FUNCTIONAL ANALYSIS OF FOOD DISTRIBUTION

PART II

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Wayne C. Trapp

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FUNCTIONAL ANALYSIS
OF
FOOD DISTRIBUTION
PART II

By

Wayne C. Trapp

AN ABSTRACT

Submitted to the School of Graduate Studies of Michigan State University of Agriculture and Applied Sciences in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

Department of General Business

Curriculum in Food Distribution

1957

Approved E. T. Grether

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ABSTRACT

The food retailing business has progressed in an evolutionary manner from the small corner grocery store of the twenties to the giant supermarket of today. Many economic and social factors have played a part in the development of the self-service supermarket. The growing population, the increased prosperity, and the wide-spread movement from city living to suburban living are only a few of the major factors that have changed the food retailing business.

Establishing a new supermarket today requires extensive planning and an initial investment of $250,000 to $500,000 dollars. The initial step in establishing a new supermarket is selecting the site. A complete research study of the trading area regarding size, population, income level, traffic volume, sales potential, competition, and progressiveness provides data which aids in the selection of a new site for locating a new supermarket.

A new phenomenon in retailing has been the rapid rise of shopping centers. The shopping center developed as a result of the need for one stop shopping. Retailers found a greater sales potential in grouping their businesses together and providing ample parking for their customers adjacent to the stores. Before entering a shopping center agreement the retailer must study the potential of the center, probability

of competitive centers being built nearby and all other factors relating to the trading area and center development. Lease agreements require careful examination of all clauses especially clauses relating to merchant associations, maintenance of building and parking lots, promotional agreements, lease recapture, and exclusive business rights.

Many large chain organizations have formed separate real estate companies in order to raise capital for expansion and shopping center development. Other organizations are financing expansion by the issuance of debentures, convertible bonds, and stock splits.

Indications are that in 1957 about 400 new shopping centers will be opened bringing the total number of shopping centers opened and operating to about 2,200.

The construction of larger supermarkets has changed the layout and design of the new stores and extended the self-service idea to the meat and produce departments. Convenience and ease of movement in shopping have become important in store layout and design. Impulse buying represents a large portion of the customers purchases and has changed merchandising ideas and techniques. Equipment manufacturers have had to develop equipment to meet the wide-spread demand for self-service. Developments in refrigeration, air conditioning, check stands, lighting, automatic doors, and materials handling equipment have been necessary. Efficiency has reached maximum importance in the food retailing business as operational costs have risen. Production methods have been developed in

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handling, preparing, and selling food items. Time study and work methods that increased productivity in factories are now being used in the food retailing business to protect the low net profits.

Establishing a modern supermarket requires planning large capital investment, a knowledge of modern merchandising techniques and the proper use of modern equipment that enables efficiency, productivity, and a profitable operation. Selection of a poor site could be disastrous to an independent or very costly to a chain organization. Careful study of research data, modern retailing methods, current trends and future predictions, combined with past experience will greatly reduce the chance of selecting a poor site. Food retailing is a dynamic and progressive business that offers opportunity to the independent and chain organization alike.

"The Food Distribution program at Michigan State University is under the sponsorship of the National Association of Food Chains"

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No thesis is the product of one individual. What beliefs the author claims to be his own are in reality an assimilation of the writings, ideas, and experiences of others along with seven years of practical experience in the food retailing industry. I am indebted to the authors of the books and articles of periodicals referred to, the professors and to the fellow students for their ideas, suggestions, and constructive criticisms.

The author also wishes to gratefully acknowledge all members of the Kroger Company who made attendance at this university possible.

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CHAPTER I

INTRODUCTION

Purpose

Food retailing has progressed from a small corner store with a cracker-barrel type of business to the dynamic food industry of today. The development of self-service, which was first accepted during the depression years, continues to permeate all phases of food retailing. Competition has and probably will always be the impetus behind the tremendous advancements made in the food retailing business. Manufacturers continually supply the retailer with larger selections of new items of better quality. The housewife is overwhelmed by the variety and selection of merchandise that is presented in the supermarkets today. Modern food retailing is a dynamic business employing modern techniques as exemplified by the modern design of stores, equipment, customer services, and wide extension of the self-service principle to all major departments within the retail store.

The food industry has witnessed great progress in larger and more beautiful supermarkets, as well as widespread acceptance of shopping centers.

The purpose of this thesis is to emphasize the magnitude of planning necessary in establishing a supermarket as a solo retailing unit or as an integral part of a large group of retailing stores in a modern shopping center. Much of the guessing that previously occurred in store planning has been eliminated. Factual data can be obtained which greatly reduces the guesswork and thus helps lessen the risk involved in establishing a new supermarket. The need for a more scientific approach to supermarket planning has arisen from the increased investment required to open a new market.

The writer hopes to present a picture of the complex problem of site selection as faced by management and, at the same time, provide an outline of investigation which will give factual data upon which management can base site selection decisions.

Single or solo locations will be examined, and the problems and major factors that need investigation prior to establishing a supermarket in a shopping center will be presented.

As the size of modern supermarkets has increased, the demand for more efficient equipment to augment work productivity has increased. The development of display cases and shelving to afford the greatest ease in product selection has resulted from the increased demand for self-service selection. This study will attempt to present advancements, current trends, and possible future developments in the food

field.

Need For Study

Almost without exception, every issue of the trade journals emphasize the increase in number and size of the new supermarkets being opened. Most of the leaders in the food industry have been quoted as being optimistic concerning the increased size and number of new supermarkets. The development, acceptance and, in many cases, the demand for one-stop shopping has increased as the population movement from the city to suburban areas continues. Many leaders in the food industry feel the industry is in an expansion stage which could be disastrous if thorough investigation of new site locations is not followed.

New ideas in store layouts have been created because of changing attitudes, buying habits, and motives of the consumer, as well as the increased size of the supermarkets. The basic concepts of store layouts are included in many different layout designs.

Increased operational costs have initiated development of new equipment to facilitate productivity within the supermarket operation. New products and new merchandising techniques have also brought forth new design in display equipment.

The food retailers realize the need for study and publication of findings which will elaborate on the current trends and present the results being achieved through the advancements that have been and are being developed.

Limitations

A report on the history and development of site selection, shopping centers, store layout, and design, as well as the advancements in new store equipment, would require a larger, more comprehensive report than could be presented in a thesis of this size. One of these areas of study would be enough to fill a thesis report. Due to the lack of publication in text form of present trends and the rapid changes that are continually taking place, the writer felt that more insight into the development and solution of the problems, as presented by these areas, could be accomplished in presenting current trends and future predictions. Some history and background in these areas will be presented in this paper; however, major emphasis is placed upon present and future trends in: (1) site location, (2) shopping centers, (3) store layout and design, and (4) advancement in new store equipment.

Material Procurement Procedure

The sources from which material was gathered for this study were varied. Personal interviews and lectures by leading men in the food industry form some of the research material.

Since the food industry has not attracted many authors, the number of books that have been published on the topics covered in this report is limited. This being the case, the major sources of material were trade publications, United States government research reports, newspapers, and

numerous periodicals and magazines.

The writer made use also of his observations gathered during several years of experience as an employee of two of the larger food chain organizations in the country.

Important also to this study were the many papers and reports submitted to the food distribution office by present and past students of the Food Distribution Curriculum of Michigan State University. Many interesting ideas and facts which were pertinent to this study have been included.

CHAPTER II

SITE SELECTION

Introduction

Today, when all major food organizations are in the process of expansion, some planning to double and even triple the number of stores in the next few years, one of the foremost problems these organizations face is that of site selection. New stores are the life blood of the food industry. "Year after year, food industry surveys report that new stores are responsible for the major share of increases in business achieved by chain and individual operators alike."[1]

In 1956 the food industry witnessed the opening of nearly 1,500 new supermarkets. Predictions for 1957 indicate that over 1,500 supermarkets will be opened. Expansion is not limited to the large chain organizations. Independent, cooperative, and voluntary groups, as well as small chain operators, are expected to help make 1957 a banner

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[1] J.J. Trout, "How to Establish and Finance a Store," Progressive Grocer Vol. 34 No. 10, (Jan. 1956), p. 42.

year in the opening of new markets. Glamorous, modern supermarkets will appear all over the nation. Expansion is a sign of a dynamic industry, the food industry, attempting to keep pace with a prosperous, dynamic nation. Our nation's increased population, changing consumer buying habits and attitudes, and a record-breaking consumer income have necessitated the expansion of the food retailing facilities. The public is demanding large, modern, self-service supermarkets; consequently, new supermarkets must be built.

The problem of site selection is as vital to the established chain stores as it is to a newcomer in the food retailing business. Recent trends in population movement have greatly affected the value of old and new locations. Changes in the American economy have forced changes in food retailing, especially so in store location and estimated length of doing business in one location. The principle changes in the economy that have had an effect on food retailing are: (1) increased disposable income and increased number of families now in the middle income group; (2) the increased ownership and use of the automobile, as well as increased number of two-car families; (3) the shift of population from city to the suburbs.

A market area is not static. The area is constantly changing and adjusting to economic and social forces. Food retailers must be alert to trends and anticipate important shifts occurring in the market area. A location that is desirable today may become undesirable in a few years, on

the other hand, the location may become very successful as a result of the shift in population.

Most of the food chain organizations are closing the small corner or neighborhood stores and are opening large modern supermarkets with greater parking facilities. The number of new supermarkets has multiplied and, at the same time, the cost of establishing new supermarkets has increased. The increased expense has heightened the risk involved in establishing a new supermarket. Desirable locations are at a premium. Rental and building costs have soared. New markets cannot be located in old buildings. "The public has been educated to expect attractive decor, and competition between supermarkets has increased greatly."[2] These factors have increased the importance of site selection. The problem of site selection is a serious one, and can only be solved in a systematic, well-organized manner.

Area Appraisal

A study of a city or town where a new supermarket location is proposed reveals that the retail trade of that municipality is conducted in a number of business areas of varying types and sizes. Because of its unique nature in the retail field, the supermarket may be located in any of these areas or in none of them. Each area must be analyzed and regarded as a potential location.

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[2]M.M. Zimmerman, The Supermarket (New York: McGraw-Hill, 1955), p. 166.

A knowledge of various business areas already in existence is therefore an ideal starting point for a study of trading areas. The types of existing business areas most often observed are:

Central Shopping Area This is the so-called "downtown area." The area where the department stores are concentrated or where the public transportation terminals are situated.

Secondary Shopping Area This area is similar to the central shopping area in all respects other than size. Several secondary shopping areas might well be within a large metropolitan area in addition to the central or "downtown" area.

String Street Location Some types of specialty goods stores thrive on competition from other stores of the same type. These stores are often found clustered or "strung" along a single street.

Neighborhood Area This type of location is characterized by a number of convenience goods stores and service establishments, clustered together in a residential area.

Shopping Center This type of shopping area might have a resemblance to any of the above mentioned areas. The distinguishing characteristic, as the term shopping center is commonly understood, is a planned and controlled trading area usually not located in the downtown area.

Each type of a trading area has peculiar characteristics. Although any one of the existing trading areas is

a possible location for a supermarket, by no means is the location of a supermarket limited to one of these areas. Densely populated areas make excellent locations for supermarkets. An analysis of a city, town, or community should note a concentrated, highly populated area as a potential location for a new market.

Once an area has been selected and assurance is received that a section of land is available on which a supermarket could be constructed, an analysis of the trading area must be accomplished. Today, research is the backbone of site selection for a new supermarket. Regardless of where the site is to be, the major factor in determining the potential is the trading area. The trading area should be analyzed on these major points:

(1) Size
(2) Population
(3) Income level
(4) Traffic volume
(5) Sales potential
(6) Competition
(7) Progressiveness of the community
(8) Other minor factors

No one formula can be used for selecting the best location, but there are several generally accepted factors which should be investigated. The data from the investigation of these factors, combined with good judgment offers a good basis on which to select a new supermarket location.

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TRADING AREA

Large Cities

Most new supermarkets constructed in the large cities are located in trading areas outside the downtown district. Neighborhood, suburban trading areas and shopping centers offer more potential than does the downtown district. Usually the downtown districts offer limited parking facilities and high rentals; areas outside the downtown district usually provide more parking and lower rentals. The food retailer is interested in getting as close as possible to a large number of people and prefers to locate in or near a densely populated area. In some instances, isolated stores located on heavily traveled roads have been successful. The actual size of the trading area in terms of miles is not considered as important as is the concentration of homes within a given driving time radius. Probably one of the best methods of determining the trading area of a proposed site is by examining a map of the area surrounding the site which shows a street by street, block by block development. Maps are usually available even in the smaller cities and often the number of houses in a given area can be obtained from the city or county recorder's office or post office. A series of isochrons plotted on a map of the area will delineate the trading area. Points can be determined along each street leading from the proposed site in minutes of driving time. The lines of the isochrons are formed by connecting the points of equal driving time. Along each street

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dots are plotted in accordance with minutes of driving intervals. On the main highway where high average driving speed is normal and safe, the single dots (each representing one minute of driving time) are far apart. In the outskirts of a town or on a winding narrow road the points are closer together. Some locations appear geographically remote from the site, but not in terms of time-distance. The concentric circles of earlier use have been outdated by the special influences of the automobile. "By plotting such isochrons, although the pattern is more complex, the distance factor can be more accurately interpreted."[3]

Still in general use is the plan using the proposed site as the center point, and drawing concentric circles for five, ten, fifteen, and twenty minutes driving time intervals. Specialists feel that twenty minutes driving time represents the fringe area. The fringe area may vary, however, due to location of competition or the size of the community the new market is to serve. The amount of business expected from each five minute driving time interval will vary also due to the same causes.

Some site selection specialists prefer to use the actual distance in miles to determine the extent of the trading area. The proposed site is used as the center point, and concentric circles are drawn on the map representing

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[3]J. W. Wingate and J. J. Corbin, Changing Patterns in Retailing (Homewood, Illinois: Richard D. Irwin, Inc., 1956), p. 173.

radii of one fourth, one half, one mile, two miles, three miles, four miles, and five miles. Estimates as to the per cent of business expected from each mileage radius varies. According to Myer B. Marcus of Food Fair Stores, the neighborhood market in a congested urban section obtains eighty per cent of its customers within a one mile radius of the store. A survey conducted among several food chains revealed that sixty to ninety per cent of supermarket customers live within a mile radius. The thirty per cent variation may be accounted for by the various types of regions in which the chains operate. "Stores located in metropolitan areas would tend to have smaller trading areas than those located in sparsely settled areas."[4]

No definite figure is generally accepted for the number of families needed to support a new supermarket. In fact, the following statements indicate organizations seem to have their own formulas to follow.

> Mr. Laverty, Jr., Fitzsimmons Stores, Limited, in California said, "Market sites should have at least 3,500 families within a square mile to support a 30,000 square foot market."
>
> Mr. Henry, Thorofare Markets, Incorporated, Pittsburgh, Pennsylvania said, "It is best to have 2,000 families or so located in the immediate vicinity."
>
> Simon Moltack, Alterman-Big Apple, Incorporated, Atlanta, Georgia Said, "Big Apple stores are always located within one mile or possibly a mile and a half

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[4]Christos D. Lillios, "Super Market Site Selection," (unpublished M.A. thesis Michigan State University, East Lansing, Michigan, 1953), p. 99.

> of homes where there are 1,500 to 2,000 in number provided there is no other competition. If there is competition," he stated, "sites are selected where there are between 2,000 and 3,000 homes."[5]

As the size of supermarkets increases, the number of families needed in the immediate area to support a new supermarket must be increased.

Small Cities

Many locations draw customers from an even larger trading area than the community or city alone. In small cities and towns, especially in sparsely populated regions, a store may benefit from a trading area that may be several times the population of the city or town itself.

Unfortunately, population data is not published by trading areas. Such areas cannot be represented by distinct boundaries. Zones of indifference are usually found between competing cities. In the area between competing supermarkets, the attraction of each supermarket or each city is closely related to its population size and accessibility. One of the best attempts to reduce the determination of the extent of a trading area to a mathematical formula was made by Dr. William J. Reilly in his so called "Law of Retail Gravitation." The relationship was developed through numerous indictive studies and is as follows:

> "Two cities attract retail trade from any intermediate city or town in the vicinity of the breaking point, approximately in direct proportion to the pop-

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[5]"Growing Bigger," Supermarket News Vol. 5 No. 43, (October 18, 1956), p. 37-43.

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> ulation of the two cities, and in an inverse proportion to the square of the distance from these two cities to the intermediate town."[6]

The formula for determining the drawing power of two trading areas upon an intermediate area is:

$$1 + \sqrt{\frac{\text{Distance from A to B}}{\frac{\text{Population of A}}{\text{Population of B}}}}$$

This formula represents an averaging approach which first of all assumes that the two competing centers are equally accessible from the intermediate point except for distance. It is important to note that the concept of time is being used more frequently than is actual driving mileage.

Another method for delimiting the trading area of a small town is the market area technique.

> "The trading area of a small town will not be greatly changed by the presence of a supermarket in that town. If we know where a town draws from for other types of business, we know approximately what the trading area of a supermarket in that town will be. A town twice as large as a neighboring town will draw trade from twice the distance. If a town of 1,000 people and a town of 2,000 people were 6 miles apart, the town of 2,000 people would draw trade from 4 miles in the direction of the smaller town (assuming that there are no barriers to travel). Thus a trading area of a town of 5,000 people can be delimited as follows:

Town A	5,000 people	proposed site
Town B	1,000 people	10 miles from A
Town C	10,000 people	15 miles from A
Town D	2,500 people	8 miles from A
Town E	5,000 people	20 miles from A

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[6]Paul L. Brown and William R. Davidson, Retailing Principles and Practices (New York: Ronald Press C., 1953), p. 68.

> The trading area boundary will be five times farther from A than B on the road between the two towns or eight and three-tenths (8.3) miles from town A (see map on page 17). The boundary will be only one-half (½) as far from town A as to town C or five (5) miles from town A on the road to town C. Generally, all cities surrounding a proposed site should be recorded on the map unless the cities have a population of under one thousand (1,000) people or are over thirty miles from the proposed site. The trade area rarely exceeds thirty miles in any direction and should not overlap any towns larger than the proposed site."[7]

Many studies have shown that the predominate reason given for the patronage of one supermarket over another supermarket is proximity. Trading areas are limited by natural barriers which are difficult to cross. Railroads, expressways, rivers, industrial areas, etc. may appear to have crossings on maps which actually are in such poor condition that few people will use them. These lines become trading boundaries.

Population

The size of the population, its density, dispersion, growth trend, and characteristics are all major factors in site selection. All people are consumers; and accordingly, are potential customers of a supermarket. The size of an area's population will therefore help supply a rough estimate of the sales potential of the trading area. Population data of the trading area can be obtained in numerous ways.

