AN ECONOMIC ANALYSIS OF BANTAMS AND CONVENTIONAL CONVENIENCE FOOD STORES

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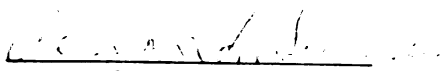

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EARL H. BROWN

A THESIS

Submitted to the School for Advanced Graduate Studies of
Michigan State University of Agriculture and
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AN ABSTRACT

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ABSTRACT

Bantams, the new modern convenience food stores, are heralded as one of the greatest advancements in food distribution since the inception of super markets. The objectives of this study are: 1) to determine some reasons for the emergence of bantams, 2) to determine the general characteristics of bantams and 3) to estimate the operating cost and profit functions for bantams and conventional convenience stores.

The first objective is attained by examining industry trends from various sources and reviewing the Federal Trade Commission's report, "Economic Inquiry into Food Marketing, Part I, Concentration and Integration in Retailing." Willard Mueller and Leon Garoian's report, "Changes in the Market Structure of Grocery Retailing 1940-58" also provides valuable insights, as do the various reports published by the House of Representatives' Select Committee on Small Business.

The second objective was achieved by visiting several bantam operations and studying four companies quite intensively.

The third objective is accomplished by estimating operating cost and profit functions for bantams and conventional convenience stores. The economic-engineering method is used to estimate the operating cost functions. Profit functions are estimated by subtracting the operating cost functions from the gross margin functions. Both functions are presented as algebraic formulae, graphic break-even charts and condensed operating statements or budgets.

It is concluded that location is the single most inportant factor that influences sales. It is further concluded that the ability to attract sales is the most significant factor affecting the profitableness

of a convenience store. Both bantams and conventional convenience stores have a high initial fixed operating cost which increases much slower than gross profit as sales increase. In both cases, profit increases rapidly once break-even volume is reached and the store approaches capacity.

It appears as though the smaller conventional convenience stores (about 1,500 square feet) will be forced out of the picture as break-even volume is very close to capacity volume. The competition will be between the larger conventional convenience stores and bantams, both with about 2,400 square feet. Bantams have a slightly lower operating cost function, primarily because they do not have a fresh meat department. However, the difference is so slight that the store with the most sales attracting ability will most likely survive.

Bantams seem to be more successful in attracting sales than conventional convenience stores, mostly because of location, but partly because of appearance and merchandising methods. Some existing conventional convenience stores have some of the characteristics of bantams, and any classification is arbitrary. It seems likely, however, that future convenience stores will tend to have the bantam's characteristics.

The change will be gradual, however, as many conventional convenience stores are being operated with old, depreciated capital, and they will be able to remain in business, and make a profit, until a major capital replacement is needed.

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CHAPTER I

INTRODUCTION

The bantam, a new type of convenience store that has been introduced during the last few years, has been heralded as the greatest advancement in food distribution since the inception of the super market. Trade sources report:

Up to 30 inventory turns per year
Modest investment required
Sales up to $6,000 per week
23 to 25 percent gross margin
8 to 10 percent net margin
25 to 50 percent return on investment
Individual owner-operators making up to $15,000 per year

There is no precise definition of bantams, but essentially, they are modernized convenience stores that are taking advantages of population shifts, increasing incomes, and improved transportation methods. They are designed to fill a particular market void, left by both super markets and conventional convenience stores. Their success has been attributed primarily to spatial and time convenience, cleanliness and improved methods of operations.

Ever since the introduction of super markets, the number and importance of small stores has been decreasing. Some observers think that super markets will eventually replace all small convenience stores. Others believe that there will always be a place for some minimum number of small convenience stores. The bantam represents the first major attempt to modernize and revive the small convenience type of store. Since bantams are primarily convenience stores, it is felt that they will not effect super markets materially. If they are successful, however,

they will have a drastic effect on small conventional convenience stores, to the extent that they may eventually replace them entirely. It is this latter problem that this study is primarily concerned with.

The first objective of the study is to examine the structure of the retail food industry to determine some of the reasons for the emergence of bantams.

The second objective is to determine the general characteristics of bantams and to establish some limits within which convenience stores can be classified as bantams.

A third and final objective is to estimate the cost and profit functions for a bantam and two different-sized conventional convenience stores to see if bantams have a cost advantage over conventional convenience stores or if their success depends primarily on non-cost factors.

Chapter two is devoted to a discussion and analysis of the retail food industry, including the economic environment, organizational patterns and market shares, the growth of super markets and the decline of the convenience segment of the food market. Chapter three considers the bantam, it's characteristics and some reasons for it's entry into the food industry. An example of a nine-unit, franchised group is used, partly to clarify the bantam's characteristics and partly because this group is representative of existing bantams. In chapter four, the theoretical framework and the research methodology is discussed in detail. The economic-engineering method of estimating cost and profit functions is used instead of fitting mathematical equations statistically. The cost functions for a bantam and two different-sized conventional convenience stores are presented in chapter five. The cost functions

represent the estimated costs of operating new stores where no resource is fixed, rather than existing stores, where certain commitments influence capital requirements and operating costs. In this respect, the analysis is long run; however, after the size and kind of store has been established, as is done in this study, the analysis becomes short run. Chapter six is devoted to profit determination. In chapter seven, several comparisons are made between bantams and conventional convenience stores. These comparisons lead to some general conclusions about bantams and their potential. Chapter eight is a summary of the entire study.

CHAPTER II

THE RETAIL FOOD INDUSTRY

Introduction

Food retailing is the largest industry in the United States. In 1959, food store sales amounted to 50.3 billion dollars.[1/] The industry has historically been one composed of many relatively small retail outlets. However, the introduction of the super market in the 1930's marked the beginning of a new era in food distribution. During the last twenty-five years the super market has become the dominant factor in food distribution. In fact it has been so successful that many other types of retail stores have copied the idea of mass display and self-service from them. In the food industry, super markets have not been content with capturing only the added sales, as a result of increasing population, built-in maid service and the addition of new items, but they have been very successful in taking business away from small convenience type stores. Perhaps most of the super markets' success has been due to lower prices; however, part of the success must surely be attributed to the status quo of the small store. Changes have taken place so rapidly that the industry has grown up practically overnight. Today, food retailing can rightfully be considered as big business. With these changes, of course, came many problems.

During the years 1958 and 1959, the Federal Trade Commission started an extensive inquiry of Food Marketing, particularly in respect to concentration and integration of food retailing. It also began

1/ "Economic Inquiry into Food Marketing, Part I, Concentration and Integration in Retailing" Federal Trade Commission, 1960, p. 39.

investigating the actions of specific chains, particularly in regard to mergers. Further evidence of concern about the big business aspect of food retailing was the decision of the House of Representatives to form a Select Committee on Small Business to conduct hearings on the problems of small businesses in food distribution. Two important and very useful reports were released in 1960. One was the Federal Trade Commission's report, "Economic Inquiry Into Food Marketing, Part I, Concentration and Integration In Retailing."[2/] The other was an analytical report by Mueller and Garoian from the University of Wisconsin entitled, "Changes in the Market Structure of Grocery Retailing 1940-58."[3/] In both reports, major emphasis is placed on concentration and it's effect on competition.

Concentration in food retailing can be viewed in two perspectives. First, it can be viewed in terms of store ownership or method of operation, that is, how the market is divided among corporate chains,[4/] voluntary chains,[5/] cooperative chains[6/] and independents[7/]. This is the approach taken in the two reports mentioned above. Second, it can be viewed in terms of store size or type of sale made to the consumer, that is, how the market is divided between super markets and convenience stores.

2/ Op Cit., Federal Trade Commission

3/ Changes in the Market Structure of Grocery Retailing 1940-58, Willard F. Mueller and Leon Garoian, University of Wisconsin, April 1960.

4/ A corporate chain is defined as a company operating 11 or more stores.

5/ A voluntary chain is defined as a group of retailers who have an agreement with a wholesaler regarding the purchasing of merchandise and the providing of services. Usually they operate under a common name such as IGA.

6/ A cooperative chain is defined as a group of retailers who collectively own a warehouse for the purpose of purchasing merchandise. Usually they operate under a common name such as Certified Grocers and usually the management of the warehouse provides services similar to those provided by the voluntary wholesaler.

7/ An independent is defined as a company with less than 11 stores which does not operate a warehouse nor belong to a voluntary or cooperative group.

In this study, concentration is viewed from this latter perspective. Before developing this further, however, it will be helpful to consider the economic environment in which food retailing operates and some trends in organizational patterns and market shares.

Economic Environment

Food retailing firms operate within the general framework of imperfect competition, in the sense that the firms are neither in perfect competition nor perfect monopoly. The theories of perfect competition and perfect monopoly are characterized by very limiting assumptions. They have been criticized as being oversimplified and too far from reality to be useful to businessmen. It should be borne in mind, however, that the theories are not designed to describe the entire complex of firm activity. Their major objective is to serve as a model or measure of comparison in evaluating the price-quantity behavior and performance of firms. Their over-simplification permits an investigator to reduce the number of variables in the analysis, and in this framework the theories are useful. On the other hand, I think the theory of imperfect competition attempts to describe how firms do in fact behave, in addition to serving as models or measures of comparison.

The theory of imperfect competition exists in two frameworks: 1) the theory of monopolistic competition, characterized by many, relatively small firms having relatively little influence on each other, and 2) the theory of oligopoly, characterized by few, relatively large firms with a considerable degree of interdependence. Both of these theories apply to food retailing firms. If one were concerned with the

national trend of aggregation considering the national, multi-store chains, the regional, multi-store chains and the independent, one store operations, the theory of oligopoly would be most applicable. It would have to account for a few large firms, which act as price leaders existing simultaneously with a large number of small firms acting as followers. On the other hand, if one were concerned with the analysis of individual stores, regardless of whether they were part of a multi-store group or not, the theory of monopolistic competition would be more appropriate. It was this latter framework that was thought to be most applicable for this study as the analysis is concerned primarily with individual stores, that is, a comparison of bantams and conventional convenience stores. A brief review of the theory of monopolistic competition will help to establish a framework for the rest of this report.

The theory of monopolistic competition was introduced by Professor Chamberlin in 1933 as a result of his dissatisfaction with the theory of perfect competition as a theory of value. He submitted that, "both monopolistic and competitive forces combine in the determination of most prices and therefore a hybred theory affords a more illuminating approach to the study of the price system than does a theory of perfected competition, supplemented by a theory of monopoly".[8/] Chamberlin used the theory of perfect competition as a starting point and later worked in monopoly elements. He concluded with a blend which he called monopolistic competition.

The theory rests very heavily on the concept of product differentiation. Chamberlin submitted that, "Differentiation may be based upon certain characteristics of the product itself, such as exclusive patented features;

8/ Chamberlin, Edward Hastings, The Theory of Monopolistic Competition, (Cambridge: Harvard University Press, 1956) P. XI, Preface.

trademarks; trade names; pecularities of the package or container, if any; or singularity in quality, design, color or style. It may also exist with respect to the conditions surrounding it's sale. In retail trade to take only one instance, these conditions include such factors as the convenience of the seller's location, the general tone or character of his establishment, his way of doing business, his reputation for fair dealing, courtesy, efficiency, and all the personal links which attach his customers either to himself or to those employed by him. Insofar as these and other intangible factors vary from seller to seller, the 'produce' in each case is different, for buyers take them into account, more or less and may be regarded as purchasing them along with the commodity itself. When these two aspects of differentiation are held in mind, it is evident that virtually all products are differentiated, at least slightly, and that over a wide range of economic activity differentiation is of considerable importance."9/

Product differentiation causes the demand curve facing a firm to take on some degree of slope, that is, it is not perfectly elastic as in perfect competition. No firm can sell all it wants to at the market price. It also means that each firm has some control over the price it receives and the quantity it offers, even though this control may be ever so slight.

The aspects of differentiation that apply most to retail food stores are: spatial or location differentiation, product differentiation and the differentiation that is created by circumstances surrounding the sale, including the hours the store is open for business. Other things being equal, customers who find a retailer's location most convenient

9/ Ibid. pp. 56 and 57

to their homes will trade with him rather than accepting more or less imperfect substitutes in the form of identical goods at less convenient locations. This is what is meant by spatial differentiation. Product differentiation is achieved in food retailing primarily through the use of private brands and labels. Almost all large, and many small, chains and merchandising groups have some private label merchandise. The contents of different brands may be exactly the same except for the package or label, thus differentiation isn't really obtained with a different product, but rather with the reputation and associations formed by consumers with the respective brands. The reputation and associations are, of course, influenced by advertising. Differentiation regarding circumstances surrounding the sale include such things as the availability of credit and delivery, the personality and attitude of the clerks, the appearance and cleanliness of the establishment, etc.

Chamberlin submits that, "the theory of pure competition falls short as an explanation of prices when the product is (even slightly) differentiated. By eliminating monopoly elements (i.e., by regarding the product as homogeneous) it ignores the upward force which they exert, and indicates an equilibrium price which is below the true norm."10/ Under monopolistic competition a firm's market is separated to a degree from that of his rivals. It's sales are limited and defined by three factors: price, product type and selling outlay.

"Monopolistic competition then, concerns itself not only with the problem of an individual equilibrium (the ordinary theory of monopoly), but also with that of a group equilibrium (the adjustment of economic

10/ Ibid., p. 64

forces within a group of competing monopolists, ordinarily regarded merely as a group of competitors). In this it differs both from the theory of competition and from the theory of monopoly."11/

Chamberlin submits that a firm operating under conditions of monopolistic competition is usually characterized by excess capacity. Excess capacity is the rule, rather than the exception in retail food stores. Most stores could reduce their unit costs by increasing sales. Perhaps this explains why retailers are so much more interested in increasing sales than reducing costs. Most of them are in fact operating on the downward sloping portion of their average cost curve. I think most everyone would agree that the cost of distributing food would be reduced if there were fewer, but larger food stores. Thus, the theory of monopolistic competition partly explains and supports the trend to fewer and larger retail food stores. The disadvantage of higher costs under monopolistic competition, must be weighed against the increased variety of product types, and the added convenience of numerous stores.

It should be pointed out that the above theory applies primarily to the economic environment in which the individual store finds itself. To the extent that individual stores are not independent, as in the case of corporate chain stores, the theory is limited. However, various aspects of individual corporate chain stores are independent, for example, number of items, store hours, amount of customer service, and certain merchandising techniques. Thus the theory is believed to be fairly accurate when one uses the individual store as a focal point.

A second limitation of the above theory should also be noted. The above theoretical framework is a static one. Retail food firms exist

11/ Ibid. p. 67

in a dynamic framework. This causes considerable problems if one tries to use the theory to explain the entire complex of individual store behavior. Until a satisfactory dynamic theory is developed, the above static theory will have to suffice. Even though it can not be used to describe the entire complex of store behavior, it can be used quite satisfactorily to provide a framework for analyzing problems of individual stores. This is the objective of it's use in this study. We turn now to a brief description of the most important organizational patterns that have evolved in food retailing.

Organizational Patterns and Market Shares

Consumer Expenditures for Food

Total food consumption in the United States is increasing primarily because the population is increasing. Average per capita food consumption has decreased, from an average of 1,578 pounds for the years 1925 to 1929 to an average of 1,502 pounds for the years 1954 to 1958. The per capita consumption of dairy products, eggs, meat, fish, poultry, citrus fruits, tomatoes, coffee, tea and cocoa are increasing while the per capita consumption of flour, cereal products and potatoes are declining.[12/]

Improvements in food processing and handling are causing changes in the form of many products found in the retail food store. Due to improved refrigeration and freezing methods, there has been a tremendous increase in frozen foods. It is estimated that 6,000 new items reach the buyers' desk of a large chain store annually. On the average, only about 415 are accepted, but this results in a net addition because only 355 are discontinued.[13/] Generally, there is an increasing amount of built-in

12/ Op. Cit. p. 32, Federal Trade Commission
13/ Chain Store Age, Oct. 1960, p. 81

maid service in many products, resulting in less preparation time on the part of the housewife.

Total expenditures for food have increased from 19.5 billion dollars in 1929 to 69.1 billion dollars in 1958, (see table 2.1). The increase was due primarily to an increase in population, inflation, built-in maid services and a general up-grading of the diet. The proportion of consumers' disposable income spent for food has remained relatively constant during the last 30 years. In 1929 it was 23.5 percent and in 1958, it was 22.3 percent. This indicates a general up-grading of the diet because per capita disposable income has increased relatively more than the consumer price index for food. Per capita disposable income increased from 1,291 dollars in 1948 to 1,784 dollars in 1958, an increase of 38 percent, while the consumer price index for food increased only 15.6 percent during the same period.

Retail Food Store Sales

Retail food stores, grocery and specialty, continue to account for the major share of consumer expenditures for food. In 1929, retail food stores accounted for 10.8 billion of the 19.5 billion dollars spent for food, about 55 percent of the market. In 1958, they accounted for 50.3 billion of the 69.1 billion dollars spent for food, about 73 percent of the total.

The transition from specialty stores to grocery stores[14/] has continued at a steady pace since 1929. In 1929 grocery stores accounted for 7.4 billion dollars or 67.9 percent of all food store sales. In 1958 grocery stores accounted for 44.5 billion or 88.6 percent of all food stores sales (see table 2.2). The desire on the part of consumers

14/ A grocery store is defined as a complete food store, handling dry groceries, meat, produce, frozen food and dairy products, whereas a specialty store may handle only one or two product lines.

Table 2.1 Consumer Expenditures for Food, 1929 to 1958

Year	Expenditures for Food (billions of dollars)	Population (thousands)	Per Capita		Expenditures for Food as Percent of Disposable Income
			Expenditures for Food (dollars)	Disposable Income (dollars)	
1929	19.5	121,875	160	682	23.5
1930	18.0	123,188	146	604	24.2
1931	14.7	124,149	118	514	23.0
1932	11.4	124,949	91	389	23.4
1933	10.9	125,690	87	364	23.9
1934	12.2	126,485	96	411	23.4
1935	13.6	127,362	107	458	23.4
1936	15.2	128,181	119	517	23.0
1937	16.4	128,961	127	551	23.0
1938	15.6	129,969	120	505	23.8
1939	15.7	131,028	120	538	22.3
1940	16.7	132,122	126	576	21.9
1941	19.4	133,402	145	697	20.8
1942	23.7	133,860	176	871	20.2
1943	27.8	136,739	203	977	20.8
1944	30.6	138,397	221	1,060	20.8
1945	34.1	139,928	244	1,075	22.7
1946	40.7	141,389	288	1,136	25.4
1947	45.8	144,126	318	1,180	26.9
1948	48.2	146,631	329	1,291	25.5
1949	46.4	149,188	311	1,271	24.5
1950	47.4	151,683	312	1,369	22.8
1951	53.4	154,360	346	1,474	23.5
1952	55.8	157,028	355	1,520	23.4
1953	56.6	159,636	355	1,582	22.4
1954	57.7	162,417	355	1,582	22.4
1955	59.2	165,270	358	1,661	21.6
1956	62.2	168,176	370	1,727	21.4
1957	66.4	171,196	388	1,782	21.8
1958 1/	69.1	174,064	397	1,784	22.3

1/ Preliminary

Source: "Economic Inquiry into Food Marketing, Part I, Concentration and Integration in Retailing", Federal Trade Commission, January 1960

Table **2.2** Sales of Retail Food Stores and Grocery Stores, Selected Years, 1929 to 1958

Year	Total Sales (Millions of Dollars) Food Stores	Grocery Stores	Grocery Store Sales as a Percent of all Food Store Sales
1929	10,837	7,353	67.9
1939	10,165	7,722	76.0
1948	29,208	24,730	84.7
1954	39,762	34,421	86.6
1957	47,786	42,444	88.8
1958	50,263	44,546	88.6

Source: "Economic Inquiry into Food Marketing, Part I, Concentration and Integration in Retailing", Federal Trade Commission, January 1960

Table **2.3** Number and Average Sales of Grocery Stores, and Average Number of People Per Store, Selected Years, 1929 to 1958

Year	Number of Grocery Stores	Population	People per Store	Average Sales Per Store
1929	307,425	121,875,000	396	$ 23,918
1954	279,440	162,417,000	581	123,178
1958	243,625 1/	174,064,000	714	182,846

1/ Preliminary

Source: "Economic Inquiry into Food Marketing, Part I, Concentration and Integration in Retailing" Federal Trade Commission, January 1960

for one-stop shopping is perhaps the major reason for the decline of specialty stores, however it is generally believed that the large super market, the predominant type of grocery store, has lower prices than the small specialty store and this no doubt also has considerable influence.

Number and Size of Grocery Stores

In 1929, on the average, there was one grocery store for every 396 people. In 1958, there was one for every 714 people. This change is due primarily to an increase in population and a decrease in the number of grocery stores. The population of the United States has increased from 121.9 million in 1929 to 174.1 million in 1958, an increase of 52.2 million or 43 percent. On the other hand the number of grocery stores has decreased from 307,425 in 1929 to 243,625 in 1958, a decrease of 63,800 or 20.8 percent (see table 2.3).

The average annual sales of grocery stores has increased from 23,918 dollars in 1929 to 182,846 dollars in 1958, an increase of 415 percent. In addition to the increase in population and the decrease in the number of grocery stores, the increase is due to inflation, improved diet, shift from specialty store to grocery store and the increase in the number of items.

Market Shares

The perennial problem of chains versus independents still exists, however, to a much lesser extent than during the period of the anti-chain legislation. Perhaps the main reason is that the independent food retailer is no longer independent, at least not entirely. Most independents have given up some of their independence by affiliating themselves with a wholesaler, either on a voluntary contractual basis or on a cooperative

ownership basis. Both of these are in fact sometimes referred to as chains, that is voluntary chains and cooperative chains in contrast to corporate chains.

A voluntary chain is one in which a privately-owned wholesaler has a contract or agreement with independently-owned retailers whereby, the retailers agree to purchase the majority of their merchandise from that wholesaler. The retailer is also permitted to associate his store with the trade name selected by the wholesaler, such as IGA, Red and White and Super Valu. Primary advantages of this arrangement are group buying and advertising. It is generally believed that voluntary chains are able to place merchandise in the independent's store at lower prices than the unaffiliated wholesaler primarily for two reasons. First, because they are able to buy in larger quantities and are able to get car lot prices and quantity discounts. The size of their purchases also gives them more bargaining power over price. This is not true in all cases, however, because some unaffiliated wholesalers also buy in large quantities. A second advantage is that the affiliated wholesaler is better able to predict the quantity of merchandise that his retail customers will be ordering and he does not have to maintain as large of an inventory to prevent an excessive level of outs. In addition, the cost of extensive advertising is usually prohibitive for one store unless it is very large. A group of affiliated stores, operating under a common name, can all use the same advertisement and share the cost. Other services, such a financial analysis, training programs, research, store supervision, site selection and financing can also be provided at less cost on a group basis than on an individual basis.

A cooperative chain is one whereby a group of retailers actually own the warehouse and hire a manager to operate it. The same advantages of quantity buying, group advertising and other services exist for the cooperative chain as for the voluntary chain. Cooperative chains argue that they can provide merchandise to the stores for a lower price than the voluntaries, because they do not operate for a profit. Usually they return any excess of charges over cost to the members in the form of patronage dividends. Sometimes, they retain funds for growth, but these are credited to the members. Both, voluntary and cooperative chains sell to non-members, but the majority of their sales are to members.

The importance and growth of the affiliated independent is illustrated in table 2.4, which shows a breakdown of the share of total grocery store sales accounted for by corporate chains, unaffiliated independents and affiliated independents. In 1947 corporate chains accounted for 37 percent of the market. In 1959, their share had increased to 39 percent. Affiliated independents on the other hand, increased their share of the market from 29 percent in 1947 to 47 percent in 1959. Unaffiliated independents suffered a decrease in their share of the market, from 34 percent in 1947 to 14 percent in 1959. It should be remembered, however, that these figures pertain only to grocery stores and not all food stores. If all food stores were considered, the unaffiliated independents' share would be larger as most of the non-grocery food stores are unaffiliated independents.

Without doubt, some of the increased share accounted for by affiliated retailers was due to increased membership, relative to unaffiliated retailers. However, much of their success can be attributed to group buying and advertising, and a general upgrading of

Table 2.4 Share of Grocery Store Sales by Corporate Chains, Un-affiliated Independents and Affiliated Independents, Selected Years, 1947-1959

	1947	1953	1956	1958	1959
	(percent of grocery store sales)				
Corporate Chains	37	36	37	39	39
Un-affiliated Independents	34	25	19	16	14
Affiliated Independents	29	39	44	45	47
Total Grocery Store Sales	100	100	100	100	100

Source: Progressive Grocer Magazine - Facts in Grocery Distribution, 1960

their member retailers both in size of store and in efficiency of operation. In fact, it is generally accepted that the affiliated independent is in as favorable a position from a competitive standpoint as the corporate chain. Perhaps the major advantage of a corporate chain lies in the degree of control it can maintain over its retail operations. However, what the voluntary and cooperative chains lack in control they seem to make up in greater flexibility. To some extent corporate chains have established franchised or affiliated independents as a part of their operation, such as the Red Owl Agency Stores. On the other hand, some affiliated independents own and operate some corporate stores, such as Super Valu. This arrangement appears to offer advantages to both groups and perhaps there will be more of it in the future.

