increasing market share of the total away-from-home food business. The rough assumption

concerning the growth rate of fast-food's market share[1] clearly influences findings of the total potential analysis.

(4) The general characteristics of the consumer for the fast-food market were identified. However, a more detailed analysis aimed to evaluate the relative importance of the different market segments is necessary.

(5) The estimation of PROAGRO's sales potential was made on a rather judgmental basis. However, even with the "pessimistic" approach taken, the findings indicate an attractive potential market. Also, the fact that this firm is already in the broiler business would give the organization an advantage over some potential competitors.

(6) The volume cost-profit analysis was presented as an illustrative example to demonstrate methodology. However, its crude findings show that the operations might be carried out at competitive prices and simultaneously meet the company's policy regarding return on investment in new ventures.

Recommendations for Additional Research

From the findings and conclusions of this report, it is evidenced that there are some areas that will need additional

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[1]Assumed as equal to the growth rate in the entire Eating and Drinking Place sales.

research before making any decision concerning entry into the fast-food broiler business. A summary of recommendations to be followed in further research is presented as follows:

(1) To consider the possibility of improving the evaluation of the potential market through the development of a regression analysis model as applied directly to the demand for broilers through fast-food outlets. The limitation of this recommendation would be the availability of information needed for the analysis.

(2) To evaluate the potential size of the different market segments identified in the qualitative analysis.

(3) To obtain a more accurate estimate of the cost component factors involved in a fast-food chain operation and to apply sensitivity analysis to evaluate probabilities of losses and gains associated with different levels of variables.

(4) To develop the methodology required to identify specific marketing characteristics of the products to be sold in a fast-food broiler operation in Venezuela. This methodology should be aimed to match local consumer taste preferences and at the same time to develop a product identifiable with a specific brand. In the analysis of the side dishes and drinks offered, the nutritional requirements of the population should also be considered.

(5) To develop methodology for use in store location studies.

(6) To evaluate alternatives to satisfy the financial requirements of a fast-food chain operation (owned versus franchised stores or a combination of them).

APPENDIX I

A DEMAND ANALYSIS FOR BROILERS IN VENEZUELA

APPENDIX I

A DEMAND ANALYSIS FOR BROILERS IN VENEZUELA

1. Introduction

The analysis of the potential market for broilers in Venezuela will be made by the method described in Chapter III of this paper. The main factors affecting consumption for broilers are: retail price of broilers, prices of substitutes, population, and personal disposable income. To develope the relationship of these factors with the demand for broilers, it was necessary to consider the following assumptions:

(1) Consumption was equal to the available supply in the period selected (1961 - 1976).

(2) The per capita GNP deflated by the CPI was assumed to be a good indicator of the personal disposable income. There was not enough available information to estimate the last one.

(3) Beef and pork were considered as the primary substitutes for broiler meat. However, the price of pork was eliminated from the analysis because its correlation with the broiler consumption per capita resulted negative.

(4) Price averages for broilers and substitutes were assumed to be the same for the whole country in a

given year. In reality there were small differences in transportation and storage costs, and in local regulation in some areas.

2. Name of the Variable Used in the Analysis

Input data:

X1 = consumption of broilers in tons

X2 = price of broilers in Bs

X3 = price of beef in Bs

X4 = trend factor

X5 = gross national product

X6 = population

X7 = consumer price index.

By applying same preliminary transformations in the input data we can obtain the variables expressed in the following way:

X1 = per capita consumption of broilers

X2 = broilers retail price deflated by the CPI

X3 = beef retail price deflated by the CPI

X4 = trend factor (none transformation)

X5 = per capita GNP deflated by the CPI.