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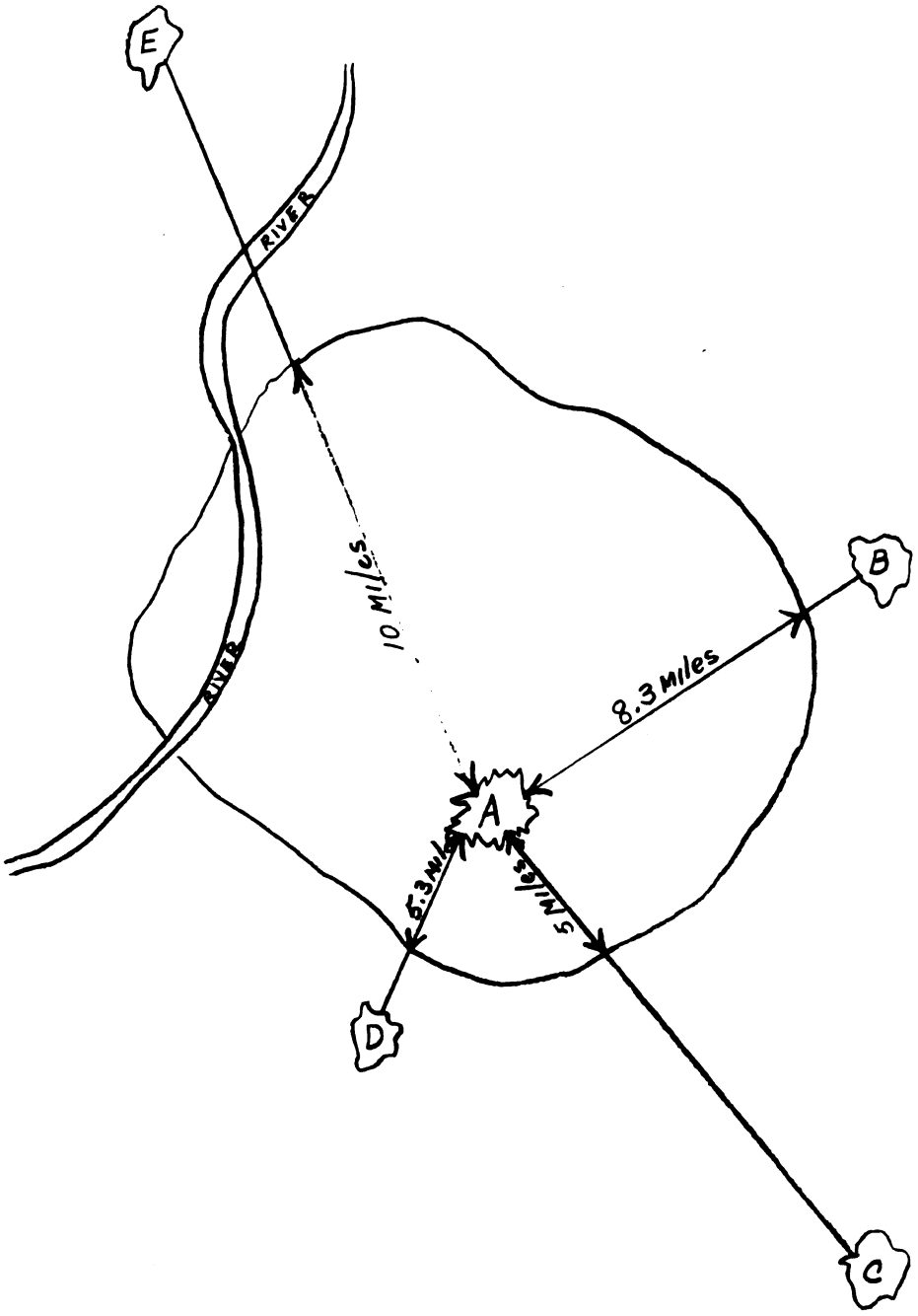
[7]Outline for Selecting A Site for A New Supermarket Prepared by the Kroger Company for real estate personnel of the Kroger Company, Cincinnati, Ohio, 1956.



The map delineates the trading area using the theory that a town draws business from other towns approximately in proportion to the difference in population.[8]

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[8] Ibid., p. 10.

Some of the sources of population data are:

1. Census tract data
2. Public utilities
3. Post office data
4. School enrollment
5. Churches
6. Banks
7. Newspaper circulation data
8. Surveys of the trading area
9. City, county, and state records

Many food chains have established rule of thumb requirements for population in the trading area. The requirements may, and often do, vary considerably according to the income levels, the proximity, and quality and quantity of competition, and the size of a proposed supermarket. One eastern chain estimates that nearly fifty per cent of the customers of modern supermarkets come from an area within a half mile of the store,[9] this emphasizes the need for density of population near the supermarket. When considering a possible location for a new supermarket, Wrigley's uses a rule of thumb principle which requires that a concentration of 10,000 people be located within a one mile radius of the proposed site.[10]

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[9]Stop and Shop, Inc., Shopping Habits of Supermarket Customers, A Report prepared by the Marketing Research Dept., (Boston: Stop and Shop, Inc., 1947), p. 5.

[10]Max Shaye, "The Human Element in Food Chain Expansion," An address presented to the Food Distribution Club of Michigan State University, East Lansing, Michigan, (March 6, 1957).

Naturally, a rule of thumb used for the selection of a site for a twenty thousand dollar ($20,000) a week supermarket would have to be adjusted in planning a forty thousand dollar ($40,000) a week or larger store. As the size of the supermarket increases so must the size of the trading area be increased to support the larger market. The area of greatest population offers the greatest number of potential customers. While present population is of major importance, the future population possibilities also need analyzing. Many questions must be answered. Has the population of the area increased substantially in recent years? Is there room for new homes? Has substantial new home construction been carried on in the area? Answers to these questions are needed to evaluate the past, present, and future growth of the area.

Locating in an area with an expanding population and an area that has room for future expansion of new homes is usually desirable. At times the present trading area may not fulfill the required needs in order to establish a new supermarket, but when the future of the area is considered the potential may warrant the risk of constructing a new supermarket. The potential of the trading area will have some influence upon the size of the market constructed. Additional information concerning the population can be obtained by checking the birth rate and school construction in the area. High birth rate indicates a growing town, and school construction indicates a growth in population of families

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with children--the stable kind of people who are going to stay and grow with the community.[11]

When analyzing the population of the trading area, a study of the composition of the population is wise. The presence of a large number of people of Roman Catholic faith who abstain from meat on certain days and fast during the Lenten season will have an effect upon store sales. Predominance of a foreign nationality, as well as a religious faith, may have a bearing upon the type of merchandise that should be carried. Any and all characteristics or predominant factors concerning the population of the trading area should be analyzed carefully for possible effects upon a new supermarket.

The average sizes of families, as well as average age, are useful data. The number of schools, the enrollment and age distribution give a fair indication of the age of the population of the area.

Income

Fundamental to a sound analysis of the trading area is a study of the disposable income, the distribution of that income among the population and the sources that provide the income. Deciding whether or not a city or trading area can provide a profitable location for a new supermarket is extremely important. The success of a supermarket is dependent upon the income of the families living in the trading

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[11]R. W. Mueller, "How to Locate and Finance a New Market," Progressive Grocer Vol. 34 No. 10, (Nov. 1955), p. 45.

area. Generally, the standard of living in a trading area is determined by the level of income, and knowledge of the income of the people within the trading area helps to determine the area's sales potential. The total sales potential of a trading area can be estimated by multiplying the total number of families in the area times one thousand dollars ($1,000). One thousand dollars represents the average annual family expenditure for food.[12] The mathematical answer gives the approximate annual amount spent for food by the families in the trading area.

One of the most important questions concerning the income of the trading area is the source of income. An area in which a large portion of the population is dependent upon a particular industry or manufacturing concern may be less desirable than an area in which the income originates from widely diversified sources. A single industry or concern may be influenced by seasonal or cyclical variations. Income paid to the employees is less secure because of the possibility of industrial relocations or work stoppage due to strikes or other causes. Certain mining and construction areas have proven poor locations for supermarkets required to sign long term lease agreements. Large cities usually provide a diversified source of income and offer more potential than areas of limited income sources.

Estimates of the income of the area can be taken from census tracts, local tax records, local property records and rentals in the area, as well as many published reports on

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[12]Lillios, Op. Cit., pp. 56-57.

local and national income averages. Determining the general income level of the area and making predictions for the future of the trading area is important.

Traffic Volume

The amount of traffic passing the proposed site location will help to determine the potential of the location. A close check of streets and highways passing directly past or near the site should help in estimating the sales potential of transient customers. Often times a store located on a highway or main traffic artery will draw considerable business from those rural dwellers working in the city.

It would be helpful to know:

1. Traffic count passing the site daily
2. What per cent are local cars (from the city)
3. What per cent are county cars
4. What per cent are out of county and city cars
5. What per cent are cars driven by women, since women do most of the shopping
6. What are the heaviest traffic periods

The idea of counting the number of persons who pass a given point during a day, and classifying them according to desired characteristics has been basic to sound site selection practice for many years. The opinion was once held that the total volume of traffic passing a site was the most significant factor determining its value for merchandising purposes. Chain store experience and Department of Commerce studies have revealed, however, that there is no dependable

general relationship between quantity of traffic and the value of a site as measured by retail store sales.[13] Except for a small number of stores which cater to a broad segment of the public and in which transactions are executed in a minimum amount of time because the wants of the consumer are clearly defined upon entering, quantitative characteristics of the traffic and its sales potential are far more important considerations. Results of analysis of both quantity and composition of passing traffic, when relegated to the types of customers, served by different kinds of stores, are highly significant because variations not apparent from casual observation are often discovered.

Personal surveys of those passing a proposed site by car and on foot will often times give valuable information concerning the shopping habits and attitudes of those in the trading area. Inspection should be made on a scale sufficient to obtain a reliable sample of the trading area.

Sales Potential

Probably one of the most difficult parts of the trading area analysis is the estimation of the sales potential of the area, and the expected sales for a new supermarket. The total dollar expenditure for food of families within the trading area can be calculated by multiplying the number of families in the trading area by one thousand dollars. One thousand represents the estimated annual food

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[13]Brown and Davidson, Op. Cit., p. 84.

expenditures per family in the United States. By multiplying these two figures, the annual food expenditure of the trading area is determined. The competition within the trading area is determined. The competition within the trading area must be evaluated, and the annual sales estimated for each competitor. Subtracting the sales of the competition from the estimated annual sales of the trading area will give the estimated sales available to the new store. However, the strength or drawing power of the new supermarket must be evaluated, and the general feeling is that a new supermarket can draw twenty-five to thirty per cent of the total food sales of an area.[14] A national chain or a very aggressive local chain or independent may do somewhat better depending upon the individual reputation in the trade area.

Another approach to sales potential of an area is presented by Larry Smith of Larry Smith and Company, Seattle, Washington. Mr. Smith feels that supermarkets are able to capture only seventy per cent (70%) of the food business in any trading area. He estimates food consumption at three hundred dollars ($300) per capita. The supermarkets' seventy per cent (70%) of the food business would be two hundred and ten dollars ($210) per capita. If after multiplying the total population of the trading area by two hundred and ten dollars ($210), and then checking this figure against the total estimated annual sales of all competitors nothing is left over, a saturation point is reached. To determine the

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[14]Lillios, Op. Cit., p. 99.

number of supermarkets a trading area can support, Mr. Smith presents another unique approach:

> ". . . we measure the total floor area of all supermarkets combined. We figure that the selling area of a supermarket is about seventy per cent (70%) to seventy-five per cent (75%) of the total floor area. Of this, about eighty-five per cent (85%) is devoted to food, fifteen per cent (15%) to other lines. Such a supermarket should be able to do between one hundred dollars ($100) and one hundred and five dollars ($105) per square foot of its total floor area. On the assumption that two hundred and ten dollars ($210) food sales per capita are available to supermarkets, you can build two square feet of supermarket floor area per unit of population. Suppose we determine that a given community can support 85,000 square feet of supermarket area. If the existing stores total 60,000 square feet, we would consider a possibility for another supermarket or two with a combined floor area of 25,000 square feet."[15]

Mr. Smith made allowance for degree of effectiveness of present markets by grading them good, fair, or poor and applying this rating to his evaluation of the needs of the trading area.

Many chain organizations compare the proposed site and trading area with similar areas in which they are operating. The estimated total food business of the area is calculated, and the competition in the area is evaluated. The chain organizations select three stores of a similar size in a trading area which has approximately the same population and income level as the new store to be opened. The sales of these stores are combined and an average of the sales per thousand population is computed. When this figure is multi-

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[15]Harry Gene Beckner, "Marketing Research Applied to Food Chains," (unpublished M.A. thesis, Michigan State University, East Lansing, Michigan, 1951), p. 90.

plied by the population of the trading area under consideration, the expected sales volume of the new unit is determined.

"Since the comparison with similar areas usually results in an estimate within five per cent of actual sales, this method has proven to be quite accurate."[16] The methods used to estimate the sales of a new supermarket will vary from one organization to another due to the size of the store's, competition, and other characteristics of the different trading areas. Again, one method cannot be considered the best. The results of the analysis combined with good judgment based upon past or comparative experience will be much more valuable and accurate than either the analysis or judgment alone.

Competition

The competition in or near the trade area is of major importance. Both the quantity (numbers of competitors) and the quality of competition must be thoroughly investigated. The amount of sales of the competition in the trading area can be estimated, and this amount subtracted from the total area's sales potential to give the approximate potential sales for a new supermarket. It is usually desirable to enter an area where the present stores are not able to handle the present business, and the people of the trading area are forced to shop at stores distant to the trading area. Many times a large new supermarket will attract a portion of the customers

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[16] Lillics, Op. Cit., p. 101.

from other food stores in the area, and thus, make it profitable to open a new supermarket in a highly competitive area. Chain stores rarely stay out of an area because of excessive competition if they can do a better merchandising job than the existing competitors, and are able to obtain a specific, desirable location at reasonable lease rates. Emphasis is more on the quality of the competition rather than the quantity. Not to be overlooked are other possible site locations in the trading area which could be used by competition. As competitive as the food retailing business has become, possible competitive locations must be anticipated.

A close investigation of retail business in the trading area is usually indicative of prosperity in the business area. New businesses that have opened recently are fairly easy to check, as well as old businesses that have expanded or remodeled. All of these factors that concern the trading area need to be investigated if intelligent site selections are to be made.

Progressiveness of the Community

Most retail grocery organizations have had considerable experience in evaluating the trading area of a possible site location. Food organizations usually place a great deal of emphasis upon the progressiveness of the area. This is evident to some extent from population trends, industrial character, income level, competitive circumstances, and general progress of retail business in the trading area. Progressiveness is judged by questions that frequently appear

upon community check lists or questionnaires used by research groups to get a "feel" of the future potentialities of the area. Among the most common questions are the following:

1. Is there considerable amount of new construction in progress?
2. Is the school system modern and adequate for the needs of the area?
3. Is the Chamber of Commerce active or the Junior Chamber of Commerce forceful in the area?
4. Does the area have a good transportation system?
5. Is there a well-developed park and area recreational program?
6. Do churches play an active role in the area?

If the answers to the above questions are "yes", the community is considered progressive.

Minor Factors

The availability and accessibility of prospective sites, the population of the trading area, the income of the population, the competitive situation, the sales potential of the area, and the progressiveness of the area are all considered major factors in area evaluation because economic justification for a proposed supermarket is determined by these factors. Factors which do not affect the economic justification for the supermarket, but which affect the economic operation of the proposed supermarket are considered as minor factors. Some of the minor factors are:

Advertising Media Advertising of some sort is an integral part of a supermarket's merchandising success. The absence or presence of suitable advertising media, and the cost relative to its coverage should be fully investigated. Radio, television, newspapers, handbills, mail circulars, and all media should be checked for possible use in the proposed trading area.

Availability of Suitable Employees Supermarkets which have been located for easy customer accessibility by automobile have sometimes found themselves unaccessible to bus-riding employees. While paying premium wages in such an area has sometimes proved profitable, these premium wages draw heavily upon store profits. In any case, the payment of premium wages does not guarantee that a sufficient work force will automatically be available.

Proximity to Sources of Supply Transportation costs, speed of delivery, and investment in inventory are all influenced by proximity to sources of supply. Consideration must be given to the distance of the proposed supermarket from the various supply points and the route which must be used to complete deliveries.

Banking Facilities Because of the amount of money handled by modern supermarkets, daily bank deposits are a necessity. The need for sufficient quantities of "change" is enormous. While most supermarket managers take banking facilities for granted, the lack of suitable facilities must be recognized as a serious handicap.

Utilities and Sewers While utilities may be present, many times the amount of electric power, or water that a business uses, may be limited. With the increased use of air conditioning, a new supermarket may have to drill a well to supply the needed water. A check of the strata of ground for water level and support of the building should be made. Also, the availability of city sewers should be checked as the water run-off for the parking lot and store may be greater than the present city sewers can handle.

Selecting the Site

Secondary only to the trading area in importance is the actual site or location for the new supermarket. Many of the previously mentioned factors dealing with the trading area also have a direct effect upon the selection of a particular site. Once the sales potential of the trading area has been estimated, and the sales potential of a new supermarket in the area has been predicted, then the size of the building and parking area can be projected.

No set pattern or sequence is followed in an investigation. However, certain estimates can be made only after investigation of certain other factors has been completed. Much of the investigation of needed information is carried on simultaneously.

The sales per square foot of total store space or the sales per square foot of sales area of a store now operating in a similar location, and with similar characteristics to the proposed site may be used as a guide to determine the

size of the building needed. As an example, the following data was presented at the National Association of Food Chains convention in Chicago, Illinois, October 1956. To obtain an annual sales volume of two million dollars, how big a supermarket should be built?

> "Assuming that the new supermarket would be typical of the stores of thirty-two National Association of Food Chain's member companies who reported on this study, average weekly sales per square foot of total store area would be two dollars and twenty-seven cents. Using that as a yardstick, it is found that a store of 17,000 square feet total area would be needed to produce the two million dollars a year.
>
> Based on the six newest supermarkets of the thirty-two responding members, as of March 1, average sales per square foot of selling space was three dollars and sixty-eight cents per week or one hundred and ninety-one dollars and thirty-six cents a year. Selling space required to achieve two million dollars a year volume at that rate is 10,452 square feet."[17]

Once the size of the building needed has been determined, two major factors remain that need to be investigated before a particular site is selected. The first factor is accessibility of the site to auto traffic and walk-in traffic.

Parking

The increased use of the automobile in shopping, and the lack of parking facilities have caused many supermarkets to fail after ample parking was made available by a competitor. Today, parking facilities receive major attention in site selection and store planning. The ratio of parking space to total store space is usually based on an estimate of the

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[17] "NAFC Convention, " Supermarket News, Vol. 5 No. 43, (October 14, 1956), p. 17.

number of customers expected to arrive at the store by automobile. The amount of parking space needed for a store which expects almost one hundred per cent of the customers to arrive by automobile is usually estimated to be four square feet of parking space to one square foot of store space. If fifty per cent of the customers will arrive by automobile the parking ratio is usually two square feet of parking space to one square foot of store space. Generally, the average will be between three or four square feet of parking space to one square foot of store space. The average figures about 375 to 400 square feet of space per car.

In addition to being large enough to offer sufficient parking, the parking area must be conveniently located to afford ease of entrance and exit from the store.

Employees' parking must also be considered. Additional parking on the store's lot must be added when parking for employees is not available or otherwise provided nearby.

Combining the total figure for the area needed for parking with total figures for the size of the building gives the approximate size of the site needed for the new store. The problem is to find a site of the approximate size needed having as many of the favorable characteristics for a good store location as possible. As more two car families are formed the store with limited parking facilities will probably lose business to competitors who offer sufficient convenient parking.

Accessibility

Vital to the success of any supermarket site is the accessibility of the site to the customers. The entire road system in the trading area is important because roads influence the traffic a site can readily attract. Difficult stretches of winding roads, very low speed sections, detours, steep hills, narrow unpaved roads, and crowded areas through which cars must pass, all discourage regular shopping trips. Traffic congestion during peak sales' hours can destroy an apparently good site. A high speed highway can also be detrimental if potential customers are not able to reach the stores easily. Sites located at or near the intersection of two to four major streets have been successful, however, consideration must be given to the proximity of homes. A store that is located on a main highway may sacrifice walk-in business while gaining drive-in business.