It was stated above that concentration in food retailing can also be viewed from the perspective of store size. Any division of the industry according to store size is somewhat arbitrary, however, there are two quite distinct segments, one consisting of super markets and the other consisting of small convenience stores. This, however, is

not the precise demarcation that I have in mind. I would really like to divide the market by the type of purchase made by the consumer. Let us denote as "major purchases" those relatively large, infrequent purchases usually made once a week to provide the bulk of the family's needs, and let us denote as "convenience purchases" those relatively small, more frequent "fill-in" purchases usually made between the major purchases. Super markets account for the bulk of most peoples' major purchases and small convenience stores account primarily for the convenience purchases; however, super markets account for some of the convenience purchases and convenience stores account for some of the major purchases. If these two influences offset each other, the size of each of these markets can be estimated roughly to be 69 percent of the market for major purchases and 31 percent for convenience purchases. The exact size of each segment is not as important as the differences in the type of store catering to each segment. We will, first, consider the super market segment and then the small store or convenience segment.

The Growth of Super Markets

One of the most significant advancements in the history of food distribution is the development of the super market. The super market[15/] with it's large volume, mass displays and self-service, is one of the major reasons for the relatively low price of food. The consumer price index for food has risen only 24.4 percentage points, from 95.9 in 1947 to 120.3 in 1959 whereas the consumer price index for all commodities has risen 28 points, from 95.5 in 1947 to 123.5 in 1959. The typical gross margin in grocery stores before the super market was 30 to 35 percent. Today the gross margin of most food chains is about 19 percent.

15/ A super market is defined as a grocery store with an annual sales volume greater than 375,000 dollars.

Many large super markets can operate profitably with a gross margin as low as 16 to 17 percent. This represents a substantial reduction in the cost of food to consumers. The super market is not responsible for all of the savings, but it is the vehicle through which the savings are possible.

The data on average sales per grocery store presented above is somewhat misleading. As was mentioned, the average annual sales of grocery stores has increased from 23,918 dollars in 1929 to 182,846 dollars in 1958, but this increase was due primarily to super markets and not all grocery stores. The super market is by far the dominant type of grocery store insofar as sales are concerned. Super markets accounted for 43 percent of grocery store sales in 1952. By 1959, this had increased to 69 percent (see table 2.5).

Table 2.5 Super Markets' Share of Grocery Store Sales, Selected Years, 1952 to 1959

Year	Percent of Grocery Store Sales Accounted for by Super Markets
1952	43
1954	53
1956	62
1958	68
1959	69

Source: Progressive Grocer Magazine - Facts in Grocery Distribution, 1960

On the other hand, in 1929, super markets were virtually non-existant, whereas in 1958 they represented about 10 percent of all grocery stores. In 1958, the average annual sales of super markets was 1.10 million dollars

whereas, the average annual sales of all other grocery stores was only 61,176 dollars. Therefore the average annual sales of grocery stores, other than super markets, increased from 23,918 dollars in 1929 to about 61,176 dollars in 1958. If this is corrected for inflation by dividing by the retail food price index, (1947-49 = 100) the average annual sales in constant dollars only increased from 35,460 in 1929 to 50,853 in 1958.

The 32,000 super markets in operation in 1958 were operated primarily by corporate chains and affiliated independents. A direct comparison of corporate chain and affiliated independent super markets is impossible because data are not available. Data are available however, on the number of sales of corporate chain and all independent super markets. In 1952, there were 7,000 independent super markets and 9,540 corporate chain super markets. In 1959, there were 15,800 independent super markets and 16,200 corporate chain super markets (see table 2.6). If one considers total sales, the two are also very similar. In 1958, independent super

Table 2.6 Number of Super Markets Operated by Corporate Chains and Independents, Selected Years, 1952 to 1959

Year	Independent Super Markets	Corporate Chain Super Markets	Total
1952	7,000	9,540	16,540
1954	10,300	11,140	21,440
1956	13,600	13,500	27,100
1958	14,600	15,300	29,900
1959	15,800	16,200	32,000

Source: Progressive Grocer Magazine - Facts in Grocery Distribution, 1960

markets accounted for 15.4 billion dollars for an average of 1.05 million dollars per super market. Corporate chain super markets accounted for 17.5 billion dollars for an average of 1.14 million dollars per super market.

Perhaps a closer look at the growth of super markets is in order. It was stated that super markets were virtually non-existant in 1929. By 1952, there were 16,540 and by 1959, there were 32,000. Without a doubt, the growth of super markets has been phenomenal, but it may be slightly over-stated. First of all in 1929, the concept of a super market was not very widely known. Nor was it very clearly defined. Let's consider the common definition of a super market as being any retail food store with annual sales exceeding 375,000 dollars per year. Surely a fairly large number of stores in 1929 met this criterion, so on that basis, the number of super markets in 1929 was not zero. Now let's consider the effect of inflation over the years. The 375,000 dollar requirement has remained the same, but the value of the dollar has decreased considerably. Over the years many stores acquired the status of a super market because of inflation. That is, many stores moved over the 375,000 dollar mark without increasing their physical output, merely because of higher prices.

Actually, however, the concept of a super market is still changing. Many would like to define a super market as being a store with at least 1 million dollars annual sales and the grocery department 100 percent self-service. Perhaps, this definition better describes the modern super market than the requirement of 375,000 dollars annual sales, however data on this newer concept of super markets are very limited.

It is generally believed by trade people and consumers that operating costs and prices are lower at super markets than at small convenience stores. To my knowledge there has never been a thorough study to determine the economies of store size. Given a physical plant of a particular size, it is generally believed that the average operating cost per dollar of sales will decrease as sales increase. Neither, the total operating cost function, nor the average operating cost per dollar of sales was derived for super markets in this study. A very real problem exists in that there are many sizes of super markets. Theoretically, a cost function would have to be derived for every conceivable size. This problem is beyond the scope of this study, but it is one that needs some attention.

The data in table 2.7 and figure 2.1 provide an approximation to the economies of super market size. This provides a basis for comparison between super markets and convenience stores, that is, the relative cost of distribution food through the two types of outlets. This provides, at least in a historical sense, an indication of the additional price that consumers will pay for the added convenience of the small store.

The average operating cost per dollar of sales curve in figure 2.1 is presented as a band or range. It can be considered only as an indication of how the cost per dollar of sales decreases as the sales of a particular sized store increase. This can be considered as the most common sized super market. The derivation of the relationship was based on the data in table 2.7 and on operating costs of a few companies to which I have had access over the past years. The most

Figure 2.1 Probable Relationship Between Operating Cost and Annual Sales for the most Common Size Super Market

Figure 2.1 Probable Relationship Between Operating Cost and Annual Sales for the most Common Size Super Market

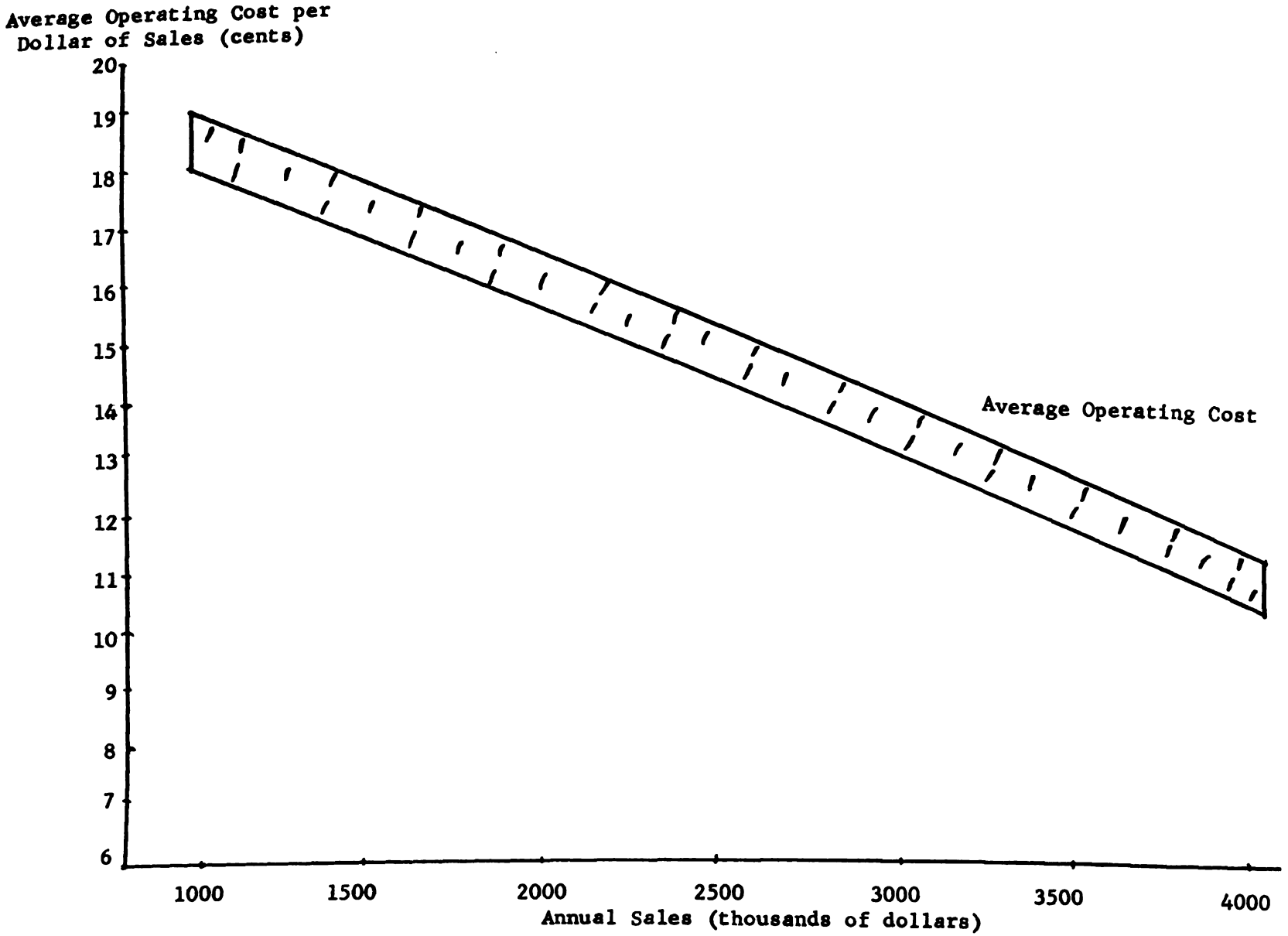


Table 2.7 Operating Expense Ratios and Average Sales Per Store, 22 Large Food Chains, 1958

Company	Operating Expense (As a Percent of Sales)	Average Sales Per Store (thousands of dollars)
A & P	12.6	1,240
Safeway	15.9	1,160
Kroger	16.0	1,240
American	15.0	1,060
First National	12.6	960
National Tea	16.9	860
Food Fair	15.0	2,040
Winn-Dixie	12.3	1,360
Grand Union	17.5	1,260
Jewel Tea	14.9	1,760
Colonial	16.3	920
Red Owl	16.1	1,300
Thriftymart	14.8	3,460
Penn Fruit	16.0	2,840
Lucky	18.1	1,380
Weingarten	17.1	2,780
Purity	19.5	1,000
Von's	18.3	3,480
Market Basket	16.1	2,260
Shopping Bag	19.7	2,460
Daitch Crystal Dairies	18.7	1,020
Food Mart	16.2	940

Source: "Economic Inquiry into Food Marketing, Part I, Concentration and Integration in Retailing", Federal Trade Commission, pp. 84, 85, 87 and 88, January 1960.

common sized super market, with an annual sales volume of 4 million dollars could probably achieve an operating cost per dollar of sales as low as 10.5 to 11.5 cents. On the other hand, because of the large proportion of fixed operating costs, average operating costs per dollar of sales would probably be between 18 and 19 cents if annual sales were only 1 million dollars.

Net profit of retail food stores is commonly stated in two ratios, net profit as a percent of sales and net profit as a percent of total assets. In table 2.8 these two profit ratios are presented for 22 large food chains. This gives an indication of the profit achieved by super markets as practically all of the stores of these companies are super markets. Net profits before taxes expressed as a percent of sales ranged from a low of .9 in Purity to a high of 4.3 in Winn-Dixie in 1958. Net profit before taxes expressed as a percent of total assets ranged from a low of 4.6 in Purity to a high of 27.9 in Winn-Dixie in 1958.

The Convenience Food Market

There are many types and sizes of small stores or conventional convenience stores as they are called in this report. The general characteristics that apply to most of them are:

Location that is primarily accessible to walk-in trade - usually in congested metropolitan or residential areas.
Limited amount of parking space.
Relatively old building.
Relatively old equipment.
Relatively little emphasis on appearance and cleanliness.
Relatively high inventory turn.
Limited selection of brands and sizes.
Complete fresh, service-meat department.
Emphasis on convenience rather than price.
Open long days.
Gross margin that is higher than super markets.
Independently owned and operated using mostly family labor.

Table 2.8 Net Profit Before Taxes as a Percent of Sales and Total Assets, 22 Large Food Chains, 1958

Company	Net Profit as a Percent of Sales	Net Profit as a Percent of Total Assets
A & P	2.3	18.4
Safeway	3.1	17.1
Kroger	2.5	13.4
American	2.8	15.1
First National	1.7	17.2
National Tea	2.2	12.0
Food Fair	2.8	13.6
Winn-Dixie	4.3	27.9
Grand Union	2.6	10.5
Jewel Tea	3.6	15.5
Colonial	2.3	11.7
Red Owl	2.5	12.5
Thriftymart	2.6	12.5
Penn Fruit	2.9	13.7
Lucky	3.8	19.6
Weingarten	2.0	11.2
Purity	.9	4.6
Von's	4.2	25.3
Market Basket	3.9	20.9
Shopping Bag	2.0	7.8
Daitch Crystal Dairies	2.6	15.1
Food Mart	3.7	16.1

Source: "Economic Inquiry into Food Marketing, Part I, Concentration and Integration in Retailing", Federal Trade Commission, pp. 84, 85, 87 and 88, January 1960.

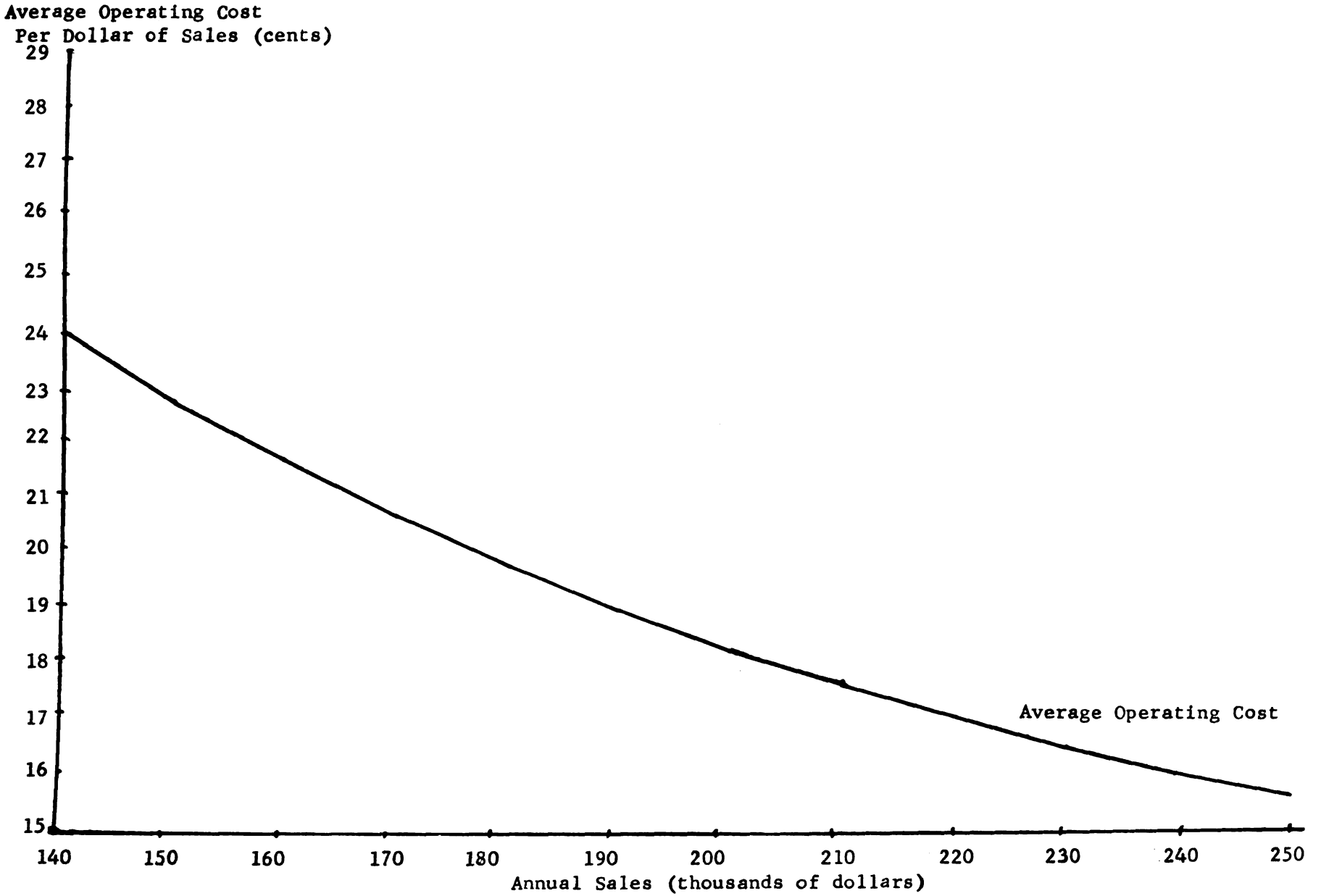
Some wholesaler affiliation, but a considerable amount of their purchases made in cash and carry depots.

Because of the large proportion of fixed operating costs in food retailing, the average operating cost per dollar of sales is probably less for a small store operating close to capacity, than for a large store operating at a small fraction of capacity. If both were operating at or near capacity, the average operating cost per dollar of sales would probably be less in the super market than in the small store. Figure 2.2 illustrates a portion of the average operating cost curve per dollar of sales for a bantam. This was derived by dividing the total operating cost in figure 5.1 by sales. The average operating cost per dollar of sales decreases from 24 cents when annual sales are 140,000 dollars to 15.5 cents when annual sales are 250,000 dollars. Perhaps, the average operating cost curve would decrease still further if sales were increased beyond 250,000 dollars, as 250,000 is probably not the absolute capacity volume. However, it is felt that 250,000 dollars is a "reasonable" capacity for a bantam just as 4 million dollars is for the most common sized super market.

Corporate, voluntary and cooperative chains have concentrated primarily on super markets and the major purchases of consumers. The fact that these groups are highly organized, and the fact that the stores are concentrated in multi-unit groups are perhaps the main reasons that they have modernized and adjusted to changing conditions more rapidly than convenience stores. Whether or not the super market can continue to increase it's share of the market, and whether or not people will make fewer trips to the store, buying more each time is a matter of speculation. Because many areas cannot support a large super market and because shopping habits include a certain number of

Figure 2.2 Average Operating Cost Per Dollar of Sales, Bantam

Figure 2.2 Average Operating Cost Per Dollar of Sales, Bantam



shopping trips for convenience purchases, it is felt that the convenience segment of the market will continue to exist, at least at some minimum level.

Many areas are already saturated with super markets, where each is operating far below capacity volume. In fact, competition is so severe for super market locations, that some new super markets are not expected to reach break-even volume for 1 or 2 years after the date they are opened. Most companies have been expanding, by building more stores and by buying or merging with other companies. Because of the Federal Trade Commission's inquiry into concentration in food retailing many companies are becoming reluctant to expand through mergers. If these growth-minded companies are not able to find a sufficient number of super market locations for new stores, they will probably turn their attention to the convenience segment of the market. In fact this has already happened in a limited number of instances. If this does increase, there should be a general up-grading of convenience-type stores. This will also tend to stabilize the two segments of the market, perhaps somewhere around the current 69-31 percent level.

There are reasons to believe that the super market and the convenience market are fairly distinct. If this is true and if the elasticity of demand is different at the relavent prices in the two markets, the theory of price discrimination suggests another reason why super market companies might expand into the convenience market.

Although we can't be sure of the magnitude, we can be pretty sure of the direction, that is, that the average operating cost per dollar of sales is less in super markets than in small convenience stores. The justification for the existance of convenience stores, then, must lie

in the added convenience that they provide, particularly in respect to location, hours of operation and time required to shop when only a few items are desired.

Being reasonably assured, then, that the convenience segment of the market will continue to exist, we come face to face with the central problem of this study. That is, does the bantam have any advantages, particularly cost advantages, that will enable it to force the conventional convenience stores out of business?

CHAPTER III

BANTAMS THE MODERN CONVENIENCE STORES

Characteristics of the Bantam

The bantam represents the first major attempt to modernize and revive the convenience segment of the food market. There has been a tremendous increase in suburban population, where there is at least one and in many cases two cars per family. Small convenience stores have traditionally been located in congested metropolitan areas with little or no parking space, catering primarily to walk-in trade. Recognizing the population redistribution, the changing character of transportation, and the failure of most existing small stores to change their method of operation, bantams have located primarily in suburban areas, and on main highways. They have emphasized clean, attractive, modern buildings with new equipment and have catered to drive-in trade by providing parking space.

A great deal of confusion exists about bantams. Nowhere, have they been clearly defined. We read and hear about all types of convenience stores that are called bantams. Some handle fresh meats; others do not. Some are located on main highways; others are in suburban residential areas. Some are as large as 6,000 square feet; others are as small as 1,500 square feet. Some have a sales volume as large as 10,000 dollars a week; others do as little as 1,000 dollars a week. If we were to decide on a set of criteria for bantams and then classify all existing stores, we would find a large number of stores, not called bantams, that would meet our criteria. Actually, the term bantam was not used in

connection with retail food stores very much until 1955. Since then it has generally been associated with small convenience stores having the following general characteristics:

Location that is accessible to auto traffic as well as walk-in traffic -- usually on a main thoroughfare or in a suburban housing development.
Parking space for 15 or 20 cars.
New or remodeled building - usually 60 feet by 40 feet.
Modern equipment.
Emphasis on appearance and cleanliness.
Relatively high inventory turn - only the fast-moving items.
Limited selection of brands and sizes -- about 2,500 items.
Handle only delicatessen and frozen meats -- no fresh meats.
Emphasis on convenience rather than price.
Open long days, usually from 7 a.m. to 11 p.m.
Relatively high gross margin - about 22 to 25 percent.
Many are operating as a part of a multi-store group. Franchised arrangements are quite common.
In the franchised operation, the most important management functions are removed from the store level and placed in the hands of a supervisor, who has charge of several stores.
In the multi-store group, emphasis is placed on uniformity of appearance, inventory, prices and operating procedure.

The term drive-in is used synonomously with the term bantam in referring to convenience stores that meet the above characteristics, including both, the open-front and closed-front stores. Both can be considered as modern convenience stores, which are adapted to modern times. Emphasis in this study is placed on the closed-front bantam, as my concern is with the adaptation of bantams to a relatively cold climate. Generally, the closed-front bantams are larger, and have more equipment and more inventory than the open-front. Thus, the capital investment and operating expenses are somewhat higher.

There are four different types of bantam operations in existance, the corporate chain, the franchised group, the single independent and the wholesaler-affiliated.

The main advantages of a corporate chain are:quantity buying, both merchandise and equipment, bargaining power to obtain favorable

credit and leasing arrangements, economies of advertising and centralized management and control over store operations. Not very much is known about the economies of multi-bantam operations. Perhaps, the first major break comes around the 15 store level. Added economies are probably obtained up to the 45 or 60 store level depending on the size of the geographic area in which they are located. Three major problems exist: One is the amount of capital needed to get started; a second is employee pilferage; and a third is labor relations. Because of administrative overhead, the cost of operating a corporate chain of bantams is probably slightly higher than the cost of operating the same number of independent bantams of equal sales volume.

Under a franchised arrangement, the franchisor assumes some of the risks, provides some of the management and assists in financing. For this, he usually charges a franchise fee plus a service or administrative charge. The franchised arrangement has considerable merit for both the franchisor and franchisee. It offers advantages of group advertising, quantity discounts and favorable credit and leasing arrangements. For a single convenience type store, advertising may not be important and quantity discounts are often available by affiliation with a wholesaler. The cost of obtaining a franchise varys considerably. Some franchisors pass on quantity discounts on both equipment and merchandise; others do not. Some franchisors sub-lease the land and building for the same terms as in their lease with the property owner; others do not. Some franchisors provide more rights and services than others, and of course some franchisors charge higher fees than others. An advantage may exist over a corporate chain organization in the area of labor relations. Usually each franchised store is considered as a separate firm, and

because of it's size very little labor is required over that provided by the owner-operator's family. Franchised companies claim that although an owner-operator's earnings are more than a hired manager's, they have more incentive to do a better job and in the long run the average operating cost per dollar of sales is actually less.