3. Regression Analysis

The following log-log function was used in this analysis:

$$\log y = a + b \log X1 + b2 \log X2 + \ldots + zt.$$

To avoid multicollinearity problems between per capita income and other independent variables, the following dependent variable was defined:

$$X15 = \text{Log } X1 - \eta \log X5.$$

In this way the effects of other variables separated from the effects of the income factor can be evaluated. The elasticity was taken as $\eta = .28$. This figure was selected from several external sources consulted.[1]

Three regression analysis models were tested:

$$\text{(i)} \quad X15 = a_{11} + b_{21} \log X2 + b_3 \log X3 + b_{41} X4$$

$$\text{(ii)} \quad X15 = a_{12} + b_{22} \log X2 + b_{42} X4$$

$$\text{(iii)} \quad X15 = a_{13} + b_{43} X4.$$

4. Selection of the Model

The model (i) shows high multicollinearity problems between the independent variables. In model (ii), the multicollinearity problems are of less importance, but this equation would not be useful to project demand for the next five years because it would be necessary to predict broiler prices. This equation may be rather used in shorter periods forecasting (from year to year). The model (iii) eliminates the multicollinearity problems and at the same time allows for accounting of factors other than income and population.

The equation selected is:

$$X15 = \log (X1) - .28 \log (X5) = -.748 + .042x4$$

The statistic t = 14.31 shows a high level of significant in a 95 percent confidence interval and the adjusted R square says that more of the 93 percent of variations in the

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[1] Jose E. Gomez, "Demand and Supply Analysis for Broilers in Venezuela," (unpublished paper, MSU, 1977).

dependent variable are explained by this equation. In the following, a printed list of the program and input data is presented and then the results obtained in the three multiple regression analysis and the coefficients of correlation between variables are summarized.

```
GOMEZ,RG3,JC200,T20,L200.
PW=JOSE
HAL,SPSS.
*EOR
RUN NAME          DEMAND ANALYSIS FOR BROILERS VENEZUELA 1961/1976
VARIABLE LIST     YR,X1,X2,X3,X4,X5,X6,X7
INPUT FORMAT      FIXED(F4.0,1X,F6.0,1X,F4.2,1X,F5.2,1X,F4.0,1X,F6.0,1X,F8.
                  0,1X,F5.1)
N OF CASES        UNKNOWN
COMPUTE           X1=(X1/X6)*1000.
COMPUTE           X2=(X2/X7)*100.
COMPUTE           X3=(X3/X7)*100.
COMPUTE           X5=((X5/X6)/X7)*1.0E8
COMPUTE           X2=LN(X2)
COMPUTE           X3=LN(X3)
COMPUTE           X15=(LN(X1)-.28*LN(X5))
REJECT IF         (YR EQ 1961)
REGRESSION        VARIABLES=X2,X3,X4,X15/
                  REGRESSION=X15 WITH X2,X3,X4/RESIDUALS/
                  REGRESSION=X15 WITH X2,X4/RESIDUALS/
                  REGRESSION=X15 WITH X4/RESIDUALS/
OPTIONS           11
STATISTICS        ALL
READ INPUT DATA
```

YR	X1	X2	X3	X4	X5	X6	X7
1961	33960	5.41	5.70	0	24185	7612327	93.2
1962	36564	5.06	5.75	1	25927	7872266	92.3
1963	40697	4.89	5.71	2	28401	8143629	93.2
1964	50785	4.78	5.83	3	32340	8426799	95.1
1965	50970	4.81	5.91	4	34090	8722212	96.9
1966	54506	4.84	5.97	5	35734	9030330	98.8
1967	60779	4.85	5.96	6	37990	9351602	98.8
1968	64041	4.70	6.05	7	41160	9686486	100.0
1969	67735	4.71	6.04	8	45797	10035435	102.8
1970	74522	4.42	5.80	9	49486	10398907	104.7
1971	77383	4.74	6.09	10	57094	10611602	108.4
1972	90936	4.87	6.98	11	63112	10939241	111.5
1973	99919	4.85	9.07	12	76097	11279608	116.1
1974	113425	5.23	10.56	13	127741	11631650	125.7
1975	124624	5.52	11.98	14	125347	11993052	138.6
1976	144326	5.70	13.27	15	133071	12361090	149.1

```
*EOF
```

Coefficients of the Variables and Relevant Statistics for the Models Tested to Estimate the Demand Equation for Broilers in Venezuela

Dependent Variable: x15; Independent Variable: x2, x3, x4.