Emphasis must be placed on the ease of ingress and egress from the street or streets bordering the site. Location on one side of the street or the other may have a negative effect providing cross-overs or left turn lanes are not accessible. Other considerations involving accessibility are:

1. Distance of the proposed store from residences of potential customers
2. Amount of traffic congestion prevailing in the district and the variations in this congestion during hours of the day and days of the week

3. Parking facilities available within convenient walking distance of the proposed store
4. Width of the bordering streets
5. Streets with marked inclines and dead ends
6. Corner or middle of block location[18]

Although public transportation may not be a factor in accessibility to customers, it may be very important to the employees who will have to use public transportation to get to and from work. Also, the accessibility of the site to delivery trucks must not be overlooked. Rear entrances from an alley or side street are preferable to the use of front entrances with customer traffic conflicts. Accessibility factors need consideration and cannot be overlooked.

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[18]Delbert J. Duncan and Charles F. Phillips, Retailing Principles and Methods, (3rd edition), (Chicago: Richard D. Irwin, Inc., 1951). p. 133.

Summary

Selection of a site for the construction of a modern supermarket requires a carefully planned, systematic investigation. Selection of a profitable site is as important to the established chain organization as it is to a newcomer in the food industry. In small towns, the problem of choosing an area or section of the city is rather limited to one shopping district; the city itself is the trading area. In cities of appreciable size, the complexity of the business district emphasize the significance of appraising different trading areas in or around the city. The trading area is of major significance in site selection. Major factors in trading area evaluation are size, population, traffic systems, income level, sales potential, competition, and progressiveness. Minor factors in the evaluation are advertising media, availability of employees, proximity to sources of supply, banking facilities, zoning restrictions, taxes, utilities, and sewers. All the factors listed above must be investigated for careful site selection.

Secondary to the trading area in importance is the actual site of the supermarket. The extensive use of the automobile by supermarket customers has greatly increased the size of the parking area needed, and thus increased the size of the site needed. In addition to parking, the site must offer the greatest amount of accessibility to both drive-in and walk-in customers. The nearer a site is to the largest

number of customers the more successful the store is apt to be.

Good site selection requires systematic investigation of the trading area and the actual proposed site combined with good judgment based upon previous site selection experience. The very high cost of constructing a new supermarket today (one-fourth to one-half million dollars) demands accurate evaluation of possible site locations. An error in prognosticating the potential of a new site may be very costly. The low profit of the food retailing business leaves little room for error in selecting new sites.

CHAPTER III

Shopping Centers

Introduction

Each year the supermarket horizon broadens in all aspects. Great expansion continues as a natural outgrowth of an industry with tremendous potential. The final figures on construction of new grocery stores for 1957, while not complete, indicate that about fifty per cent of all new supermarkets constructed were located in shopping centers. This figure may be a new high exceeding the forty-three per cent established in 1955. A recent survey by Chain Store Age magazine indicates that some 1,600 planned shopping centers are currently in operation, with about 600 of them having been opened during the past year. The same survey shows that about 2,500 centers are in the construction or planning stage.[1]

Large and small cities have experienced an increased movement of population to the suburbs. Growth in the suburban areas has brought about a change in the shopping habits of the suburban population. Contributing also to the change in shopping habits has been the increased use of the automobile. Downtown shopping areas originally planned for shoppers using public

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[1] "Shopping-Center Boom Continues," Chain Store Age Vol. 32 No. 6 (May 1956), p. 225.

conveyances are now faced with the problem of supplying parking facilities for the shoppers. Driving in congested downtown areas does not appeal to most shoppers. Also, to be considered is the driving time required to reach the downtown areas. Increased use of the automobile, congested traffic, and poor parking facilities have all contributed to the decrease in downtown shopping and have increased the demand for shopping centers within reach of the suburbs.

The shopping center boom seems to be developing in an evolutionary pattern similar to that of the supermarket. Opinions have been expressed that too many shopping centers are being constructed. True or false, the growth and expansion of shopping centers continues to advance at a tremendous rate. The rapid rate of increase has led many to question the sound planning behind each development. In many areas two or even three shopping centers are located in such a close radius of each other that the centers are in direct competition with one another. The only foreseeable solution is to have local zoning boards limit the number and size of shopping centers constructed in different sections of a city. However, many local government officials refuse to consider restrictions on shopping center construction because of the increased amount of new taxes accompanying the increased valuation which construction of shopping centers creates. Whether too many shopping centers are being built too close together remains to be seen.

Which shopping center to join is a major problem of

independent as well as the chain store operators. The main points to be considered in choosing a shopping center, as outlined in the following pages, are applicable to almost all shopping centers. The systematic analysis for a single site, as mentioned in Chapter II is also needed in the analysis of a proposed shopping center site.

I. Trading Area

Population

The trading area is one of the first details to be considered in the selection of a shopping center. Chain stores are particularly interested in the possibilities of the growth in population around the shopping center, as well as the present population.

Population figures may be obtained in the following ways:

1. Census tract data
2. Public utilities
3. Post office data
4. Number of schools and enrollment
5. Churches
6. Nearby banks and number of depositors

An accurate measurement of the population now present in the shopping area, as well as future prospects, helps to decide not only whether to establish in a shoping center, but also the size of store needed.

Size of Trading Area

Indications show that chain executives are using the driving time required to reach the shopping center to determine the distance from which prospective customers may be drawn. Actual mileage driven to reach the shopping center has been used previously to determine the distance from which customers might be drawn. Most chains establish five, ten, fifteen, and twenty minute driving radii from the center and calculate the number of customers to be drawn from each radius. Since the average family spends approximately one thousand dollars for food each year, the total sales expected can be estimated by multiplying the number of expected customers by the average yearly expenditures for food. The average income level of the area is also an aid in calculating expected sales potential for the shopping area.

Traffic Volume

Traffic volume will also help to determine the drawing power of the shopping center. A close check on present streets and highways where traffic can affect the shopping center is of importance. Accessibility to the shopping center from major thoroughfares is essential. Additional information that will be helpful follows:

1. Traffic count passing shopping center daily
2. What per cent are local (county or city) cars
3. What per cent are state or out-of-state cars
4. What per cent of this traffic are women since women do most of the buying

Accessibility of Center to Traffic

The shopping center need not be situated on a highway. A center located on a highway may prove a definite disadvantage, if the highway tends to be jammed with traffic during the shopping center's peak selling hours. A current practice is to set the shopping center back from the highway and provide traffic lanes with turn offs that are easy to negotiate. Local traffic officials may be consulted if there is possibility of a problem affecting traffic movement.

Competition's Location

A complete check of the competition in and near the trading area is very important. A map showing the exact location, the estimated sales, and the estimated trading area of each competitor, is very helpful in determining the potential of the new shopping center location.

Chain and independent stores seek centers where competition, both actual and potential is minimized. Vulnerability of a center to competition after the center is established is a vital point in measuring the value of its location. The chances that a competitor or a competitive shopping center may open in the same trading area with popular name stores, which tend to outdraw the first center, should be considered. Many supermarkets turn away from a center where there is already one supermarket or where the shopping center lease does not guarantee exclusive location rights. If the population is found to be large enough to support more than one supermarket, establishing another supermarket

will prove beneficial because good competition will tend to pull additional traffic to the shopping center.

The location in the trading area of established retailers in other lines of merchandise which will be affected by the shopping center or that may have an effect upon similar retailers in the center should be carefully studied. A careful analysis of all the information pertinent to the trading area will help to estimate expected current sales' volumes as well as the prospects for increases in the future.

II. Types of Stores in Shopping Center

If the trading area analysis indicates a potential for the establishment of a shopping center, the next step in evaluation is the plan for the shopping center. What types of retail stores are to be included and how much does each type contribute to a successful shopping center? Varied opinions and requirements are expressed by executives of chain store companies. However, in general, companies agree that they have more confidence in the success of a shopping center if the center has two supermarkets, a department store, two variety stores, one drug store, and the usual apparel and local stores. The drawing power of each type of retail establishment will vary with the prestige that each commands in its local areas. Restaurants are becoming more interested in locating in shopping centers. Underestimating the potential offered by shopping centers has been admitted by restaurant executives. Having good restaurant facilities not

only draws shoppers and gives the center the completeness of service for which centers strive, but by providing eating facilities, the shopping center developer helps the shopper stay at the center for a longer period.[2]

"Blue chip stores" which have good reputations in the area and the ability to pull large sales volumes are desired in a shopping center. For a center to be successful, each store must have some pulling power, initial or supplementary. Banking facilities are very desirable in large shopping centers from the standpoint of shoppers and business owners.

II. Shopping Center Leases

The lease and the provisions and restrictions must be analyzed with major attention being given to:

1. Rent rates
2. Length of lease
3. Lease recapture clauses
4. Merchant association
5. Parking
6. Other clauses

Rent

The rental rates usually vary according to the type of retail business of each leaser and are figured on certain rates per square foot of space. A minimum rental figure is

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[2]Ibid., p. 241.

usually established for each occupant in the shopping center. The minimum rental is paid until sales volume reaches a certain amount after which a percentage of gross sales is charged in addition to the minimum for all additional sales over the established minimum figure. The rent on supermarkets will average between one to one and a half per cent of sales. Also many leases include maintenance charges varying from one-fourth per cent to one-half per cent. Many chains feel that the rental of shopping center locations should be all-inclusive with respect to miscellaneous expenses such as maintenance. However, the trend is unmistakably in favor of additional charges for maintenance prorated on per cent of sales. To give a better picture of how the rent of a supermarket compares with the other retail business in a typical shopping center, a breakdown is given on the following page. Rental percentages quoted in Chain Store Age for 1956 indicate very little change in the rental percentage of total sales. Generally speaking, the larger the stores the lower the per cent of sales rent rate. A lessee's bargaining position is usually affected by his ability to pull traffic to the shopping center. A powerful traffic generator deserves generous leasing arrangements; this helps make the center as a whole successful and increases the value of the other store spaces to the developer.[3]

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[3]Ibid., p. 237.

TYPICAL RENT SCHEDULE[4]

Store	Sq.ft.	Front.ft.	% Rent to Sales	Min. Rent	1953 Sales	1953 Rent	Overage
Drug	5,600	40	4	$ 650	$ 258,300	$10,300	$2,531
Bank	2,800	20	Nil	400			
Men's Shop	2,000	20	5	400	96,000	4,800	Nil
Children's Shop	2,000	20	5	400	74,900	4,800	Nil
Dress Shop	1,750	17½	5	350	98,200	4,900	700
Liquor Store	1,750	17½	Nil	275			
Beverage Store	1,500	15	Nil	300			
Apparel Store	3,600	36	4	600	128,900	7.200	Nil
Delicatessen	1,300	13	Nil	250			
Women's Apparel	1,200	15	4½	300(5 years 300thereafter)		3,600	Nil
Jeweler	520	13	5	310	42,300	2,500	Nil
Barber	480	12	Nil	175		2,100	300
Dry Cleaner	800	15	Nil	300		3,600	Nil
Bakery	1,125	15	5	300		3,900	300
Meat Market	1,200	15	2½	300	151,900	3,600	Nil
Supermarket	11,600	70	1	1,155	1,148,800	14,500	628
Variety	*9,000	70	4	1,000	2,047,600	12,000	Nil
Supermarket	15,000	100	1	2,000	2,046,600	24,000	Nil
Hardware	5,400	30	5	600	151,600	7,600	345
Shoes	3,360	24	5	480	126,000	6,300	545

* Plus Basement

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[4] S.C. Kaylin, "The Planned Shopping Center," Chain Store Age Vol. 30 No. 5, (May 1954), p. 249.

Length of Leases

Probably one of the most important factors concerning the lease is its length. Length of lease varies, but general agreement is that they are getting longer. The principal reason for the increase in length is that lending agencies are demanding better guarantees on length of occupancy. Many shopping center developers are asking leases to run the length of the mortgages on the center. The following chart gives a picture of the present trends in lengths of shopping center leases and options on renewals of the leases. Trends are toward more ten to fifteen year leases.

Lease Terms Based on Experience
In Shopping Centers of Thirteen Supermarkets[5]

Length of the Basic Term Years	Number of Options	Length of the Option Term Years
7½	2	7½
10	2	5
10	2	5
10	2	5
10	2	5
10	1	10
15	2	10
15	2	5
15	1	5
20	0	10
25	0	--
25	0	--

[5] Supermarket News Vol. 5 No. 43, (October 15, 1956), p. 17. Location Question discussed at Special Panel Presentation NAFC.

Leases by other chains in different types of business average about as follows:[6]

Department store	20 years	2-10 year options
Jr. Department store	15 years	5-5 year options
Supermarkets	15 years	2-5 year options
Variety stores	15 years	5-5 year options
Drug stores	15 years	2-5 year options
Women's apparel	15 years	2-5 year options
Shoes	15 years	2-5 year options
Restaurants	10 years	1-5 year options
Furniture	10 years	2-5 year options
Hardware & Supplies	10 years	1-5 year options
Jewelry	10 years	2-5 year options
Children's wear	10 years	2-5 year options
Bakery	10 years	1-5 year options
Candy	10 years	2-5 year options
Stationery	10 years	1-5 year options
Sporting goods	10 years	1-5 year options
Meat store	5 years	1-5 year options
Dry cleaners	10 years	2-5 year options
Camera	10 years	No options
Barber shop	5 years	1-5 year options
Beauty shop	10 years	1-5 year options

This information would be helpful in forming a basis for considering the proposed lease for a location in a shopping center.

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[6]"Shopping Center Leases," Chain Store Age, Vol. 32 No. 6, (May 1956), p. 228.

Lease Recapture Clauses

Lease recapture clauses, which give the shopping center developer the right to take away the lease of any tenant whose inefficient operation may become a detriment to the whole center, are becoming more common and serve to protect the developer of the shopping center as well as the tenants. A "radius" clause has been added to many leases. This clause prevents any tenant of the shopping center from opening another store within a certain distance of the shopping center. The radius clause reduces the possibility that another store will be established nearby to draw off sales and prevent payment of rent overages in the shopping center or with the intent of moving out of the center at the first possible chance.

Merchant Associations

Membership in a merchants' association or shopping center association along with promotional agreements which include the shopping center developer and each tenant should be checked closely. In some cases a free membership into a merchants' association is given all tenants of the shopping center. The center developer may or may not contribute to promotional activities of the shopping center. Grand opening date and other clauses covering the grand opening may be included in the lease. Opening of all stores in the center may be restricted until a certain per cent of stores in the center are prepared to open together. Naturally, the more stores that participate in the grand opening, the greater are the chances for a successful opening of the shopping center. Shopping

centers that have allowed stores to open at will have not become successful as quickly as those who have opened together. Anniversary sales or promotions may be included in the lease along with possible periodic assessments to be applied to promotional activities of the center. Assessments for promotions are usually figured on a percentage basis and thus the larger stores which normally are the heavy advertisers for the shopping center are charged the most for promotions. A very close investigation of the lease by a lawyer, preferrably familiar with the proposed type of enterprise, should be considered advisable for all entering a shopping center agreement.

Promotion Clauses

Some food chain organizations are adverse to participating in shopping center promotions to attract customers, since they are already advertising for all of their stores located in the area. Since their regular advertising extends into the trading area of the shopping center, these organizations feel that additional special advertising for the single store in a shopping center is not beneficial. Many chains will however, participate in special holiday promotions, as well as anniversary promotions. The developers of shopping centers are usually anxious to promote the center until such a time that all rental space is occupied and the center is a success. To help in this promotion the developers may match the amount for advertising that the tenants are willing to spend on center-wide promotions. Other developers, feeling that the first three years are the most important in the

successful development of the shopping center, agree in the lease contract to match dollar for dollar the first year; fifty per cent the second year, and twenty-five per cent the third year any monies spent by the tenants for center-wide promotions. By so doing, at least an advertising program will be planned for three years. The details of this promotional program are usually worked out through the merchants' association of the center. In one center the developer hired and paid for the services of an advertising promotions specialist who gave aid and assistance to all the tenants. The promotion specialist worked with the merchants' association in planning center-wide promotions. The services of a specialist seemed like an extra expense to the developer, but the plan was so successful and the shopping center's sales continued to grow to a point where the rental averages more than offset the cost of the promotion specialist. Much of the success of any shopping center depends upon the sound planning, enthusiasm, and support afforded the tenants by the developer.

Parking Facilities

The parking problem created by lack of parking facilities in downtown business districts has been one of the primary reasons for the success of the shopping centers. Supermarket operators should investigate carefully the proposed parking facilities of the center. The amount of parking space available and the total number of cars that can park at one time become very important when planning the shopping center.

Adequate parking space and future expansion requirements must be considered in the basic center plans. Every effort should be made to avoid the parking problems that contribute so much to the downtown business district problem. Poor planning of parking facilities can be fatal to a shopping center or, at least, to some of the tenants. Most progressive shopping center developers realize the need for sound planning and have engaged traffic consultants to set up the plans for parking. Expansion needs seem to be better planned in the larger shopping centers than in the smaller ones. In many of the medium and smaller community centers the parking facilities are now inadequate to handle the business, thus creating an opportunity for competition to open nearby or in a new shopping center with adequate parking facilities.

An acceptable minimum parking area to sales area ratio is about three square feet of parking space to one square foot of store area. However, a ratio of four or five to one is more desirable. The supermarket operator should estimate the parking available for his customers. The actual ratio for supermarket customers can be calculated by dividing the total parking area accessible to the supermarket customers by the total space occupied by the supermarket.

If the center is located in an area where foot traffic is anticipated a lower parking ratio may be satisfactory. Most supermarket operators want a four to one ratio for that portion of the parking lot that is accessible to the supermarket.

Many operators feel that the number of car spaces offers a more accurate measure of parking than the parking ratio. The space needed to park one car and allow aisles is three hundred and nine square feet. However, if access drives, pedestrian walks, bumpers, and landscape areas are planned four hundred square feet should be allotted per car.

The following points should be considered when planning or analysing the plans for parking facilities in a shopping center:

1. L, U, square, and strip shaped shopping centers work best when parking facilities are provided in front of the buildings.
2. Reserve parking areas, employee's parking, and delivery areas should be in the rear of the buildings.
3. Women, especially, do not like to park in the back of a building, particularly at night.
4. Double deck parking is not economically feasible or easy to use.
5. Well-lighted and clearly-lined parking areas are advantageous.
6. Walk ways from the parking lot to the shopping area enable safe and easy movement of customers to and from the stores.
7. Straight forward type of parking is easiest to get in and out of, but requires more space for aisles.
8. Best size for each parking stall is eight feet six inches wide and twenty-one feet long.