One bantam operating as an independent can usually achieve more profit with a given sales volume than a franchised bantam, mainly because of the franchise fee. However, this means that the operator will have to assume the risks that the franchisor assumes under a franchised arrangement. It also assumes that he can provide the same quality of management for the same cost as the franchisor. In addition, the operator has to have more capital or credit.

One bantam affiliated with a wholesaler, either voluntary or cooperative, who sponsors a group of bantams can obtain essentially the same benefits as one affiliated with a franchised group. In fact, the same arrangement and fee structure could occur under both types of operations. A wholesaler with a warehouse and an operating organization, could sponsor a bantam group without too much additional cost. Under present wholesaler-sponsored arrangements with small stores and super markets, the wholesaler does not exert too much control over store management. Therefore, a wholesaler may find it difficult to sponsor a group of bantams in which it exerts as much control over store operations as is being done in franchised and corporate bantam arrangements. This may, however, be overcome by more flexibility as in the case of the affiliated wholesaler-retailer arrangement.

An Example of a Franchised Group

A case example of one bantam company, a franchised group, that was studied intensively is presented here because it is representative of what is generally found in bantam operations, and because the franchised system as used by the bantam introduces some new concepts into the food retailing industry. However, because the company is located entirely in one state, precaution should be taken if these data are used for making comparisons.

The stores ranged in volume from 102 thousand dollars annual sales to 318 thousand dollars. Some stores were located on well-traveled highways; some were located in residential areas. Some stores were extremely profitable; some were unprofitable. The stores were all of the closed-front type; all had ample parking and all had new equipment. The oldest store in the company was opened in 1956.

For a franchise fee and an administrative charge the company provided the following rights and services to the owner-operators:

Evaluation and selection of store site.
Design and layout of store.
Supervision of building construction.
Purchase and installation of equipment.
License to use company's name, trademark, labels, copyrights and advertising media.
Short-term leasing arrangements for land and building.
Financing arrangements for the purchase of inventory and equipment.
Merchandise and other discounts through quantity buying.
Inventory control.
Advertising and publicity assistance.
Accounting and financial analysis.
Pricing of merchandise.
Supervision of store operation.
Merchandising assistance.
Selection and training of store personnel.

The franchise fee and administrative charges are based on each bantam's sales, at the rate of 2½ percent for the franchise fee and 2½ percent

for the administrative charge.

Capital Requirements

The company obtained the land and building for each bantam on a long-term lease and in turn sub-leased to each owner-operator for the same terms provided in the original lease except for a short-term cancellation clause. The cost of the newest bantam, 60 feet wide and 40 feet deep, at the time of the study was 33,947 dollars, (see table 3.1). This is

Table 3.1 Capital Requirements for a Bantam in one Franchised Company

	Cost (dollars)
Land and building*	Leased
Equipment	21,397
Inventory	12,000
Operating cash	250
Miscellaneous	300
Total	33,947

* Estimated cost of land (100' X 70') = 18,000 dollars
Estimated cost of building (60' X 40') = 25,000 dollars

the amount that is required of the owner-operator, however, the company will co-sign the owner-operator's note for a considerable part of this amount if necessary.

The equipment found in most existing stores, and planned for all new stores is as follows:

Produce dry case - (8 feet)
Produce refrigerated case - (8 feet)
Frozen food and ice cream case - (28 feet)
Dairy-deli case - 3 deck - (12 feet)
Walk-in cooler - 8 door - (16 feet)
Shopping carts - 10

Shelving
Check-out counter
Scale
Cash register
Adding machine
Pylon

The cost of refrigerated equipment delivered and installed is 14,786 dollars, and the cost of non-refrigerated equipment is 6,611 dollars, giving a total cost of 21,397 dollars.

The beginning inventory for each new bantam is ordered and stocked by the company to insure uniformity. Each new store is stocked with about 2,598 items in 1,305 linear feet of display space. See table 3.2 for a breakdown by commodity groups.

In the February, 1960, issue of Progressive Grocer, a breakdown of items by commodity groups was given for a new Convenient Food Mart. It stated that 2,556 items were stocked. The total number of items and the breakdown by commodity groups compares quite closely with this case example.

Operating Statements

At the time of the study only nine stores in the company had been open for one or more full years. The operating statements for each of these nine stores and the average for all nine stores is presented in table 3.3. All expenses in the stores were quite comparable except labor. Therefore, labor expense is adjusted in table 3.3 in accordance with volume to make comparisons more meaningful.

Five of the nine bantams showed a net profit for the year, while four showed a loss. Store C, with an annual profit of $15,122 (representing 5.15 percent of sales) was the most profitable. The profit was obtained from a sales volume of $293,609 with a gross margin of 24.06 percent. Store I, however, with annual sales of $102,016 and gross margin of

Table 3.2 Linear Feet of Display and Number of Items Per Bantam in one Franchised Company, by Commodity Groups

Commodity Group	Linear Feet of Display	Number of Items
Baby Food	27	66
Bakery, Bread, Cookies, Crackers	161	119
Baking Mixes - Sugar, Flour	43	71
Beverage - Cold	76	55
Beverage - Hot	26	42
Breakfast Foods	42	59
Canned Fruit	38	59
Canned Juice	34	46
Canned Meat and Fish, Prepared Foods	35	72
Canned Vegetables	55	85
Candy, Snacks	77	190
Cigarettes, Tobacco	19	47
Condiments, Jam, Spreads, Salt, Spice, Pickles	99	215
Dairy, Ice Cream	84	161
Desserts	8	23
Dietetic	7	21
Dried Fruit, Vegetable, Mac., Spag.	21	38
Frozen Foods	20	110
Health and Beauty	62	261
Household, Toys, Magazines	134	570
Meat	23	48
Milk - Canned and Dry	7	11
Paper Products	34	40
Pet	25	41

Page 2 of Table 3.2

Linear Feet of Display and Number of Items Per Bantam in one Franchised Company, by Commodity Groups

Commodity Group	Linear Feet of Display	Number of Items
Produce	48	30
Soaps and Detergents	75	88
Soup	25	31
	1,305	2,598

Table 3.3 Operating Statements for Nine Bantams in one Franchised Company, 1958

	Average all Stores		A		B		C		D	
	$	%	$	%	$	%	$	%	$	%
Sales	224,604	100.00	318,334	100.00	309,873	100.00	293,609	100.00	231,022	100.00
Beg. Inventory	11,430	5.09	12,343	3.88	10,440	3.37	11,810	4.02	11,286	4.89
Purchases	178,697	79.56	253,221	79.55	246,259	79.47	230,746	78.59	184,125	79.70
End. Inventory	11,706	5.21	12,982	4.08	11,689	3.77	12,273	4.18	11,931	5.16
Merch. Disc.	5,539	2.47	7,621	2.39	7,913	2.55	7,306	2.49	5,875	2.54
Cost of Goods	172,882	76.97	244,961	76.95	237,097	76.51	222,977	75.94	177,605	76.88
Gross Margin	51,722	23.03	73,373	23.05	72,776	23.49	70,632	24.06	53,417	23.12
Expenses:										
Wages	23,243	10.35	28,599	8.98	27,260	8.80	21,904	7.46	23,243	10.06
Advertising	3,369	1.50	4,655	1.46	5,237	1.69	4,302	1.47	3,419	1.48
Supplies	1,280	.57	1,508	.47	1,515	.49	1,752	.60	1,427	.62
Maintenance	824	.37	1,380	.43	965	.31	781	.27	573	.25
Building Rent	3,817	1.70	4,780	1.50	4,986	1.61	4,404	1.50	4,516	1.95
Utilities	3,044	1.36	2,789	.88	3,422	1.10	2,993	1.02	2,746	1.19
Equip. Dep.	3,057	1.36	3,057	.96	3,057	.99	3,057	1.04	3,057	1.32
Administrative 1/	5,857	2.61	8,327	2.62	9,020	2.91	7,850	2.67	6,094	2.64
Taxes, Lic. & Ins.	1,022	.46	808	.25	1,351	.44	1,127	.38	888	.38
Franchise Fee	5,615	2.50	7,959	2.50	7,747	2.50	7,340	2.50	5,776	2.50
Total	51,128	22.76	63,862	20.06	64,560	20.83	55,510	18.91	51,739	22.40
Net Profit	594	.26	9,511	2.99	8,216	2.65	15,122	5.15	1,678	.73
No. of years store has been in operation including 1958			2		1½		3		1½	

Page 2 of Table **3.3**

Operating Statements for Nine Bantams in one Franchised Company, 1958

	E		F		G		H		I	
	$	%	$	%	$	%	$	%	$	%
Sales	223,115	100.00	184,544	100.00	181,393	100.00	177,533	100.00	102,016	100.00
Beg. Inventory	11,579	5.19	11,200	6.07	11,422	6.30	11,681	6.58	11,111	10.89
Purchase	177,836	79.71	149,880	81.22	144,907	79.89	140,806	79.31	80,492	78.90
End. Inventory	12,302	5.51	11,520	6.24	10,650	5.87	11,375	6.41	10,632	10.42
Merch. Disc.	5,356	2.40	4,793	2.60	4,328	2.39	4,200	2.37	2,456	2.41
Cost of Goods	171,757	76.98	144,767	78.45	141,351	77.93	136,912	77.12	78,515	76.96
Gross Margin	51,358	23.02	39,777	21.55	40,042	22.07	40,621	22.88	23,501	23.04
Expenses:										
Wages	21,904	9.82	21,904	11.87	20,564	11.34	21,904	12.34	21,904	21.47
Advettising	3,261	1.46	2,725	1.48	2,601	1.43	2,603	1.47	1,521	1.49
Supplies	1,256	.56	1,003	.54	1,361	.75	1,000	.56	701	.69
Maintenance	1,149	.51	815	.44	915	.50	582	.33	257	.25
Building rent	3,339	1.50	3,600	1.95	3,600	1.98	3,600	2.03	1,528	1.50
Utilities	2,941	1.32	3,024	1.64	4,057	2.24	2,861	1.61	2,559	2.51
Equip. Dep.	3,057	1.37	3,057	1.66	3,057	1.69	3,057	1.72	3,057	3.00
Administrative[1/]	6,309	2.83	4,690	2.54	4,344	2.39	3,529	1.99	2,550	2.50
Taxes, Lic. & Ins.	1,240	.56	877	.48	1,118	.62	891	.50	894	.88
Franchise Fee	5,578	2.50	4,614	2.50	4,535	2.50	4,438	2.50	2,550	2.50
Total	50,034	22.43	46,309	25.09	46,152	25.44	44,465	25.05	37,521	36.78
Net Profit	1,324	.59	-6,532	-3.54	-6,110	-3.37	-3,844	-2.17	-14,020	-13.74
No. of years store has been in operation including 1958	3		2		3		2		1½	

1/ Administrative charge is slightly over 2½ percent of sales charged by the company because of bad debts and cash shortage.

Table 3.4 Average Sales, Customer Count and Sales Per Customer Transaction for Five Stores That Showed a Profit and Four Stores That Showed a Loss in one Franchised Company, by Thirteen, Four-Week Periods, 1958

Period	Sales		Customer Count		Sales per Customer Transaction	
	Stores with Profit	Stores with Loss	Stores with Profit	Stores with Loss	Stores with Profit	Stores with Loss
1	10,661	17,593	10,720	18,170	.99	.97
2	11,252	18,179	11,123	18,593	1.01	.98
3	10,710	17,714	10,819	22,863	.99	.97
4	11,556	19,366	11,335	19,782	1.02	.98
5	11,682	19,688	11,820	20,962	.99	.94
6	13,525	20,843	12,989	21,643	1.04	.96
7	13,185	21,287	13,533	20,150	.97	1.06
8	12,963	20,476	13,751	20,398	.94	1.00
9	13,907	21,776	14,339	20,728	.97	1.05
10	13,556	21,078	13,507	20,737	1.00	1.02
11	13,371	20,537	13,449	20,283	.99	1.02
12	14,062	21,479	13,197	20,046	1.07	1.07
13	13,375	20,576	12,778	18,130	1.05	1.13

23.04 percent was the least profitable, operating with a loss of $14,020. The average annual profit of all nine stores was $594 (.26 percent of sales) which was obtained from $224,604 of sales and a gross margin of 23.03 percent. Labor expenses averaged 10.35 percent of sales while total operating expenses were 22.76 percent.

Store A had the largest sales volume, $318,334, while store I had the smallest, $102,016. Gross margin ranged from a high of 24.06 percent in store C to a low of 21.55 percent in store F.

The average sales per customer transaction did not differ significantly between the five stores that showed a profit and the four stores that showed a loss. Both groups of stores had slightly higher sales and slightly higher sales per customer transaction in period thirteen than in period one (see table 3.4).

Summary

Taken as a whole, it is my conviction that bantams have been somewhat over-rated, possibly because success stories have been told, while stores that floundered rarely drew notices. Surely the results achieved by this franchised group do not merit a mass conversion of conventional convenience stores to bantams. To draw conclusions from the results of one company would indeed be risky. One purpose of this study is to get a broader base from which to draw conclusions. Since data could not be obtained on a sufficient number of bantam operations, another research methodology had to be used. Details of the methodology are explained in the next chapter.

CHAPTER IV

THEORETICAL FRAMEWORK AND METHODOLOGY

The third and most important objective of this study is to estimate the cost and profit functions for bantams and conventional convenience stores. The purpose of this chapter is to discuss the theoretical framework within which the analysis is made and to explain the research methodology.

The Theory of Costs

The law of diminishing returns is basic to the short run theory of cost, that is, a period in which at least one input is fixed. Stigler defines the law as follows: "As equal increments of one input are added, the inputs of other productive services being held constant, beyond a certain point the resulting increments of product will decrease, i.e., the marginal product will diminish."[1/] He further states that the law is valid under the following conditions: "First, the state of technology is given.---Second, it is necessary that there be productive services where quantity is held constant.---Third, the law premises the possibility of varying the proportions in which the various productive services combine."[2/]

Short run cost curves, or the cost curves of a particular plant or store, represent the relationship between the rate of output and the rate of expenditure on various inputs. When a firm handles more than one product, as does a retail food store, output can be measured in dollars

1/ Stigler, George J., The Theory of Price, (The MacMillan Company, New York), p. 111.
2/ Ibid pp. 111 and 112.

of sales.

Two types of costs exist in the short run: fixed costs, those which do not vary as output varies, and variable costs, those which do vary as output varies. Fixed costs (FC) are represented geometrically as a horizontal line.

Variable costs are represented as a curve, increasing first at a decreasing rate and then at an increasing rate, as a result of diminishing returns and/or the firm having to pay successively higher prices as it purchases additional inputs. Total costs (TC) are simply the addition of variable and fixed costs (figure 4.1).

The relationship between output and cost can also be expressed in terms of average cost per unit of output (figure 4.2). In figure 4.2, AFC represents average fixed cost, AVC, average variable cost and ATC, average total cost.

The long run average cost curve, or industry planning curve as it is sometimes called, is a curve that is tangent to all possible short run cost curves for the firms in that industry. It represents the lowest possible cost for every output in the long run where no factor is fixed. The relationship is illustrated in figure 4.3 using only three, of the many possible, short run average cost curves. In figure 4.3, SRAC represents short run average cost and LRAC represents long run average cost. The long run average cost curve is believed to be U shaped, denoting first, increasing returns to scale and then decreasing returns. At sufficiently small outputs there will probably be increasing returns to scale, primarily because of the possibility of specialization. At sufficiently large outputs, there will probably be decreasing returns to

Figure 4.1 Theoretical Relationship Between Rate of Output and Cost

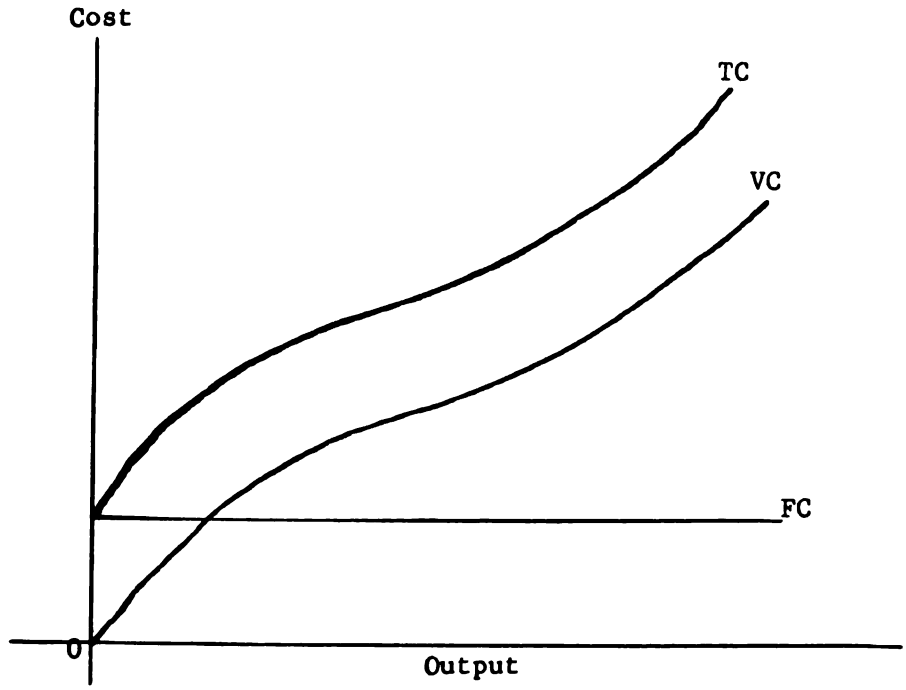


Figure 4.2 Theoretical Relationship Between Rate of Output and Average Cost per Unit of Output

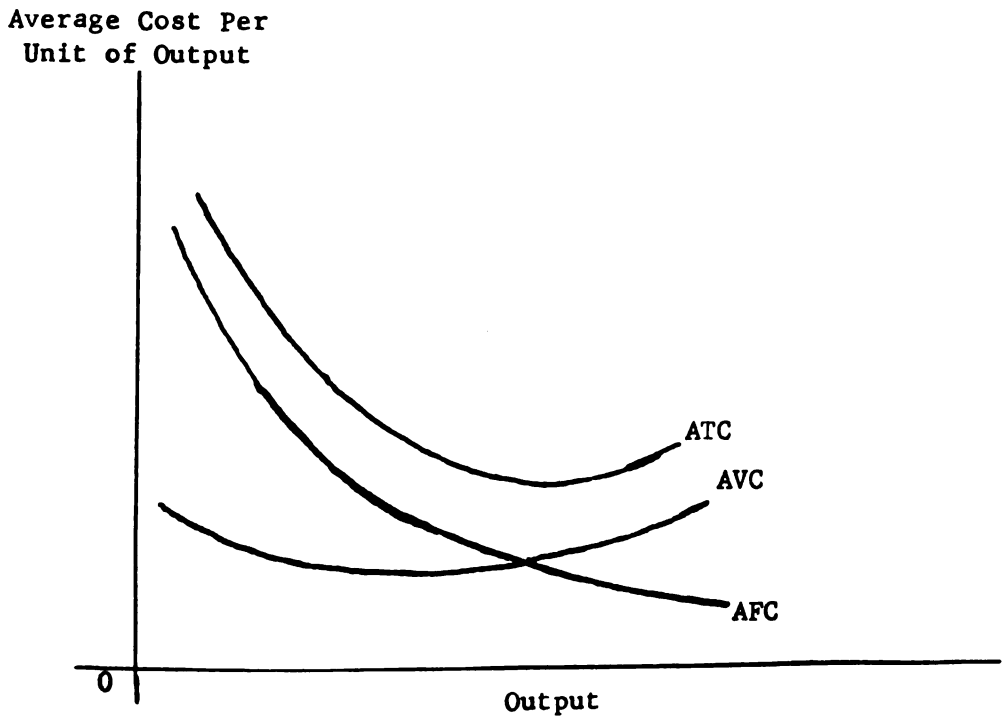
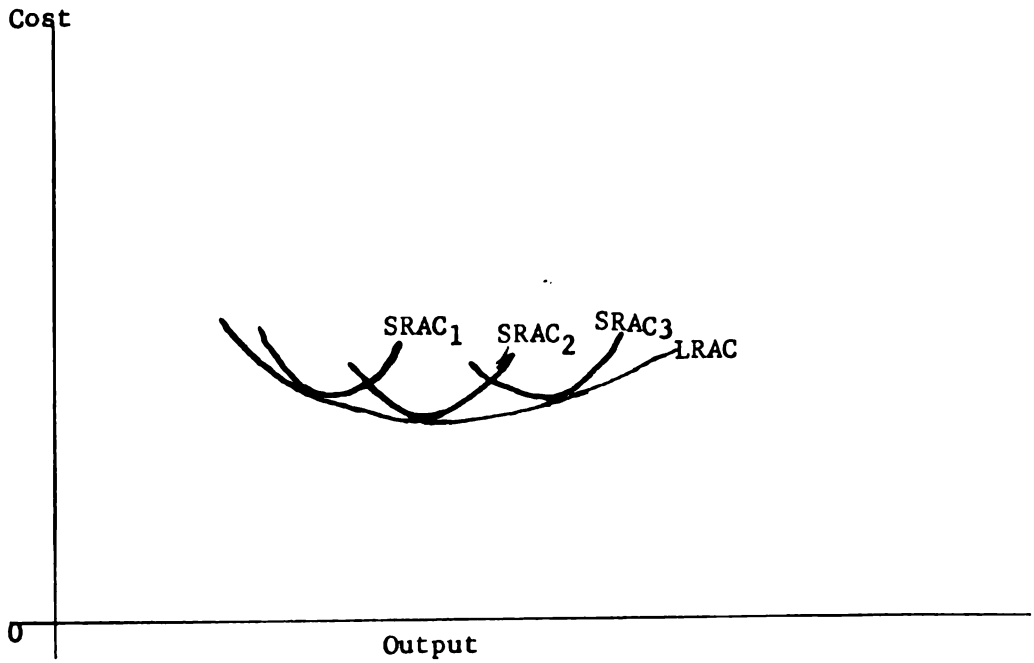


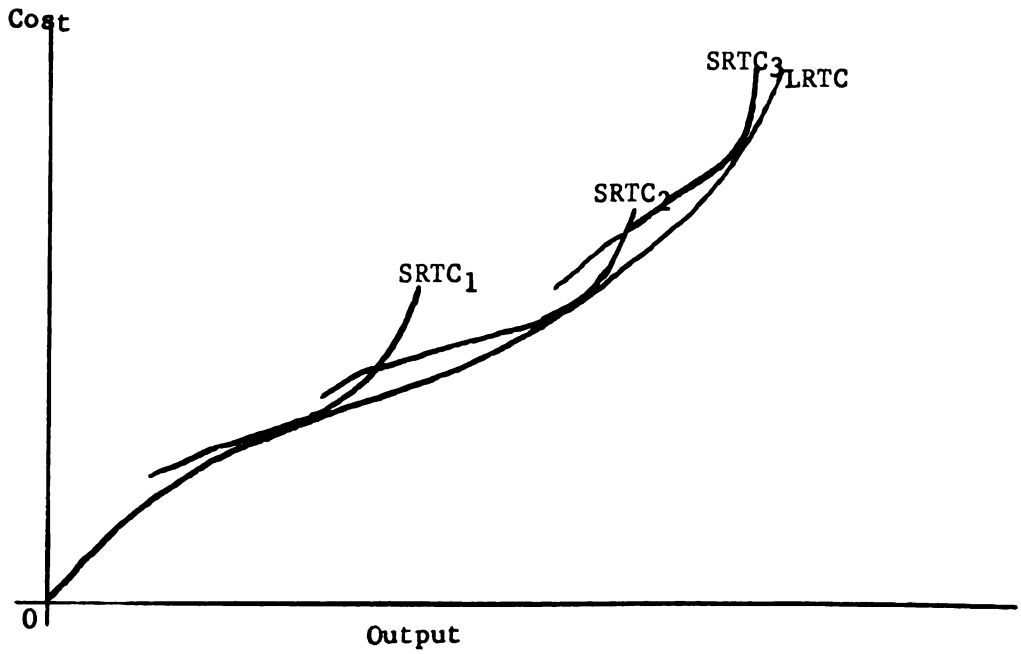
Figure 4.3 Theoretical Long Run Average Cost Curve for an Industry



scale, primarily because of bureaucracy and duplication of management.

The industry planning curve is usually presented as an average curve as represented in figure 4.3. It can also be presented as a total cost curve. The long run total cost curve is a curve that is tangent to all possible short run total cost curves for all the firms in the industry. The theoretical long run total cost curve is illustrated in figure 4.4 using only three of the many possible short run total cost curves. In figure 4.4, LRTC represents long run total cost and SRTC represents short run total cost. As with the long run average cost curve, all points on the long run total cost curve represent the minimum cost for any output in the long run when all factors are variable.