Coefficients / Model	Constant	b_2 (t)	b_3 (t)	b_4 (t)	R^2
I	1.088	-1.24 (-2.01)*	.1638 (1.54)*	$.958 \times 10^{-2}$ (.62)	.948
II	.895	-.97 (-1.54)*		$.199 \times 10^{-1}$ (1.37)	.942
III	-.748			$.421 \times 10^{-1}$ (14.32)*	.935

Note: Values in parenthesis are the respective t statistics.
*The t value is significantly different than zero at 5% using a one-tail test.

Coefficients of Correlation between Variables

x3	-.63963		
x4	-.98143	.69244	
x15	-.97082	.71575	.96972
	x2	x3	x4

APPENDIX 2

COST ANALYSIS FOR A FAST-FOOD STORE OPERATION IN VENEZUELA

APPENDIX 2

COST ANALYSIS FOR A FAST-FOOD STORE OPERATION IN VENEZUELA

It is important to emphasize that these calculations will only be an illustrative approach to the research methodology required in a volume-cost profit analysis for a fast-food broiler business in Venezuela. Most of the basic data used in this analysis are crude estimates from private sources in Venezuela or in some cases, the equivalent information for a similar operation in the U.S. Also, it is important to consider the following assumptions:

(1) The store has a simple-line service with an attendant to take orders and a cashier to pay when checking out at the end of the line.

(2) The customer may sit in or take out his food.

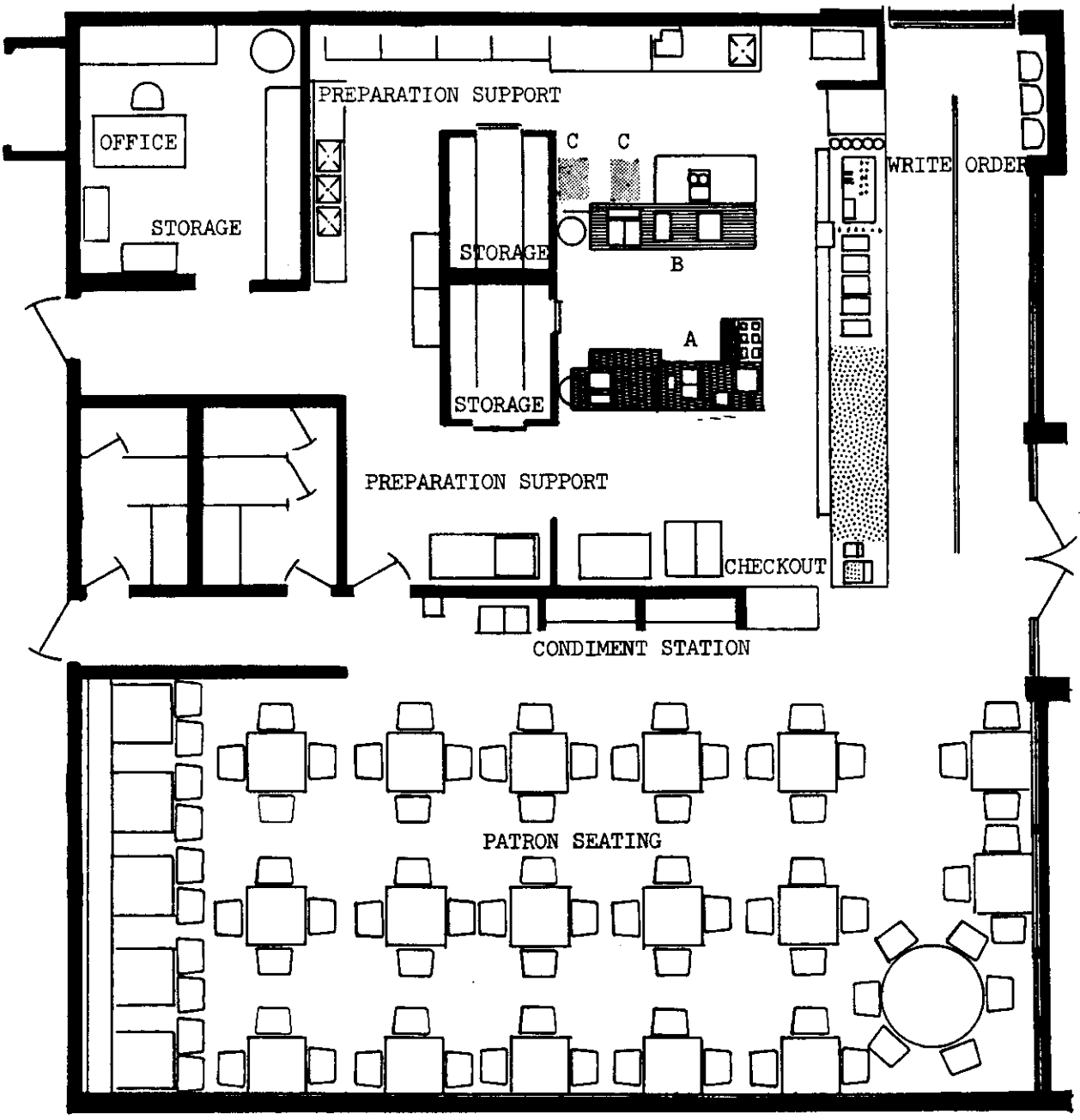
(3) The size of the store is 150 square meters and the lot area is 1000 square meters. (In figure II-1 the basic layout assumed for the equipment is shown.)