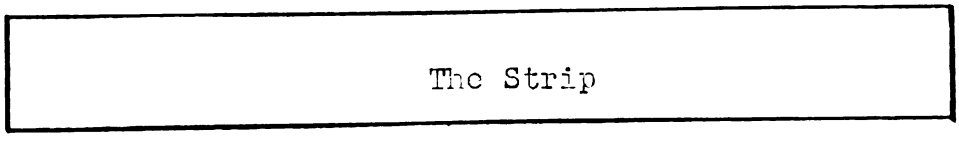
Other Clauses

Zoning restrictions that pertain to the shopping centers may or may not be included in the lease. A thorough investigation of zoning restrictions that are now in effect or that possibly may be established in the future need attention before entering into a shopping center agreement. In checking over a lease, close attention should be given to options, subleasing and exclusive clauses. Just to [illegible] has not been a success will alter [illegible] should be given some consideration. Sub-leasing with the approval of the developer and/or the merchants' association serves this purpose. Exclusive clauses are included in almost all shopping center leases and should be investigated for their present effect and possible future on each tenant. Some arrangements should be included to allow for possible expansion should the shopping center prove to be successful. Provisions for future expansion of stores, as well as parking facilities, should be included in the lease. Maintenance and repair of the buildings may be included in the rent as a percentage of sales. Parking lot upkeep may or may not be included in the rent. Some allowance should be made in the lease concerning physical improvements and the liability of both tenant and developer.

IV. Shopping Center Layouts

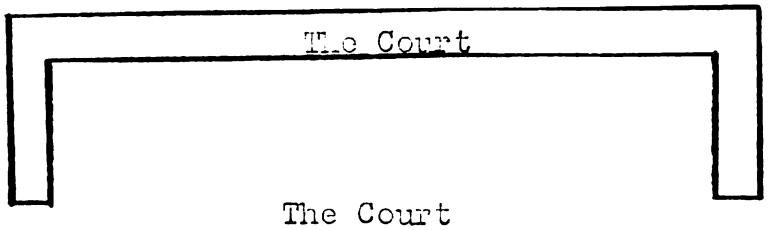
The designs of shopping centers have taken on different shapes or forms. The most common shapes or forms are:

1. Center strip or straight line of stores
2. L shape strip
3. U shape or court shape
4. The mall
5. The cluster



The Strip

The strip shopping center derives its name from the location of the stores in a line along the street. The buildings face the main thoroughfare, sometimes with space in front, often fronting directly on the street. Almost all neighborhood shopping centers are of this type, and there are literally thousands to be found in all sections of the country.[7]



The Court

This arrangement places the stores in the shape of a

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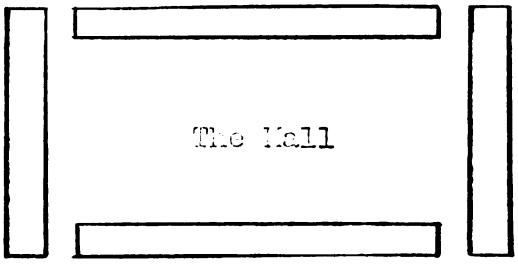
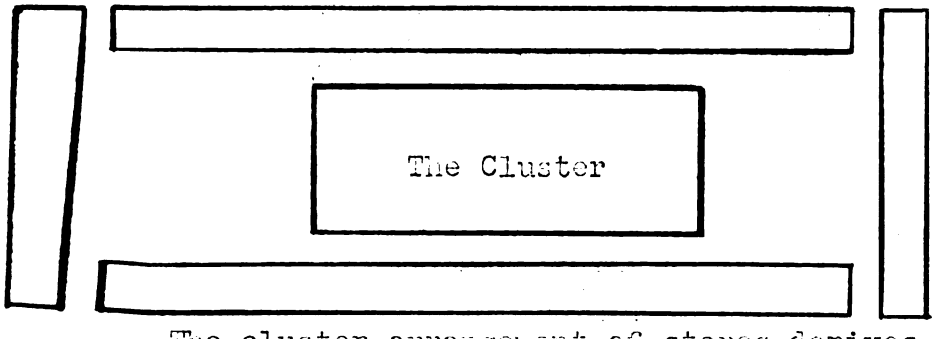
[7]Dr. F.E. Smith, Shopping Centers, (New York: NRDGA, 1956), p. 91.

court. The buildings are placed so they form a court, with parking around the court, and perhaps inside, if the inside area is large enough to accommodate parking. This type of center is used best for a square building plot that cannot accommodate a string of stores. It also has the advantage of having four corners, which may be preferred because it gives more key store locations.[8]



The mall concept is that of an indoor shopping street. The stores are arranged somewhat as they are on any shopping street, the chief difference being that noise and auto traffic are absent. The usual practice is to place the department store at one end, with another large store at the other end. Parking is around the mall.[9]



The cluster arrangement of stores derives its name from the fact that the stores are clustered around a large

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[8] Ibid., p. 110.

[9] Ibid., p. 112.

central store. The center that incorporates this concept in planning is Northland in Detroit. Parking surrounds the stores.[10]

Many shopping center developers feel that the customer should walk as short a distance as possible (average three hundred and fifty feet) to any store in the center. However, as the centers are becoming larger, this is not always possible. The strip, L, U, and mall shaped centers require the customer to walk considerably farther. Easy accessibility to the stores from the parking areas is of major importance.

V. Location of Supermarket in Center

Location of the supermarket within the shopping center is another problem requiring more than minor attention. Every tenant wants to be in the probable path of maximum traffic, and the supermarket operator is no exception. The great amount of customer traffic and the necessity for frequent deliveries, because of the turnover of merchandise, usually regulates the supermarket to a position near the end or perimeter of the center. Ease of entry and exit and a great amount of parking space to handle peak traffic periods are important to the supermarket's location. Much consideration must also be given to the parcel pick-up area. The pick-up area should be located so that it can be entered easily by the customer and

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[10] Ibid., p. 111.

the area must afford easy exit to avoid congestion of traffic. Supermarkets located on the end of a shopping center strip have an advantage in that the parcel pick-up station can be located at the side of the building offering greater accessibility to the customers.

In large shopping centers where there is a large department store, the supermarket should not be located near the department store. This decision is based upon the fact that the average shopper spends only thirty minutes shopping in a supermarket as compared to two or three hours in a department store. When the department store and supermarket are close to one another the department store customers occupying parking space for a longer period of time reduce available parking facilities for the supermarket customers.

Size of Supermarkets in Centers

The size of the supermarkets occupying space in the shopping centers varies considerably. In regional centers sizes run from thirty thousand to sixty thousand square feet gross area. In the medium size centers the supermarkets occupy twenty-two thousand to thirty thousand square feet and in the small centers the gross area of the supermarkets is from twelve thousand to twenty-two thousand square feet of space. At the annual N.A.F.C. meeting in 1956 the question was asked "to obtain an annual volume of two million dollars, how big a supermarket should be built?" The answer given was

> "figuring two hundred and twenty seven dollars of weekly sales per square foot of total area, a store

> of seventeen thousand square feet total area would be needed to produce two million dollars a year."[11]

The trend in supermarket construction has been to larger and larger stores. If this trend continues, construction of supermarkets within shopping centers can be expected to increase in size also.

> "Supermarket chains are tending to exceed the twenty thousand square foot mark in the new shopping center units. A forty thousand square foot supermarket no longer is an exceptionally large installation."[12]

VI. Shopping Center Size

The size of the shopping centers varies as greatly as does the size of the supermarkets. Basically shopping centers are considered as regional--the very large, community--the medium size, and the neighborhood--the small size. To give an idea of the relative size of each type, the following figures would be representative of each type:

A. Regional (large size)

Total acres	60
Retail store area	20 acres
Parking area	40 acres or 5,000 cars

(7 cars parking space per 1,000 square feet retail selling space)

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[11] "N.A.F.C. Convention," Supermarket News, Vol. 5 No. 43, (October 15, 1956), p. 17.

[12] "Centers Call for Bigger Stores," Chain Store Age Administrative Edition, Vo. 32 No. 6, (May 1, 1956), p. 23.

A. Regional (continued)

Number of retail stores	60
Serve trading area of 300,000 people	
Number within 5 minutes driving range	100,000
Reserve acreage approximate equal to original total of	60

B. Community (medium size)

Total acres	25
Retail area	10 acres
Parking area	2,500-3,000 cars
Number of stores	20-35
Reserve acreage	25 acres

C. Neighborhood (small Size)

Total acres	10-20
Retail sales area	150,000 sq. ft.
Parking area	500-1,000 cars
Number of stores	10-20
Reserve acreage	10-20

The regional shopping center has as its greatest advantage controlled environment. With the large selective group of stores the regional center has a drawing power far greater than the sum of the individual appeals. In the regional center the emphasis is on planned and united effort by all tenants.

The community size shopping center uses the prestige and drawing power of a junior department store or large chain

variety store plus one or two leading supermarkets to draw traffic to the center. The other variety stores and service stores help add to the one stop shopping theme.

The neighborhood shopping center stresses the convenience of one stop shopping. A supermarket, drug store, and variety store usually supply the drawing power of a neighborhood shopping center.

Construction Cost of Shopping Center

The cost of constructing a shopping center is high. Factors such as type of materials used in the construction of the building, land costs, and the topography of the land all affect the cost of constructing a shopping center.

> "A developer of well-known center figures land and construction costs in the North range from sixteen dollars and sixty cents per square foot including parking area at four to one of gross building space."[13]

In the South the range is lower, around nine dollars and fifty cents a square foot. Probably a median range would be twelve dollars to fifteen dollars per square foot including parking.

Financing Construction of Center

Securing financing for a shopping center development is not easy to accomplish. Some chains have decided to experiment with shopping center development and have formed subsidary organizations. The tight money market has carried over from 1956 and many of the insurance companies who are large financial backers of many shopping center developers

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[13] Ibid., p. 34.

have limited their investments in shopping centers. Many food organizations feel they must combine to modernize and expand, and to do so have had to turn to sources of financial backing other than insurance companies. Food Fair, an eastern chain, formed a separate corporation known as Food Fair Properties, Incorporated and raised capital for modernization and expansion by selling stock in the corporation. "Food Fair Properties, Incorporated plans to have the ty-two shopping centers fully opened or nearly completed by the end of 1957."[14]

A.C.F.-Wrigley formed the Wrigley Properties, Incorporated to engage in the development of new locations and shopping centers.

Grand Union and several other chains have formed separate companies to handle the financing of new stores.

The Kroger Company, a midwestern or central chain, recently formed Gromaree, Incorporated, a real estate subsidiary to finance new market construction. Gromaree, Incorporated expects to raise around twelve million by sale of real estate backed notes. Many smaller chains are financing expansion by the issuance of debentures and convertible bonds. Again, the question arises, is there enough business for all of these new markets to succeed. One chain answered by saying that during last year the number of their supermarkets doing over forty thousand dollars weekly had tripled, and most of the smaller stores with sales of five thousand dollars

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[14]"Shopping Center Talk," Supermarket News, Vol. 6 No. 15, (April 15, 1957), p. 30.

or less per week have closed.

VII. Future Predictions

What does the future offer? This question was asked at the N.A.F.C. meeting in October, 1956 of leading executives in the food industry. What development in the location, structure, or layout of the supermarket can be expected? The following answers are indicative of the feelings of these industrial leaders:[15]

> Mr. Clements, president Jewel Tea Company, Chicago, Illinois: "We expect that in our marketing area, around Chicago, the trend toward the development of neighborhood shopping centers will grow more pronounced. It is our experience that these centers provide parking facilities on an economical basis and offer the greatest attraction and convenience to customers shopping for their everyday needs."
>
> Mr. Crawford, president Crawford's Modern Village Stores, California: "Markets of the future will be found where large acreage is available and the structure or layout of the market will tend toward a more complete shopping center all under one roof. Non-foods will soon be separated from food items and will be more complete than supermarkets now handle."
>
> Mr. Eberhard, president Eberhard Supermarkets, Grand Rapids, Michigan: "Supermarkets of 16,000 square feet to 20,000 square feet with 200 to 400 car parking located in shopping centers or suburban areas will be most popular in 1957. More space for frozen foods and non-foods with wider aisles for shopping convenience will win approval for customers."
>
> Mr. Edwards, president Alpha Beta Markets, California: "Rising cost of land and construction result in larger and more expensive leases; larger and still larger markets increase operating expenses out of proportion to

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[15]"Leaders Forecast Trends," Supermarket News, Vol. 5 No. 43, (December 10, 1956), p. 23.

the increased sales per store. The increased operating expense because of these factors is significant."

Mr. Grimes, president Independent Grocer's Alliance, Chicago: "Solo stores just across from shopping centers will develop to counteract the exclusive arrangements made within the shopping centers and particularly when they are made exclusively with chains. More economical construction for buildings will be developed on a unit construction basis so that a smaller market can be easily expanded as more space is needed. More attention-getting store fronts, with emphasis on spectacular signs, will be further developed in our opinion."

Summary

Population is still growing, new families are being formed with record-breaking frequency and the rush to the suburbs continues. The cities are growing, but they are growing much less rapidly than the suburban areas. These changes in the population have caused changes in the retailing structure, primarily, from centralized shopping districts. How much effect this decentralization of shopping will have on the supermarket industry is largely a matter of opinion. Indications are that shopping centers are developing rapidly and that supermarkets are anxious to locate in shopping centers.

The apparent advantages of shopping centers are:

1. Adequate parking facilities are provided.
2. The shopping center provides one stop shopping by incorporating many different retail businesses.
3. Shopping centers are centrally located to serve a given area.
4. Competition is usually controlled in the shopping centers. Usually only one retailer in any one

type of business is permitted in the center.

5. All stores are new and attractive.

6. Usually a strong feeling is developed among the different retailers within a center. All the merchants are prone to cooperative promotions because they all have an interest in the success of the shopping center.

All of these advantages will not be realized in every shopping center, in fact, many shopping centers will fail in spite of all these advantages. Each company in selecting a location should take into consideration the long run view, as well as the current situation. Shopping centers have some disadvantages. Some of the disadvantages are:

1. The shopping center is dependent upon the automobile.

2. Out-lying areas are more prone to potential competition than central districts because of the availability and cheapness of land.

3. Any change in the purchasing power may cause the customer to decide whether to take the bus to the central shopping district or drive the auto to the shopping center.

4. The habits, tastes, and desires of the people may change rapidly.

5. Stores which are successful in other business districts are not always successful when they open a new store in a shopping center.

6. Length of leases are increasing.

7. In many areas zoning regulations are lacking that limit construction of new shopping centers close to established centers.

8. Larger size store construction increases the initial investment and raises the volume of sales needed to reach the break-even point.

Opinions vary about the merits of shopping centers as supermarket locations, but the many operators locating new units in shopping centers must have confidence in this type of a location. The advantages seem to outweigh the disadvantages at the present time. If financial backing can be obtained in 1957, construction of shopping centers should exceed the record year of 1956.

CHAPTER IV

STORE LAYOUT

Introduction

The modern supermarket represents the epitome of modern merchandising and architectural design. The supermarket has passed through an era of unparalleled changes from the small, service-type store to the retailing giant of the present day.

The planning of a modern supermarket layout is an intricate operation requiring a careful combination of architectural and engineering sciences, and a knowledge of human behavior. Supermarket retailers have acquired vast knowledge about customer attitudes, merchandising, equipment, lighting and design through years of experience and research. All of these factors are incorporated into layout.

Layouts are designed to create a desirable shopping atmosphere, based upon operator's knowledge of customer behavior. An indication of the effect of customer consideration upon store layout was expressed by Lansing P. Shields, president of Grand Union Company.

> "I visualize a market that would overcome the illusion of vast cave-like interiors which characterize many of the larger markets today. We do not want the housewife to be overwhelmed by the feeling that she has a large area to traverse. We want to take the drudgery out of food shopping and give the shopper an intimate,

colorful atmosphere which will make it a pleasure to shop in our markets."[1]

An over all store layout has not been developed that can be used by every supermarket retailer or chain organization. Every retailer or chain organization must work out the system that best fits the needs and the customers of each store. The entire supermarket must be built around the customer who is the most important asset in any type of retail business.

In the food retailing business self-service merchandising has developed rapidly. Retailing as a whole has passed through stages of change most of which are directly related to self-service merchandising.

Basic Objectives

Self-service, as it has been adopted by retail business, has caused many changes in store design and interior layout. Retail businesses have a common objective in the planning of the layout of the stores. These basic objectives are:

1. To facilitate complete customer circulation of the entire store.
2. To increase sales of high margin merchandise.
3. To establish a buying routine consistent with the consumer's thinking, habits, and methods of planning.
4. To make the task of shopping as pleasant as possible, so pleasant that satisfaction is apparent

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[1]M. M. Zimmerman, The Supermarket, (New York: McGraw-Hill, 1955).

by repeat visits.

5. To provide the most effective utilization of space from the standpoint of operating efficiency.

In the food industry the trend has been toward the construction of larger stores. This trend is the result of the addition of many non-food items and the extensive expansion in the prepared food lines.

It goes without saying that display and shelf space is at a premium in the modern food market. Constant improvement of food products, the unending variety of new merchandise, and the increasing attention which is presently being paid to package designs and sizes by the manufacturer, all combine to create a problem which can only be solved by building a larger store and allocating space to individual items of merchandise in such a way as to provide enough space to achieve maximum sales.

The one stop shopping theme has had a great deal of influence upon the variety and assortment of items now carried in the supermarkets. Surveys indicate that two-thirds of the buying in the supermarkets is on impulse. Actually the consumer either had in mind or written down on a shopping list only one-third of the items purchased. As self-service has expanded to the perishable departments of the store, much of the selling success depends upon the proper location of the merchandise throughout the store. Proper allocation of space, as well as actual location in the store, requires much planning.

Principles of Layout

What is a good layout? A layout is good or bad in relation to its effectiveness under local conditions. A layout for one location may be very successful, but the same layout in a different area may be unsuccessful. However, certain principles of food store layout are applicable to nearly all stores, regardless of location or size. These principles, when followed step by step, help to set up a store layout in which impulse, convenience, and demand items have been completely integrated. When such a layout is achieved, fast turning products serve as magnets to draw customers through the entire store and thus expose them to the wide range of high margin, impulse items, as well as demand items which they purchase weekly.[2] The effectivenessof this type of a layout can be seen best through the following illustrations that represent the principles of a store's selling layout.

Inside Perimeter

In illustration Figure I (page 70), a rectangular-shaped floor is used which is typical of most supermarkets. The location of the entrance may vary, but the principles of layout are the same. The first step in planning is to locate around the inside perimeter of the store the perishable departments. The meat department is placed in the rear of the store because it is a demand item which draws the customers.

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[2]Progressive Grocers, Modern Supermarkets and Superettes, (New York: The Butterick Co., 1956), p. 12.