Figure 4.4 Theoretical Long Run Total Cost Curve for an Industry



Application of the Theory of Costs to the Problem

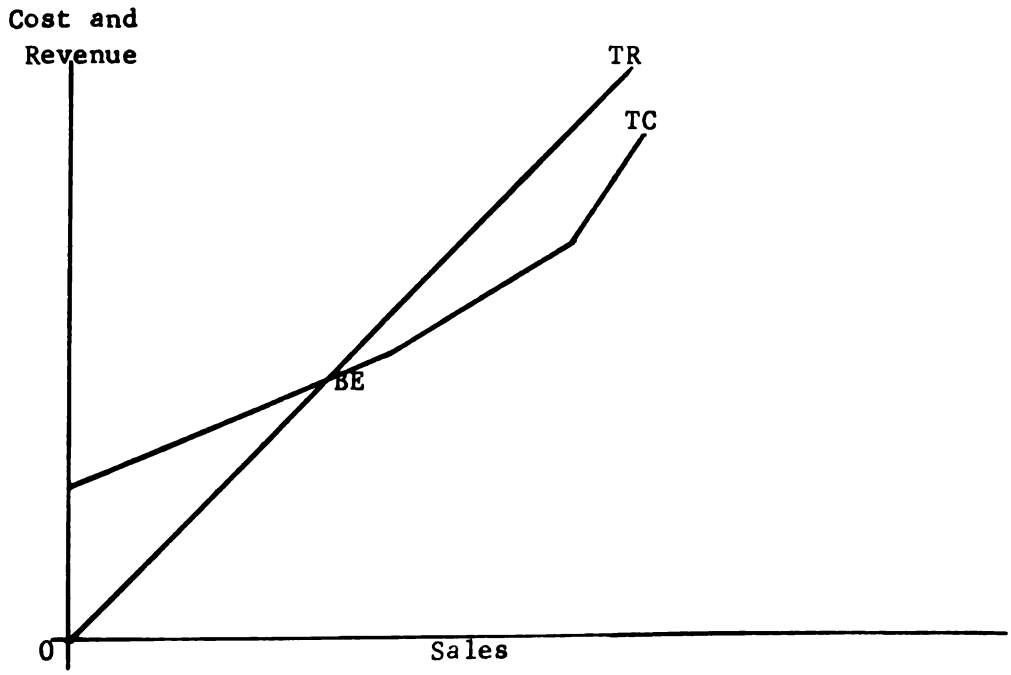
The analysis of bantams and conventional convenience stores is centered primarily around a break-even analysis rather than the more usual analysis of average costs. Break-even analysis incorporates both the total cost and the total revenue functions, thus it is an extension of the usual theory of costs. Knowing these, the profit function can be obtained by subtracting the total cost function from the total revenue function.

No attempt is made in this study to estimate the long run cost function for the food retailing industry. The cost functions that are estimated for conventional convenience stores and bantams are, in one sense, long run functions, in that they pertain to new buildings, equipment and technology rather than existing buildings, equipment and

technology. However, once any input is specified in a fixed amount, as is done in this study, the analysis is, theoretically speaking, short run.

A break-even chart is a diagram of the short run relationship of total cost (TC) and total revenue (TR) to the rate of output. The relationship applies to a single point in time. The revenue function is a linear 45 degree line originating at the origin; every dollar of sales yields a dollar of revenue. It assumes that selling prices and product mix remain constant over the volume range considered. In food retailing, the cost function can be approximated with a series of discontinuous linear functions. It assumes that store size, store facilities and technology are constant. The intersection of the total revenue and total cost functions represents the break-even volume, that is, the amount of sales that is necessary to just cover total costs (B E figure 4.5). To the left of the break-even point the difference between the total cost and the total revenue curve represents losses. To the right of the break-even point, it represents profits. Profits are maximized where total revenue and total cost are farthest apart.

The projection of future profits from a static short run break-even chart is subject to serious limitations. It presupposes a continuation of present relative prices, technology, selling costs, product mix and management stategy. It is an oversimplified analysis of expected profits at various output levels. The assumption that profit is a function of output alone is limited indeed. However, break-even analysis does permit one to concentrate on the relationship between



cost, revenue, profit and sales. Break-even analysis is also useful for comparing two types of stores, and that is another way in which it is used in this study.

Food retailing is essentially a cost-plus industry, operating with a certain gross margin percentage over costs. Thus, it is more convenient to use a gross margin curve, as is done in this study, instead of a total revenue curve. Gross margin is also a linear function of sales. It is usually expressed as a percent of sales, such as, 21, 23 or 25 percent. The only difference between the gross margin curve and the total revenue curve is that the gross margin curve is not as steep as the total revenue curve. This method permits one to compare the break-even volume and profit that results from different gross margin percentages without recalculating the cost function. The gross margin

curve can be expressed algebraically as: $X_1 = a X_2$, where X_1 equals gross profit, a equals gross margin percent and X_2 equals sales.

To use a gross margin curve instead of a total revenue curve, it is necessary to subtract the cost of goods from the total cost function, giving a total operating cost function, which can also be expressed algebraically. For example, the one derived for a bantam in this study is linear with a break at a sales volume of 120,000 dollars per year.

1. For annual sales up to 120,000 dollars

   $X_1 = 32,319 + .00316 X_2$

2. For annual sales over 120,000 dollars up to 250,000 dollars

   $X_1 = 32,319 + .00316 X_2 + .04288 (X_2 - 120,000)$

Where: X_1 = Annual operating cost

X_2 = Annual sales

Figure 6.1 in chapter 6, illustrates three gross margin curves commonly found in convenience stores and the total operating cost curve for a bantam. The annual profit or loss that results from a given annual sales volume and a given gross margin percent can be measured as the vertical distance between the appropriate gross margin curve and the total operating cost curve. Break-even volume can be determined by dropping a vertical line from the point of intersection of the appropriate gross margin curve and the total operating cost curve.

The amount of profit or loss that results from a given annual sales volume can also be determined algebraically by solving the profit formula. For example, two profit formulae exist for bantams because of

the discontinuous cost function. They are:

1. For annual sales up to 120,000 dollars

$$P = a X_2 - (32{,}319 + .00316 X_2)$$

2. For annual sales over 120,000 dollars up to 250,000 dollars

$$P = a X_2 - [32{,}319 + .00316 X_2 + .04288 (X_2 - 120{,}000)]$$

Where: P = annual net profit

a = gross margin percent

X_2 = annual sales

More specifically, if gross margin is 23 percent and annual sales are 250,000 dollars, net profit is 18,817 dollars (using formula 2 above).

$$P = a X_2 - [32{,}319 + .00316 X_2 + .04288 (X_2 - 120{,}000)]$$

$$= .23 (250{,}000) - [32{,}319 + .00316 (250{,}000) + .04288 (250{,}000) - .04288 (130{,}000)]$$

$$= 18{,}817 \text{ dollars}$$

Break-even volume can also be determined algebraically for a given gross margin percent by setting the profit equation equal to zero and solving for X_2. For example if gross margin is 23 percent the break-even volume for a bantam is 147,711 dollars per year.

$$.23 X_2 - [32{,}319 + .00316 X_2 + .04288 (X_2 - 120{,}000)] = 0$$

$$.23 X_2 - .00316 X_2 - .04288 X_2 = 32{,}319 - 5{,}146$$

$$.18396 X_2 = 27{,}173$$

$$X_2 = 147{,}711$$

Most businessmen do not understand algebraic formulae and some don't understand break-even charts. They do, however, understand operating statements or budgets that resemble operating statements. For this

reason, the revenue, cost and profit functions are also presented as budgets for three volume levels, one below the break-even volume, one at the break-even volume and one at what is estimated to be a reasonable capacity volume.

For example, see tables 5.10 and 6.1 in chapters 5 and 6.

Methodology

With assistance from Marie Kiefer, Secretary of the National Association of Retail Grocers, permission was received to visit several bantam operations in the United States. Some of these offered complete access to their records and agreed to furnish additional information. Companies in Illinois, Oklahoma, Texas and California were visited to provide background material and a basis for selecting four companies, a corporate chain, an independent and two franchised groups, for intensive study. Several days were spent in each of these four companies interviewing top management, supervisors and store personnel. Detailed information was obtained on capital requirements, operating statements, sales per customer, number of items, linear feet of display and factors affecting location.[3/] The quantitative and qualitative data obtained from these companies provided the basis for determining some of the reasons for the emergence of bantams (see chapter 2) and for delineating the general characteristics of bantams (see chapter 3). The general characteristics of conventional convenience stores and the analysis in chapter 2 are based primarily on this writer's experience in food retailing.

The economic-engineering method of estimating cost functions is used in this study instead of the statistical accounting method for the

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3/ See Appendix A for a copy of the schedule completed in each of the four companies.

following reasons:

1. The number of bantams available for the collection of cost data is insufficient to estimate the cost function statistically with sufficient reliability.

2. The cost of buildings, land, equipment, labor, etc. differ by areas, even though, the physical requirements are quite similar.

3. Statistical analysis of cost data from existing stores includes both efficient and inefficient operations and represents the average performance of existing stores, whereas a cost function estimated from economic-engineering data can be derived to represent a very efficient store, but one that can be attained with good management.

The economic-engineering method of cost analysis is used extensively by agricultural economists in studying various types of agricultural marketing firms. The study entitled, "Economic Efficiency In Plant Operations With Special References To The Marketing Of California Pears," by B. C. French, L. L. Sommet and R. G. Bressler is one of the most significant contributions to date.[4/]

To my knowledge, this study represents the first attempt to apply this method to retail food firms. Basic differences in the type of plant (in this study a store) cause some problems, and modifications in methodology have to be made. Basically, the economic-engineering method involves the estimation of each component of cost separately in terms of physical inputs, for example, man-hour requirements for labor, kilowatt requirements for electricity, cubic feet of gas for heating, etc. The physical requirements for each component are then multiplied by the appropriate price per unit of that input to obtain the cost function for that component. These component cost functions are then added together to obtain the total cost function for the store.

4/Bressler, R. G., B. C. French, L. L. Sammet, Hilgardia, "Economic Efficiency In Plant Operations With Special Reference To The Marketing Of California Pears", University of California, Vol. 24, No. 19, July 1956

The first step in estimating the cost function for a store, is to prepare a list of specifications. This is merely a description of the lot, building and equipment for which the cost function is to be estimated. Perhaps, a disadvantage of this method is that the cost function that is derived pertains to a very specific store, the one described in the specifications. Theoretically, a cost function has to be derived for every possible size of store. At least this is true if one's purpose is to estimate the industry planning curve. The purpose of this study, however, is not to derive the industry planning curve, but merely to derive the cost function for a bantam, a small conventional convenience store and a large conventional convenience store to determine if the bantam has an operating cost advantage over the conventional convenience stores that are in closest competition with it.

The next step is to determine the amount of capital required for the store described in the specifications. This is needed for two reasons: first, to compute the prorated annual cost for the building and the equipment, and second, to compute ratios to measure the profitableness of the operation. The land and building is handled by using a leasing arrangement instead of depreciation. The leasing arrangement used in this study is based on a percent of sales with a certain minimum. After a certain sales volume the occupancy cost becomes a variable expense rather than a fixed expense as is the case with depreciation. The cost of equipment was determined by submitting the list of specifications to three equipment manufacturers for bids, and using the lowest bid. The cost is depreciated over a seven-year period using the straight-line method. Other capital items, such as inventory, operating cash and miscellaneous items are computed from the most common situations found in the industry.

The next step is to divide the operating costs into components and estimate, first, a physical function and then a cost function for each component. The inclusiveness of each component will depend on the objectives of the study and the type of data that are available. In this study, operating costs are divided into the following components:

Labor
Land and Building
Supplies
Administration
Utilities
Equipment Depreciation
Maintenance
Miscellaneous (taxes, insurance, licenses, etc.)

Michigan prices are used in this study, however, for areas where these prices are not appropriate, other prices can be substituted. This assumes, however, that the physical relationships are the same in all areas. This may not be precisely correct, but for most purposes, this assumption can be made without introducing very much error. If the physical relationship for any one component is considerably different, this component can be completely revised, that is, in regard to physical as well as price relationships. Thus, the basic data in this study can be used for any area without revising the entire model.

The final step is to aggregate the component cost functions into a total operating cost function. Knowing this, and the gross margin function, which is a constant percent of sales, determined by the firm, the profit function can be determined.

CHAPTER V

THE COST FUNCTIONS

Specifications

A cost function estimated by the economic-engineering method is based on a list of specifications. Extreme care has to be taken in preparing the specifications so that the estimated cost functions are in accordance with the objectives of the study. The cost functions estimated for bantams, small conventional convenience stores and large conventional convenience stores represent single independent stores operating in Michigan, housed in new buildings, with new equipment and paying competitive wage rates. The list of specifications prepared for bantams represents the most common type of closed-front bantams (see Appendix B).

There are many types of small conventional convenience stores, and no list of specifications can be all inclusive. It is felt, however, that the specifications in Appendix C represent the majority of the older existing small stores.

The specifications for the large conventional convenience stores are designed to represent the majority of the newer conventional convenience stores. The physical facilities and size of store are quite comparable to bantams. Two different cost functions are estimated for large conventional convenience stores, one with a low cost lease and one with a high cost least. The low cost lease represents the cost of renting the land and building on a site comparable to the sites where

most existing large conventional convenience stores are located. The high cost lease represents the cost of renting the land and building on a site comparable to the sites where most bantams are normally located. Thus, the only difference between the two cost functions is that one is charged a higher rent for land. This enables the variable of location to be accounted for in the comparison of bantams and large conventional convenience stores (See Appendix D).

Capital Requirements

The capital requirements for all three stores are divided into five categories: land and buildings, equipment, inventory, operating cash and miscellaneous.

Practically all bantam operators and many conventional convenience store operators follow the practice of leasing the land and building rather than owning it. This reduces the operator's capital considerably. This is the way land and buildings are treated in this study, using common leasing arrangements found in the industry.

Contractors estimate that the bantam described in the list of specifications can be built in Michigan for about 24,000 dollars. According to realtors, most locations that would support a bantam above the break-even volume would cost from 25,000 to 30,000 dollars. The small conventional convenience store described in the specifications can be built in Michigan for about 15,000 dollars. The cost of land, where most conventional convenience stores are located, would be about 5,000 dollars. The large conventional convenience store described in the specifications can be built in Michigan for about 24,000 dollars. The cost of land where most large conventional convenience stores are

located would be about 10,000 dollars.

The cost of equipment was determined by submitting the list of specifications for each store to three equipment manufacturers. The figure used in this study represents the lowest estimate, delivered and installed. The equipment cost is 24,000 dollars for bantams, 18,037 dollars for small conventional convenience stores and 23,533 dollars for large conventional convenience stores (see table 5.1).

The investment required for inventory is based on the amount found in most existing stores. This is 10,000 dollars for bantams and large conventional convenience stores and 7,500 dollars for small conventional convenience stores (see table 5.1).

Operating cash to take care of daily transactions is estimated to be 500 dollars in all three stores (see table 5.1). This is the amount usually used in most existing stores.

Miscellaneous capital requirements involve primarily the cost of opening the store, such as, labor to stock the shelves, handbills and give-a-ways. It is estimated that this amounts to 500 dollars for each of the three stores (see table 5.1).

Table 5.1 Capital Requirements: Bantams, Small Conventional Convenience Stores and Large Conventional Convenience Stores

	Bantams	Small Conventional Convenience Stores (Dollars)	Large Conventional Convenience Stores
Land and Building	Leased	Leased	Leased
Equipment	24,000	18,037	23,533
Inventory	10,000	7,500	10,000
Operating Cash	500	500	500
Miscellaneous	500	500	500
Total	35,000	26,537	34,533

Labor

The labor requirements are based on gross time studies in four bantam companies, a study of small stores in Indiana, estimates of store supervisors, estimates of store operators and this writer's experience. Assuming that each store is open 16 hours per day, it is estimated that a basic crew of 2 men, each working 2,912 hours per year, is required to keep the store open for business. In addition they would have to be supplemented with 224 hours of vacation help and 192 hours of sick leave allowance per year. This means a minimum of 6,240 man-hours per year are required (see table 5.2). Beyond a certain sales volume, additional part-time help is required, but up to that point the basic crew is sufficient.

Table 5.2 Minimum Annual Man-Hour Requirements to Keep Bantams, Small Conventional Convenience Stores and Large Conventional Convenience Stores Open for Business

	Annual Man Hours
1st man, 52 weeks at 56 hours per week	2,912
2nd man, 52 weeks at 56 hours per week	2,912
Vacation help, 4 weeks at 56 hours per week	224
Sick leave allowance, 24 days at 8 hours per day	192
Total	6,240

Bantams

It is estimated that the basic crew (table 5.2) working 6,240 man-hours per year can meet the labor requirements in a bantam up to an annual sales volume of 120,000 dollars. As sales increase beyond that point, 1 man-hour of part-time help has to be added for every 43 dollar increase

in sales, up to 250,000 dollars per year, the estimated "reasonable" capacity volume.

The labor cost function is determined by applying the salary schedule in table 5.3 to the man-hour requirements. The salary schedule represents competitive wage rates in Michigan super markets, and is used for all 3 stores. For any sales volume up to 120,000 dollars per year, the annual labor expense for the basic crew is 15,011 dollars (see table 5.4). For every dollar of sales over 120,000 dollars per year, up to 250,000 dollars per year, the annual labor expense will increase by .02288 dollars, or 1 dollar for every increase of 43 dollars and 75 cents in sales.

Stated algebraically, the labor cost function is:

1. For annual sales up to 120,000 dollars

   $X_1 = 15,011$

2. For annual sales over 120,000 dollars up to 250,000 dollars

   $X_1 = 15,011 + .02288 (X_2 - 120,000)$

   Where: X_1 = annual labor expense
   X_2 = annual sales

Table 5.3 Salary Schedule for Bantams, Small Conventional Convenience Stores and Large Conventional Convenience Stores

	Wage Rate (Dollars)
1st Man	150/week
2nd Man	125/week
Vacation help	125/week
Sick leave help	1.10/hour
Part-time help	1.10/hour

Table 5.4 Minimum Annual Labor Expense to Keep Bantams, Small Conventional Convenience Stores and Large Conventional Convenience Stores Open for Business

	Wage Rate (Dollars)	Annual Labor Expense (Dollars)
1st man	150/week	7,800
2nd man	125/week	6,500
Vacation help	125/week	500
Sick leave help	1.10/hour	211
Total		15,011

Small Conventional Convenience Stores

Most small conventional convenience stores operate a fresh meat department. In almost all cases the meat department is located at the rear of the store and the checkout counter is at the front of the store. This means that two persons are required to be in the store practically all of the time. In estimating the labor requirements for the small conventional convenience store, it is assumed that the meat counter is located near the checkout counter so one person can handle both operations during slack periods. It is also assumed that one of the men is a qualified meat cutter. It is estimated that the basic crew (table 5.2) working 6,240 man-hours per year can meet the labor requirements in a small conventional convenience store up to an annual sales volume of 100,000 dollars. As sales increase beyond that point, 1 man-hour of part-time help is added for every 28 dollars and 82 cents increase in sales, up to 150,000 dollars per year, the estimated "reasonable capacity" volume.

The labor cost function is determined by applying the salary

schedule in table 5.3 to the man-hour requirements. For any sales volume up to 100,000 dollars per year, the annual labor expense is 15,011 dollars (see table 5.4). For every dollar of sales over 100,000 dollars per year, up to 150,000 dollars, the annual labor expense will increase by .03817 dollars, or 1 dollar for every increase of 26 dollars and 20 cents in sales.

Stated algebraically, the labor cost function is:

1. For annual sales up to 100,000 dollars

   $X_1 = 15,011$

2. For annual sales over 100,000 dollars up to 150,000 dollars

   $X_1 = 15,011 + .03817(X_2 - 100,000)$

   Where: X_1 = annual labor expense
   X_2 = annual sales

Large Conventional Convenience Stores

Most large conventional convenience stores also operate a fresh meat department. In estimating the labor requirements for these stores, it is assumed that the meat counter and checkout counter are located so one man can handle both operations during slack periods. It is also assumed that one man is a qualified meat cutter. The labor cost function is exactly the same for large conventional convenience stores as it is for small conventional convenience stores. That is, the basic crew is sufficient up to 100,000 dollars per year. Thereafter, 1 man-hour of part-time help is added for every 28 dollars and 82 cents in sales. The only difference is that the "reasonable" capacity of large conventional convenience stores is estimated to be 250,000 dollars sales per year instead of 150,000 dollars.

Stated algebraically, the labor cost function is:

1. For annual sales up to 100,000 dollars

$$X_1 = 15,011$$

2. For annual sales over 100,000 dollars up to 250,000 dollars.

$$X_1 = 15,011 + .03817(X_2 - 100,000)$$

Where: X_1 = annual labor expense
X_2 = annual sales

Land and Buildings

As was stated above, the annual cost of land and building is handled as a rental or leasing expense rather than a depreciation expense, as this is the most common method in the industry. The leasing arrangements used in this study are based on an informal survey of bantams, conventional convenience stores and financial agencies. For all three stores the lease is based on a percentage of sales with some minimum dollar amount per year.

Bantams

The leasing arrangement used for bantams is 2 percent of sales with a minimum of 2,400 dollars per year. This includes a heating and air conditioning system, a paved parking lot and the major items of maintenance for the land and building.

Stated algebraically, the cost function for renting the land and building is:

1. For annual sales up to 120,000 dollars

$$X_1 = 2,400$$

2. For annual sales over 120,000 dollars up to 250,000 dollars

$$X_1 = 2,400 + .02 (X_2 - 120,000)$$

Where: X_1 = annual cost of renting the land and building
X_2 = annual sales

Small Conventional Convenience Stores

The leasing arrangement used for small conventional convenience stores is 1.5 percent of sales with a minimum of 1,000 dollars per year. This includes a heating and air conditioning system and the major items of maintenance for the land and building.

Stated algebraically, the cost function for renting the land and building is:

1. For annual sales up to 66,667 dollars

   $X_1 = 1{,}000$

2. For annual sales over 66,667 dollars up to 150,000 dollars

   $X_1 = 1{,}000 + .015\ (X_2 - 66{,}667)$

   Where: X_1 = annual cost of renting the land and building
   X_2 = annual sales

Large Conventional Convenience Stores

As was mentioned above, two leasing arrangements are used for large conventional convenience stores. The low cost lease is based on 1.7 percent of sales with a minimum of 1,700 dollars per year. The high cost lease is the same as the one for bantams, that is, 2 percent of sales with a minimum of 2,400 dollars per year. Both leasing arrangements include a heating and air conditioning system and the major repairs of land and building. The low cost lease does not include a paved parking lot because most existing conventional convenience stores do not have parking lots. The high cost lease, as in the case of the bantam, does include a paved parking lot.

Stated algebraically, the cost function for renting the land and building with the low lease is:

1. For annual sales up to 100,000 dollars

   $X_1 = 1{,}700$

2. For annual sales over 100,000 dollars up to 250,000 dollars

   $X_1 = 1{,}700 + .017\ (X_2 - 100{,}000)$

   Where: X_1 = annual cost of renting the land and building with a low cost lease
   X_2 = annual sales

Stated algebraically, the cost function for renting the land and building with the high cost lease is:

1. For annual sales up to 120,000 dollars

   $X_1 = 2{,}400$

2. For annual sales over 120,000 dollars up to 250,000 dollars

   $X_1 = 2{,}400 + .02\ (X_2 - 120{,}000)$

   Where: X_1 = annual cost of renting the land and building with a high cost lease
   X_2 = annual sales

Supplies

Supplies include such items as paper bags, wrapping paper, cash register tapes, knives and other miscellaneous equipment. Some of the items, included in supplies, are used in direct proportion to sales and some are not. Thus, a cost of supplies function will consist of some fixed coefficient plus a variable coefficient. The functions used in this study are not determined statistically, but they are based on existing bantams and conventional convenience stores.

Bantams

The annual cost of supplies for a bantam is estimated to be 657 dollars plus .00316 dollars for every dollar of sales.

Stated algebraically, the cost function for supplies is:

$X_1 = 657 + .00316\ X_2$

Where: X_1 = annual supply expense
X_2 = annual sales

Small Conventional Convenience Stores

The cost of supplies for a small conventional convenience store is estimated to be 750 dollars plus .0035 dollars for every dollar of sales.

Stated algebraically, the cost function for supplies is:

$X_1 = 750 + .0035\ X_2$

Where: X_1 = annual supply expense
X_2 = annual sales

Large Conventional Convenience Stores

The cost of supplies for a large conventional convenience store is estimated to be 750 dollars plus .0035 dollars for every dollar of sales.

Stated algebraically, the cost function for supplies is:

$X_1 = 750 + .0035\ X_2$

Where: X_1 = annual supply expense
X_2 = annual sales

Administrative

In a small store, particularly if the owner works in the store, one person may perform both labor and management functions. Sometimes all of the management functions are performed by a person working in the store, and sometimes some or all of the management functions are hired. In this study, the management functions are treated as though they are performed by someone not working in the store. The administrative costs are based on estimates by store supervisors and accounting firms. They include the cost of hiring the following services:

Inventory management
Advertising and publicity assistance
Accounting service
Supervision of store operation
Merchandising assistance
Business analysis
Selection and training of store personnel
Legal assistance
Pricing of merchandise

The annual cost used for administrative services is 5,000 dollars for each type of store, over the volume ranges considered. If the 1st man or owner-operator provides some of the above services, and his time is replaced with part-time help, the cost can probably be reduced somewhat in the short run. However, if he can not perform the services as well as if they were hired, the cost in the long run could actually be higher.