(4) Transportation costs for the equipment bought in the U.S. is assumed as 20 percent of the f.o.b. price.

(5) Installation costs for equipment is assumed as 20 percent of the f.o.b. prices.

(6) The interest on capital is assumed as 10 percent of the investment and equal to the opportunity cost of that capita.

Fig. II-1 Basic Layout for a Fast-Food Restaurant



A SIDE DISHES

B DEEP FRY STATION

C FRIED CHICKEN STATION

D BEVERAGE STATION

Source: Marketing Research Report No. 1033 USDA

(7) Depreciation of building in 10 years.

(8) Depreciation of equipment in 5 years.

(9) Average number of meals per day = 276.

(10) Standard times for direct and indirect labor are the same as those given by the USDA Marketing Research Report No. 1033.

(11) Number of meals by bird = 2.5.

(12) Chicken cost = Bs 7.1 per bird.

(13) Workers and employees are hired on a full-time basis in this kind of business in Venezuela.

(14) $1 = 4.3 Bolivares.

Fixed Costs

	Bs
Interest on land, $\frac{(240000 \times 10\%)}{R}$	12000
Land investment: 120 Bs/m^2 x 2000 m^2 = Bs 240000	
Building depreciation (in 10 years)	15000
Interest on building	15000
Building: 150 m^2 x Bs 1000/m^2 = Bs 150,000	

General equipment:	$
Freezer (100 sq. ft.)	2800
Cooler (100 sq. ft.)	3000
Service counter (150 sq. ft.)	4400
Other equipment	8000
Total delivered	18200

	$	Bs.
Transportation and installation (40%)	7280	
Total installed	15480	
Interest (10%)	1274	
Total cost	$26754	
Annual depreciation	5350	
Maintenance and repairs (5 years)	728	
Annual total cost	$ 6078	
Annual total cost in Bs (6078 x 4.3)		26139

Equipment to Prepare Chicken

Table and shelving	$ 240	
Frier	2000	
Warmer	300	
Total delivered (1975 prices)	2540	
Adjusted to 1978 prices*	2850	
Transportation and installation (40%)	1140	
Total installed (2 units)	7980	
Interest	399	
Total cost	8379	
Annual depreciation (5 years)	1675.8	
Annual total cost in Bs (x 4.3)		7206

*Price Index for machinery and equipment (1967 = 100, 1975 = 140.7, 1977 = 154.9). U.S. Department of Commerce.

Auxiliary Equipment	$	Bs.
Two friers	800	
Stainless steel counter and shelving	400	
Lamp warmer	30	
Slicer	700	
Bun toaster	550	
Milkshake machines (2)	5600	
Coffee machines	2000	
Carbonate drinks unit	3000	
Orange drink machine	250	
Total (1975 prices)	$13330	
Adjusted to 1978 prices	16082	
Transportation and installation (40%)	6432	
Total installed	22514	
Interest	1126	
Total cost	23640	
Annual depreciation	4298	
Annual total cost in Bs (x 4.3)		20330
(In a daily basis Bs. 55.7)		
Utilities and miscellaneous		26660
Corporate overhead		43000
Unit management (1 manager Bs. 4413 + 40% in fringe benefits)		74140
Contingencies and reserves		8600
Total fixed costs (total fixed cost every day = Bs. 679.66)		248075