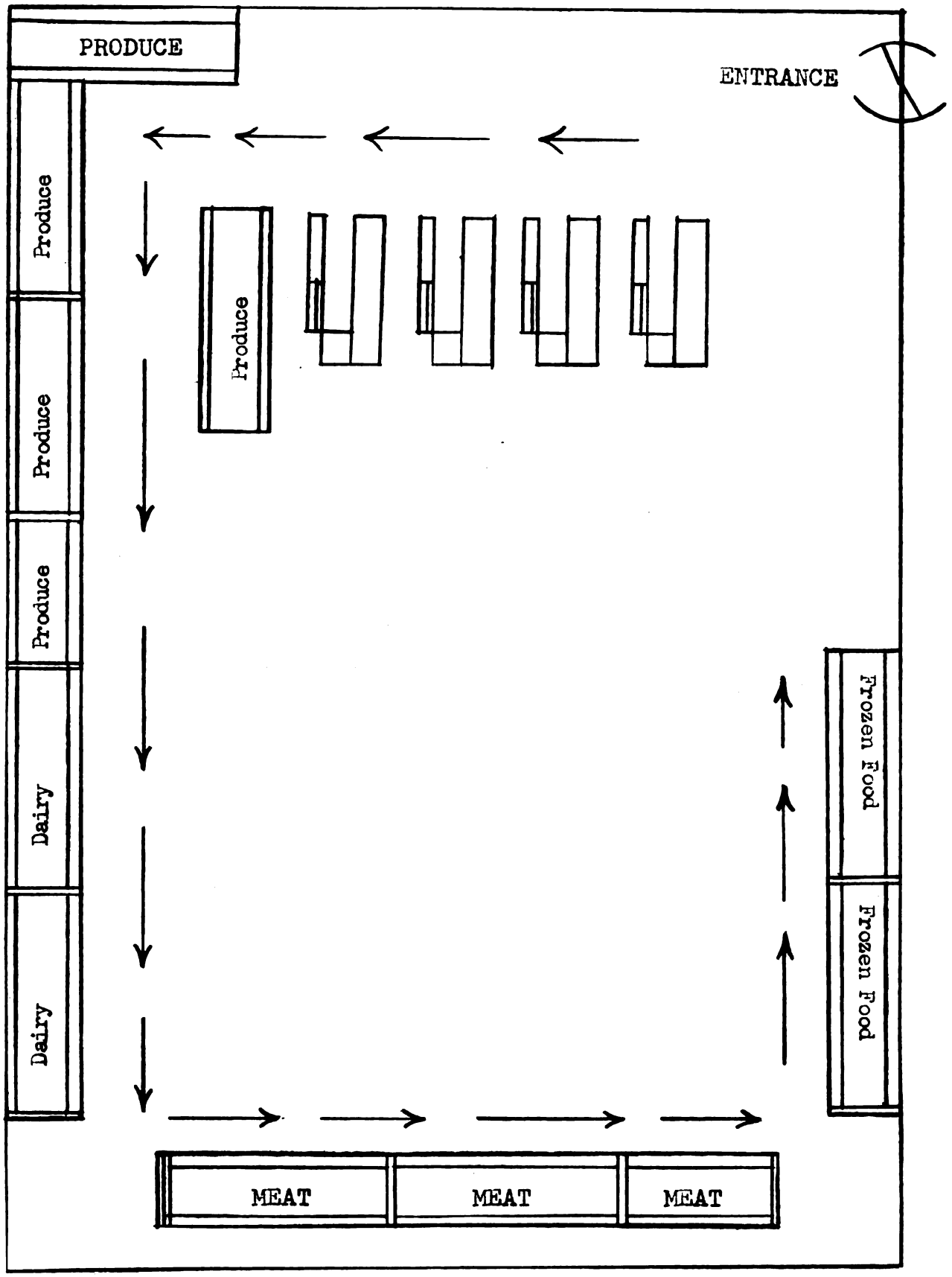
PRODUCE
ENTRANCE
Produce
Produce
Produce
Produce
Produce
Dairy
Dairy
Frozen Food
Frozen Food
MEAT
MEAT
MEAT

Figure I

They will go through the store to reach the meat department in the back. The produce department is located in the line of traffic as it is a high margin and high profit department. Surveys indicate that as much as seventy-five per cent of the produce sales are on impulse. It is possible to create a quality and freshness impression upon the consumer at the beginning of the shopping tour through attractive eye-appeal, buy-appeal displays. Along the same wall following the produce department, the dairy department is placed. Dairy products are above average in markup and are a demand item in the food store. An extensive assortment of dairy products can be a major factor in a store's over-all appeal to its customers.

Frozen foods are next located along the wall opposite the dairy department. This arrangement helps stimulate complete flow of traffic around the inside perimeter of the store. Each year frozen foods capture more and more of the total percentage of grocery sales. More and more floor space is being allocated to frozen food as the customer demand for frozen products increases. At this point the store layout of the perishable departments is such as to draw the customers from the entrance almost around the inside perimeter of the store.

Gondolas and Aisles

The next step is to locate the gondolas and establish aisles and breakthroughs. In setting up aisles and gondolas, a typical layout is shown in illustration Figure II (page 73). When the check out lanes are parallel to the side walls, the

gondolas are usually placed parallel to the side walls also. The gondolas are parallel to the produce and dairy departments, and directly opposite the same, is one long continuous row without a breakthrough. By not allowing a breakthrough here, the consumer is forced to move to the back of the store before being able to turn toward the front again. This brings up the problem of how wide the aisles should be.

> "Great variations are very evident to anyone who has shopped in several different supermarkets. It is felt by most merchandising experts that the minimum aisle width should be four feet when shelving is on one side only, such as would occur adjacent to a window. When merchandise is placed on each side of the aisle, a six foot or more first aisle is considered best. An eight foot aisle is a boulevard and is used where traffic can not be dispersed."[3]

Areas immediately in front of the meat department and produce departments are usually points of congestion and twelve foot aisles help to improve the traffic movement past these departments. Breakthroughs from one aisle to another of from four to six feet in width are considered best.

Location of Demand Merchandise

After the aisles and gondolas have been located on the plan, the next step is to locate certain merchandise on each gondola. Consideration should be given to the fast-moving demand items. Territorial differences will affect the locations of certain merchandise in different stores. The overall plan is to draw traffic to each aisle of the store by so placing these demand items. Illustration Figure II (page 73) shows

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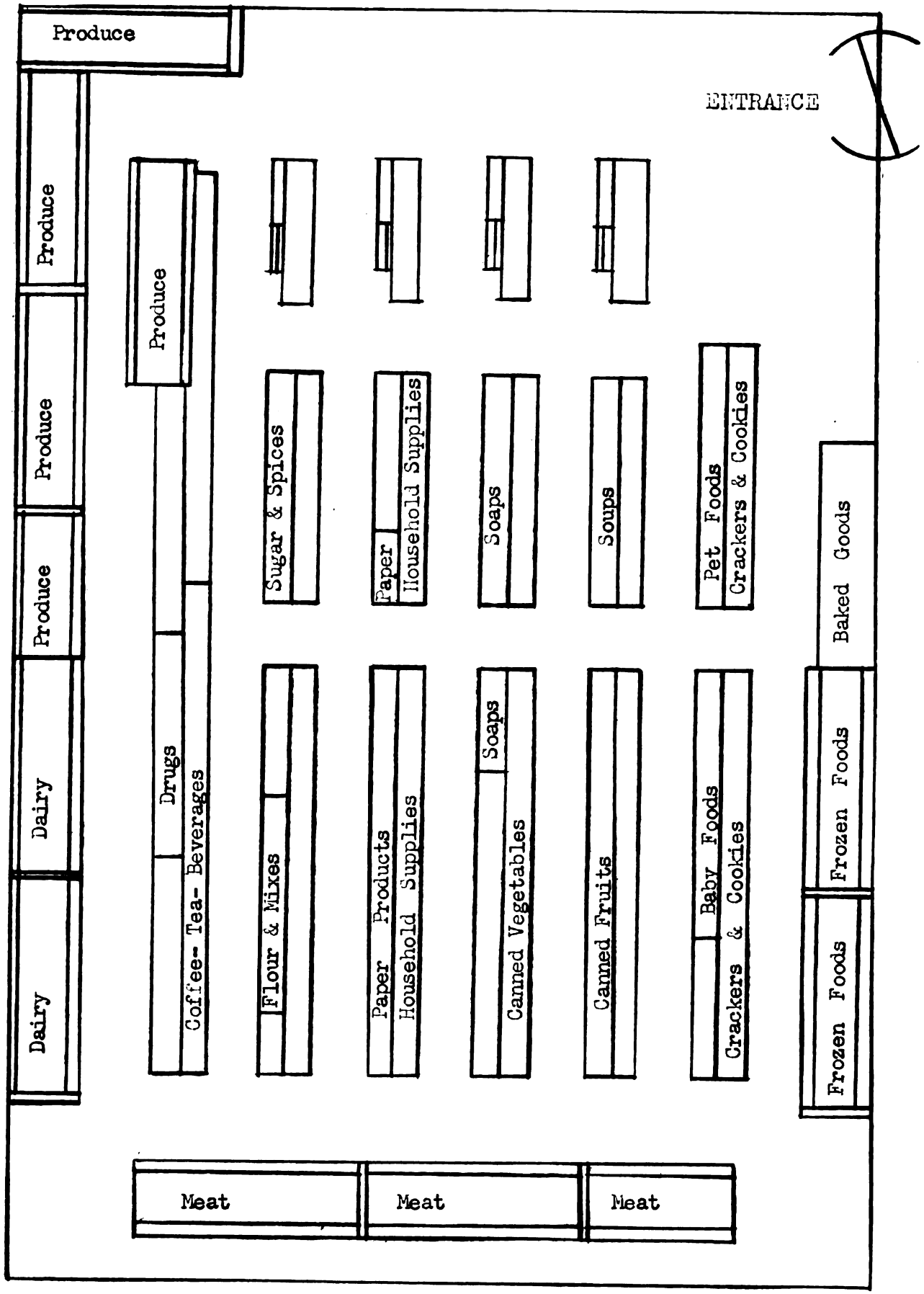
[3]Ibid., p. 21.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Flour & Mixes
Paper
Household Supplies
Paper Products
Household Supplies
Soaps
Soaps
Canned Vegetables
Soups
Canned Fruits
Pet Foods
Crackers & Cookies
Baby Foods
Crackers & Cookies
Baked Goods
Frozen Foods
Frozen Foods
Meat
Meat
Meat

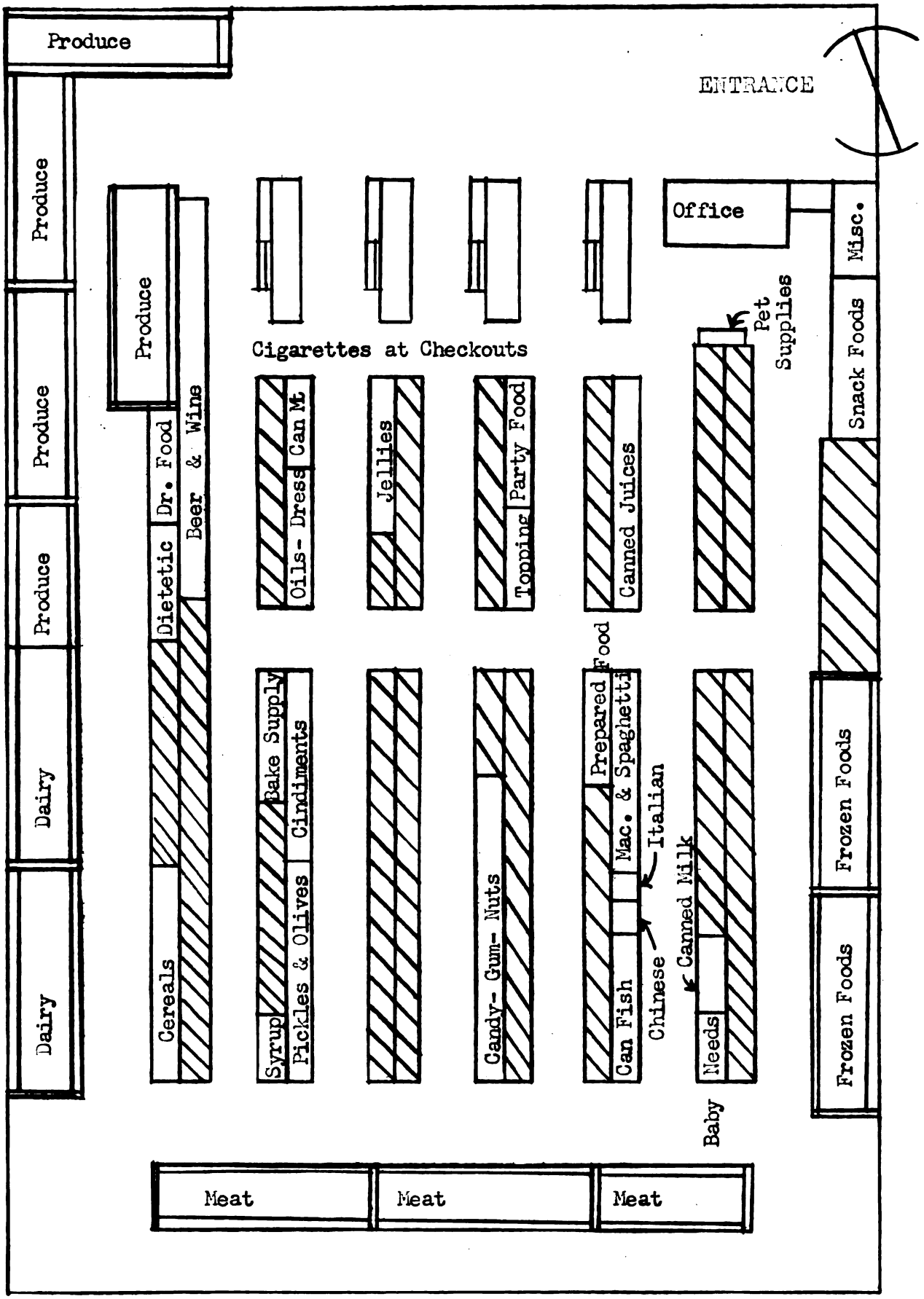
Figure II

how this is done.

Location of High Mark Up Merchandise

The next step is to position the high mark up, impulse selling merchandise (see illustration Figure III, page 75). It is best to group related items together near the faster moving items. Items such as dried foods, party foods, all beverages, and household supplies sell most successfully when displayed together. High mark up, impulse items tend to sell best located near checkout lanes. By strategically placing the fast-moving demand items, complete store shopping is almost assured. A good layout depends mostly upon ease of customer movement afforded by wide aisles and accessibility of the merchandise. The customer must see the merchandise, examine and purchase without the assistance of a sales person. It is generally considered best not to place merchandise above eye level and display cases or racks placed against the side walls should be kept low enough that a person of average height can reach the merchandise easily. Attempts have been made in directing traffic through the store on one way aisles. This has not proven very satisfactory, and in some cases customer dissatisfaction was voiced against being forced to follow a certain pattern of traffic.

The next major problem that arises is how much space to allocate for each of these important departments and more especially how much shelf space to allocate for the important grocery items. Since the grocery items remain relatively stable, as far as supply is concerned, the problem of space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Snack Foods
Cigarettes at Checkouts
Dr. Food
Beer & Wine
Dietetic
Cereals
Oils- Dress
Can M.
Jellies
Topping
Party Food
Canned Juices
Bake Supply
Cindiments
Syrup
Pickles & Olives
Candy- Gum- Nuts
Prepared Food
Mac. & Spaghetti
Italian
Chinese
Can Fish
Canned Milk
Needs
Baby
Frozen Foods
Frozen Foods
Dairy
Dairy
Meat
Meat
Meat

Figure III

allocation is considered more important than in the perishable departments where the supply fluctuates. Many food retailers are missing additional business, and the opportunity for increased profits through poor space allocation of the merchandise in their supermarkets. They are wasting valuable selling space through the failure to check periodically the turnover of the many different products they feel that they must carry in stock to satisfy their customers.

Space Allocation

The problem of wasted selling space is applicable to all food stores from the smallest to the largest.

> "Many operators of supermarkets would be surprised to learn that as much as thirty per cent of their selling space is taken up by products which sell only one unit order a week."[4]

Food retailers, faced with higher rentals, building and labor costs, are beginning to realize that higher margins are meaningless unless the product can be sold. Turnover is a major factor of success in food retailing today. Not only does effective utilization of shelf-space help to create turnover, but it also helps reduce the cost of food distribution. By utilizing the space wisely and increasing the turnover of merchandise, the retailer can reduce his prices to a certain extent. This enables him to stay competitive and competition is needed in order to keep the price to the consumer as low

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[4] V.L. Brenner, Allocation of Selling Space to Increase Grocery Efficiency, Marketing Activities, U.S. Dept. of Agriculture, Government Printing Office, (June-August, 1954), p. 12.

as possible.

There seem to be several reasons why retailers have not eliminated the dead or slow-moving items. The first reason is that retailers dislike to eliminate any item. Second, there is much brand duplication in slow-moving items; and third, there is duplication in unit sizes of the same merchandise in the same price range. Fourth, many retailers do not know the actual movement or turnover rate of most of the merchandise.

Nearly every operator will agree that proper allocation of space is essential in maintaining full shelves with a minimum of effort and cost. However, the task of analyzing and interpretating product movement, varieties handled, unit sizes and gross profit on sales is not easy, and few retailers have the time or facilities to undertake such analysis. As a result, space is not generally allocated in terms of these facts. Quite frequently space is allocated on a "hit and miss" basis. Large chain organizations are equipped to make such analysis and are using information on product turnover very effectively. Periodically, the store manager of a chain supermarket will receive a listing of discontinued merchandise. As new items are added, the manager receives definite information about where to display the new item and the suggested number of facings it should receive. This system has helped to relieve the store manager of deciding which items must be eliminated and where to display the ever-increasing number of new items. Space analysis by the chain organizations has helped to

increase overall sales and profits.

Of course, the amount of total shelf space that should be alloted to any particular grocery commodity cannot be precisely determined and applied in one sweeping realignment of all stores. Each supermarket, depending upon its location, character, etc., is an individual unit and operates as such. However, by following the guide sent out, based on commodity turnover analysis and profitableness, the store manager can do a better job of allocating the shelf space in his supermarket to the items that will return the most profit.

Trade journals have been very progressive in their investigation of this problem. The United States Department of Agriculture Marketing Research Service has conducted research on space allocation for grocery items in food stores. An example of this is a survey made by the United States Department of Agriculture Marketing Service which produced the following results which can be of help to any food retailer.

A study of the sales and inventories of eleven retail food stores on which this report was based, revealed that approximately thirty per cent of the grocery items studied had average sales of one unit or less per week. Retail food sales in nine of the stores, in which fifteen or more categories of grocery items were surveyed, showed that at least twenty-nine per cent of the 700 to 1,000 items studied in each store had sales of ten units or less during a four week period. Four of the stores sold ten units or less of more than half the items displayed. The averages of the stores showed the following:

6.5% of all items studied had no sales during the 4 wk period
23.4% of all items studied had 1-5 sales during the 4 wk period
13.8% of all items studied had 6-10 sales during the 4 wk period
18.3% of all items studied had 11-20 sales during the 4 wk period
10.8% of all items studied had 21-30 sales during the 4 wk period[5]
From this study it can be seen that many of the slow-moving and non-selling items could be advantageously discontinued and replaced by items that would be in more demand. In this way it would be possible to increase sales and turnover and reduce out-of-stock conditions; thus obtaining the greatest possible advantage from shelf space in relation to turnover.

This study, however, covered only 700 to 1,000 grocery items or only between fifteen and nineteen of the major food categories. While this study would be helpful, it does not cover all the major items in a food store.

Progressive Grocer magazine felt that many of the food retailers would appreciate a guide or outline covering the major categories of items carried in most supermarkets. They picked a typical supermarket, analyzed its operation, and then published a plan and guide, that while not perfect, could be used very effectively by retailers to check actual space allocation. The typical supermarket was 14,230 square feet overall, with weekly sales of $45,000. Total selling area was 10,700 square feet and 1,206 linear feet of display space.

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[5]U.S. Department of Agriculture Marketing Service, Space Allocation of Grocery Items in Food Stores, (Washington, D.C., February, 1955, Report No. 80), p. 16.