Stated algebraically, the cost function for administrative expense is:

$X_1 = 5,000$

Where: X_1 = annual administrative cost

Utilities

Utility costs are classified into 6 categories: electricity, heating, sewage, water, trash and snow removal and miscellaneous. The requirements for electricity, heating, sewage and water are engineering estimates based on the specifications for each store. The costs for trash and snow removal and miscellaneous items are based on estimates of store supervisors, store managers and firms engaged in trash and snow removal.

Bantams

The physical requirements, rates and annual cost of utilities for

a bantam are illustrated in table 5.5. The annual cost is estimated to be 3,600 dollars over the volume range considered. Stated algebraically, the cost function for utilities is:

$X_1 = 3,600$

Where: X_1 = annual cost of utilities

Table 5.5 Estimated Physical Requirements, Rates and Annual Cost of Utilities for a Bantam

	Physical Requirements	Rate (dollars)	Annual Cost (dollars)
Electricity	92319 KW	.03/KW	2,770
Heating	615355 cu. ft. gas	.65/1000 cu. ft.	400
Water	109500 gals.	.257/1000 gals.	29
Sewage	-	-	15
Trash & Snow Removal	-	-	360
Miscellaneous	-	-	26
Total			3,600

Small Conventional Convenience Stores

The physical requirements, rates and annual cost of utilities for a small conventional convenience store are illustrated in table 5.6. The annual cost is estimated to be 2,650 dollars over the volume range considered. Stated algebraically, the cost function for utilities is:

$X_1 = 2,650$

Where: X_1 = annual cost of utilities

Table 5.6 Estimated Physical Requirements, Rates and Annual Cost of Utilities for a Small Conventional Convenience Store

	Physical Requirements	Rates (dollars)	Annual Cost (dollars)
Electricity	64,062 KW	.03/KW	1,923
Heating	435,000 cu.ft. gas	.65/1000 cu.ft.	283
Water	109,500 gals.	.267/1000 gals.	29
Sewage	-	-	15
Trash & Snow Removal	-	-	360
Miscellaneous	-	-	40
Total			2,650

Large Conventional Convenience Stores

The physical requirements, rates and annual cost of utilities for a large conventional convenience store are illustrated in table 5.7. The annual cost is estimated to be 3,370 dollars, over the volume range considered. Stated algebraically, the cost function for utilities is:

$X_1 = 3,370$

Where: X_1 = annual cost of utilities

Table 5.7 Estimated Physical Requirements, Rates and Annual Cost of Utilities for a Large Conventional Convenience Store

	Physical Requirements	Rate (dollars)	Annual Cost (dollars)
Electricity	83,675 KW	.03/KW	2,510
Heating	615,355 cu. ft. gas	.65/1000 cu.ft.	400
Water	146,000 gals.	.267/1000 gals.	39
Sewage	-	-	20
Trash & Snow Removal	-	-	360
Miscellaneous	-	-	41
Total			3,370

Equipment Depreciation

The amount and kind of equipment found in bantams and conventional convenience stores varies considerably. An itemized description of the kind and amount of equipment used in each store in this study is found in appendixes B, C and D. The equipment specifications used in this study are based on existing bantams and conventional convenience stores and budgeted requirements. The equipment cost was determined by submitting the list of specifications to three equipment manufacturers for estimates, delivered and installed. The lowest estimates are used. Annual depreciation is computed by the straight-line method over a period of seven years, a common period used in the industry.

Bantams

The estimated cost of equipment for a bantam is 24,000 dollars. Annual depreciation is 3,420 dollars.

Stated algebraically, the cost function for equipment is:

$X_1 = 3,420$

Where: X_1 = annual depreciation cost of equipment

Small Conventional Convenience Stores

The estimated cost of equipment for small conventional convenience stores is 18,037 dollars. Annual depreciation is 2,577 dollars. Stated algebraically, the cost function for equipment is:

$X_1 = 2,577$

Where: X_1 = annual depreciation cost of equipment

Large Conventional Convenience Stores

The estimated cost of equipment for a large conventional convenience store is 23,533 dollars. Annual depreciation is 3,362 dollars.

Stated algebraically, the cost function for equipment is:

$X_1 = 3,362$

Where: X_1 = annual depreciation cost of equipment

Maintenance

Under the leasing arrangements, the landlord pays for all major maintenance on the land and building. However, the store is charged with the cost of minor maintenance on the land and building, such as cleaning floors, washing windows, etc. In addition, the stores are charged with the full amount of equipment maintenance. The annual average maintenance is based on engineering estimates - four percent of equipment cost for equipment and one percent of building cost for the building.

Bantams

The average annual maintenance expense for bantams is estimated to be 960 dollars for equipment (4 percent of 24,000 dollars) and 240 dollars for the building (1 percent of 24,000 dollars), giving a total annual cost of 1,200 dollars.

Stated algebraically, the cost function for maintenance is:

$X_1 = 1,200$

Where: X_1 = average annual maintenance expense

Small Conventional Convenience Stores

The average annual maintenance expense for small conventional convenience stores is estimated to be 721 dollars for equipment (4 percent of 18,037 dollars) and 150 dollars for the building (1 percent of 15,000 dollars), giving a total annual cost of 871 dollars.

Stated algebraically, the cost function for maintenance is:

$X_1 = 871$

Where: X_1 = average annual maintenance expense

Large Conventional Convenience Stores

The average annual maintenance expense for large conventional convenience stores is estimated to be 941 dollars for equipment (4 percent of 23,355 dollars) and 240 dollars for the building (1 percent of 24,000 dollars), giving a total annual cost of 1,181 dollars. Stated algebraically, the cost function for maintenance is:

$X_1 = 1,181$

Where: X_1 = average annual maintenance expense

Miscellaneous (Taxes, Licenses, Insurance, etc.)

The cost of taxes, licenses and insurance varies by cities. The estimates of cost used in this study are based on an informal survey of selected cities in Michigan. The cost for conventional convenience stores is higher than for bantams primarily because they have to buy licenses for fresh meat.

Bantams

The annual miscellaneous cost for bantams is estimated to be 1,022 dollars. Stated algebraically, the cost function for miscellaneous items is:

$X_1 = 1,022$

Where: X_1 = annual miscellaneous expense

Small Conventional Convenience Stores

The annual miscellaneous cost for small conventional convenience

stores is estimated to be 1,200 dollars. Stated algebraically, the cost function for miscellaneous items is:

$X_1 = 1,200$

Where: X_1 = annual miscellaneous expense

Large Conventional Convenience Stores

The annual miscellaneous cost for large conventional convenience stores is estimated to be 1,200 dollars. Stated algebraically, the cost function for miscellaneous items is:

$X_1 = 1,200$

Where: X_1 = annual miscellaneous expense

Total Operating Cost Functions

The total operating cost function is a summation or aggregation of the component cost functions. The estimated functions are linear, consisting of two segments for the bantam, three for the small conventional convenience store, two for the large conventional convenience store with a low cost lease and three for the large conventional convenience store with a high cost lease.

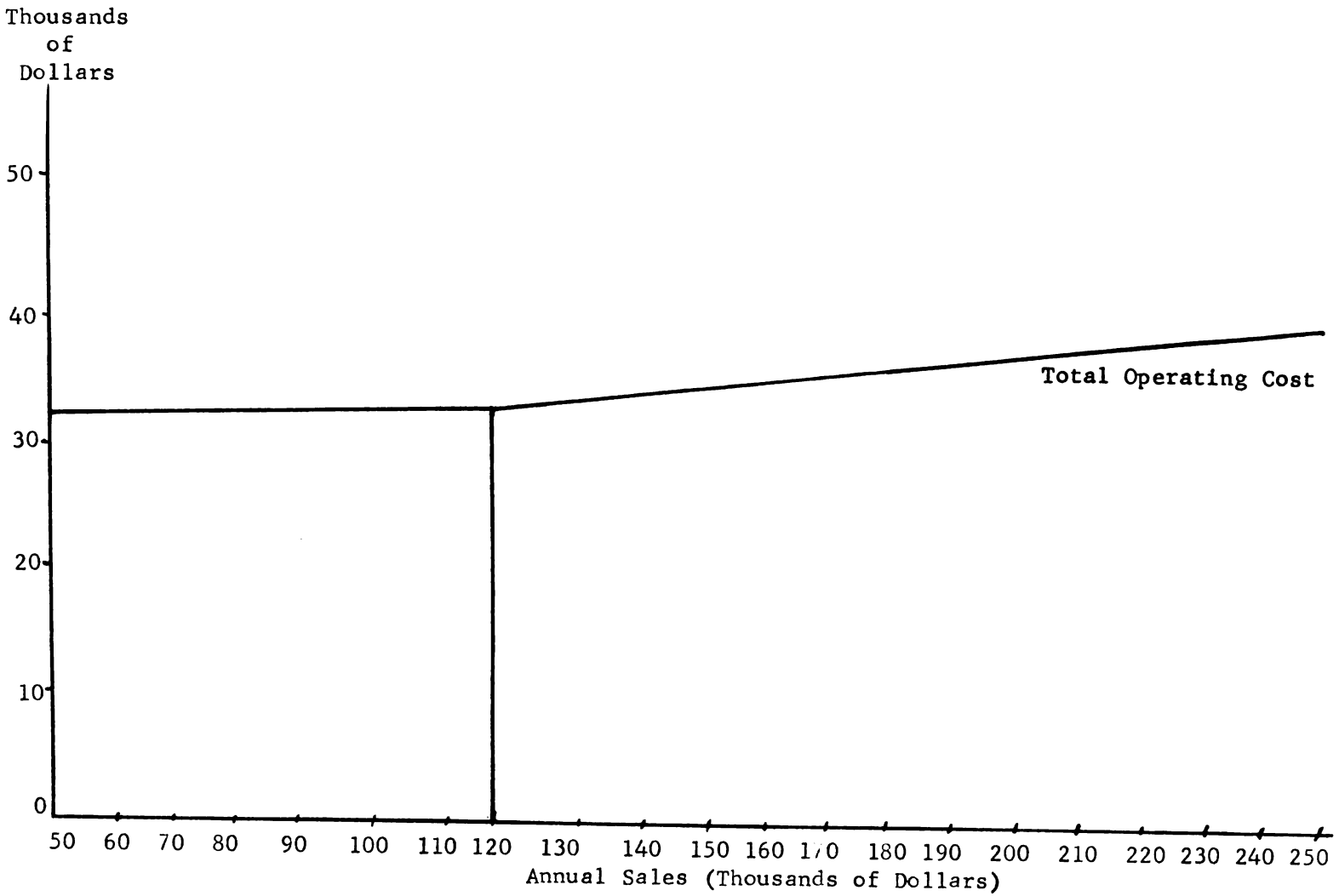
Bantams

The annual total operating cost function for a bantam consists of two linear segments, one for annual sales between 0 and 120,000 dollars and one for annual sales between 120,000 dollars and 250,000 dollars (see figure 5.1).

1. First Segment

For annual sales up to 120,000 dollars, the total operating cost is 32,319 dollars plus .00316 dollars for every dollar of sales. Stated

Figure 5.1 Total Operating Cost Function for Bantams



algebraically, the total operating cost function is:

$$X_1 = 32,319 + .00316\ X_2$$

Where: X_1 = annual total operating cost
X_2 = annual sales

Table 5.8 Estimated Equation for the First Segment of the Total Operating Cost Function for Bantams - Annual Sales Between 0 and 120,000 Dollars

Component	Annual Cost Function
Labor	$X_1 = 15,011$
Land and building	$X_1 = 2,400$
Supplies	$X_1 = 657 + .00316\ X_2$
Administration	$X_1 = 5,000$
Utilities	$X_1 = 3,600$
Equipment depreciation	$X_1 = 3,429$
Maintenance	$X_1 = 1,200$
Miscellaneous	$X_1 = 1,022$
Total	$X_1 = 32,319 + .00316\ X_2$

X_1 = annual cost
X_2 = annual sales

2. Second Segment

For annual sales over 120,000 dollars up to 250,000 dollars total operating cost is 32,319 dollars plus .00316 dollars for every dollar of sales plus .04288 dollars for every dollar of sales over 120,000 dollars per year (see table 5.9). Stated algebraically, the total operating cost function is:

$$X1 = 32,319 + .00316\ X_2 + .04288\ (X_2 - 120,000)$$

Where: X_1 = annual total operating cost
X_2 = annual sales

Table 5.9 Estimated Equation for the Second Segment of the Total Operating Cost Function for Bantams - Annual Sales Between 120,000 and 250,000 dollars

Component	Annual Cost Function
Labor	$X_1 = 15,011 + .02288\ (X_2 - 120,000)$
Land and building	$X_1 = 2,400 + .02\ (X_2 - 120,000)$
Supplies	$X_1 = 657 + .00316\ X_2$
Administration	$X_1 = 5,000$
Utilities	$X_1 = 3,600$
Equipment depreciation	$X_1 = 3,429$
Maintenance	$X_1 = 1,200$
Miscellaneous	$X_1 = 1,022$
Total	$X_1 = 32,319 + .00316X_2 + .04288\ (X_2 - 120,000)$

X_1 = annual cost
X_2 = annual sales

Table 5.10 illustrates annual operating expense budgets for a bantam for three sales volumes, 120,000 dollars, 147,711 dollars and 250,000 dollars per year. If annual sales are only 120,000 dollars, total operating expenses are 32,698 dollars or 27.25 percent of sales. If annual sales are 250,000 dollars, total operating expenses increase to 38,683 dollars but decrease to 15.47 as a percent of sales.

Small Conventional Convenience Stores

The annual total operating cost function for a small conventional convenience store consists of three segments, one for annual sales between 0 and 66,667 dollars one for annual sales between 66,667

Table 5.10 Annual Operating Expense Budgets, Bantam, 120,000 Dollars, 147,711 Dollars and 250,000 Dollars Sales per Year

	$120,000 Sales		$147,711 Sales		$250,000 Sales	
	$	%	$	%	$	%
Labor	15,011	12.51	15,645	10.59	17,985	7.19
Building and Land	2,400	2.00	2,954	2.00	5,000	2.00
Supplies	1,036	.86	1,124	.76	1,447	.58
Administrative	5,000	4.17	5,000	3.39	5,000	2.00
Utilities	3,600	3.00	3,600	2.44	3,600	1.44
Equipment Depreciation	3,429	2.86	3,429	2.32	3,429	1.37
Maintenance	1,200	1.00	1,200	.81	1,200	.48
Misc. (Taxes, Lic., Ins.)	1,022	.85	1,022	.69	1,022	.41
Total	32,698	27.25	33,974	23.00	38,683	15.47

dollars and 100,000 dollars and one for annual sales between 100,000 dollars and 150,000 dollars (see figure 5.2).

1. First Segment

For annual sales up to 66,667 dollars, total operating cost is 29,059 dollars plus .0035 dollars for every dollar of sales (see table 5.11). Stated algebraically, the total operating cost function is:

$$X_1 = 29,059 + .0035\ X_2$$

Where: X_1 = annual total operating cost
X_2 = annual sales

Table 5.11 Estimated Equation for the First Segment of the Total Operating Cost Function for Small Conventional Convenience Stores - Annual Sales Between 0 and 66,667 Dollars

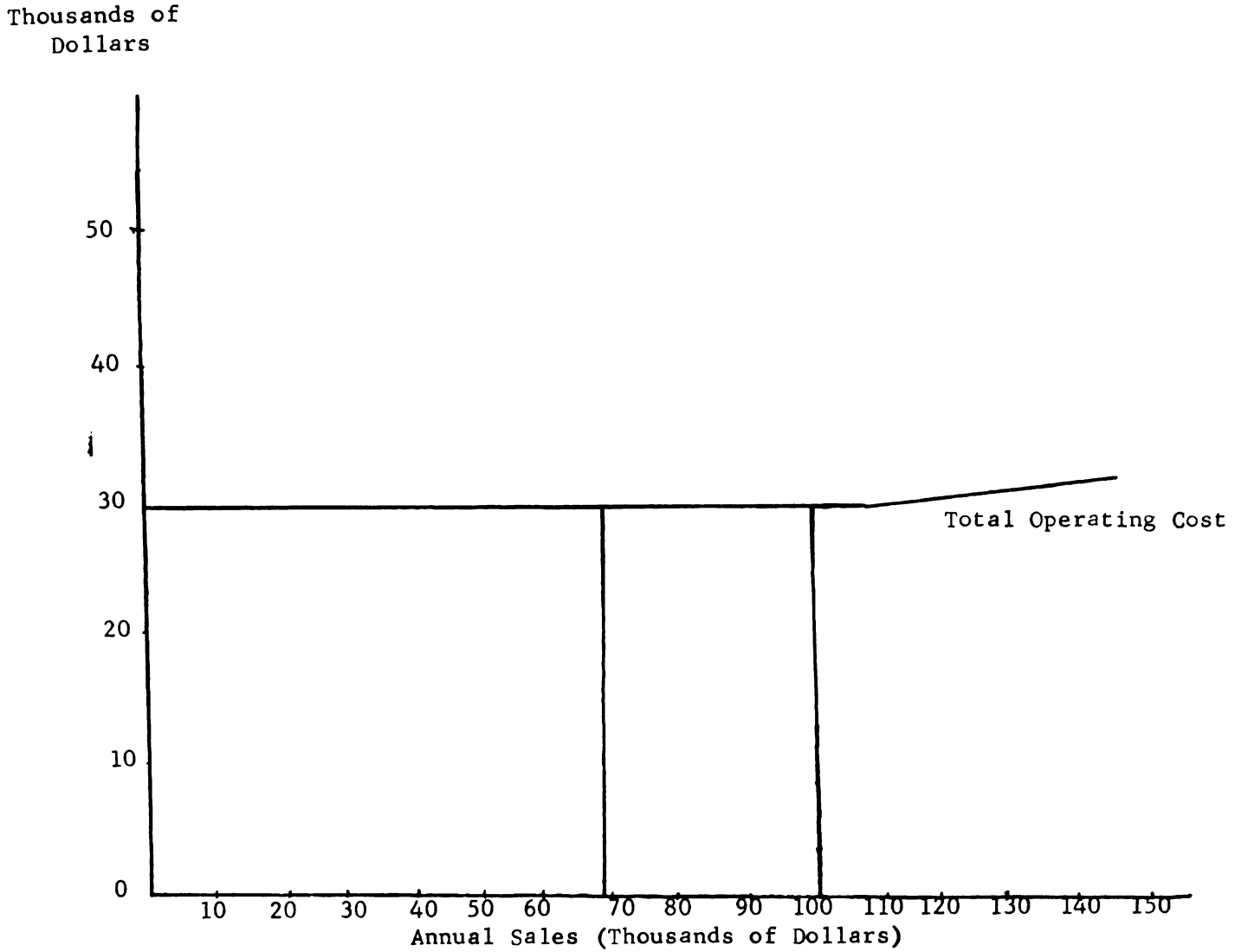
Component	Annual Cost Function
Labor	$X_1 = 15,011$
Land and building	$X_1 = 1,000$
Supplies	$X_1 = 750 + .0035X_2$
Administration	$X_1 = 5,000$
Utilities	$X_1 = 2,650$
Equipment depreciation	$X_1 = 2,577$
Maintenance	$X_1 = 871$
Miscellaneous	$X_1 = 1,200$
Total	$X_1 = 29,059 + .0035X_2$

X_1 = annual cost
X_2 = annual sales

2. Second Segment

For annual sales over 66,667 dollars up to 100,000 dollars, total operating cost is 29,059 dollars plus .0035 dollars for every dollar of sales plus .015 dollars for every dollar of sales over 66,667 dollars

Figure 5.2 Total Operating Cost Function for Small Conventional Convenience Stores



per year (see table 5.12). Stated algebraically, the total operating cost function is:

$$X_1 = 29,059 + .0035X_2 + .015\ (X_2 - 66,667)$$

Where: X_1 = annual total operating expense
X_2 = annual sales

Table 5.12 Estimated Equation for the Second Segment of the Total Operating Cost Function for Small Conventional Convenience Stores - Annual Sales Between 66,667 and 100,000 Dollars

Component	Annual Cost Function
Labor	$X_1 = 15,011$
Land and building	$X_1 = 1,000 + .015\ (X_2 - 66,667)$
Supplies	$X_1 = 750 + .0035\ X_2$
Administration	$X_1 = 5,000$
Utilities	$X_1 = 2,650$
Equipment depreciation	$X_1 = 2,577$
Maintenance	$X_1 = 871$
Miscellaneous	$X_1 = 1,200$
Total	$X_1 = 29,059 + .0035X_2 + .015\ (X_2 - 66,667)$

X_1 = annual cost
X_2 = annual sales

3. Third Segment

For annual sales over 100, 000 dollars up to 150,000 dollars, total operating cost is 29,059 dollars plus .0035 dollars for every dollar of sales plus .015 dollars for every dollar of sales over 66,667 dollars plus .03817 dollars for every dollar of sales over 100,000 dollars (see table 5.13). Stated algebraically, the total operating cost function is:

$$X_1 = 29{,}059 + .0035\ X_2 + .015\ (X_2 - 66{,}667) + .03817\ (X_2 - 100{,}000)$$

Where: X_1 = annual total operating expense
X_2 = annual sales

Table 5.13 Estimated Equation for the Third Segment of the Total Operating Cost Function for Small Conventional Convenience Stores - Annual Sales Between 100,000 and 150,000 dollars

Component	Annual Cost Function
Labor	$X_1 = 15{,}011 + .03817\ (X_2 - 100{,}000)$
Land and building	$X_1 = 1{,}000 + .015\ (X_2 - 66{,}667)$
Supplies	$X_1 = 750 + .0035\ X_2$
Administration	$X_1 = 5{,}000$
Utilities	$X_1 = 2{,}650$
Equipment depreciation	$X_1 = 2{,}577$
Maintenance	$X_1 = 871$
Miscellaneous	$X_1 = 1{,}200$
Total	$X_1 = 29{,}059 + .0035X_2 + .015\ (X_2 - 66{,}667) + .03817\ (X_2 - 100{,}000)$

X_1 = annual cost
X_2 = annual sales

Table 5.14 illustrates annual operating expense budgets for a small conventional convenience store for 3 sales volumes, 100,000 dollars, 139,860 dollars and 150,000 dollars per year. If annual sales are only 100,000 dollars, total operating expenses are 29,909 dollars or 29.91 percent of sales. If annual sales are 150,000 dollars, total operating expenses increase to 32,743 dollars, but decrease to 21.83 as a percent of sales.

Table 5.14 Annual Operating Expense Budgets, Small Conventional Convenience Store, 100,000 Dollars, 139,860 Dollars and 150,000 Dollars Sales per Year

	$100,000 Sales		$139,860 Sales		$150,000 Sales	
	$	%	$	%	$	%
Labor	15,011	15.01	16,532	11.82	16,920	11.28
Building and land	1,500	1.50	2,096	1.50	2,250	1.50
Supplies	1,100	1.10	1,240	.89	1,275	.85
Administrative	5,000	5.00	5,000	3.58	5,000	3.33
Utilities	2,650	2.65	2,650	1.89	2,650	1.77
Equipment depreciation	2,577	2.58	2,577	1.84	2,577	1.72
Maintenance	871	.87	871	.62	871	.58
Miscellaneous	1,200	1.20	1,200	.86	1,200	.80
Total	29,909	29.91	32,163	23.0	32,743	21.83

Large Conventional Convenience Stores - Low Cost Lease

The annual total operating cost function for a large conventional convenience store with a low cost lease consists of 2 segments, one for annual sales between 0 and 100,000 dollars and one for annual sales between 100,000 and 250,000 dollars (see figure 5.3).