Variable Costs

Direct Labor		30660
Standard time per 100 menu items served (chicken dinner)	= 9.06 hrs.	
Number of workers	= 2	
Daily labor cost	= Bs 30 + fringe benefits (40%)	
Indirect Labor		51100
Two cashiers (2 shifts)		
A cashier Bs 50/day + 40% 140 Bs/day		
One worker (supporting task)		12775
(25 Bs + 40 c/u)		
Total indirect labor		63875

Material Costs

Chicken: 276 meals ÷ 25 meals/ bird x Bs 7.1/bird	286087
Additional costs (53%) (from USDA MRR 1033)	151626
Total material costs	437713
Total variable costs	532248
Variable cost per day	1458.21
Variable cost per meal	5.28

BIBLIOGRAPHY

Banco Central de Venezuela, Informe Economico 1975, Caracas, 1976.

_____, Informe Economico 1976, Caracas, 1977.

_____, Boletin Mensual, Caracas, March 1978.

Benson, Verel W. and Witzig, Thomas J. The Chicken Broiler Industry: Structure, Practice and Costs. USDA Agricultural Economic Report No. 381, August 1977.

Cordiplan, V Plan de la Nacion, Caracas, 1976.

Dietrich, Robert. "Who's Eating Out," Progressive Grocer (September 1977).

Dernburg, Thomas F. and McDougall, Duncan M. Macroeconomics: The Measurement, Analysis and Control of Aggregate Economic Activity, 5th Ed. New York: McGraw-Hill, 1976.

Esposito, Michael J. "An Economic Profile for Fast Food," Fast Service (May 1978)

FAO, Agricultural Commodity Projections, 1970-1980. Vol. II (Food and Agriculture Organization of the United Nations: Rome, 1971).

_____, Agricultural Commodities. Projections for 1975 and 1985, Rome 1972.

Freshwater, John F. USDA Marketing Research Report No. 1033. August 1976.

Gomez, Jose E. "Demand and Supply Analysis for Broilers in Venezuela." Unpublished paper, Mich. State Univ., March 1978.

Gomez, Jose E., Mercado, Roberto S. and Silva, Charlos A. "Marketing of Poultry Products in Venezuela." Unpublished paper, December 1977.

Graterol-Jatar, Alejandro. "The Venezuelan Broiler Industry: Structure, Practices and Performance." Unpublished M.S. dissertation, Mich. State Univ., 1972.

Lazer, William. Marketing Management: A Systems Perspective. The Wiley Marketing Series. New York: John Wiley and Sons, Inc., 1971.

Luck, David J., Wales, Hugh G., Taylor, Donald A. and Rubin, Ronald S. Marketing Research, 5th Ed. New Jersey: Prentice-Hall, 1978.

Ministerio de Agricultura y Cria. Anvario Estadistico Agropecuario. Selected Issues (1961-1975). M.A.C. Caracas.

Ministerio de Agricultura y Cria. Plan Operatio del Sector Agricola 1977. M.A.C. Caracas 1977.

Ministerio de Fomento. Anvarios Estadisticas de Venezuela. Selected Issues.

Montilla, Juan de S. "Avicultura para el Desarrollo, Ph.D. Dissertation." Universidad Central de Venezuela, 1977.

Mossman, Frank H., Crissy, W.J.E. and Fischer Paul M. Financial Dimensions of Marketing Management. The Wiley Marketing Series. New York: John Wiley and Sons, Inc., 1978.

PROAGRO, Selected Reports.

Staudt, Thomas A., Taylor, Donald A. and Bowersox, Donald J. A Managerial Introduction to Marketing, 3rd Ed. New Jersey: Prentice-Hall, 1976.

Tomek, William G. and Robinson, Kenneth L. Agricultural Product Prices. Ithaca: Cornell University Press, 1972.

Weisenberg, Terry Mathew. "Generalized Market Segments." Ph.D. dissertation, Mich. State Univ., 1977.

Wentz, Walter B. Marketing Research: Management and Methods. New York: Harper and Row Publishers, 1972.