Weekly sales per linear foot of display was $37.85. The relationship of square feet of floor occupied and the per cent of total sales and dollar margin realized in the six major store departments were as follows:[6]

Departments	% of Total Fixture Area	% of Store Sales	% of Store Margin
Grocery	44.6 %	43.7 %	40.3 %
Meats	27.0 %	28.1 %	26.5 %
Produce	17.4 %	12.8 %	18.0 %
Frozen Foods	5.0 %	4.1 %	5.1 %
Dairy (and ice cream)	4.0 %	8.6 %	7.4 %
Bakery	2.0 %	2.7 %	2.7 %
	100.0 %	100.0 %	100.0 %

The following chart shows how display space, sales and dollar margins are divided among forty grocery product items. By applying these figures to the actual store layout, it is possible to allocate space to these forty major grocery items. While this allocation may not be the best for all stores, it has been very successful for this market. The plan could be adjusted to fit other supermarkets of larger or smaller size. Adjustments could be made in space allocation for differences in per cent of store sales that are of significance in the major categories of food items. Actually this plan has followed the suggested principles of:

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[6]"Fordtown Study", Progressive Grocer Vol. 34, No. 1 (January 1955), p. 36.

A BREAKDOWN OF THE PER CENT OF SALES BY CATEGORIES

AS TO TOTAL SALES AND AVERAGE GROSS PROFIT OF EACH IN A STORE OF:[7]

Total Area: 14,230 sq. ft.

Selling Area: 10,700 sq. ft.

Average Weekly Sales : 45,000 sq. ft.

Item	% to Total Sales	G. P.	
Produce	12.76	25.4	
Dairy	8.61	15.5	
Meat	28.12	16.9	
Frozen Food	4.14	23.2	6 Major Categories
Bakery	2.68	18.0	
Grocery	43.69	16.6	

BREAKDOWN OF GROCERY ITEMS

Beverages	7.76	10.4	Canned Juices	.77	18.2
Soaps	2.56	8.4	Jams & Jellies	.71	21.4
Crackers & Cookies	2.16	23.5	Condiments	.62	24.2
Household Supplies	2.14	28.1	Canned Milk	.43	8.5
Paper Products	1.96	23.9	Prepared Foods	.24	15.9
Canned Vegetables	1.78	20.8	Dietetic Foods	.14	25.7
Canned Fruits	1.49	18.1	Dried Fruit	.14	21.0
Flour & Mixes	1.48	12.9	Party Food	.13	24.9
Drugs & Toiletries	1.48	27.7	Chinese Food	.10	22.0
Candy, Gum, Nuts	1.48	24.1	Italian Food	.04	27.8
Soups	1.36	11.6	Pet Supplies	.04	33.3
Sugar	1.07	6.2	Dried Foods	.24	19.7
Pickles, Relishes	1.06	28.1	Canned Meats	.22	13.3
Baby Food	1.04	9.8			
Salad Dressing	.96	16.0			
Cereals	.92	13.3			
Baking Supplies	.90	11.8			
Canned Fish	.89	14.1			
Macaroni & Spaghetti	.88	19.9			
Pet Foods	.86	17.9			

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[7] Ibid., p. 38.

HOW DISPLAY SPACE, SALES AND DOLLAR MARGINS ARE DIVIDED AMONG GROCERY PRODUCTS GROUPS[8]

Items	lin. ft floor space	% total lin. ft. gro. pd.	% total $ sales gro. dp.	% total $ margin gro. sales
Crackers & Cookies	78	8.8	7.0	4.9
Household Supplies	63	7.6	8.5	4.8
Beverages	58	7.0	11.2	17.7
Beer & Wine	47	5.7	2.9	1.8
Paper Products	47	5.7	6.5	4.5
Canned Vegetables	43	5.2	6.0	4.5
Candy, Gum, Nuts	37	4.5	4.9	3.3
Canned Fruits	33	4.0	4.0	3.6
Soaps	30	3.6	2.9	5.7
Baby Food	28	3.4	1.4	2.3
Flour & Mixes	27	3.2	2.6	3.3
Cereals	20	2.4	1.4	2.1
Pet Foods	20	2.4	2.1	1.9
Condiments	20	2.4	2.1	1.4
Juices	20	2.4	1.9	1.6
Macaroni & Spaghetti	19	2.3	2.4	2.0
Pickle, Olives, Relishes	17	2.0	4.1	2.4
Cigarettes	17	2.0	2.2	6.2
Miscellaneous	17	1.9	.5	.5
Soups	15	1.8	2.2	3.0
Sugar	15	1.8	.9	2.3
Jams, Jellies	13	1.6	2.1	1.6
Canned Fish	13	1.6	1.7	2.0
Baking Supplies	12	1.4	1.4	2.0
Snacks	12	1.4	1.7	1.3
Desserts & Toppings	10	1.2	1.1	1.2
Salad Dressing & Oils	10	1.2	2.1	2.2
Baking Foods	9	1.1	.5	.3
Spices & Extracts	8	1.0	1.5	.9
Party Foods	8	1.0	.4	1.3
Dried Fruits	7	.8	.4	.3
Prepared Foods	7	.8	.5	.5
Canned Meats	7	.8	.4	.5
Dried Foods	6	.7	.6	.5
Canned & Powdered Milk	4	.5	.5	.9
Syrups	3	.4	.4	.3
Chinese Foods	2	.2	.3	.3
Italian Foods	2	.2	.2	.1
Pet Supplies	2	.2	.2	.1

[8] Ibid., p. 39.

1. Placing perishables around the inside perimeter of the store.
2. Strategically locating the demand items to necessitate complete shopping coverage of the store.
3. Placing high margin, impulse items along side or near the demand items.

Grocery Storage and Work Area

The storage area for the grocery items should be located as close to the actual sales area as possible. The actual stocking of the shelves represents one of the highest expense items in the store. Naturally, anything that will increase productivity is of benefit.

The purpose of a storage area is to serve as a place where merchandise is stored and prepared for display. The storage area should be laid out so that the operations can be performed with a minimum of handling, walking, carrying or searching for merchandise. Correct conveyor installations eliminate most of the walking and carrying. Excess handling and searching can be eliminated by commodity group segregation and by proper arrangement of the stocks within the storage area.

Factors that control the size of storage areas are grocery sales, number of deliveries of merchandise per week, merchandise turnover, and amount of reserve stock carried.

Studies by the United States Department of Agriculture indicated that a long narrow rectangular area provides the best type of storage area. The area should be separate from the meat and produce receiving areas if possible. A permanent

conveyor properly installed aids in the productivity of those working in the storage area. The advantages of the long, narrow storage area are:

1. It minimizes the distance that cases of merchandise must be moved by hand from conveyor, the merchandise stacks and back to the conveyor in subsequent operations.
2. It permits more precise commodity segregation and results in less searching for merchandise.
3. It facilitates movement of merchandise from the stacks or bays to future operations, such as price stamping and stocking.

In the narrow storage area the bays or stacks of merchandise should be double rows perpendicular to the wall with an aisle of one and a half feet between the bays or stacks to permit easy removal of merchandise. The conveyor is set up parallel to the wall and perpendicular to the bays or stacks. The distance from the bays or stacks should be no more than twelve feet which would not be too far for anyone unloading or loading the conveyor to carry merchandise.

The merchandise should be stacked in the storage area to coincide with its location in the selling area. It is much easier to locate any desired item when this arrangement is followed. Signs designating the commodity group or aisle number corresponding to the selling area location are very helpful when located in the storage area. If all the merchandise is to be centrally marked the stamping table should

be located at the end of the conveyor near the door leading to the sales area, thus saving stockmen many unnecessary steps.

By setting up bays capable of holding a double row of merchandise much time is saved in removing needed merchandise, due to shorter height of stacks. Bays have been very helpful where soft items that are crushable need to be stacked up in quantity. Such items as cookies, crackers, cereals, and other crushable items can be stacked to minimize the danger of damage.

Adequate frozen food storage space is a major problem in all supermarkets. The trend is toward large walk-in freezer storage coolers to handle all frozen foods, frozen meats and ice cream. The frozen product items seem to continue to grow in number and to maintain full selling displays of product usually large backup stocks must be carried. Often in a corner of the storage area is a dairy preparation table and cooler. The size of this area and equipment used will vary from one supermarket to another depending upon the amount of dairy items handled and the amount of cheese that is cut and packaged in the market. This area should be close to a door leading to the selling area and as near to the dairy department as possible. While it is desirable to plan the size of the building to fit the needs of storage, work area and sales area, this is not always possible. Usually the storage and work areas are the ones that must be adjusted. However, more and more the trend is to establish the needs of each department of the store along with storage and work area and then con-

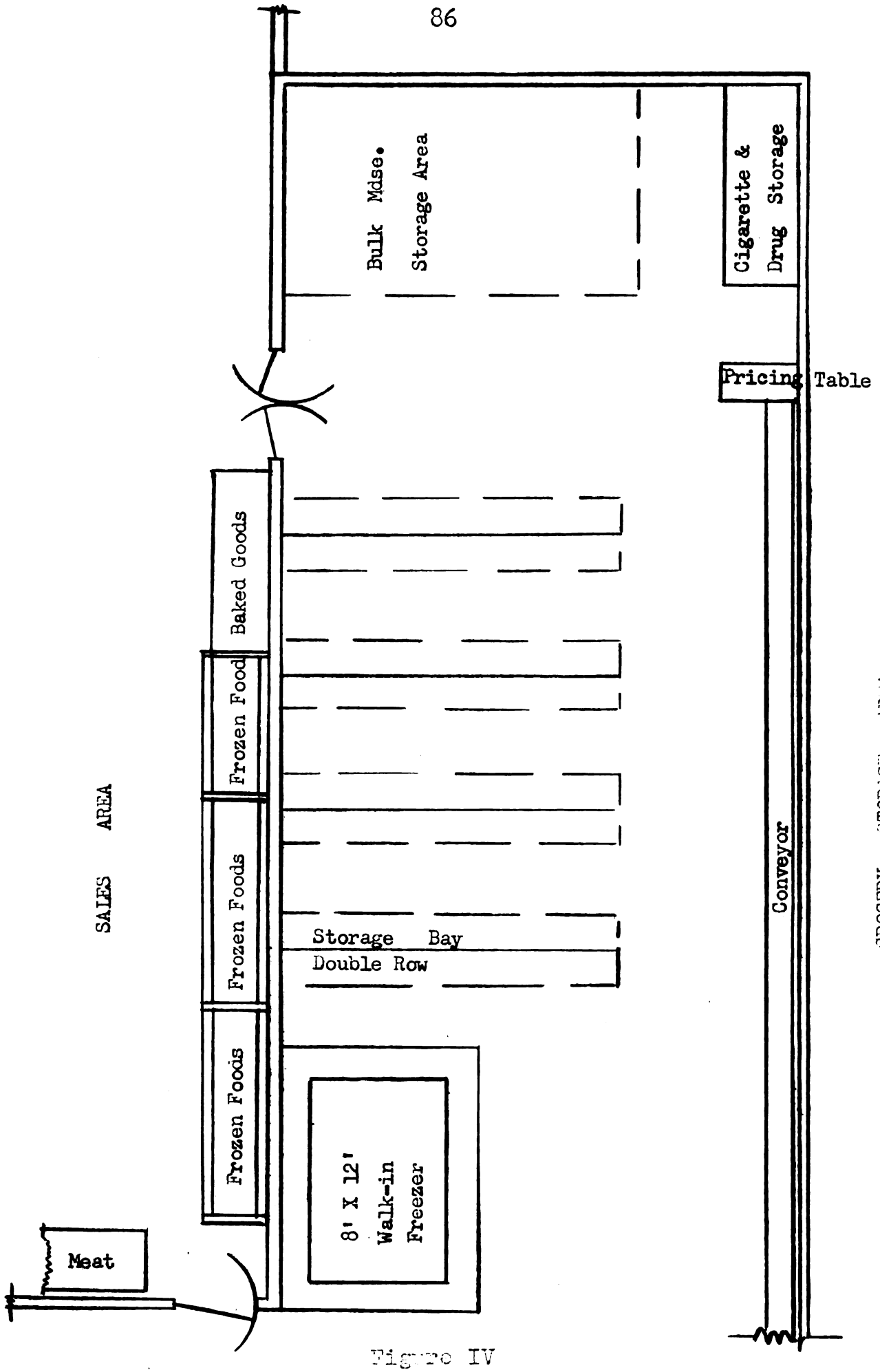

Bulk Mdse. Storage Area
Cigarette & Drug Storage
Pricing Table
Baked Goods
Frozen Food
Frozen Foods
Frozen Foods
Storage Bay
Double Row
8' X 12'
Walk-in
Freezer
Meat
Conveyor
SALES AREA
GROCERY STORAGE AREA

Figure IV

structing a building to fill these requirements.

Meat Department Sales Area

The meat department has gone through an evolution from service type meat to self-service meat department. Many of the older supermarkets have converted to self-service and the United States Department of Agriculture made an extensive study of self-service meat departments. Several booklets have been published by the department with the results of their findings, as well as recommendations for the layout of self-service meat departments. There are advantages and disadvantages to self-service meats, but at present the advantages seem to outweigh the disadvantages. Some of the major advantages and disadvantages of self-service meats are:

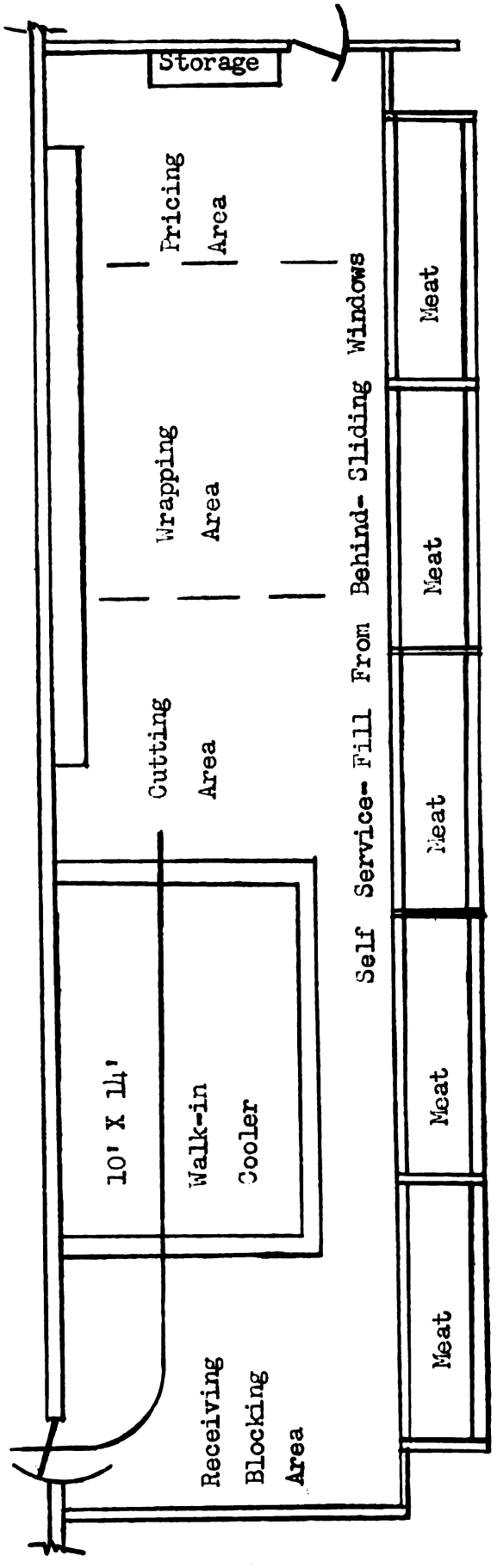
Advantages	Disadvantages
1. Increased profits by lower unit cost	1. Immediate cost of supplies and equipment
2. Reduces waste and mark downs	2. Merchandise must sell itself (no salespeople)
3. Increases shelf life	3. Needs close supervision
4. Speeds flow of traffic	4. Possible customer resistance
5. Appeals to customers because of sanitation	5. Requires better planning and close control of ordering
6. Increase impulse selling	

The most effective layout for the cases in the sales area is one which presents the meat open, easily accessible to the

customer. Usually meats are grouped together to facilitate the ease of customer selection. Frozen meat products may be located either with the meat or frozen food. The trend is to locate all frozen foods together for customer convenience. Construction costs are reduced somewhat by locating all freezer cases together. Probably the most used and most efficient lay-out of self-service meats allows filling the cases from the rear. This can be accomplished by allowing a walkway behind the cases or by using sliding mirrored windows directly behind the cases.

Meat Department Work Area

The basic layout of the meat work area is designed to accomplish one thing, that is the fastest, smoothest, flow of the product through the work area to the selling area. A typical and efficient layout to accomplish this is presented in illustration Figure V. Establishment of a successful layout requires the coordinated planning of space and equipment to facilitate productivity. As shown in illustration five, the meat travels in a pattern or sequence starting at the delivery entrance to the receiving area to the meat cooler. Then the meat is taken to the preparation area from which it moves to the wrapping area and on to the pricing area. After it has been priced it either goes directly to the sales area or storage cases prior to movement to the selling area when needed. Great reduction in the amount of space that is needed in the working area has resulted from the addition of labor-saving machines. The increase in automatic machinery continues



SELF SERVICE MEAT LAYOUT BACKROOM AREA

Figure V

to change the layout and design of the working area; however, the selling area has remained principally the same with the exception of additional frozen meat cases as new frozen meat items have been added.

Produce Sales Area

The third and last major department that requires back-room working and storage area is the produce department. Here again, the continued expansion of self-service, as well as pre-packaging has brought about a variety of changes in layout and design.

Modern, progressive supermarket operators have in recent years gained important advantages from conversion of meat department to self-service. The produce department, last bottleneck in self-service retail food merchandising, is now the focus of attention. As with self-service meats, up-to-the-minute sales methods, and a packaged, completely self-service operation can supply the answers to many merchandising and profit problems. In the last few years a trend to packaged self-service produce has developed rapidly. When managed properly packaged self-service produce has brought modern selling techniques to one of the store's most profitable departments, techniques which have meant a steady increase in volume.

Refrigerated display cases have helped to change the layout of the produce selling areas also. Still there are supermarkets which are not using refrigerated cases for this perishable product. The trend, however, is toward attractive refrigerated cases that present this high impulse, high margin

product to the customer in a fresher, more convenient manner. It has been found in a survey conducted by the DuPont Company that self-service increased the speed and ease of shopping of the consumer and also that the consumer purchased sixteen per cent more in self-service departments as compared to service type produce departments. It was pointed out in the survey that congestion of traffic was greatly reduced by self-service which permitted the customer more time to shop. More and more produce is being received at the store in packaged form ready to put on display. Packaging is being done by the grower, wholesaler, or a repacker for the retailer. It is interesting to note that the per cent of total stores' sales of produce is usually less than half of the total store sales of the meat department, yet comparison of the per cent of the total store profit is usually greater percentage wise. This is often the reason for the amount of space allocated for produce sales area.

Produce Work Area

The produce storage and work area varies due to the same conditions that affect grocery storage areas, namely:

1. Produce sales volume
2. Number of deliveries each week
3. Merchandise turnover
4. Amount of reserve stock needed
5. Seasonal demands

The layout of the backroom follows along the same principle of the flow of product as does the meat layout.

Illustration of Figure VI shows a typical layout for a self-service produce working and storage area. As more and more produce is prepackaged there tends to be an increase in the amount of machinery that is being used in the preparation area. A type of layout similar to that of the meat operation has developed through which greater productivity can be accomplished. As larger supermarkets are constructed and produce sales volume increases, there will develop a product flow plan coordinating layout and equipment that will parallel the meat layout plan.