1. First Segment

For annual sales up to 100,000 dollars, the total operating cost is 31,574 dollars plus .0035 dollars for every dollar of sales (see table 5.15). Stated algebraically, the total operating cost function is:

$$X_1 = 31,574 + .0035X_2$$

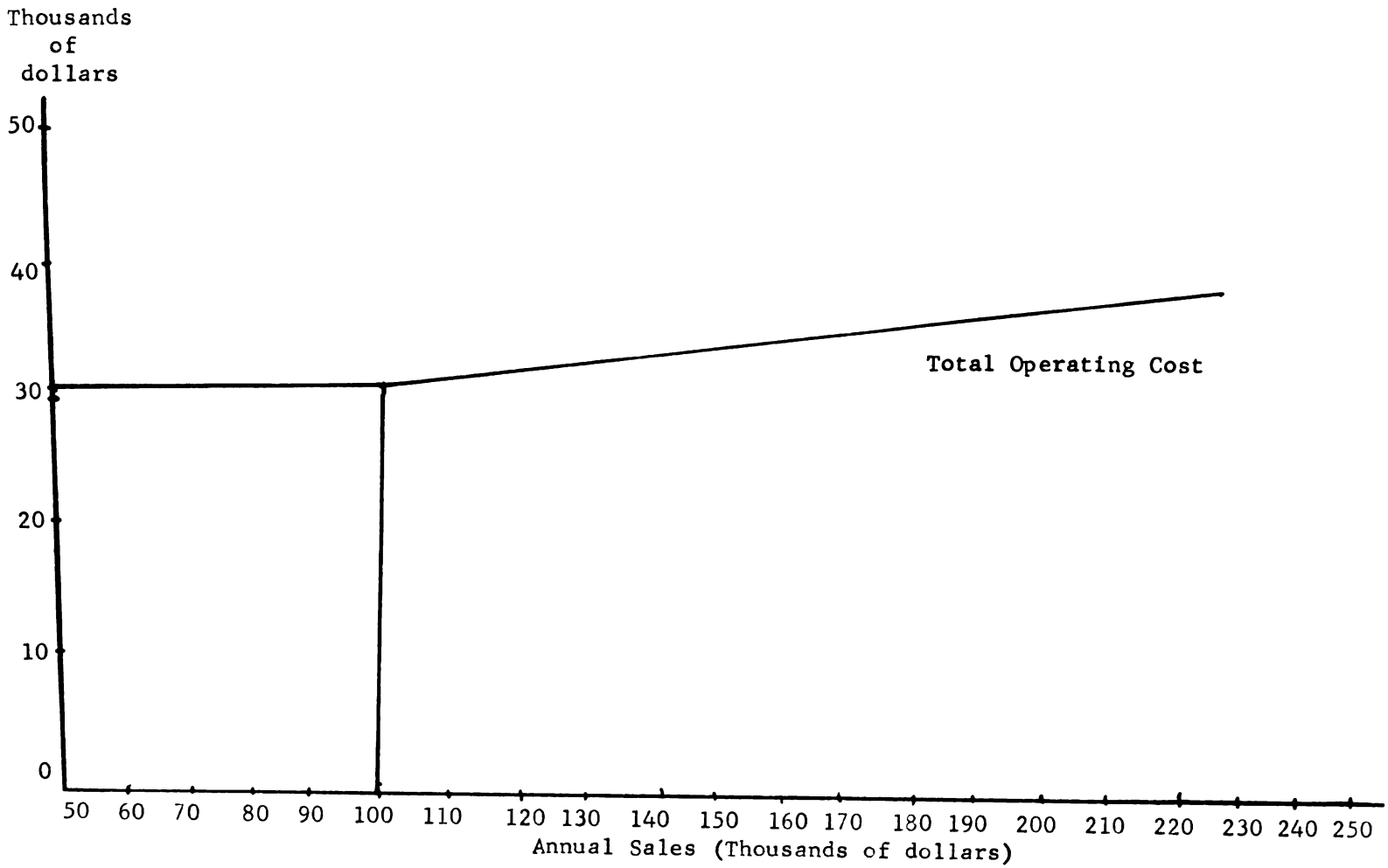
Where: X_1 = annual total operating cost
X_2 = annual sales

Table 5.15 Estimated Equation for the First Segment of the Total Operating Cost Function for Large Conventional Convenience Stores - Low Cost Lease - Annual Sales Between 0 and 100,000 Dollars

Component	Annual Cost Function
Labor	$X_1 = 15,011$
Land and building	$X_1 = 1,700$
Supplies	$X_1 = 750 + .0035X_2$
Administration	$X_1 = 5,000$
Utilities	$X_1 = 3,370$
Equipment depreciation	$X_1 = 3,362$
Maintenance	$X_1 = 1,181$
Miscellaneous	$X_1 = 1,200$
Total	$X_1 = 31,574 + .0035 X_2$

X_1 = annual cost
X_2 = annual sales

Figure 5.3 Total Operating Cost Function for Large Conventional Convenience Stores - Low Cost Lease



2. Second Segment

For annual sales over 100,000 dollars up to 250,000 dollars, total operating cost is 31,574 dollars plus .0035 dollars for every dollar of sales plus .05517 dollars for every dollar of sales over 100,000 dollars (see table 5.16). Stated algebraically, the total operating cost function is:

$$X_1 = 31,574 + .0035X_2 + .05517\ (X_2 - 100,000)$$

Where: X_1 = annual total operating expense
X_2 = annual sales

Table 5.16 Estimated Equation for the Second Segment of the Total Operating Cost Function for Large Conventional Convenience Stores - Low Cost Lease - Annual Sales Between 100,000 and 250,000 Dollars

Component	Annual Cost Function
Labor	$X_1 = 15,011 + .03817\ (X_2 - 100,000)$
Land and building	$X_1 = 1,700 + .017\ (X_2 - 100,000)$
Supplies	$X_1 = 750 + .0035\ X_2$
Administration	$X_1 = 5,000$
Utilities	$X_1 = 3,370$
Equipment depreciation	$X_1 = 3,362$
Maintenance	$X_1 = 1,181$
Miscellaneous	$X_1 = 1,200$
Total	$X_1 = 31,574 + .0035X_2 + .05517\ (X_2 - 100,000)$

X_1 = annual cost
X_2 = annual sales

Table 5.17 illustrates annual operating expense budgets for a large conventional convenience store with a low cost lease for 3 sales volumes, 120,000 dollars, 152,087 dollars and 250,000 dollars per year. If annual sales are only 120,000 dollars, total operating expenses are 33,097 dollars or 27.58 percent of sales. If annual sales are

Table 5.17 Annual Operating Expense Budgets, Large Conventional Convenience Store, Low Cost Lease, 120,000 Dollars, 152,087 Dollars and 250,000 Dollars Sales Per Year

	$120,000 Sales		$152,087 Sales		$250,000 Sales	
	$	%	$	%	$	%
Labor	15,774	13.14	17,000	11.17	20,737	8.30
Building and land	2,040	1.70	2,585	1.70	4,250	1.70
Supplies	1,170	.98	1,282	.84	1,625	.65
Administrative	5,000	4.17	5,000	3.29	5,000	2.00
Utilities	3,370	2.81	3,370	2.22	3,370	1.35
Equipment depreciation	3,362	2.80	3,362	2.21	3,362	1.34
Maintenance	1,181	.98	1,181	.78	1,181	.47
Miscellaneous	1,200	1.00	1,200	.79	1,200	.48
Total	33,097	27.58	34,980	23.00	40,725	16.29

250,000 dollars, total operating expenses increase to 40,725 dollars, but decrease to 16.29 percent of sales.

Large Conventional Convenience Stores - High Cost Lease

The annual total operating cost function for a large conventional convenience store with a high cost lease consists of three segments, one for annual sales between 0 and 100,000 dollars, one for annual sales between 100,000 and 120,000 dollars and one for annual sales between 120,000 and 250,000 dollars (see figure 5.4).

1. First Segment

For annual sales up to 100,000 dollars, total operating cost is 32,274 dollars plus .0035 dollars for every dollar of sales (see table 5.18). Stated algebraically, the total operating cost function is:

$$X_1 = 32,274 + .0035X_2$$

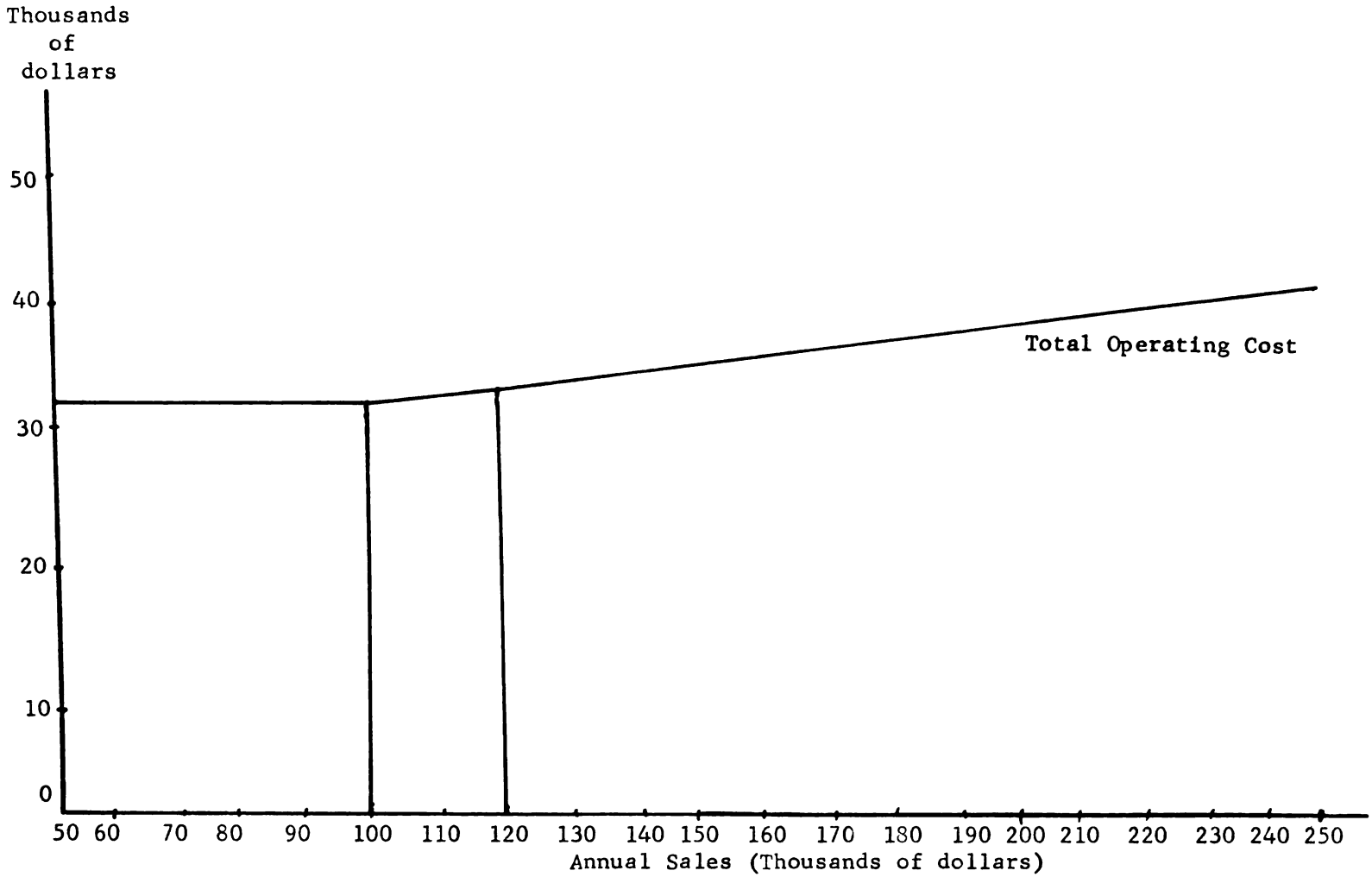
Where: X_1 = annual total operating cost
X_2 = annual sales

Table 5.18 Estimated Equation for the First Segment of the Total Operating Cost Function for Large Conventional Convenience Stores - High Cost Lease - Annual Sales Between 0 and 100,000 Dollars

Component	Annual Cost Function
Labor	$X_1 = 15,011$
Land and building	$X_1 = 2,400$
Supplies	$X_1 = 750 + .0035X_2$
Administration	$X_1 = 5,000$
Utilities	$X_1 = 3,370$
Equipment depreciation	$X_1 = 3,362$
Maintenance	$X_1 = 1,181$
Miscellaneous	$X_1 = 1,200$
Total	$X_1 = 32,274 + .0035X_2$

X_1 = annual cost
X_2 = annual sales

Figure 5.4 Total Operating Cost Function for Large Conventional Convenience Stores-High Cost Lease



2. Second Segment

For annual sales over 100,000 dollars up to 120,000 dollars, total operating cost is 32,274 dollars plus .0035 dollars for every dollar of sales plus .03817 dollars for every dollar of sales over 100,000 dollars (see table 5.19). Stated algebraically, the total operating cost function is:

$$X_1 = 32,274 + .0035\ X_2 + .03817\ (X_2 - 100,000)$$

Where: X_1 = annual total operating cost
X_2 = annual sales

Table 5.19 Estimated Equation for the Second Segment of the Total Operating Cost Function for Large Conventional Convenience Stores - High Cost Lease - Annual Sales Between 100,000 and 120,000 Dollars

Component	Annual Cost Function
Labor	$X_1 = 15,011 + .03817\ (X_2 - 100,000)$
Land and building	$X_1 = 2,400$
Supplies	$X_1 = 750 + .0035X_2$
Administration	$X_1 = 5,000$
Utilities	$X_1 = 3,370$
Equipment depreciation	$X_1 = 3,362$
Maintenance	$X_1 = 1,181$
Miscellaneous	$X_1 = 1,200$
Total	$X_1 = 32,274 + .0035X_2 + .03817\ (X_2 - 100,000)$

X_1 = annual cost
X_2 = annual sales

3. Third Segment

For annual sales over 120,000 dollars up to 250,000 dollars, total operating cost is 32,274 dollars plus .0035 dollars for every dollar of sales plus .03817 dollars for every dollar of sales over 100,000 dollars

plus .02 dollars for every dollar of sales over 120,000 (see table 5.20). Stated algebraically, the total operating cost function is:

$$X_1 = 32{,}274 + .0035X_2 + .03817\ (X_2 - 100{,}000) + .02\ (X_2 - 120{,}000)$$

Where: X_1 = annual total operating cost
X_2 = annual sales

Table 5.20 Estimated Equation for the Third Segment of the Total Operating Cost Function for Large Conventional Convenience Stores - High Cost Lease - Annual Sales Between 120,000 and 250,000 Dollars

Component	Annual Cost Function
Labor	$X_1 = 15{,}011 + .03817\ (X_2 - 100{,}000)$
Land and building	$X_1 = 2{,}400 + .02\ (X_2 - 120{,}000)$
Supplies	$X_1 = 750 + .0035X_2$
Administration	$X_1 = 5{,}000$
Utilities	$X_1 = 3{,}370$
Equipment depreciation	$X_1 = 3{,}362$
Maintenance	$X_1 = 1{,}181$
Miscellaneous	$X_1 = 1{,}200$
Total	$X_1 = 32{,}274 + .0035\ X_2 + .03817\ (X_2 - 100{,}000) + .02\ (X_2 - 120{,}000)$

X_1 = annual cost
X_2 = annual sales

Table 5.21 illustrates annual operating expense budgets for a large conventional convenience store with a high cost lease for three sales volumes, 120,000 dollars, 154,797 dollars and 250,000 dollars per year. If annual sales are only 120,000 dollars, total operating expenses would be 33,457 dollars or 27.88 percent of sales. If annual sales are 250,000 dollars, total operating expenses increase to 41,475 dollars, but decrease to 16.59 as a percent of sales.

Table 5.21 Annual Operating Expense Budgets, Large Conventional Convenience Store - High Lease - 120,000 Dollars, 154,797 Dollars and 250,000 Dollars Sales per Year

	$120,000 Sales		$154,797 Sales		$250,000 Sales	
	$	%	$	%	$	%
Labor	15,774	13.14	17,102	11.05	20,737	8.30
Building and land	2,400	2.00	3,096	2.00	5,000	2.00
Supplies	1,170	.98	1,292	.83	1,625	.65
Administrative	5,000	4.17	5,000	3.23	5,000	2.00
Utilities	3,370	2.81	3,370	2.18	3,370	1.35
Equipment depreciation	3,362	2.80	3,362	2.17	3,362	1.34
Maintenance	1,181	.98	1,181	.76	1,181	.47
Miscellaneous	1,200	1.00	1,200	.78	1,200	.48
Total	33,457	27.88	35,603	23.00	41,475	16.59

Summary

The total operating cost functions presented in this chapter were obtained by aggregating the component cost functions. The functions were found to be linear, consisting of two segments for the bantam, three for the small conventional convenience store, two for the large conventional convenience store with a low cost lease and three for the large conventional convenience store with a high cost lease. The functions were presented as algebraic formulae, charts and budgets. Cost functions, however, are only part of the problem with which this study is concerned. From the firm's point of view, the most important function is the profit function, and this is presented in chapter six.

CHAPTER VI

PROFIT DETERMINATION

The estimation of profit functions requires, both a total revenue and a total cost function. Profit is defined as the difference between total revenue and total cost. In this study gross margin is used instead of total revenue and total operating cost is used instead of total cost. Thus, profit is defined as gross margin minus total operating cost. Three methods are used in this study to determine profit: the algebraic method, the graphic method and the budgeting method. Each is discussed briefly in this chapter.

Algebraic Method

The amount of profit or loss that results from a given annual sales volume can be determined by subtracting the operating cost function from the gross margin function.

For example, for the bantam, the profit formulae are:

1. For annual sales up to 120,000 dollars:

$$P = aX_2 - (32{,}319 + .00316\ X_2)$$

2. For annual sales over 120,000 dollars up to 250,000 dollars

$$P = aX_2 - [32{,}319 + .00316\ X_2 + .04288\ (X_2 - 120{,}000)]$$

Where: P = annual net profit
a = gross margin percent
X_2= annual sales

More specifically, if gross margin is 23 percent and annual sales are 250,000 dollars, net profit is 18,817 dollars.

$$P = aX_2 - [32,319 + .00316X_2 + .04288 (X_2 - 120,000)]$$

$$P = .23 (250,000) - [32,319 + .00316 (250,000) + .04288 (250,000 - 120,000)]$$

$$P = 18,817 \text{ dollars}$$

Break-even volume can be determined for a given gross margin percent by setting the profit equation equal to zero and solving for X_2. For the bantam if gross margin is 23 percent, the break-even volume is 147,711 dollars per year.

$$.23 X_2 - [32,319 + .00316 X_2 + .04288 (X_2 - 120,000)] = 0$$

$$.23 X_2 - .00316 X_2 - .04288 X_2 = 32,319 - 5,146$$

$$.18396 X_2 = 27,173$$

$$X_2 = 147,711$$

Profit (or loss) and break-even volume can be determined for the conventional convenience stores, as well as the bantam by using the appropriate gross margin and cost functions. Annual break-even volume is 139,860 dollars for the small conventional convenience store, 152,087 dollars for the large conventional convenience store with a low cost lease and 154,797 dollars for the large conventional convenience store with a high cost lease.

Graphic Method

The annual profit or loss that results from a given annual sales volume and a given gross margin percent can be determined graphically as the vertical distance between the gross margin curve and the total operating cost curve. Three gross margin curves are used: 21, 23 and 25 percent. Break-even volume is determined by dropping a vertical line from the point of intersection of the appropriate gross margin

curve and the total operating cost curve. For example, if gross margin is 23 percent, break-even volume for a bantam is 147,711 dollars per year (figure 6.1). For a small conventional convenience store it is 139,860 dollars per year (figure 6.2). For a large conventional convenience store with a low cost lease, it is 152,087 dollars per year (figure 6.3). And for a large conventional convenience store with a high cost lease break-even volume is 154,797 dollars per year (figure 6.4).

Condensed Annual Operating Statements

Condensed annual operating statements are illustrated for all three stores for three volume levels, at the first break in the cost function, at break-even volume and at "reasonable" capacity volume (see tables 6.1, 6.2, 6.3 and 6.4).

Summary

Each of the three methods presented in this chapter can be used to estimate profit and break-even volume. The method to use depends primarily on one's objectives. The algebraic method would have sufficed for the purpose of this study, however, since most businessmen are more familiar with break-even charts and operating statements, these methods were also included.

Figure 6.1 Break-Even Chart, Bantam

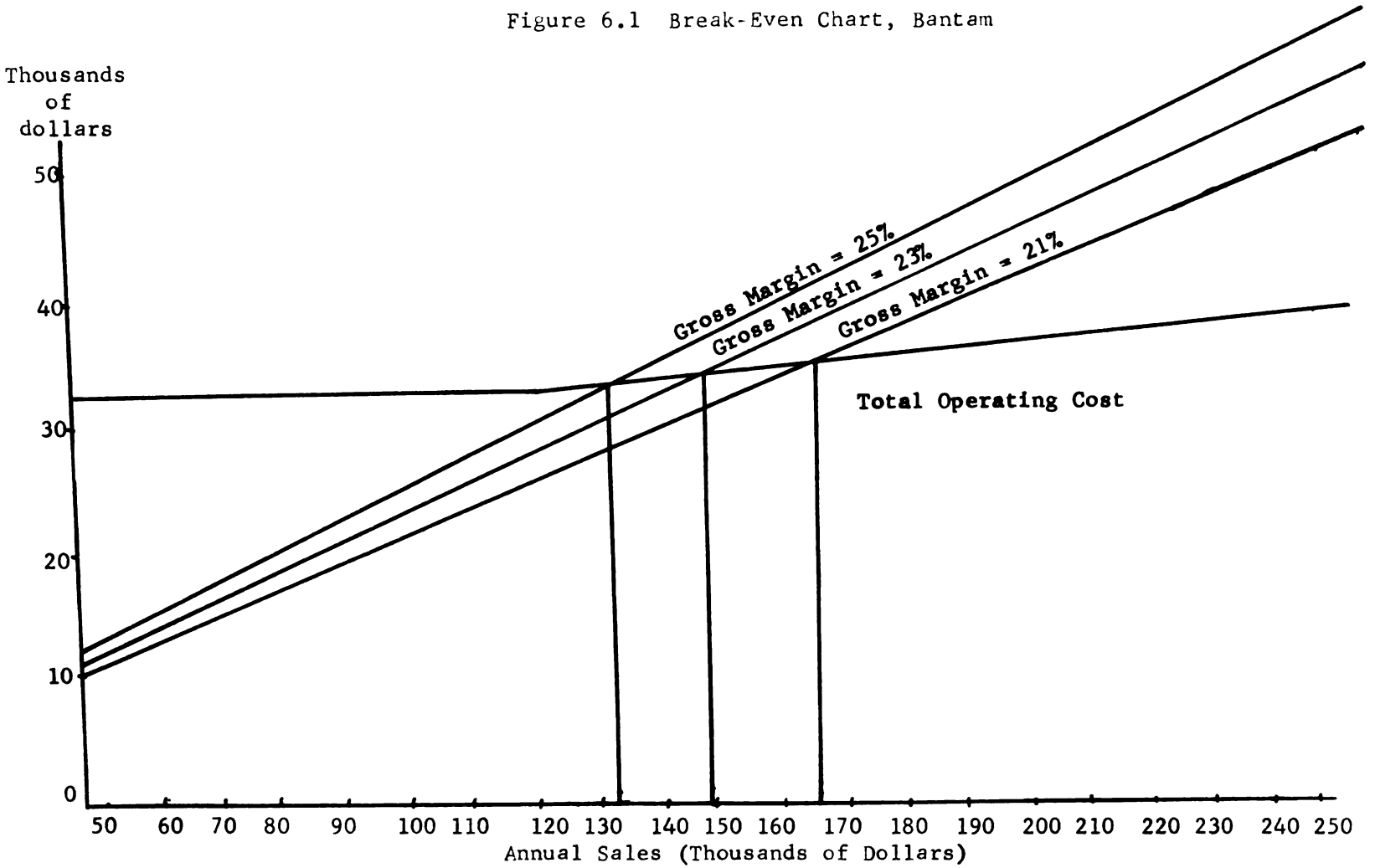


Figure 6.2 Break-Even Chart - Small Conventional Convenience Store

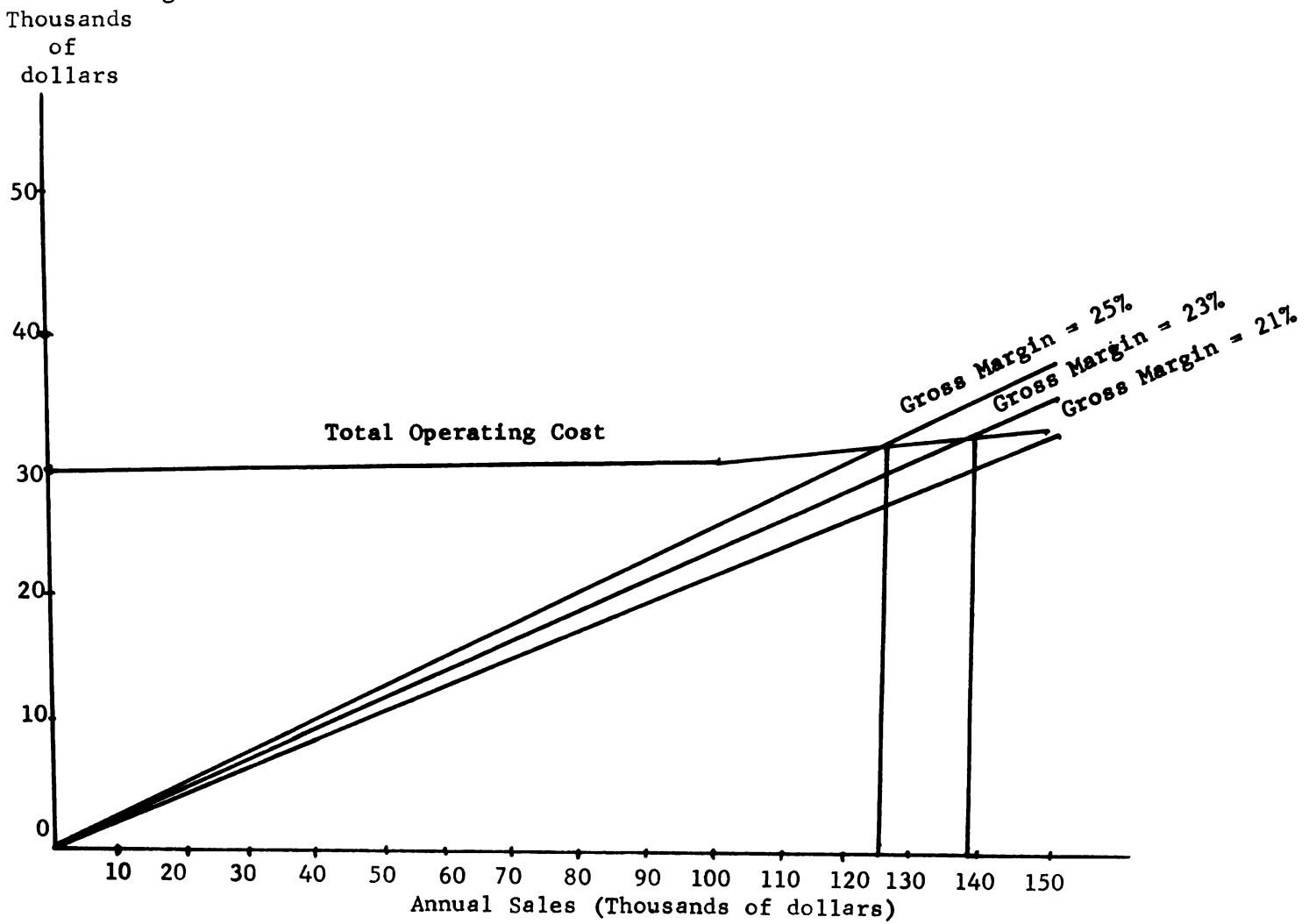
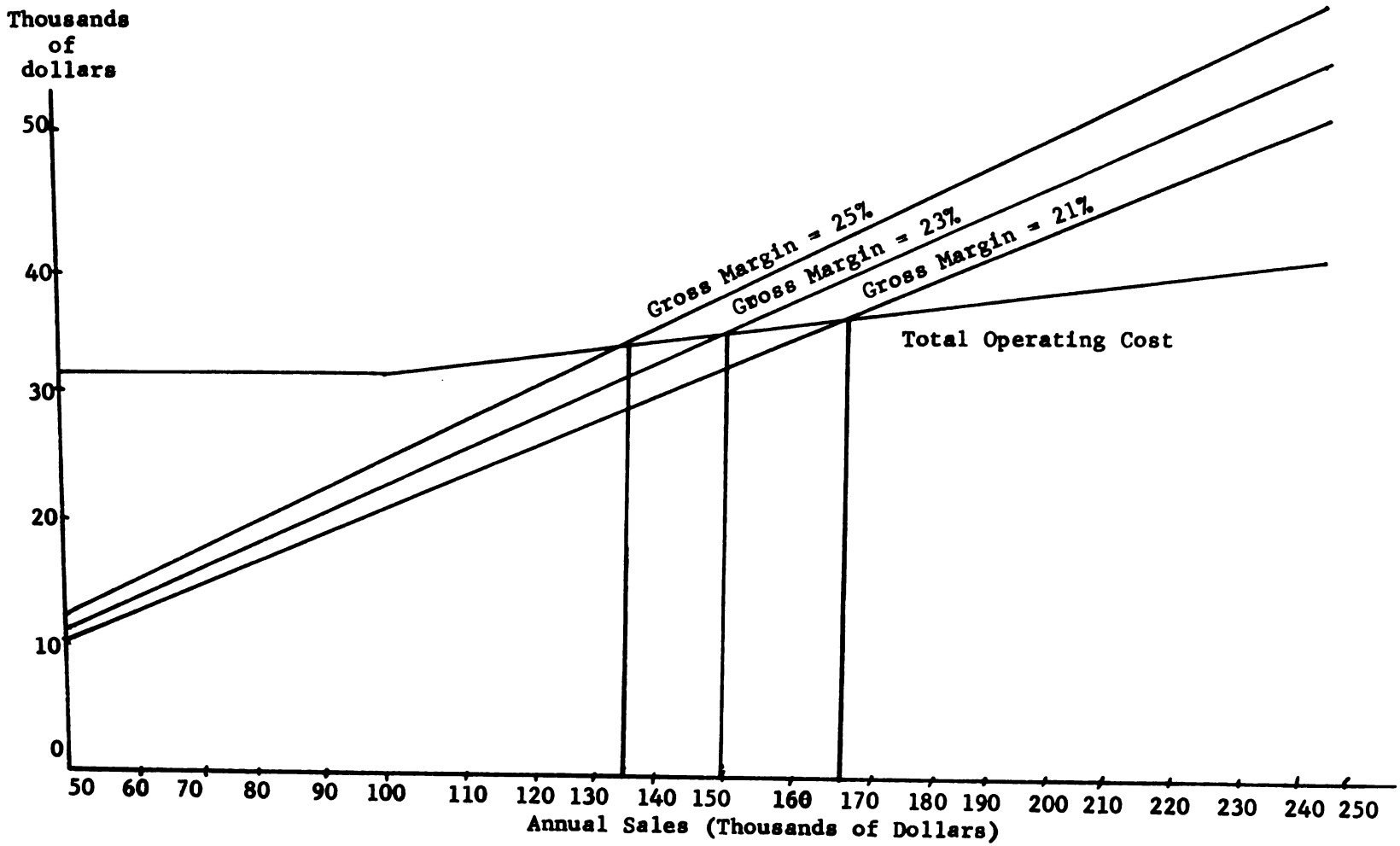


Figure 6.3 Break-Even Chart - Large Conventional Convenience Store - Low Cost Lease



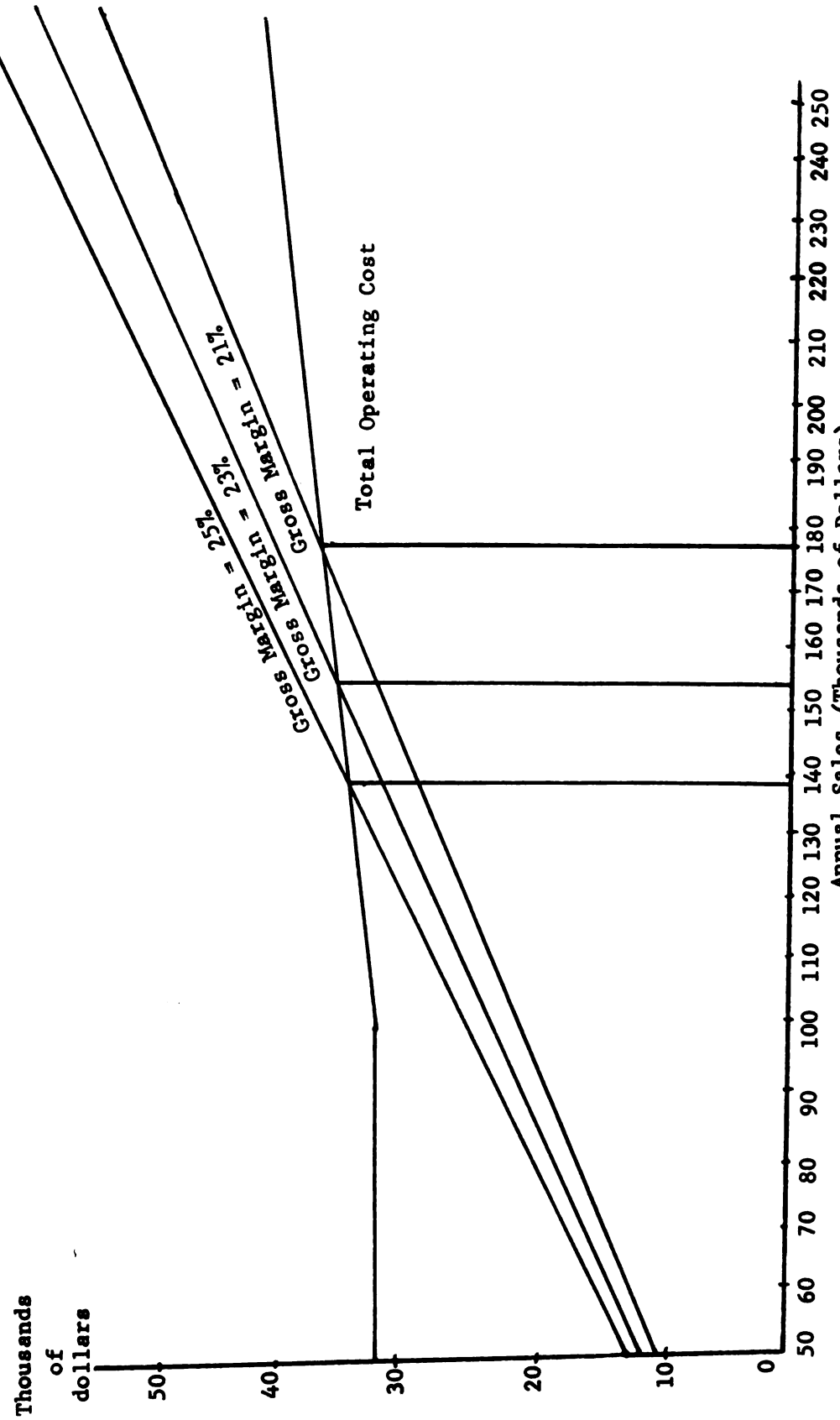


Figure 6.4 Break-Even Chart, Large Conventional Convenience Store - High Cost Lease

Table 6.1 Condensed Annual Operating Statements, Bantams, 120,000 Dollars, 147,711 Dollars and 250,000 Dollars Sales Per Year

	$120,000 Sales		Break-Even Volume		$250,000 Sales	
	$	%	$	%	$	%
Sales	120,000	100,00	147,711	100.00	250,000	100.00
Margin	27,600	23.00	33,974	23.00	57,500	23.00
Expense	32,698	27.25	33,974	23.00	38,683	15.47
Net Profit	- 5,098	- 3.77	--	--	18,817	7.53
Return to Capital (35,000)	--	--	--	--	18,817	53.76

Table 6.2 Condensed Annual Operating Statements, Small Conventional Convenience Store, 100,000 Dollars, 139,860 Dollars and 150,000 Dollars Sales per Year

	$100,000 Sales		Break-Even Volume		$150,000 Sales	
	$	%	$	%	$	%
Sales	100,000	100.00	139,860	100.00	150,000	100.00
Gross Margin	23,000	23.00	32,168	23.00	34,500	23.00
Operating Expenses	29,909	29.90	32,168	23.00	32,743	21.83
Net Profit	- 6,909	- 6.91	--	--	1,757	1.17
Return to Capital (26,537)	--	--	--	--	1,757	6.62

Table 6.3 Condensed Annual Operating Statements, Large Conventional Convenience Store, Low Cost Lease, 120,000 Dollars, 152,087 Dollars and 250,000 Dollars Sales per Year

	$120,000 Sales		Break-Even Volume		$250,000 Sales	
	$	%	$	%	$	%
Sales	120,000	100.00	152,087	100.00	250,000	100.00
Gross Margin	27,600	23.00	34,980	23.00	57,500	23.00
Operating Expenses	33,097	27.58	34,980	23.00	40,725	16.29
Net Profit	- 5,497	- 4.58	--	--	16,775	6.71
Return to Capital (34,544)	--	--	--	--	16,775	48.58

Table 6.4 Condensed Annual Operating Statements, Large Conventional Convenience Store, High Cost Lease, 120,000 Dollars, 154,797 Dollars and 250,000 Dollars Sales per Year

	$120,000 Sales		Break-Even Volume		$250,000 Sales	
	$	%	$	%	$	%
Sales	120,000	100.00	154,797	100.00	250,000	100.00
Gross Margin	27,600	23.00	35,603	23.00	51,500	23.00
Operating Expenses	33,457	27.88	35,603	23.00	41,475	16.59
Net Profit	- 5,857	- 4.88	--	--	16,025	6.41
Return to Capital (34,533)	--	--	--	--	16,025	46.40

CHAPTER VII

COMPARISONS AND CONCLUSIONS

Introduction

It was suggested above, that there are two fairly distinct segments of the retail food market, those major relatively infrequent purchases made primarily in super markets and those "fill-in", relatively frequent purchases made primarily in small convenience stores. Super markets have been accounting for a larger and larger share of the market. It is generally believed, however, that there is some maximum share that they can attract, and that there will always be a place for a certain number of convenience-type stores. It is not the purpose of this study to determine at what point the market will stabilize, or for that matter if it ever will. There is no reason to believe that developments will take place at the same rate in both segments of the industry, therefore, the share accounted for by each will probably fluctuate over time. It is assumed that convenience stores will account for some share of the market, at least for some time to come. The primary purpose of this chapter is to compare bantams with conventional convenience stores. Since we are concerned with the "long-run" or future aspects of bantams and conventional convenience stores, the analysis is centered around the costs of establishing and operating new stores, rather than a comparison of existing stores where certain committments influence the capital requirements and operating costs.

Capital Requirements

Bantams are larger than most conventional convenience stores, hence

they require a larger investment in both inventory and equipment. The small conventional convenience store in this study is probably representative of most existing ones. It requires an investment of 26,537 dollars exclusive of land and building, whereas the bantam requires 35,000 dollars. There is a tendency, however, to increase the size of conventional convenience stores both through remodeling existing stores and building new ones. Therefore most of the newer conventional convenience stores require a capital investment, exclusive of land and building, approximately the same as the bantam, 34,533 dollars compared to 35,000 dollars (see table 7.1).

Location

The problem of location is a most important and frustrating one, one which can cancel all other advantages or disadvantages that a particular store or company might have. The best operator may not make a profit with a poor location whereas a poor operator may very well make a large profit with a choice location.

In comparing the bantam to conventional convenience stores, the problem of location is handled by deriving a cost structure for the large conventional convenience store for both a "choice" location and a "poor" location. This is handled by using a higher leasing arrangement in one case, the one labeled high cost lease, which is the same as that used for the bantam. In this way the variable of location is taken into account, and one can consider that both the conventional convenience store and the bantam have an equal opportunity of attracting sales, at least as far as location is concerned.

One of the questions raised by the bantam is, what is a good location? The fact that a bantam location demands a higher lease, thus raising the

Table 7.1 Comparison of Capital Requirements for a Bantam and Conventional Convenience Stores

	Small Conventional Convenience Store (dollars)	Large Conventional Convenience Store (dollars)	Bantam (dollars)
Land and Building	Leased	Leased	Leased
Equipment	18,037	23,533	24,000
Inventory	7,500	10,000	10,000
Operating Cash	500	500	500
Miscellaneous	500	500	500
Total	26,537	34,533	35,000

cost structure, does not insure a higher sales volume. Therefore, a cost structure is also derived for a large conventional convenience store, labeled low cost lease, with a leasing arrangement reflecting a slightly poorer and less costly site than that occupied by bantams. This is, in fact, the case for most existing conventional convenience stores. In the long run conventional convenience stores can be located on sites similar to bantams, so it is felt that both kinds of comparisons should be made.

Further questions can be raised about the small stores located in rural areas and in large heavily-populated tenement sections, or choice locations downtown in large cities. The site, cost and problems of these stores are considerably different from those of the bantam and what we have called conventional convenience stores. There is really a wide variation in convenience stores, and any attempt to classify them for analysis is arbitrary. Perhaps, the crucial problem is selecting the "right" location for the "right" store.

Gross Margin

It was pointed out above that the structure of the retail food industry is such that all retail food stores can purchase merchandise for approximately the same price. Small chains and independents can affiliate themselves with a wholesaler for purchasing. If this is true, then a comparison of gross margins gives the same relationship as a comparison of selling prices. Convenience stores generally have higher prices than super markets, partly because many of them are not affiliated for group buying, and partly because they charge a higher gross margin. Super markets charge about 18 to 19 percent gross margin; conventional

convenience stores charge about 20 to 21 percent and bantams charge between 21 and 25 percent.

Very little is known about the elasticity of demand that faces a convenience store, or for that matter a retail food store of any kind. Conventional convenience stores feel that they have to keep their gross margins within 1 to 3 percentage points of the super market. Bantams have successfully been able to charge up to 25 percent gross margin and still attract a sizeable sales volume. Perhaps the demand curve facing a convenience store is not as elastic as is commonly thought. Or perhaps, the bantam has some aspect of differentiation that the conventional convenience store does not have, and it's demand curve is more inelastic than the demand curve facing conventional convenience stores. A study measuring elasticity of demand facing retail food stores would be very valuable to the entire industry.

Break-Even Volume

The sales volume that a particular convenience store can attract is the most crucial factor affecting it's profitability. Profits, for both bantams and conventional convenience stores are maximized when sales volume is at capacity. Both types of convenience stores have a very high proportion of fixed costs, that is, those costs that are required to keep the store in operation regardless of sales volume. Total operating costs remain relatively constant up to a sales volume of 100,000 to 120,000 dollars annual sales. Thereafter, they increase as sales increase, up to a "reasonable" capacity volume, 150,000 dollars annual sales for a small conventional convenience store and 250,000 dollars annual sales for a large conventional convenience store and a bantam.

If gross margin is 23 percent, the annual break-even volume is 139,860 dollars for a small conventional convenience store, 152,087 dollars for a large conventional convenience store with a low cost lease, 154,797 dollars for a large conventional convenience store with a high cost lease and 147,711 dollars for a bantam (see figures 6.1, 6.2, 6.3 and 6.4).

The break-even analysis emphasizes the importance of location and the need to attract a large sales volume. Generally, bantams are able to attract a larger sales volume than conventional convenience stores. Part of this is due to location and part is due to other factors such as cleanliness and type of product. In the long run, however, there is no reason why the conventional convenience store can not copy these features and be in a position to attract an equal amount of sales. To do this would raise the cost structure. This is represented by the operating cost curve labeled large conventional convenience store, high cost lease. With the same sales volume, the bantam would be the more profitable of the two because it has a somewhat lower cost structure.

It appears as though the small conventional convenience store will be forced out of the picture entirely. Notice that the annual break-even volume of 139,860 dollars is pretty close to it's "reasonable" capacity volume of 150,000 dollars. Thus, primarily because of the high proportion of fixed costs in convenience stores, it appears as though they will be forced to become physically larger, perhaps closer to the 2,400 square foot size than their present 1,500 square feet, and attract a larger sales volume so they can spread the fixed costs over a larger base. Many of these small stores are being closed every year. The process is slow because many of them are operating with old, depreciated

equipment and buildings, and they are able to remain in business until a major capital replacement is needed. In addition, many of these operators have limited opportunities and will continue in business as long as they can make a satisfactory living even though the return to their labor, management and capital is relatively low.

Operating Costs

If the small conventional convenience store is being eliminated and if sales volume is crucial, the real competition will be between the large conventional convenience store with the high cost lease and the bantam. Table 7.2 illustrates the average cost per dollar of sales for these

Table 7.2 Average Operating Cost per Dollar of Sales for a Large Conventional Convenience Store with a High Cost Lease and a Bantam

Annual Sales	Large Conventional Convenience Store, High Cost Lease (cents)	Bantam (cents)
130,000	26.2	25.5
140,000	24.8	24.0
150,000	23.5	22.7
160,000	22.5	21.6
170,000	21.5	20.6
180,000	20.6	19.7
190,000	19.9	18.9
200,000	19.2	18.2
210,000	18.6	17.7
220,000	18.0	17.0
230,000	17.5	16.4
240,000	17.0	15.9
250,000	16.6	15.5

two types of stores over the volume range in which most of them should be operating. The average cost per dollar of sales for the bantam lies below that of the conventional convenience store over the entire range. If annual sales are 130,000 dollars, the average operating cost per dollar of sales is 26.2 cents for the conventional convenience store and 25.5 cents for the bantam. If annual sales are 250,000 dollars the average operating cost per dollar of sales is 16.6 cents and 15.5 cents respectively. The cost of utilities, equipment depreciation and maintenance is higher in the bantam than in the conventional convenience store, however, this is more than offset by the higher cost of labor and supplies in the conventional convenience store. The higher cost of labor and supplies is due primarily to the fresh meat department in the conventional convenience store. The wage rates applied to both stores are identical, but the conventional convenience stores requires more man-hours because fresh meat has to be processed, displayed and sold. This is true even though it is assumed that the meat counter is adjacent to the check-out counter to minimize the extra help needed. In addition to the extra labor required, there is the problem of quality control when operating a fresh meat department in a small store. Except in instances where a special clientele can be built up for fresh meat, it appears as though the convenience store will be forced to discontinue, as has the bantam, the maintenance of a fresh meat department, unless centralized prepackaging of meats becomes feasible. The so-called conventional convenience store will probably become more like the bantam, both in the operating cost structure and the type of products offered for sale. With new developments in technology, namely frozen and irradiated meats, both types of stores will be able to offer a more complete line of meats.

Net Profit

The amount of net profit that can be obtained from conventional convenience stores and bantams can be measured in figure 7.1 as the vertical difference between the total operating cost curve and the gross margin curve. If 23 percent is not the appropriate gross margin for a particular case, the appropriate one can be drawn on the diagram and used to measure net profit.

Two ratios of net profit are commonly used in the food industry as a measure of profitability, net profit to sales and net profit to total assets. Table 7.3 illustrates both of these ratios for the small conventional convenience store, the large conventional convenience store with a low lease, the large conventional convenience store with a high lease and the bantam. The comparisons are made with the assumption that all four types of stores are operating at "reasonable" capacity, and that all obtain a 23 percent gross margin. Net margin expressed as a percent of sales is 1.17 for the small conventional convenience store, 6.71 for the large conventional convenience store with a low lease, 6.41 for the large conventional convenience store with a high lease and 7.53 for the bantam. For reasons mentioned above, perhaps only the latter two are significant. The latter two are considerably higher than the 2 to 3 percent obtained by the largest chain stores (see table 2.8). This is due to the higher gross margin rather than a lower cost structure.

Net profit as a percent of total assets (exclusive of land and building) is 6.62 percent for the small conventional convenience store, 48.50 percent for the large conventional convenience store with a low

Table 7.3 Net Profit Before Taxes as a Percent of Sales and Total Assets (Exclusive of Land and Building) for a Bantam and Conventional Convenience Stores

	Small Conventional Convenience Store	Large Conventional Convenience Store, Low Lease	Large Conventional Convenience Store, High Lease	Bantam
Annual Sales (dollars)	150,000	250,000	250,000	250,000
Gross Margin (% of sales)	23.00	23.00	23.00	23.00
Net Margin (% of sales)	1.17	6.71	6.41	7.53
Net Margin (% of total assets)	6.62	48.50	46.40	53.76
Total Assets (exclusive of land and buildings)	26,537	34,533	34,533	35,000

cost lease, 46.40 percent for the large conventional convenience store with a high cost lease and 53.76 percent for the bantam. These latter two are considerably higher than the 10 to 20 percent of most of the large chains (see table 2.8). It seems unlikely that either the large conventional convenience store with a high lease or the bantam will be able to obtain a return to total assets as high as 46 and 53 percent over time. Either one, or both, of two things is likely to occur. First, the convenience stores probably will not be able to average 250,000 dollars annual sales, particularly as they increase in number. For example if they averaged only 200,000 dollars annual sales, the return to total assets would be 20.59 percent for the conventional store and 27.49 percent for the bantam. This would still be somewhat higher than for the large chains but considerably closer than before. The other possibility is that convenience stores will increase their costs by advertising and other non-price factors, or reduce their gross margin until the return to total assets is more in line with that of the large chains.

Productivity Ratios

Although the two net profit ratios are the most important indications of the profitableness of a store, certain productivity ratios are in common use as measures of efficiency. Table 7.4 is a comparison of the most common productivity ratios for convenience stores and bantams, assuming each operates at "reasonable" capacity and obtains a 23 percent gross margin.

Labor is the highest single expense item in any retail food store. In super markets, it usually accounts for 40 to 50 percent of total operating expenses. Labor is also the most important expense item in

Table 7.4 Selected Productivity Ratios for a Bantam and Conventional Convenience Stores

	Small Conventional Convenience Store	Large Conventional Convenience Store, Low Lease	Large Conventional Convenience Store, High Lease	Bantams
Annual Sales (dollars)	150,000	250,000	250,000	250,000
Gross Margin (% of sales)	23.00	23.00	23.00	23.00
Labor Expense (% of sales)	11.28	8.30	8.30	7.19
Operating Expense (% of sales)	21.83	16.29	16.59	15.47
Inventory turns per year*	15.40	19.25	19.25	19.25
Sales per Man Hour	18.81	21.84	21.84	27.95
Annual Sales per Square Foot	100.00	104.00	1104.00	104.00

* Average inventory divided by cost of goods sold.

convenience stores. Two ratios measuring the efficiency of labor are in common use, labor expense as a percent of sales and sales per man hour. The first is influenced by both the physical productivity and the wage rate, whereas, the second measures physical productivity more directly, however, it is influenced by the retail price level. In table 7.4, labor expense as a percent of sales is 11.28 for the small conventional convenience store, 8.30 for the two large conventional convenience stores and 7.19 for the bantam. Since the same wage rate is used in all four cases, the difference is due entirely to man-hour requirements. Sales per man-hour are $18.81 for the small conventional convenience stores, $21.84 for the two large conventional convenience stores and $27.95 for the bantam. There is a constant pressure to increase the wage rate. To a large extent this is offset by an increase in productivity, however, in recent years wage rates have increased faster than productivity and labor costs have risen. This places the retailer in a cost-price squeeze, resulting in a gradual increase in gross margin as a percent of sales and a decrease in net margin as a percent of sales. If wage rates continue to increase faster than productivity, the type of store with less labor requirements has an advantage over it's competitor. This is the position the bantam, with $27.95 sales per man-hour, is in compared to the large conventional convenience store, with $21.84 sales per man-hour.