Single Floor Versus Basement Operation

The single floor storage and work area seems to have preference over the basement storage and work area operation. The single floor operation provides easier movement of product from the work and storage area to the selling area. Many times, however, the selling area must be reduced to allow for this storage space. Currently, some new supermarkets are being constructed with a one floor plan and other new supermarkets are being constructed with the basement plan. The principle reasons given for the use of basements are:

1. The size of the lot on which the supermarket is to be built is not large enough to accommodate large storage areas needed.
2. Construction costs for partial or full basement is usually less than for one floor storage space construction.

SELF SERVICE PRODUCE LAYOUT BACKROOM AREA

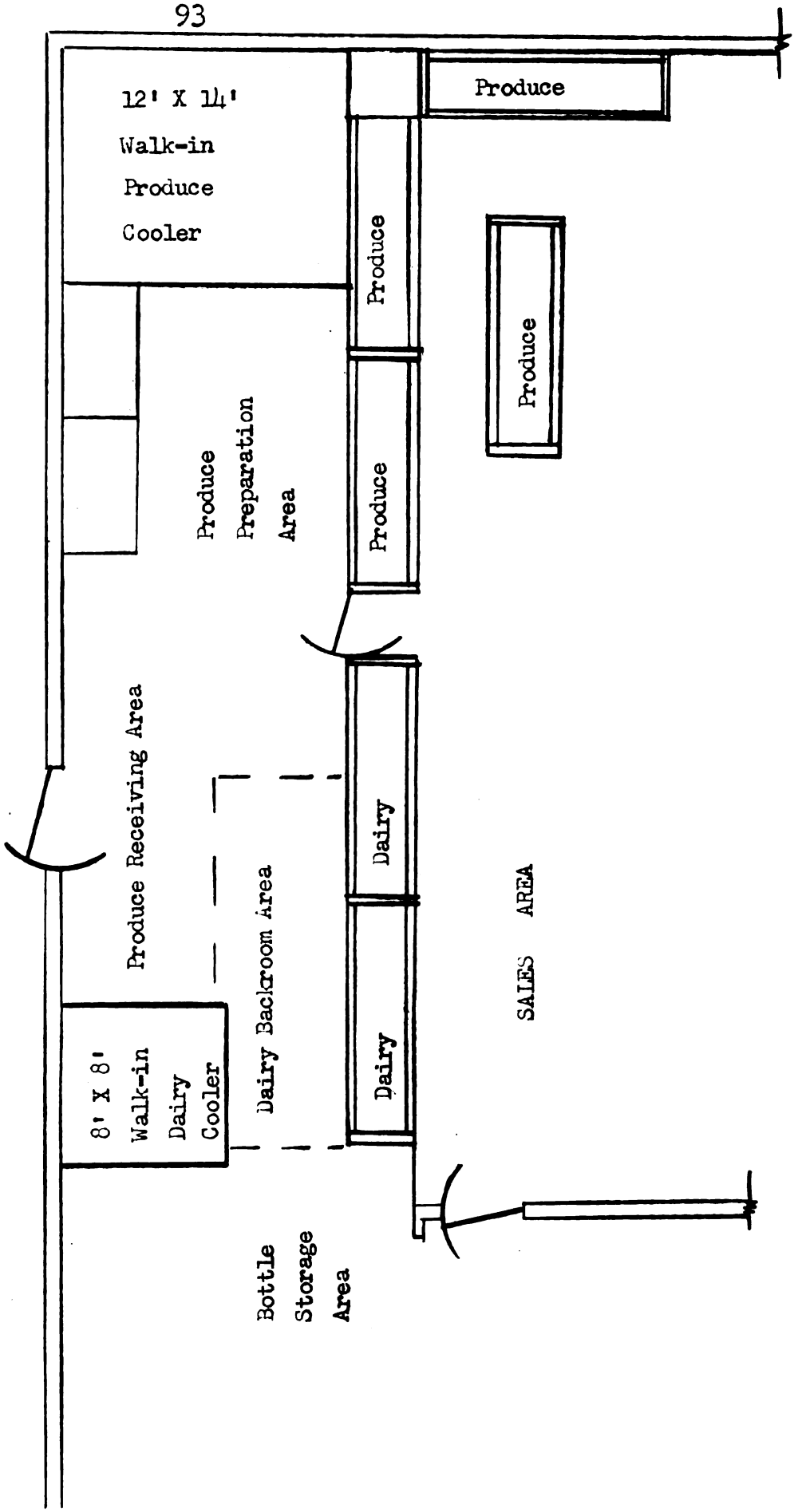


Figure VI

3. In renting shopping center locations, the full basement is usually rated half the price of the main floor and a partial basement may add no additional cost.

4. Many times more storage and work area is made possible through the utilization of a basement than would be economically or physically possible in a one floor operation.

Great advancements have been made in conveyor equipment to meet the demands of the basement type operation. Reports state that economies made through the use of a basement have offset any increase in handling costs. Apparently, no hard and fast rule is given for deciding the problem and many large food organizations have both a single floor and basement type operation in use. The deciding factor seems to be the size of the plot of land that is available, the cost of the land, and the construction cost for the new supermarket as exemplified in the statements that follow.[9]

> Ed McLaughlin, reporting on American Stores, Philadelphia, Pennsylvania said, "Steadily increasing construction costs have obliged American Stores Company completely to reverse its attitudes on use of basements in its new stores. Nowadays, company officials said it only pays to install basements where ground costs are extremely high and use of a basement would cut the over all cost of building a market."
>
> Milton Segal, vice president Elm Farm Foods Company, Dorchester, Massachusetts stated, "We prefer a single floor supermarket rather than a multi-story unit.

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[9]"Store Engineering," Supermarket News Vol. 5 No. 43, (April 8, 1957), p. 27-29.

However, the size and nature of a parcel of land often precludes such a building."

Mr. Singer, Applebaums Food Markets, Incorporated, Saint Paul, Minnesota said concerning basement operations, "Maximum efficiency of layout hinges on whether a supermarket is on lease or rental basis by square frontage and whether a firm operates its own warehouse and service. Storage of dry groceries and locating rest rooms and compressors in the basement area allows more selling space on the main floor."

General agreements seem to favor the one floor operation where it is economically possible to maintain the complete operation on one level.

Food-O-Mat

The need for more selling space and greater economies within the supermarket led to the development of the Food-O-Mat. The Food-O-Mat is a gravity-fed, rear-loaded, patented display fixture for canned, glassed, and packaged items. It makes a convenient, colorful, compact display of most dry groceries carried in a modern supermarket. Many models of the Food-O-Mat have been developed, but are all basically the same except the front fill model which is portable.

The Food-O-Mat may be almost any desired length. The standard model comes in sections three and a half feet long; a space saver model is four and a half feet long. Generally, one standard section of Food-O-Mat replaces about twelve to fourteen gondola types of shelving. The Food-O-Mat is usually installed in a straight line; however, new developments have made possible a curved section of Food-O-Mat enabling the installation to extend around a square corner. The average standard section contains approximately twenty-five item

runways per front foot of Food-O-Mat space. Fast selling items are allotted more than one runway, while slow selling items are limited to one runway. The runways are easily adjustable permitting more or less runways as determined by the size and shape of the products placed on the Food-O-Mat. An eighty-four foot long Food-O-Mat would have approximately 2,000 runways and contain from 1,700 to 1,800 items on display.[10] Related items are displayed close together as on conventional type shelving.

The Food-O-Mat has been accepted mostly by food retailers in the Eastern United States. The Grand Union Company, whose president Lansing P. Shields is the inventor of the Food-O-Mat, has used the Food-O-Mat extensively in the Grand Union supermarkets. The interior of a typical Grand Union store is best described as similar to a wagon wheel. Numerous aisles fan out from a focal point as do the spokes of a wheel; but these are intercepted by several main aisles, which cut across the wheel spokes. The effect is, therefore, one of many short aisles, spaced well apart, and there is a minimum of crowding and knotting of customers at any one point.[11]

This particular layout gives the feeling that many small shops are located under one roof. The customers stroll through

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[10]"Food-O-Mat Manual," North American Equipment Company, Patterson, New Jersey, 1955.

[11]Robert Sheehan, "Grand Union's Super-Supermarkets," Fortune Magazine Vol. LI No. 6, (June 1955), p. 111.

the store without the restricting effect of wall and doors. High shelving is eliminated and greater visibility aids the customer in finding merchandise more easily.

Many food organizations have experimented with the use of the Food-O-Mat, but wide-spread acceptance has never been achieved. Possibly, the main reason that the Food-O-Mat has not received wide acceptance has been the fact that the food organizations who first tried using the Food-O-Mat had the earlier models which had faults that have since been overcome in the newer models. Instructions for the care and use of the early models was very poor, and resulted in much dissatisfaction on the part of the early purchasers. Improvements have been made in the later models and research is still being conducted to improve the efficiency of the Food-O-Mat.

The American Equipment Company points out that the Food-O-Mat was invented to:

1. Reduce the sales space needed to display dry groceries
2. Present a sales making display
3. Keep handling costs to a minimum
4. Show higher gross and net profit for the operation of the grocery department[12]

The basis of the Food-O-Mat operation lies in the theory that by putting the high customer demand, low mark-up items on the Food-O-Mat more space is made available to display high

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[12] Ibid., p. 1.

impulse, high mark up merchandise. More space is made available for the perishable departments which usually are high mark up merchandise.

The actual stocking of the shelving in the supermarkets remains one of the biggest cost factors. The Food-O-Mat offers help to reduce this stocking cost by:

1. Reducing handling operations from eight steps to six
2. Locating reserve stock directly adjacent to the Food-O-Mat to obtain direct flow of merchandise
3. Avoiding customer interference with production of stocking clerks
4. Avoiding blocking of aisles with loading trucks or cartons
5. Enabling Food-O-Mat operators to use other merchanical handling equipment, cutting man hours
6. Making restocking faster and more convenient
7. Allowing for automatic rotation and fronting: no pulling old stock off the shelves
8. Requiring less personnel to maintain stocking operation in Food-O-Mat than conventional type shelving[13]

Great emphasis is placed on proper instruction and training of personnel who work on the Food-O-Mat. Without proper training the employee is baffled and the use of the Food-O-Mat which is designed to increase stocking efficiency

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[13]Ibid., p. 6.

can not increase the production or profits of the store. Proper instruction, good training, and some experience are needed before an employee can achieve the production efficiency for which the Food-O-Mat was designed. The Food-O-Mat may or may not be an aid to merchandising the grocery items in a supermarket. Grand Union Company has made successful use of the Food-O-Mat in its supermarkets. The future of the Food-O-Mat seems to depend upon the new improvements that are being developed and the use of an extensive promotional campaign by the North American Equipment Company.

Summary

The modern supermarket must combine modern up-to-date merchandising and architectural design in its layout. The layout must try to satisfy the basic principle that applies to a retailing market.

1. To facilitate complete customer circulation of the entire store.
2. To increase sales of high margin merchandise.
3. To establish a buying routine consistent with the customer's thinking, habits, and methods of planning.
4. To make the task of shopping as pleasant as possible.

These principles may be incorporated in a store's layout through scientific and mathematical analysis of sales by departments, stock turnover, demand merchandise, and high margin

merchandise. The problem of space allocation has been with the food retailer for many years, but only recently has the problem become acute due to the addition of five hundred or more new items yearly. Factual sales analysis and stock turnover rates must be conducted if the retailer expects to maintain present profits as operating costs continue to rise.

As with all retailing businesses the storage and work areas can be an asset as well as a liability to the over all profits.

The storage and work areas need scientific planning to increase the productivity of each department. Improved handling methods are needed in the supermarkets and improved storage and work area layout is an excellent place to accomplish increased productivity and profits. No one plan will suffice all supermarkets; however, a comparison of successful operational layouts would be helpful to any progressive retailer. General opinion seems to be that as the operational costs in supermarkets continue to rise the effect of careful planning of the store's complete layout will become of major importance if the retailer expects to operate profitably.

CHAPTER V

EQUIPMENT

Introduction

Changes in food merchandising have accompanied the progress of supermarket construction. New merchandising methods have contributed to the development of new store equipment. The wide-spread acceptance of self-service initiated the development of new equipment to satisfy the needs of modern retailing. Competition among equipment manufacturers has increased, and as a result, food retailing executives must continually re-evaluate new developments in store design, lighting, heating, air-conditioning, materials handling equipment, etc.

As operating costs have continued to rise, greater emphasis has been placed on securing modern, efficient store equipment. An example is the use of parcel pick-up stations to reduce the cost of carry-out boys. As in many other phases of the planning, one best method cannot be applied to every situation. Each store presents a problem of transferring the customer's purchases from the checkout stand to the automobile with the greatest efficiency and satisfaction.

Modern retailing continues to present a challenge to equipment manufacturers. Most of the manufacturers have been

able to meet the challenge. Many equipment manufacturers offer complete planning services to the retailer. Experienced engineers make a complete analysis of the retailer's problems, then plan the best methods to help solve the problems. As the pattern of retailing changes, the equipment must also change to meet the new demands. The food retailer must be continually alert to the changing retail patterns.

Grocery Equipment

The materials handling equipment used in the grocery departments has seen no revolutionary changes in recent years. Today's supermarkets are making greater use of conveyors to facilitate loading and unloading of product. The four-wheeled stocking cart is rapidly being accepted as a replacement for the less efficient two-wheeled hand truck. A few chain organizations are using the pallet load system in shipping product to the stores. Easy to handle pallet jacks are used in the stores to unload and move the palletized products within the store.

Gondolas

Gondolas and shelving are made by many manufacturers. Many of the large chains have their own carpenters who make the shelving as needed for new or remodeled stores. Most supermarkets make use of the variable depth or stair step type of shelving, i.e. the bottom shelf may be twenty inches in depth, the next shelf fourteen inches, the next twelve inches, the next ten inches, and the top shelf eight inches

deep. Nearly all modern shelving is made in sections with easy adjustment for the desired height of each shelf. Greater use of pegboard has been experienced as many supermarkets have extended their non-food lines. Wire dump baskets and shelf extenders are still being used by most supermarkets. Within the last few years standardized, flexible shelving has been developed. The most desirable selling space remains on the eye level range. Eye level shelving throughout a store gives the customer a clear view of the entire store; however, many remodeled stores have had to add another shelf to the top of present shelving in order to carry a more complete variety of products. Where space is limited, higher shelving is used.

Check-out Equipment

The check-out operation is an important phase of the supermarket operation. The check-out function accounts for nearly one-fourth of the man-hours required in the total supermarket operation. Supermarkets may handle sixty to seventy per cent of their week's sales on Friday and Saturday. This volume during peak periods usually causes the store manager considerable worry due to the congestion formed at the check-out counters. The introduction of self-service meats and produce have greatly reduced the main bottleneck. However, the check-out counter remains the number one bottleneck in the store. Increased volume depends to a large extent on the rapidity with which customers can be moved through the check-out lanes in a courteous, friendly manner. Where parking

facilities are limited, the check-out operation becomes more important. The extension of self-service has placed the burden of good customer relations upon the cashier, baggers, and carry out boys. In many cases they are the only store personnel with whom the customer may come in contact.

As with other types of supermarket equipment, several companies manufacture check-stands. The basic principle of operation is about the same and tests have proven that the advantages of one type checkstand over another are very few. Actually if the latest model checkstand of each manufacturer was tested under the same operating conditions very little difference in efficiency would be noted.

The checkout stand is a tool. It will receive merchandise, move merchandise, and aid in the physical handling of merchandise, but the checkstand will not check out the merchandise. The purpose of the checkstand is to make sure that the right items are at the right place at the right time with the minimum of effort or inconvenience to all concerned. Checkout equipment selection should be based upon its effectiveness. The speed, accuracy, and effectiveness of the checkstand depend upon the cashier and baggers.

Many manufacturers of checkout equipment will make claims that their models will handle a certain amount of dollar sales per checkout per day or week. Any intelligent operator knows that many variables are connected with the checkout operation so that these figures could hold true only in the store in which the tests were conducted. Variables, such as

the speed of the cashier, number and speed of the baggers, and whether the cashier must cash checks, handle bottle returns, coupons, stamps, weigh produce, etc. affect the dollar sales that pass through a checkstand per day or week. Naturally, in planning a store the number of checkstands that will be needed to handle the estimated sales must be determined. Usually a large organization can apply figures of other stores operating under similar conditions to the new supermarket. An estimate given by the Spee-Dee Check-out Systems, Incorporated, manufacturer of a widely used checkstand is $8,000 weekly sales per checkstand. The figure may be high or low depending upon the area location and the variable factors that affect the check-out operation.

New developments in cash registers have helped to speed up the check-out operation. Motorized department keys enable faster and more accurate checking of merchandise by departments without the need of sorting the merchandise prior to checking out each order. The cash register that shows the cashier the amount of change to give the customer is a new innovation. The accuracy and speed of the cash register is dependent upon the operator. Most cash registers are capable of recording eighty rings per minute. Cashiers usually check between forty to sixty items per minute.[1]

Check-out equipment should not be selected on the basis

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[1]Clyde L. McNeil, "Studying Checkouts--A Report Prepared by the Spee-Dee Check-out System, Inc", (Grand Rapids, Michigan, 1956), p. 5.

of mechanical features or a particular technique which affects speed and accuracy, but on how effectively the design and technique will enable the individual operators to develop and utilize their abilities in the operation of the equipment. Speed and accuracy are not measured by the mechanical features of the check-out equipment alone, but by the adaptability of the features used by the operator. New and improved equipment has been, and is being, developed to help eliminate the bottleneck at the check-out counter. Current experimentation with automatic bagging and even automatic checking of merchandise electronically is being conducted. Equipment manufacturers are attempting to keep pace with the progress in food retailing.

Dairy Equipment

The important contribution a successful dairy department can make to the store operation has been recognized in recent years. The increased emphasis on dairy merchandising combined with self-service has lead to new developments and design in dairy cases. The latest innovation has been the low, open-type case. The case has three shelves with individual temperature control on each level. The new case offers maximum accessibility with no glass fronts. The new case is available in several colors. Since dairy products are high impulse, high profit items the new open-type case offers great appeal to impulse buying.

Almost all dairy cases in the supermarkets are the

self-service type. In some areas wide-spread use has been made of the old type dairy coolers with front doors giving the customer easy access to milk, butter, and eggs on shelves filled from the rear of the cooler. The cooler serves as storage for extra dairy products.

Some supermarkets still cut and wrap cheese, but the trend is toward completely prepacked cheese supplied by a wholesaler. Dairy products have increased to a point where most large supermarket operators consider dairy as a separate department comparable to the meat and produce departments.

Frozen Food Equipment

The modern frozen food display cases have been an important factor in the increase of frozen food sales. The new low-slung backless cases which are available in a variety of pastel colors add sale appeal to a popular supermarket item--frozen foods.

> "The move toward greater visibility and easier access to the merchandise has helped stimulate customer interest in frozen foods. Still, the ultimate in frozen food cases has not arrived, and the chains are on the look out for better ones with more sales appeal."[2]

A variety of different sizes, shapes, and designs are in current use. Many of the cases are converted ice cream cases. The latest models, as mentioned previously, are in pastel colors. The large superstructure that held the mirrors at the back of the cases has been omitted at a reduction in

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[2]"Cases with Sales Appeal," Chain Store Age Vol. 32 No. 4, (April 1956), p. 128.

cost to the supermarket operator and at no apparent loss in sales. As frozen food sales continue to increase, and more variety is available, the demand for less expensive frozen food cases has grown. At one time frozen food cases were placed with the back of the case against the wall and a mirrored superstructure placed on the back of the case serving the two-fold purpose of hiding a wall and reflecting the attractive picture of colorful packages. The demand for more frozen food space led to the development of the low type frozen food case minus the superstructure. This type case is accessible from two or more sides and helped to increase the frozen food sales. Today, a complete line of frozen food cases are often times located in the middle of the store replacing conventional shelving. For supermarkets where backroom storage is limited, many frozen food cases have storage compartments under the case accessible by doors in the front. Extensive use is being made of the upright type of freezer for backroom storage of extra frozen products. The larger, newer supermarkets have been building walk-in freezers to store the increasing frozen products. The walk-in freezers are available in a variety of sizes and can be built to fit into a particular area of the backroom or basement.