Two ratios are used to measure the intensity with which capital is used. The first ratio, inventory turns, measures the efficiency of inventory use. Since the amount of inventory carried and the cost of goods sold is the same for the large conventional convenience stores and the bantam, the inventory turn ratio is also the same when sales are

equal. The other ratio, sales per square foot is only a crude measure of the use of total assets, exclusive of land. Neither the bantam, nor the large conventional convenience store, both with 104 dollars annual sales per square foot of total store area, has an advantage over the other if sales are equal.

Control

Perhaps one of the most significant aspects, not introduced by the bantam, but developed by it, is the concept of franchising. Franchising is a method whereby an individual, the franchisee and the company, the franchisor, share in ownership and management of the retail store (see chapter 2). The main difference between a franchised arrangement and a wholesaler-sponsored or affiliated arrangement is that the franchisor provides more capital and management than the wholesaler usually does. In addition, he maintains much closer control over the retail operation. Under the wholesaler-sponsored arrangement, the wholesaler often has difficulty obtaining retailer cooperation on various aspects of his program. The result is that the retail operations of his members are not very uniform, not only in regard to methods of operation, but also in regard to store appearance, type of products and prices of products. Under the franchised arrangement, the franchisee agrees to maintain uniformity of prices, products and operation. In essence, the franchised arrangement is a compromise between a corporate chain and a wholesaler-affiliated arrangement. An attempt is made to combine the advantage of management control over retail operations of the corporate chain with the advantage of individual incentive of the wholesaler-affiliated. Whether or not this will become the dominant arrangement for convenience stores, and whether or not it will spread into the super market segment is purely a matter of speculation.

Summary

At the present time, bantams appear to have an advantage over conventional convenience stores in respect to location, ability to attract volume, operating cost per dollar of sales and control over retail operations. On the other hand, conventional convenience stores have a lower capital investment because of location, older buildings and equipment, giving them a lower break-even volume. In the long run, however, buildings and equipment will have to be replaced. Taking this into account, the conventional convenience store will have a higher cost structure and break-even volume than the bantam, primarily because of higher man-hour requirements to operate the fresh meat department. More important than the cost structure, however, is the ability to attract a high sales volume. It would seem, therefore, that conventional convenience stores will tend to be located on sites equal to that of bantams in both sales attracting ability and cost of location. If this does happen, the major difference between the two will be in the degree of centralized control over retail operations and the operation of a fresh meat department. Whether or not they become similar in respect to these two factors will depend upon the advantages that each offers in attracting sales. It would seem that both of these will have to be decided on an individual company basis, and both types will probably exist simultaneously.

CHAPTER VIII

SUMMARY

Bantams have been heralded as the greatest advancement in food distribution since the inception of the super market. Some owners report high profits; others report losses. The objectives of this study are: 1) to determine some reasons for the emergence of bantams, 2) to determine the general characteristics of bantams and 3) to estimate the cost and profit functions for bantams and conventional convenience stores.

It is suggested that the independent super market operator, by affiliation with a wholesaler, can compete favorably with corporate chain super markets. This is borne out by the fact that super market sales (69 percent of grocery sales) are divided almost equally between the two. It is further suggested that the retail food market is composed of 2 segments, consumers' major, relatively infrequent purchases that are made primarily at super markets and "fill-in" or convenience purchases which are made more frequently, primarily at small stores. Both the affiliated independents and the corporate chains have concentrated on super markets and the major purchases, leaving the convenience market primarily to the unaffiliated independent. With super markets reaching a saturation point in many areas and the Federal Trade Commission's concern about mergers, both of these groups will probably give more attention to the convenience segment of the market. Part of the success of the super market has been due to the status quo of small convenience stores. However, the bantam, a new type of convenience store seems to have considerable

merit. Whether bantams will halt the trend of super markets and whether corporate chains and affiliated independents will move in and take over the convenience segment of the market, as they have the super market segment, is purely a matter of speculation, and outside the scope of this study. In this study it is assumed that the convenience segment of the market will continue to exist at least for some time. The concern is whether the bantam or the conventional convenience store will win out. Bantams have not been clearly defined and any definition would be arbitrary, however, a bantam has the following general characteristics:

Location that is accessible to auto traffic as well as walk-in traffic--usually on a main thoroughfare or in a suburban housing development.
New or remodeled building - usually 60 feet by 40 feet.
Parking space for 15 or 20 cars.
Modern equipment.
Emphasis on appearance and cleanliness.
Relatively high inventory turn - only the fast-moving items .
Limited selection of brands and sizes -- about 2,500 items.
Handle only delicatessen and frozen meats -- no fresh meats.
Emphasis on convenience rather than price.
Open long days, usually from 7 a.m. to 11 p.m.
Relatively high gross margin - about 22 to 25 percent.
Many are operating as a part of a multi-store group. Franchised arrangements are quite common.
In the franchised operation, the most important management. functions are removed from the store level and placed in the hands of a supervisor,who has charge of several stores.
In the multi-store group, emphasis is placed on uniformity of appearance, inventory, prices and operating procedure.

On the other hand, conventional convenience stores have these general characteristics:

Location that is primarily accessible to walk-in trade - usually in congested metropolitan or residential areas.
Limited amount of parking space.
Relatively old building.
Relatively old equipment.
Relatively little emphasis on appearance and cleanliness.
Relatively high inventory turn.
Limited selection of brands and sizes.

Complete fresh, service meat department.
Emphasis on convenience rather than price.
Open long days.
Gross margin that is higher than super markets, but lower than bantams.
Independently owned and operated using mostly family labor.
Some wholesaler affiliation, but a considerable amount ot their purchases are made in cash and carry depots.

Bantam operations were visited in Illinois, Oklahoma, Texas and California to provide background material and a basis for selecting 4 companies, a corporate chain, an independent and 2 franchised groups, for intensive study. Detailed information was obtained from these 4 companies on capital requirements, operating statements, sales per customer, number of items, linear feet of display and factors affecting location. The data collected on capital requirements and operating costs in these existing companies were inadequate for estimating the cost and profit functions for bantams for the following reasons:

The number of observations available was insufficient to estimate the cost function statistically with sufficient reliability.

The cost of buildings, land, equipment, labor, etc. differed by areas, even though the physical requirements are quite similar.

Statistical analysis of cost data from existing stores includes both efficient and inefficient operations and represents the average performance of existing stores, where as a cost function estimated from economic-engineering data can be derived to represent a very efficient store.

The economic-engineering method, which involves the estimation of each component of cost separately in terms of physical inputs, is used instead of the cost accounting method to estimate the cost functions. The physical inputs are multiplied by the price per unit prevalent in Michigan and added to get the total operating cost function. In areas where physical requirements and/or prices are different from those used, the appropriate ones can be substituted to obtain the cost function

for any area. The economic-engineering method is also used to estimate the capital requirements and operating costs for a small and a large conventional convenience store.

A case example of one of the franchised groups, that was studied intensively, is presented because it is representative of most existing bantams and because the franchised system, as used by the bantam companies, introduces some new concepts and practices into the food retailing industry. Franchising is a method whereby the franchisor, usually a central company, and the franchisee, usually an individual, share in the ownership and management of the retail outlet. The franchisor by maintaining considerable control over the retail operation is in a position to get more uniformity as to prices, type of store, products carried and methods of operation than is usually done under the more common wholesaler-affiliated arrangement. It attempts to incorporate the advantage of control over operations of the corporate chain, with the advantage of flexability of the independent. This method has been very successful in other industries and may become more common in both the convenience and super market segments of food retailing. Operating costs and prices are usually lower in super markets than in small convenience stores. However, because of the high proportion of fixed costs, the average operating cost per dollar of sales is probably less for a small store operating close to capacity than for a super market operating at a small fraction of capacity. If both are operating close to capacity, the average operating cost per dollar of sales is probably less for the super market than for the small store. For a bantam, estimated average operating cost per dollar of sales is 24 cents if annual sales are 140,000 dollars and 15.5 cents if annual sales are

250,000 dollars. The average operating cost per dollar of sales was not derived for a super market, but an approximation to this curve, based on the operating costs of 22 large chains and several super markets to which I have had access, is presented in figure 2.1. The probable average operating cost per dollar of sales for the most common-sized super market is between 18 and 19 cents if annual sales are 1 million dollars and between 10.5 and 11.5 cents if annual sales are 4 million dollars. Although it is impossible to be positive of the magnitude, it is very probable that average operating costs per dollar of sales are lower in super markets than in small stores. The justification for the existance of convenience stores, then, must lie in the added convenience that they provide, particularly in respect to location, hours of operation and time required to shop.

In addition to the general characteristics of bantams and conventional convenience stores, the estimated capital requirements and operating costs pertain to a specific list of specifications (see Appendixes B, C, and D). Since the concern is with the long-run or future aspects of bantams and conventional convenience stores, the analysis is centered around the costs of establishing and operating new stores rather than a comparison of existing stores where certain committments influence capital requirements and operating costs.

The capital requirements, exclusive of land and building, for a small conventional convenience store (1,500 square feet) is 26,573 dollars. For a large conventional convenience store and a bantam, (2,400 square feet) it is 34,533 dollars and 35,000 dollars respectfully.

Location is perhaps the most important factor influencing the profitableness of a convenience store. The best operator can not make a profit

on a poor location whereas, a poor operator could very well make a nice profit on a choice location. Bantams are located on higher cost sites than conventional convenience stores, which is probably one of the reasons they have been able to attract a higher sales volume. Two types of comparisons are made between bantams and large conventional convenience stores, one where the large conventional convenience store is located on a relatively poor site with a lower lease and one where it is located on a site equally as good as a bantam with the same lease as the bantam. This accounts for the variable of location and permits direct comparison of operating costs with more equal opportunity for attracting sales. On the other hand, if a large conventional convenience store can attract as high a sales volume as a bantam and do so with a lower location cost, it would have a relative cost advantage. Therefore, both types of comparisons are made.

Another reason that bantams are more profitable than conventional convenience stores is because they charge a higher gross margin. In determining the break-even volume, the same gross margin (23 percent) is used for all stores. The annual break-even volume is 139,860 dollars for the small conventional convenience store, 152,087 dollars for the large conventional store with a low lease, 154,797 dollars for a large conventional convenience store with a high lease and 147,711 dollars for a bantam. After reaching break-even volume, total operating costs increase as sales increase up to a "reasonable" capacity volume and profits are at a maximum at that volume. It is estimated that the "reasonable" capacity is an annual sales volume of 150,000 dollars for the small conventional convenience store and 250,000 dollars for the large conventional convenience stores and the bantam. Since the break-even

volume of the small conventional convenience store is 139,860 dollars, very close to it's capacity, it appears as though the small conventional convenience store will be forced out of the picture completely, and the crucial question is whether the bantam or the large conventional convenience store, or both, will survive.

It is estimated that the operating cost function of the bantam is below that of the large conventional convenience store over the volume range in which they will probably be operating, that is 130,000 dollars to 250,000 dollars annual sales. The difference is due primarily to the cost of operating a fresh meat department. However, the difference is so small that it appears as though both will be able to achieve a sufficiently large return on capital to survive. If both attract the same amount of sales, the bantam is slightly more profitable. For example, if both have an annual sales volume of 250,000 dollars, and both charge 23 percent gross margin, the bantam will have a net profit of 7.53 and the large conventional convenience store with a high lease will have a net profit of 6.41 expressed as a percent of sales. The crucial factor will be the ability to attract sales.

Again, if the large conventional convenience store and the bantam have an annual sales volume of 250,000 dollars, and both charge 23 percent gross margin, the return to total assets exclusive of land and building is 46.40 and 53.76 percent respectfully. This is considerably higher than the 10 to 20 percent return obtained by most of the large chains. It seems unlikely that this differential will hold over time. Either one, or both, of two things is likely to occur. First, the convenience stores probably will not be able to average as high as 250,000

dollars annual sales, and profits will be reduced. The other possibility is that they will increase their costs by advertising or reduce their gross margin until their net profit is more in line with that of the large chains.

Bantams do not require as much labor for a given volume as conventional convenience stores, primarily because they do not have a fresh meat department. Therefore, bantams are able to achieve a higher sales per man hour than conventional convenience stores, $27.95 compared to $21.84 if annual sales are 250,000 dollars. This could be an important advantage if wage rates continue to increase faster than productivity as they have in recent years.

Because of the franchising arrangement used by bantams, there is more uniformity and control over the retail operations than in conventional convenience stores. However, if this turns out to hold considerable advantages there is no reason why the same arrangement can not, and will not, be employed with conventional convenience stores.

In the long-run,then, it seems likely that bantams and large conventional convenience stores will exist side by side and in fact will tend to become more and more similar in respect to location, type of products carried and methods of operation. So much so in fact that they may become one and the same.

APPENDIX A

BANTAM SUPER SURVEY

Date:_____

CONFIDENTIAL

BANTAM SUPER SCHEDULE

Company Name_____

Company Address_____

_____

_____

Store Address_____

_____

_____

_____

Contact Person _____ Tel.:_____

Number of Stores _____

_____

Type of Operation_____

_____

Number of Years Store has been in Operation _____

_____

Number of Years Since Last Major Remodeling_____

_____

Profit and Loss Statement (Last Fiscal Year)

_____ to _____

Sales (not including sales tax, but including perquisite		
Cost of Goods Sold		
Beginning Inventory		
Freight In		
Ending Inventory		
Gross Profit		
Expenses		
Net Profit (Return to Capital)		

Detailed Expenses
(Last Fiscal Year)

Manager's Salary (incl. bonus and fringe benefits)	
Employee's Wages (incl. bonus, fringe benefits and unpaid family labor)	
Advertising (newspapers, handbills, stamps, radio, etc.)	
Supplies (paper, cleaning supplies, laundry, small equipment, such as knives, hand irons, etc.)	
Taxes	
Property	
Payroll	
Gross Income	
Other	
Insurance	
Building	
Other	
Maintenance	
Building	
Other	
Rent	
Building ( )Estimated ( ) Actual	
Other	
Utilities (tel., heat, light, water, etc.)	
Depreciation	
Building (30 years straight line)	
Equipment (7 year straight line)	
Accounting Expenses	
Administration and Overhead Expenses	

Administration and Overhead Expenses_____

Other Operating Expenses_____

Total Operating Expenses_____

DETAILED LABOR EXPENSES
(Last Fiscal Year)

Name	Position	Total Hours Worked	Wage Rate		Bonus	Fringe Benefits	Total Wages
			Hour	Week			

Detailed Depreciation Schedule

Type of Equipment	Description and Size	Cost	Age	Annual Depreciation	Present Book Value

Supplemental Information

I. Store Size

Backroom _____ sq. ft.

Selling _____ sq. ft.

Total _____ sq. ft.

II. Customer Count

J_____	M_____	S_____
F_____	J_____	O_____
M_____	J_____	N_____
A_____	A_____	D_____

Total _____

III. Sales Per Customer

J_____	M_____	S_____
F_____	J_____	O_____
M_____	J_____	N_____
A_____	A_____	D_____

Year _____

IV. Commodity Information

Commodity Group	Description of Display	Linear Ft. of Display	No. of Items	% of Sales	% Margin
Meats					
Delicatessen					
Frozen					
Fresh					
Produce					
Dairy					
Frozen Food					
Grocery:					
1. Baby Food					
2. Bakery					
3. Baking Mixes					
4. Baking Needs,					
Flour					
5. Beverages					
Soft Drinks					
Beer, Wine					
6. Breakfast Foods					
7. Candy					
8. Canned Fruit					
9. Canned Fish					
10. Canned Juices					
11. Canned Meats					
12. Canned Vegetables					

Commodity Groups	Description of Display	Linear Ft. of Display	No. of Items	% of Sales	% Margin
13. Check-Out Displays				XX	XX
14. Chinese Foods					
15. Cigarettes and Tobacco					
16. Condiments, Sauces					
17. Cookies and Crackers					
18. Desserts					
19. Diet Foods					
20. Dried Fruits					
21. Dried Vegetables					
22. End Displays				XX	XX
23. Health and Beauty					
24. Household					
25. Housewares					
26. Jams, Jellies, Spreads					
27. Macaroni Products					
28. Milk (canned & dry)					
29. Paper Products					
30. Pet Food					
31. Pet Supplies					
32. Prepared Foods (canned)					
33. Pickles, Olives, Relishes					
34. Salad Dressings					

Commodity Group	Description of Display	Linear Ft. of Display	No. of Items	% of Sales	% Margin
35. Salt, Seasoning, Spices					
36. Shortening					
37. Snacks					
38. Soaps & Detergents					
39. Soups					
40. Special Display				XX	XX
41. Sugar					
42. Syrups and Molasses					
43. Toys					
44. Miscellaneous					

V. Factors Affecting Location

1. Favorably

2. Unfavorably

VI. Miscellaneous Notes

VII. Capital Requirements For A New Market

1. Land

.1 Size

.2 Cost

2. Building

.1 Size

.2 Type of Construction

.3 Cost

3. Equipment

4. Inventory

5. Operating Cash

6. Miscellaneous

APPENDIX B

BANTAM SPECIFICATIONS

Lot

1. Size: 100 front feet, 80 feet deep
2. Surface: black top

Building

1. Size
   .1 Total store: 2,400 square feet (60 feet wide, 40 feet deep and 10 feet high)
   .2 Selling area: 2,000 square feet
   .3 Back room area: 400 square feet
2. Evacuation: none
3. Foundation: reinforced concrete
4. Floor framing: 4 inches reinforced concrete on 4 inches of sand and pea stone
5. Finished floor: vinyl asbestos tile
6. Exterior walls: painted, 8-inch cement block with insulation in cores
7. Interior walls: painted cement block
8. Roof framing: steel beam
9. Roofing: asphalt on top of insulation and concrete
10. Finished ceiling: insulated ceiling tile
11. Windows: double glass across the front starting 3 feet from the floor and extending to 1 foot from the ceiling
12. Entrances: two glass doors in front, one wood door in rear
13. Plumbing: one, 2-piece bathroom
14. Heating requirements: 201, 170 BTU, assuming an 80 degree temperature differential
15. Air conditioning*: 5 H.P. unit with a ½ H.P. fan
16. Electric wiring: 200 and 110 into the condenser room
17. Lighting fixtures: fluorescent bulbs, 1 watt/square foot
18. Expeller fan: 1/3 H.P. in condenser room

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* Accoring to engineering estimates, a 10 H.P. unit would be required to completely air condition the building on hot, humid days. However, a 5 H.P. unit will do a satisfactory job of cooling the building on most days and costs considerably less than a 10 H.P. unit.

Equipment

Item	Specifications
1. Walk-in cooler	20' X 10' X 8', 8-door, self-contained, 2 H.P.
2. Frozen food case	20', with a super structure, 3 H.P.
3. Ice cream case	16', " " " 3 H.P.
4. Deli. case	16', 4-deck, 3 H.P.
5. Produce refrigerated case	8', double duty, ½ H.P.
6. Produce dry case	6', double duty, ½ H.P.
7. Gondolas	4-double, 16' each
8. Wall shelving	235'

Item	Specifications
9. Peg board	135 sq. ft.
10. Scale	1 produce, calibrated
11. Cash register	1, not departmentalized, no change indicator
12. Adding machine	1, manual
13. Check-out stand	1, belt-type
14. Shopping carts	10 regular size
15. Pylon	

APPENDIX C

SMALL CONVENTIONAL CONVENIENCE STORE SPECIFICATIONS

Lot

1. Size: 50 front feet, 150 feet deep
2. Surface: grass

Building

1. Size:
   .1 Total store: 1,500 square feet (30 feet wide, 50 feet deep and 10 feet high)
   .2 Selling area: 1,050 square feet
   .3 Back room area: 450 square feet
2. Evacuation: none
3. Foundation: reinforced concrete
4. Floor framing: 4 inches reinforced concrete on 4 inches of sand and pea stone
5. Finished floor: vinyl asbestos tile
6. Exterior walls: painted, 8-inch cement block with insulation in cores
7. Interior walls: painted cement block
8. Roof framing: steel beam
9. Roofing: asphalt on top of insulation and concrete
10. Finished ceiling: insulated ceiling tile
11. Windows: 180 square feet double glass
12. Entrances: two glass doors in front, one wood door in rear
13. Plumbing: one, 2-piece bathroom
14. Heating requirements: 142,000 BTU, assuming an 80 degree temperature differential
15. Air conditioning:* 3 H.P. unit with ½ H.P. fan
16. Electric wiring: 220 and 110 into the condenser room
17. Lighting fixtures: fluorescent bulbs, 1 watt per square foot (1,500 watts)
18. Expeller fan: 1/3 H.P. in condenser room

* According to engineering estimates, a 6 H.P. unit would be required to completely air condition the building on hot, humid days. However, a 3 H.P. unit will do a satisfactory job of cooling the building on most days, and costs considerably less than a 6 H.P. unit.

Equipment Item	Specifications	Cost
1. Walk-in cooler	8' X8' X8', 1 door, self contained, 3/4 H.P.	1,650*
2. Frozen food and ice cream case	12' with super structure, 2 H.P.	1,775*
3. Dairy-Deli case	16', 4 deck, 3 H.P.	2,406
4. Produce Refrigerated case	8', double duty ½ H.P.	1,628
5. Produce dry case	6' double duty	-
6. Fresh meat case	8' service type, 1/3 H.P.	1,200*
7. Shelving	110 linear feet of gondolas	2,912
8. Peg board	75 square feet	11
9. Cash register	1	900

Item	Specifications	Cost
10. Adding machine	1 manual	100
11. Check-out stand	1 bench type	200
12. Shopping carts	8, regular	280
13. Pylon	1	1,500
14. Scale	1 calibrated (produce and meat	400
15. Band saw	1, light duty	600
16. Meat cuber	1	150
17. Meat slicer	1	100
18. Meat grinder	1, 1/3 H.P.	225
19. Platform scale	1	100
20. Meat block	1, 2' X 3'	100
21. Miscellaneous	Meat trays, knives, etc.	300
Estimated delivery and installation of all items except 1, 2 and 6		1,500
	Total	18,037

* Price includes delivery and installation

APPENDIX D

LARGE CONVENTIONAL CONVENIENCE STORE SPECIFICATIONS

Lot

1. Size: 60 front feet, 150 feet deep
2. Surface: grass

Building

1. Size:
   .1 Total store: 2,400 square feet (40 feet wide, 60 feet deep and 10 feet high)
   .2 Selling area: 1,600 square feet
   .3 Back room area: 800 square feet
2. Evacuation: none
3. Foundation: reinforced concrete
4. Floor framing: 4 inches reinforced concrete on 4 inches of sand and pea stone
5. Finished floor: vinyl asbestos tile
6. Exterior walls: painted, 8-inch cement block with insulation in cores
7. Interior walls: painted cement block
8. Roof framing: steel beam
9. Roofing: asphalt on top of insulation and concrete
10. Finished ceiling: insulated ceiling tile
11. Windows: double glass across the front starting 3 feet from the floor and extending to 1 foot from the ceiling
12. Entrances: two glass doors in front, one wood door in rear
13. Plumbing: one, 2-piece bathroom
14. Heating requirements: 201, 170 BTU, assuming an 80 degree temperature differential
15. Air conditioning: 5 H.P. unit with a ½ H.P. fan*
16. Electric wiring: 200 and 110 into the condenser room
17. Lighting fixtures: fluorescent bulbs, 1 watt/square foot
18. Expeller fan: 1/3 H.P. in condenser room

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* According to engineering estimates, a 10 H.P. unit would be required to completely air condition the building on hot, humid days. However, a 5 H.P. unit will do a satisfactory job of cooling the building on most days, and costs considerably less than a 10 H.P. unit.

Equipment

Item	Specifications	Cost
1. Walk-in cooler	12' X 12' X 8', 1 door, self-contained, 1½ H.P.	2,550*
2. Frozen food case & ice cream case	20', with super structure, 3 H.P.	2,409
3. Dairy-deli case	16', 4-deck, 3 H.P.	2,406
4. Produce refrigerated case	8', double duty, ½ H.P.	1,628
5. Produce dry case	6', double duty	-

Item	Specifications	Cost
6. Fresh meat case	12', service type, ½ H.P.	1,500*
7. Shelving	170 linear feet of gondola	4,480
8. Peg board	90 square feet	15
9. Cash register	1	900
10. Adding machine	1 manual	100
11. Check-out stand	1 belt-type	745
12. Shopping carts	10 regular	350
13. Pylon	1	1,500
14. Scale	2, calibrated (meat and produce)	800
15. Band saw	1, heavy duty	900
16. Meat cuber	1	150
17. Meat slicer	1	100
18. Meat grinder	1, ½ H.P.	300
19. Platform scale	1	100
20. Meat block	1, 2' X 3'	100
21. Meat cutting table	1, 2' X 8'	100
22. Miscellaneous	Meat trays, knives, etc.	400
Estimated delivery and installation for all items except 1 and 6		2,000
	Total	23,000

* Price includes delivery and installation

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ROOM USE ONLY