Currently, frozen food is displayed in a flat position in open-type cases. Experimentation is being conducted by a large manufacturer of refrigeration equipment to design an up-right case without doors. This type case would resemble a walk-in, rear-fill dairy case with no doors on the front.

The case would or could incorporate the use of the gravity fed rear-fill type rack now used in the Food-O-Mat. A case so designed would make use of vertical space now lost in the present type frozen food cases, and also make refilling more efficient. Refrigeration manufacturers have made many improvements in supermarket equipment and can be expected to continually develop new equipment that will meet the needs of the supermarket retailers.

Meat Equipment

In the last few years many of the old service type meat departments have been converted to self-service. The new supermarkets that have opened have almost unanimously incorporated self-service meat departments and adapted more mechanization. Probably no single meat department is using all of the modern equipment that is available; however, a large percentage of the meat departments are using modern self-service equipment in increasing amounts. Self-service meat operations led to the development of a meat-flow plan. In the meat flow plan the use of different types of equipment has been incorporated to facilitate productivity in the backroom preparation of the meat.

> "Overhead conveyors with tracks leading from the receiving docks to the storage and cutting rooms, heavy-duty scales of either floor or overhead design, and various types of hand trucks that can move packaged items, such as smoked hams direct from the docks to display cases, all cut down on the heavy lifting that was necessary in days gone by. Larger walk-in cold storage rooms offer many advantages over the small cooler boxes previously used. Separate storage equipment for frozen meats and fish are now provided in most supermarkets.

> Air-conditioned cutting and packaging rooms, roller-type conveyors--some of them now refrigerated--and cool holding cabinets in which counter-ready trays of meat may be stored are all considered assets in the overall program of packaging meats in the best conditions."[3]

Probably one of the greatest time-saving devices is the electric saw. The electric saw was a major factor in developing the production line efficiency in meat preparation. Practically all supermarkets today have computer scales, package sealers of the hot-plate and hand iron type, convenient label cabinets, various wrapping supplies, and dispensers to aid the prepackaging operation. Newer devices now being used include automatic and semi-automatic packaging machines, label making devices, activators for use with pressure sensitive labels, and vacum sealing equipment for use on luncheon meats and variety items. Possibly the latest and most revolutionary aid to the self-service meat operation was the development of the Kobart-Dayton scale model 2000. The new model 2000 is a completely automatic weighing and pricing machine which performs an accurate weighing operation, computes the commodity price, and issues a printed label with the required information in one completely automatic operation.

Some chains that in the past used window panels to separate the preparation room from the display case or used a mirrored sliding window rear-fill type of display case have eliminated all the dividers in the newer markets and are actually preparing the meat in full view of the customers. Another

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[3]"For Meat--More Mechanization," Chain Store Age Vol. 32 No. 13, (December 1956), p. 42.

innovation of some supermarkets is the augmenting of self-service meats with a smaller section of service case to handle special cuts, delicatessen foods, fresh fish, and variety merchandise.

Refrigerated self-service cases have been designed to give maximum visibility and accessibility to the customer. Most new supermarkets make use of the rear-fill type cases. In the larger supermarkets, live lobster tanks with steam pots, as well as rotisserie cookers for barbecue chickens, ribs and roasts are now being used for special customer attraction. Some meat departments prepare ground beef patties by using a pattie making attachment on the meat grinder. The patties can be made to weigh from two to four ounces and can be prepared at a rate of forty to eighty patties per minute. For the store that has a large fresh fish business the electric fish scaling machine is a real time-saver. Efficiency in productivity is a must in the modern self-service meat department. If centralized meat packaging by wholesalers of retail cuts does not progress, more mechanization in the preparation of meat packages at the retail level is almost a certainty.

Produce Equipment

Self-service produce departments are becoming more popular as better packaging materials and customer acceptance of prepackaged produce has developed.

> "Prepackaging is rapidly becoming the most important single phase in the handling of fresh produce. Already

> over thirty per cent of all produce in food chains is sold prepackaged and some chains are running considerably higher."[4]

Many supermarkets have one hundred per cent self-service produce departments which have brought into use the production methods developed in self-service meat preparation. In many cases similar product flow methods have been developed. Because produce is packaged on a smaller scale the hand iron or plate sealing equipment has been used extensively. In several operations where the product volume is large enough, a semi-automatic wrapping machine is used. The computing scales and labeling machines are identical in most cases to those used in the meat departments. In one case a large chain is currently experimenting with the use of the wrapping machine and Hobart 2000 weigher and pricer for packaging of produce. Normally this equipment is not used by the meat department during the night. The produce department prepares the product during the early evening hours and then uses the meat department's equipment during the night prepackaging produce for the next day's sales. A few produce personnel working at night can accomplish more by utilizing the wrapping machine, weigher and pricer in the meat department when the equipment is not being used than using the limited equipment in the produce department.

Refrigerated produce cases are not in use by all large

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[4]"Produce Manual," Chain Store Age Vol. 33 No. 3, (March 1957), p. 168.

supermarket as yet. However, the trend is toward wider use of refrigerated produce cases for fresh fruits and vegetables. Some use is being made of the mirrored sliding window rear-fill type produce cases. In other supermarkets a rear-fill operation similar to that of the meat department is being used.

Probably one of the most useful inventions adapted to supermarket use has been the garbage disposal. The problem of garbage removal has always plagued the supermarket operator. The garbage disposal has reduced the cost and worry of removing many tons of waste resulting from produce department operations.

Bagging machines are available which permit easy bagging of apples, oranges, grapefruit, potatoes and onions. An automatic bagging machine has been developed to bag head lettuce in cello bags.

Many produce departments handle garden items and the need arose for the development of appropriate display stands. Currently, many different kinds of display stands are available in a variety of sizes and colors; however, many of these display pieces are home-made. As the self-service idea penetrates the operation of the produce department the equipment manufacturers will undoubtedly develop new equipment to accomplish a higher level of productivity and efficiency than is now possible with present equipment.

Lighting

Modern advances in supermarket lighting have kept pace with changing patterns in merchandising. Whether in new store

construction or old store remodeling lighting is very important in presenting an attractive atmosphere. Well-planned lighting helps develop the colorful effect needed to influence impulse buying in today's self-service supermarkets.

> "Lighting may be designed to reveal the inherent quality of the merchandise--color, texture, form, pattern, workmanship--by means of an overall pattern of luminaries that provide light of appropriate quantity, color, direction, and diffusion."[5]

Lighting helps develop a distinctive store appearance which is an asset to a modern supermarket. A current trend is seen in vertical illumination with ranges of fifty to one hundred or more foot candles which establishes a bright, clear appearance of shelving and gondolas.

Self-service merchandising requires a higher than average range of foot candle lighting to help speed customer traffic and merchandise selection. The use of spot lights helps to attract attention to featured items and high impulse merchandise. High intensity lighting in the check-out areas aids in making change and tends to speed check-out.

Lighting and Colors

The appearance of food and other merchandise is very important in food selling. Color is one of the main factors by which goods are judged. The appraisal of color and other qualities is best when high levels of illumination are available. Unless the lighting is carefully selected, however,

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[5]"Selecting Lighting Equipment," Chain Store Age Vol. 33 No. 3A, (March 15, 1957), p. 6.

the colors of food and other merchandise may be far from their familiar or "natural" look. This particularly is true of meats and vegetables; however, it applies almost equally to packages since color is a major element in their design.

Obtaining a familiar appearance in foods is a relatively new problem. When incandescent light bulbs were used in food store lighting, colors had a familiar, though often imperfect, appearance.

Today flourescent lighting has largely replaced incandescent lighting in food stores bringing about the benefits of high levels of illumination which improve appearance and speeds up shopping. With all its virtues, flourescent lighting, until recently, has been unable to produce familiar or "natural" color effects. After much research and experimentation, flourescent lamp colors have been developed which retain the advantages of flourescent lighting, and in addition, provide familiar color rendition. These new lights, a development of the General Electric Company, are known as Deluxe Lamp colors. The "natural" effect is accomplished by the use of a new flourescent powder combination which adds more red and green to the light, while keeping the correct amount of yellow and blue.

These Deluxe flourescent lamps come in two degrees of whiteness: Deluxe Cool White which blends with and stimulates the color effects of natural daylight; and Deluxe Warm White which blends with and stimulates the color effects of traditional incandescent lighting. The appearance of colors under

both of these lights is excellent.

When used in meat cases, the Deluxe Cool White gives lean meats their familiar blood-red color, while maintaining the usually desirable white appearance of fat portions and of white surfaces in the show cases. These lamps also make fresh vegetables look fresher and greener, and give the red, orange, and green coloring of fresh fruits a brighter, more vivid appearance. Packages and canned goods can also be made more colorful, giving greater sales appeal under this Cool White lighting.

In other departments the Warm White Deluxe lamps are the best lighting choice. Poultry, baked goods, and dairy products take on added rich yellowness with the Warm White type of illumination. The rich tans and browns of baked goods are also emphasized for better appearance.

Placement of Lighting

Because the eyes are attracted first to existing spots or areas that are unusually bright, a market area lighted to a high level of foot candles by a system of bare flourescent lamp fixtures makes the eyes over-concious of the bright light sources overhead. This situation is worse as the customer enters the store, for the bright lights are more in the field of vision and create a ceiling glare. Unpleasant conditions constantly distract customer's attention from packaged merchandise on display. Likewise, upper wall surfaces finished in white reflect light of high brightness which causes eye distraction. The sanitary white glossy areas frequently produce annoying

light source reflections. Overhead glare combined with unlighted display cases contributes to changing the show cases from desirable pieces of display equipment to mere storage bins.

Besides the direct glare problems, exposed flourescent lamp systems develop a further distracting atmosphere when the bare bulbs accumulate a visable coating of dust and dirt. This condition, together with symptoms of lamp aging or early burnouts, presents what customers usually regard as an unsanitary, neglectful appearance. In many cases the situation is aggravated further when more than one color of flourescent white lamp is used, for there are seven different standard whites. Many times as replacements become necessary the wrong color lamp is used contributing to a confusing, undesirable atmosphere.

All of these objectionable situations which distract from the customer's buying impulse can be minimized by shielding with proper fixtures the direct glare from the lamps, and concealing dust and dirt accumulations on the bulbs as well as early burnouts or mismatched lamp colors. Valances may be used to light the shelves and upper walls, producing a softly luminous background against which merchandise and department signs may be displayed. Perimeter lighting, by means of valances, can also make a contribution to overall store appearance by increasing the apparent size of the store.

Special Displays

Standard shelving and merchandise in the chain food stores of today are combined with numerous displays. To accent these types of displays either direct or internal lighting may be successfully utilized. For this purpose miniature spotlights can be utilized for high-lighting the merchandise or the area. At times internal lighting of a display of various types of jellies packed in clear glass containers. By handling a display such as this around an internal source of illumination, the display can be uniquely and very effectively accented.

Outside Lighting

With the trend to larger parking areas and longer store hours many customers drive in to the supermarket in the late evening. Unless the parking area is properly lighted, women shoppers will hesitate to park in darkened areas and all customers leaving the store with arms full of packages will have difficulty in getting into their cars or in putting their packages into their cars. The problems of customer convenience and safety have made it imperative that all parking spaces be provided with flood lighting systems.

The flood lighting of the store front is also a vital part of the lighting system. An attractive well-lighted store front, not only attracts pedestrian customers after dark, but also catches the eye of approaching motorists.

A well-lighted and designed store front, coupled with a flood lighted parking area, will attract a potential customer's

attention to the store, and if a well-balanced lighting system has been employed in the interior, the customer's primary sense of sight has had a direct invitation to stop and shop in a clean, efficient, and attractive store.

Air Conditioning

Most supermarket operators are aware of the need for air conditioning in their stores. Two principle reasons for air conditioning are: bringing additional customers to the supermarket while retaining the present customers, and maintaining a competitive position in the trading area. Regardless of the air conditioning system purchased, a written guarantee outlining the conditions which will be maintained in the store by the equipment should be obtained from the manufacturer, dealer, or contractor. Maintenance service may be contracted and should be investigated to assure that a qualified repair man is available if needed.

Two principle types of air conditioning units are in general use. One type is the nearly self-contained unit. It is usually available in sizes from two to thirty tons. The smaller units are especially adapted to old or new buildings where space is limited. By spacing two or three small packaged units throughout a store complete even temperatures can be maintained. The condensing unit may be air or water cooled.

> "If water cooled, a tank must be provided for most commercial air condition installations. Very often a water saver must be used according to community ordinance. If possible, a separate well to supply water for all cooling purposes is advantageous. Where water is scarce, expensive, or where building conditions do not permit

water tanks, water savers, and air cooled condenser units can be used."[6]

These packaged units vary in cost from $350 to $500 per ton. If heating units are combined, the cost will be increased as will the cost of installation.

The second general type of air conditioning being used is for large installations. Here a larger centrally located unit supplies the air conditioning, and heating if desired. Air is blown through ductwork either located in the ceiling or near the ceiling along opposite sides of the store. The air conditioning or heating can be thermostatically controlled. This type of system provides good temperature regulation with good humidity control. The air is filtered and dehumidified before being cooled and redistributed by the aid of blowers. The life of an air conditioning system of this type is the maximum expected length of occupancy. A central air conditioning plant is most advantageous where the capacity of air conditioning needed is large. The water cooled system is the most economical, and especially so, when a well is available to supply the needed water. Air cooled units for large installations are available and in use in some stores where conditions are such that the use of air cooled units are a necessity. "The cost for the centrally located system is about $1,500 per ton for air conditioning including ductwork, piping and wiring."[7]

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[6]"Purchasing Air Conditioning," Chain Store Age Vol. 33 No. 3A, (March 1957), p. 10.

[7]Ibid., p. 11.

The use of air conditioning in supermarkets established another record high for 1956. Expenditures for air conditioning in supermarkets in 1956 were about forty-one million dollars. In 1955 the amount spent by supermarkets for air conditioning was thirty-three million dollars. Food chain organizations reported 3,100 supermarkets were air conditioned in 1956 which represents an increase over the 2,500 supermarkets air conditioned in 1955. Currently, almost all new supermarkets opened are air conditioned and many are using the centrally located system that provides both heat and air conditioning. Air conditioning is another customer service that has become more or less expected from all supermarket operators. Local conditions and location of dealers who can supply maintenance service are usually determining factors in the selection of one manufacturer's product over another.

Air Curtain

One of the latest and most remarkable inventions has been the use of an air curtain in door openings. The air curtain was developed in Switzerland and has been successfully installed in two dozen stores in Europe. A Kroger supermarket located in suburban Cincinnati, Chio has made use of the air curtain door for over a year and reports great satisfaction.

> "With one open doorway for incoming traffic and a double doorway for outgoing movement of customer's purchases and carry out boys, there is little congestion on the busiest days. The wide exit assures a safe easy flow of people, packages, and carts."[8]

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[8]"Traffic Flows Through A Curtain Of Air," Chain Store Age Vol. 32 No. 8, (July 1956), p. 451, (Executive Edition).

Two spaces can be separated by means of an air curtain and still leave free passage from one space to the other. Different temperatures, atmospheric pressures or air movement on either side of the air curtain has no effect upon the curtain of air. The air curtain acts as an insulating wall penetrable only by solid bodies.

> "The air curtain does its work by blowing a suitable quantity of air downwards through specifically shaped directional nozzles installed above the entrance, producing thereby an air wall. The air is readmitted through a floor grating, cleaned, heated or cooled, and then moved again through ducts back to the nozzles."[9]

The air curtain has a slight velocity that changes automatically depending on outside air pressure, but the velocity of the air is so soft that it will not disturb ladies' hair. The downward flow of air will keep out insects, flies, street dust, and even small animals. The grating on the floor has enough suction that dust, dirt, cigarette butts, etc. are pulled into a pit that can be easily cleaned thus keeping this trash from entering the store. The pit must be cleaned regularly as the collection of dirt and trash each day is high. The customer entering through the air curtain gets a warm feeling in winter and a cool feeling in the summer. The air curtain door gives the customer greater convenience in entering or leaving the store and keeps the dust and dirt as well as insects and animals from entering the store from the outside. Wide-spread use of the air curtain door is not expected until the high cost of operation can be reduced.

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[9] Ibid., p. 452.

The magic eye or electric eye door, as well as the electric mat door opener, currently seem to the the most used types of automatic door openers. Probably the electric mat opener, since it is a newer invention than the electric eye, is being used in most new stores. Simply stepping on the mat opens the door quickly, quietly, and safely. Several different companies manufacture automatic door openers. The only apparent advantage of one over the other would probably be the nearness of the distributor and/or repair man.

Miscellaneous Equipment

The use of an intercom system as an aid in determining the backroom stock needed on the sales floor is being used more and more. Phone jacks are installed at different intervals along each aisle and connect with jacks located in the backroom stock area. One employee in the sales area tells another employee in the stock area what merchandise is needed. The employee in the stock area marks the cases of merchandise that are to be taken to the sales area and in a short time the complete backstock can be checked.

For the supermarkets that still prefer to use iced produce displays, several types of ice making machines are available. One of the latest machines which takes up only five square feet will produce 2,000 pounds of crushed ice per day.

A portable public address system that requires no external power source is now available. The machine is a tran-

sistorized apparatus and may be useful in supermarkets where public address systems are not now in use.

For the supermarket operators who check warehouse deliveries by case count, an automatic case counter is now available. The counter is attached to the wheel-type conveyor and registers as many as 99,999 cases.

The age old problem of changing flourescent lights has been solved by an easier method than pulling out a step ladder and juggling the bulbs on the ladder. A flourescent tube changer has been invented that permits the removal of old bulbs and the installation of new ones while standing on the floor.

Manufacturers of equipment are continually striving to develop more efficient equipment. As operational costs rise more pressure will be exerted on equipment manufacturers for more efficient equipment to offset profit losses.

Summary

The supermarket of today requires modern, efficient equipment. Supermarket operators must continually evaluate and analyze the newly developed equipment. The age of automation and mechanization has supplied the supermarket with equipment that produces better aids to merchandising, as well as better service to the customer.

Many new developments have been made in refrigeration equipment, air conditioning, check stands, lighting, automatic

doors and materials handling equipment. Equipment manufacturers have tried to meet the needs of the supermarket. Counseling and engineering services are offered to help solve individual store problems. Color has been used extensively, not only for interior wall decoration, but for store equipment, such as gondolas, display cases, shelving, and checkstands.

The cost of equiping a new supermarket is tremendous. A supermarket operator must avoid the use of old-type equipment in a new store. Keeping up to date on the latest developments in supermarket equipment is a necessity. High operational costs plus a low net profit, demand the use of the most efficient equipment that gives the greatest productivity as well as customer satisfaction. Fine equipment that does the required job is important to good service. For many years equipment manufacturers have made it possible for supermarket operators to do a better merchandising job and give better service to the customers. Undoubtedly, the manufacturer's efforts to aid the supermarkets in giving more efficient service to the customer will continue in the future.

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